Culmullin 220kV Substation, Co. Meath

Environmental Considerations Report (ECR)

Energia Solar Holdings

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Table of Contents

Figures

Tables

1. Introduction

This Environmental Considerations Report (ECR) has been prepared by AECOM Ireland Ltd. on behalf of Energia Solar Holdings (herein referred to as the 'Applicant'). Energia Solar Holdings are a subsidiary of the Energia Group, who are a major all-Ireland energy provider and infrastructure investor across renewable technologies.

This report presents the likely environmental impacts associated with the 220 kilo Volt (kV) Air Insulated Switchgear (AIS) substation, named Culmullin 220kV Substation (hereafter referred to as the 'Proposed Development').

Additional information on the Proposed Development is outlined in the following sections. Reference should be made to Chapter 2 (Description of the Proposed Development) of this report for full details of the Proposed Development.

1.1 Purpose of this Report

The purpose of this ECR is to assess the potential environmental impacts and identified appropriate mitigation measures to reduce impacts associated with the proposed 220kV AIS substation, named Culmullin 220kV Substation, looped into the existing Gorman - Maynooth 220kV overhead line (OHL) directly to the west. The application site boundary ('the Site') is located at Woodtown, Co. Meath.

1.2 Scope of the ECR

The ECR has been prepared in conjunction with an Environmental Impact Assessment (EIA) Screening Report (AECOM report reference 60657534_ACM_RP_EN_CM_010 dated 25 May 2023) and each environmental topic includes a baseline assessment, impact prediction and evaluation, and determination of appropriate mitigation measures, including monitoring and reinstatement where appropriate. The structure of this report is outlined in Table 1.1.

Table 1.1: Structure of the ECR

Section	Chapter Title
1	Introduction
2	Description of the Proposed Development
3	Consultation
4	Population and Human Health
5	Biodiversity
6	Land and Soils
7	Water
8	Air Quality
9	Climate
10	Noise and Vibration
11	Material Assets
12	Cultural Heritage
13	Landscape and Visual Impact
14	Traffic and Transport
15	Conclusion
16	References

1.3 Need for the Proposed Development

The need for this Proposed Development, is to provide the necessary infrastructure to support the permanent power supply generated from neighbouring solar energy projects. The Proposed Development is required to support, secure and transport the supply of electricity from these projects.

1.4 Planning, Policy and Development Context

Details of the relevant policies and planning and development context are provided in the Planning Statement (AECOM, 2023) accompanying this planning application.

1.5 Planning History Context

A review was initially carried out to identify other existing and/or approved projects (including approved projects that have been appealed and a decision is pending), taking into account any existing environmental impacts relating to areas of particular importance likely to be affected or the use of natural resources. A review was carried out of the planning files from the following databases:

- Meath County Council (MCC)
- Neighbouring County Councils (such as Fingal County Council)
- An Bord Pleanála (ABP)
- Department of Housing, Planning and Local Government (DHPLG) EIA Portal.

An overview of the planning history search is included in Appendix D.

This assessment considers whether any of these existing/approved projects will likely have significant cumulative effects in combination with the Proposed Development. The assessment also considers whether all of the existing/approved projects taken together as a whole will likely have significant cumulative effects in combination with the Proposed Development. There are many projects listed on the planning databases considered, however, the focus for this assessment was on the proximity, scale and nature of those projects in relation to the Proposed Development and on those which could potentially exacerbate environmental effects and thus be of significance to the cumulative effects assessment. Particular attention was given to those projects which were designated as Strategic Infrastructure Developments (SID) in proximity to the proposed development given the larger scale and nature of these developments. Those projects where EIARs or NIS's accompanied the planning applications were also given due regard at review stage. Live or proposed projects which have not yet been permitted were not considered in this assessment.

Arising from this review, a number of existing and/or approved projects (as listed in Table 1.2) were identified which could have the potential for likely significant cumulative effects.

Table 1.2: List of Planned Projects Identified as Having a Potential Cumulative Effect of the Proposed Development

Reference	Address	Proposed Development	Planning Status	Distance from Site
221550	Woodland , Batterstown, Co. Meath	The development will consist of: 1. Installation of outdoor Air Insulated Switchgear (AIS) electrical apparatus, including an associated extension to the hardstand compound (approximately 4 hectares) to facilitate same. This includes: a. installation of an extension to both sides of the existing 400 kV busbar, with provision of an associated wing coupler at either end of the existing 400 kV busbar. b. additional apparatus and associated works to the two existing busbars to create what is known as sectionalising bays. c. relocation of existing transformer connections from existing busbar to adjacent location on new busbar. d. an associated single-story extension (approximately 80 m2) to the existing control building. 2. The erection of four new lightning masts and relocation of one existing mast (each approximately 45m high). 3. Two bays on opposite sides to the newly extended 400 kV busbars at the southern end of the substation, each bay to incorporate breakers, reactive compensation devices and cable sealing ends. These bays will facilitate the connection of the new 400 kV underground cable links from Dunstown and Belcamp substations respectively. 4. Renewal, alteration and/or removal of associated 400 / 220 kV electrical apparatus and equipment. 5. All ancillary site development works including site preparation works, site clearance and levelling; provision of hardstanding, internal access tracks and temporary construction compound; associated underground cabling and earthgrid; associated extended surface water drainage network including a soakaway; associated palisade fencing and gates (approximately 2.65m high); lighting poles and landscaping as required to facilitate the development. Planning Permission is sought for a period of 10 years. Significant further information/revised plans submitted on this application	Conditional Grant 25/05/2023	c.5km southeast

Reference	Address	Proposed Development	Planning Status	Distance from Site
22837 23136	Creemore & Belshamstown, Batterstown, Co. Meath	The proposed development constitutes a new battery energy storage facility & synchronous condenser, with associated change of use on lands currently in agricultural use. The proposed development will comprise of rechargeable battery units with grid forming inverters contained within 253 no. 40 foot containers on site. (An associated Strategic Infrastructure Development planning application will be made to An Bord Pleanala in relation to a 220 kV Gas Insulated Substation and associated development on the adjoining lands to the east of the proposed development site, located at Creemore & Woodland, in Co. Meath, in accordance with Section 182A of the Planning and Development Act 2000, as amended). In addition, the proposed development includes a synchronous condenser within a c.983 sqm building (ranging in height from c. 11 to 13 m), with associated compound & plant; oil separator & collection pit; transformers; circuit breakers; underground cabling ducts & cable. The proposed development includes underground cable which will connect the new battery energy storage facility to the adjoining proposed 220 kV Gas Insulated Substation (the subject of the associated Strategic Infrastructure Development planning application as reference above). The proposed development will also include a battery storage control building (c. 400 sqm, 6.86 m in height); security gates & boundary treatments; hard & soft landscaping; well; bollards; plant & water storage tank; wastewater treatment system; SuDs; attenuation pond; installation of earthen berms; piped infrastructure & ducting; culverts; street lighting; lighting masts & CCTV columns; car parking; stoned access roads & the upgrading of the existing vehicular access to the R154; changes in level & all associated site development & excavation works above & below ground. Planning Permission is sought for a period of 10 years. Significant further information/revised plans submitted on this application Permission for development at a c. 14.14 ha site, located at Creemore and Belshamstown, in Batterstown, Co. Meath, as permitted under MCC Reg. Ref. 22837 (which permitted a new battery energy facility and synchronous condenser.). The proposed development will consist of amendments to the previously permitted development (MCC Reg. Ref. 22837) including amendments to the previously approved internal access road layout; amendments to the previously approved attenuation pond to the south of the site and associated piped infrastructure, ducting and drainage arrangements. In addition, a previously permitted earthen berm to the centre of the site is to be omitted. No changes are proposed to the permitted vehicular access to the R154. Any associated amendments to changes in level and all associated site development, hard and soft landscaping and excavation works above and below ground are also included. Planning permission is sought for a period of 10 years	Conditional Grant 7/12/2022 Conditional grant 16/05/2023	c.4.6km southeast
MCC 21985 ABP-312723-22	On lands including Derryclare, Cloneymeath, Ballygortagh and Moynalvy, Summerhill, Co. Meath.	A Solar PV Energy Development with a total site area of 108.68ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 27 no. MV Power Stations, 3 No. Client Substations, 3 No. temporary construction compounds, access tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works. Solar energy plant and ancillary equipment. Associated site development works. Significant Further information/Revised plans submitted on this application. NIS submitted with FI.	MCC Conditional Grant 17/01/2022 ABP Conditional Grant 27/01/2023	c.5.0km west
212214 ABP-314058-22	On lands including Culmullin, Woodtown, Arodstown & Summerhill, Co Meath	For a solar PV Energy Development with a total site area of 206ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 54 No. MV Power Stations, 2 No. Client Substations, 4 No. Temporary Construction Compounds, access tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works, accessed via two existing accesses along the L62051. The application is accompanied by a Natura Impact Statement (NIS).	MCC Conditional Grant 15/06/2022 ABP Decision Pending	c.800m southwest
MCC 21546 ABP-311760-21	Clonymeath, Summerhill, Co Meath.	Permission for Solar Photovoltaic (PV) development within the townland of Clonymeath, Summerhill, Co Meath. Planning permission is sought for the construction and operation of a solar PV farm consisting of solar arrays on ground mounted steel frames, with a maximum overall height of 3 metres, over an area of 91.9 ha and ancillary equipment including up to 30 no. medium voltage power stations, 1 no. modular Battery Energy Storage Compound (comprising up to 5 no. battery containers) and all other associated site development works and services, including, internal solar PV farm, underground electrical cabling and ducting, 2 no. temporary	MCC Conditional Grant 29/09/2021 ABP Conditional Grant 24/05/2022	c.4.80km west

Reference	Address	Proposed Development	Planning Status	Distance from Site
		construction compounds, security fencing, CCTV camera stands, replacement of an existing site entrance with a new gated site entrance via the L2210 local road, provision of new internal access tracks including the upgrading and installation of span bridge structures, site drainage and landscaping, as required to facilitate the development. Planning permission is sought for a period of 10 years with an operational life of 35 years from the date of commissioning. The application is accompanied by a Natura Impact Statement (NIS). Significant Further information/Revised plans submitted on this application. Solar PV development. NIS lodged at application stage.		
RA170766	Knockstown & Clarkstown, Summerhill, Co. Meath	The development will consist of the following: Photovoltaic solar farm on a site of 23.6 hectares (58 acres) with an export capacity of approximately 8MW, comprising photovoltaic panels on ground mounted frames; 4 no. inverter stations; 1 no. interface substation; ducting and underground electrical cabling; perimeter fencing; pole mounted CCTV cameras; screen planting/landscaping; closing up of existing vehicular entrance and creation of a new vehicular entrance on the local road (L6215); new internal access track from the new vehicular entrance to connect with existing internal farm tracks, and all ancillary works necessary to facilitate the development. Significant further information/revised plans submitted on this application.	MCC Conditional Grant 1/6/2018	c. 4.70km southwest

2. Description of the Proposed Development

The Proposed Development will comprise a new 220kV AIS substation (Culmullin 220 kV Substation) looped into the existing Maynooth – Gorman 220kV OHL. The Proposed Development is located at Woodtown, Co. Meath (Figure 2-1). The redline boundary of the Proposed Development covers an approximate area of 7.3 hectares (ha), with the substation boundary covering approximately 2.24ha.

It is intended that three solar energy projects will connect to the proposed substation via underground cables with a maximum voltage of 33kV which are considered to be exempted development under Class 26 of the Planning and Development Regulations 2001 (as amended). The substation is required to support, secure and transport the supply of electricity from these renewable energy developments, as part of its place on the wider solar scheme. Details of the solar projects which will connect to the proposed substation are included below:

- Woodtown (c. 120 megawatt (MW) MEC (export capacity)) at Culmullin, Woodtown, Arodstown & Summerhill, Co Meath. Permission for a solar PV Energy Development with a total site area of 206 ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 54 No. MV Power Stations, 2 No. Client Substations, 4 No. Temporary Construction Compounds, access roads, boundary security fencing and security gates, CCTV, landscaping and ancillary works, accessed via two existing accesses along the L62051. A planning application was submitted to Meath County Council (MCC) in November 2021 and granted planning consent in June 2022 (Planning Ref: 212214 which has been referred to An Bord Pleanála, a decision on the case was due at the time of writing this report. .
- Derryclare (c. 70 MW MEC) near Derryclare, Cloneymeath, Ballygortagh and Moynalvy, Summerhill, Co. Meath. Permission for a for a Solar PV Energy Development with a total site area of 108.68ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 27 no. MV Power Stations, 3 No. Client Substations, 3 No. temporary construction compounds, access roads, boundary security fencing and security gates, CCTV, landscaping and ancillary works. A planning application was submitted to MCC in May 2021 and was granted planning consent in January 2022 (Planning Ref: 21985).
- Bogganstown (c. 110 MW MEC), near Culmullin, Curraghtown, Cultromer, Gaulstown. Bogganstown, Cullendragh, Drumree, Co. Meath. Permission sought for a Solar PV Energy Development with a total site area of 171.34ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 47 No. MV Power Stations, 3 No. Client Substations, 3 No. Temporary Construction Compounds, tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works, with a 40 year operational period currently under determination by the local planning authority – MCC (Planning Ref: 221508).

The Substation and grid connection will be constructed by the applicant to EirGrid specifications and ownership will be transferred to Electricity Supply Board (ESB)/EirGrid following construction. All works will be contained within the boundary of the Site (Figure 2-2).

The Proposed Development comprises:

- A new 220kV substation compound (approximately 2.24ha) consisting of:
  - Outdoor AIS equipment rated for the system voltage of 220kV equipped with 4 number 220kV cable bays.
  - Two number single storey buildings including an EirGrid standard control building with ancillary services, and a customer Medium Voltage (MV) module.
  - Two 180 megavolt amperes (MVA) oil-filled step-down power transformers within bunded enclosures.
  - 14 lightning protection masts (25m in height).
  - A 2.6m tall palisade fence.
- Two new Line Cable Interface Mast (LCIMs), under existing OHL to facilitate the removal of a short section (approximately 60m) of the existing 220kV lines.
- Approximately 120m of new underground cables to connect the substation to the grid.
- Adjacent telecoms mast area (225m²) for substation communications between Maynooth and Gorman 220kV substations at either end of the existing 220kV OHL.
- Five passing bays on the L62051.

In addition to the above the Proposed Development will include the following:

- New site access off the L62051 and internal site access road.
- Car parking.
- Drainage infrastructure.
- All associated and ancillary site development works.

2.1.1 Site Location

The Site of the Proposed Development is located at Woodtown, Co. Meath (ITM coordinates: 690069, 750028

). The R154 (regional road) (Trim Road) is approximately 2.9 km north, R125 is approximately 2.5km east, R156 is approximately 3.3km south and the L2207 local road is approximately 2.7km to the west (Figure 2-1).

The nearest residential settlements (towns and villages) to the Site are Summerhill, approximately 6km to the southwest, Trim approximately 12km to the northwest, Dunshaughlin, approximately 7km to the northeast, and Dunboyne approximately 13.5km to the southeast.

The redline boundary of the Proposed Development covers an approximate area of 7.3ha, with the substation boundary covering approximately 2.24ha, and the telecoms mast compound which is separate to the substation is 225m^2.

The location of the Proposed Development in the context of the surrounding environment is shown in Figure 2-2 and its corresponding infrastructure are shown on Figure 2-3 and Appendix A.

Figure 2-1: Site Location[1]

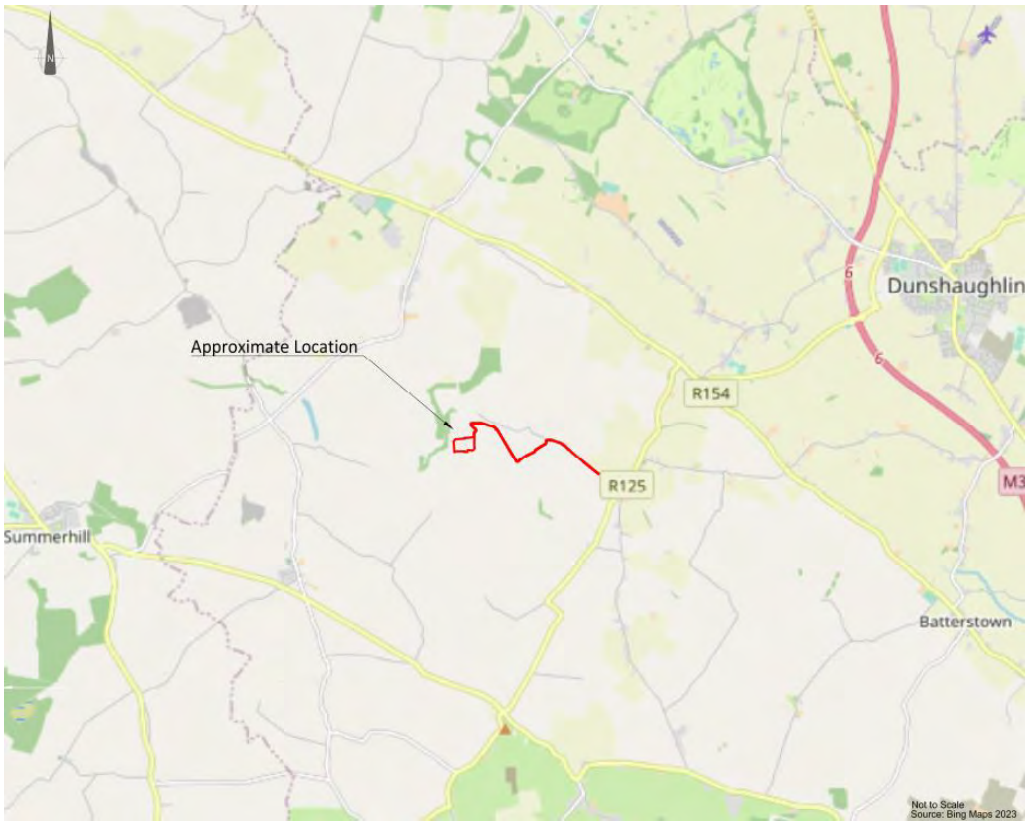
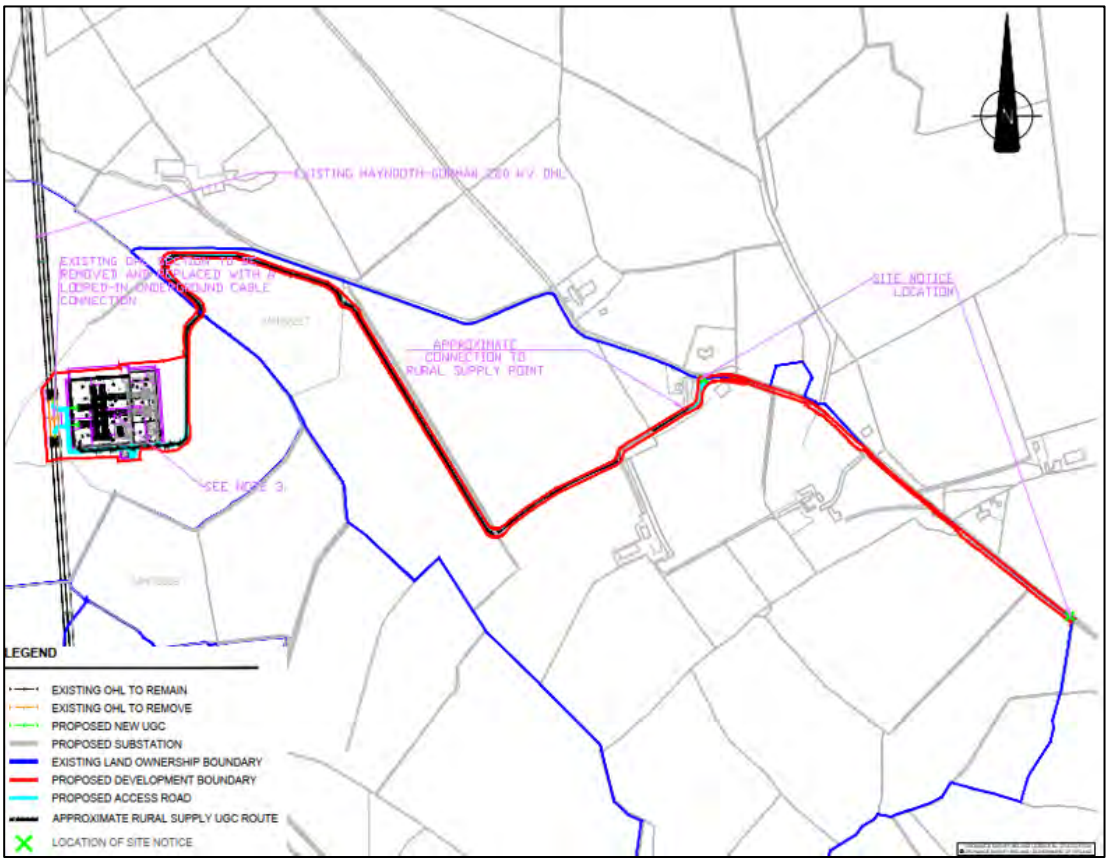


Figure 2-2: Indicative Site Location and Surrounding Environment[2]

[1] Source: Bing Maps (2023).
[2] Source: GoogleEarth (2023)

Figure 2-3: Proposed Development and Associated Infrastructure[3]



The Site is within an agricultural field encompassed by hedgerows. Access to the Site is currently via an informal farm track approximately 50m to the west of the Site that connects to a residential property approximately 500m southwest. The land is predominately flat with hedgerows delineating field boundaries. Individual residential properties and agricultural buildings are present in the wider vicinity.

Batterstown Clay Pigeon Club (CBC) shooting range is located approximately 750m to the north of the Site. The Maynooth - Gorman 220kV (Figure 2-3) OHL transects the Site to the east in a north to south orientation.

The Site is currently not zoned for development within the Meath CDP 2021-2027. The Site is zoned 'Rural Area' (RA), with the zoning objective – '*to protect and promote in a balanced way, the development of agriculture, forestry and rural-related enterprise, biodiversity, the rural landscape, and the built and cultural heritage'*.

The Site is not within or in the vicinity of a European Designated site. The nearest European Designated sites are the River Boyne and River Blackwater Special Area of Conservation (SAC) and the River Boyne and River Blackwater Special Protection Area (SPA), approximately 9.5km to the northwest of the Site.

2.1.2 Construction Phase

The Proposed Development will consist of a 220kV Substation. A copy of the design plans and drawings are contained within Appendix A.

The exact programme of works is yet to be finalised, but it is expected that:

- Application is made for Planning Permission in Q3 of 2023.
- Commence site enabling and construction works in Q4 of 2024 (subject to planning permission).
- Completion of construction and commissioning in Q4 of 2026.

Construction activities will include the following elements as shown in Table 2.1.

[3] Drawing Ref: 60657534-ACM-DWG-500

Table 2.1: Main Construction Elements and Associated Activities

Element	Description of activities
Site Preparation and Enabling Works	Site establishment. Site clearance works. Construction of temporary site drainage. Bulk earthworks including excavation, removal of topsoil/soil and berm construction. Minor earthworks at passing bay locations. Infilling of material for internal access road, site compound and laydown area. Landscaping/reinstatement.
Underground Cables	Trenching and installation of underground cables, cable joint bays and pulling pits. Installation of the associated above ground infrastructure (cable marker posts, communication boxes and access points).
LCIM Construction Loop-in	The site preparation required for the loop-in OHL will be limited with minimal site clearance required. Excavation and berm construction. Pouring of concrete foundations for mast structures. Backfill and tower body installation.
Substation Construction	Pouring of concrete foundations (potentially piling works if required). Erection of steel frame and cladding walls and roofs for any required buildings. Permanent foul and surface water drainage works. Installation of above ground and underground cabling. Electrical installation, commissioning and operation. Other miscellaneous civil works including erection of fencing, provision of site entrance, paving etc.

Consideration should be given at the detailed design stage to ensure coordination between the construction phasing and equipment delivery schedules.

Construction activities will gradually phase out from pre-construction followed by commissioning and testing of the Substation and equipment. It is expected that the number of construction workers required throughout the duration of the construction phase will peak at approximately 50 persons (peak during construction). It is anticipated that the construction of the Proposed Development will be completed during normal construction hours, i.e., 07.00 and 19.00 Monday to Friday and 08.00 to 13.00 on Saturday.

The proposed programme for the Culmullin works will be approximately 24 months from initial enablement works through to commissioning. It is expected that the civil works will take approximately 2 to 3 months, with a further four weeks estimated for cable installation, jointing and testing and reinstatement. Construction works associated with the substation will be approximately 20 to 24 months.

Consideration should be given at the detailed design stage to ensure coordination between the construction phasing and equipment delivery schedules.

An Outline Construction Environmental Management Plan (oCEMP) is included as part of this planning application. The oCEMP will be developed into a detailed CEMP by the contractor and implemented by the contractor during the construction phase of the Proposed Development. All environmental protection measures contained within this ECR will be incorporated into the detailed CEMP by the appointed Contractor. Prior to commencement of construction works, the contractor will draw up detailed Method Statements which will be informed by the oCEMP, environmental protection measures included within the planning application, and the guidance documents and best practice measures to be implemented in full during the construction phase.

2.1.2.1 Site Preparation and Enabling Works

The Site preparation phase for the Proposed Development will involve site clearance, excavations and levelling of the Site to the necessary base level for construction, surveying and setting out for structures and any rerouting of services/connections to services. A combination of bulldozer, excavators, trucks and other soil shifting plant will commence the main site clearance and levelling aspects.

Temporary access roads and a construction compound of approximately 2,500m² will be located within the Proposed Development boundary. The compound may include:

- Welfare facilities (compliant with appropriate regulations such as Safety, Health and Welfare at Work (Construction) Regulations 2013 -Part 14 Construction Site Welfare Facilities (Construction Site Welfare Facilities).
- Bunded fuel storage area.
- Potable water supply.

- Contractor lock-up facility.
- Water tanker.
- Diesel generator.
- First aid facilities.

A layer of granular material will be spread and lightly compacted within the compound to provide hardstanding for site offices and storage containers. Areas of the compound may be used as vehicle hardstanding. The compound will be built using a similar technique to the access roads. The temporary construction compounds will be removed on completion of the construction phase.

Temporary access roads will be constructed by stripping surface soils, placing geotextile reinforcement at subgrade level followed by a layer of granular material in accordance with the specification to form a working surface for vehicle. Roadside drains within the temporary works area will be culverted and check dams made from stone or sandbags covered with terram will be inserted upstream and downstream of these culverts to intercept any solids generated during the works.

Enabling works will also include road improvement works along the L62051 include the widening of the carriageway at five locations (five passing bays) to prevent congestion and improve forward visibility.

A Traffic Management Plan (TMP) will be prepared, prior to the commencement of construction.

2.1.2.2 Levelling/Cut and Fill

Works will include the construction of a landscape berm along the eastern boundary of the proposed substation.

Any excess spoil not suitable and/or required for re-use on-site will be removed off site for appropriate re-use, recovery and/or disposal.

The Proposed Development will require the importation of approximately 24,000m^3 of fill material and is expected to generate approximately 34,000m^3 of construction waste.

2.1.2.3 Foundations and Building Structure

Following completion of the enabling works and site clearance, all structures will require foundations. Building structures will comprise standard structural steel frames, and it is anticipated that foundations will require moderate scale excavations.

Design drawings of the Proposed Development and associated facilities are provided in Appendix A.

2.1.2.4 Substation

The footprint of the proposed on-site electrical substation covers an area of approximately 2.24ha in size. It will include an Eirgrid control building, MV switchgear building and the electrical substation components necessary to consolidate the electrical energy generated by the associated solar farms and export the electricity to the national grid. The layouts and elevations of the proposed substation and its compound are shown in Appendix A. The construction and exact layout of electrical equipment in the on-site electrical substation will be to EirGrid/ESB Network specifications.

The substation will be surrounded by an approximate 2.6m high steel palisade fence and internal fences will also segregate different areas within the main substation compound.

The onsite electrical substation buildings will include staff welfare facilities. Toilet facilities will be installed with a low-flush cistern and low-flow wash basin. Due to the specific nature of the Proposed Development, there will be a very small water requirement for occasional toilet flushing and hand washing and therefore the water requirement of the Proposed Development will be limited. The Applicant has consulted with Irish Water and proposes to connect to the exisiting water network, subject to a valid connection agreement being put in place prior to project execution.

It is not proposed to treat wastewater on site. Wastewater from the staff welfare facilities in the control buildings will be managed by means of a sealed storage tank. All wastewater will be removed from site by permitted waste collector to wastewater treatment plants. This is an accepted industry approach and has been adopted as a response to the specific site characteristics.

2.1.2.5 Line Cable Interface Mast (LCIM) Loop-in

The proposed design for the 220kV loop-In of the existing Maynooth - Gorman 220kV OHL will require two new LCIM which will be constructed under the existing OHL. The existing OHL conductor will be terminated at these two new LCIM structures and will transition to two new 220kV underground cable circuits that will be constructed between the LCIMs and the cable sealing ends located within the new Culmullin 220kV substation compound to facilitate the

overhead line loop-in to Culmullin 220kV Substation. The existing conductor will be removed between the LCIMs with the new connection looped through to the Proposed Development.

The new LCIM locations have been selected based on ground surveys, ground profiles, allowable angles and ruling span checks by an overhead line/cable designer using the appropriate and up-to-date software. The expected duration of works is approximately four weeks.

2.1.2.6 Transportation

Construction materials will be brought to site by road along the R125 and via a temporary access road within the Site. Construction materials will be transported in clean vehicles and lorries/trucks will be properly enclosed or covered during transportation of friable construction materials and spoil to prevent escape of material along the public roadway.

2.1.2.7 Materials and Storage

Key materials will include steel, concrete, composite cladding, piping, electrical cabling, process equipment and finishes. Construction materials will be brought to site by road via the R125. Vehicles transporting friable construction materials and spoil will be adequately enclosed or covered during transportation to prevent material escape. Where possible, materials will be sourced from the local area to minimise transportation distances and will be scheduled to avoid queues/increased traffic on local routes.

Aggregate materials such as sands and gravels will be loaded directly to vehicles for use within the site of the Proposed Development as appropriate, e.g. as fill material. Liquid materials will be stored within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006) to prevent spillage.

2.1.2.8 Reinstatement

Once all construction works are complete, the work areas will be reinstated with excavated soil and either seeded out with native species, allowed to vegetate naturally, or reinstated with excavated grass turves and will be restored to their original condition.

Landscaping consists of native meadow planting surrounding the compound with native hedgerow planting to the north and woodland planting within the visual screening mitigation planting or berm to the east (refer to Drawing 60657534-ACM-DWG-CM-528 submitted as part of this application).

2.1.2.9 Waste Management

All waste products (general waste, plastic, timber, etc.) arising during the construction phase will be managed and disposed of in accordance with the provisions of the Waste Management Act 1996 and associated amendments and regulations, and a Waste Management Plan (WMP) will be prepared by the appointed Contractor prior to the commencement of construction. All waste material will be disposed of at a fully licensed facility.

2.1.3 Decommissioning of the Proposed Development

The lifespan of the Proposed Development is not defined but it is anticipated that it will be maintained, and periodic upgrading will be undertaken over a long lifetime to meet future demand and upgrade in technology. If the Proposed Development is no longer required over the long-term, then full decommissioning in accordance with prevailing best practice will be undertaken.

2.2 Additional Assessments

2.2.1 Appropriate Assessment (AA) Screening and Natura Impact Statement (NIS) Report

An Appropriate Assessment (AA) Screening Report and NIS has been prepared for the Proposed Development, as required under the Habitats and Birds Directive (92/43/EEC) and is included as a standalone report as part of the planning application.

2.2.2 Flood Risk Assessment (FRA)

A Stage 1 Flood Risk Assessment (FRA) has been undertaken for the Site and is included in Appendix B.

2.3 Community Benefit Fund

The Proposed Development has the potential to provide significant additional investment in community initiatives which will benefit local residents and businesses through an annual community benefit fund.

3. Consultation

3.1 Pre-Application Consultation Meeting with An Bord Pleanála

Pre-application meetings were held with An Bord Pleanála (ABP) on the 22 November 2021 and 27 April 2022. The objective of the meetings was to outline the proposal and to discuss any concerns or comments that ABP may have in relation to the proposal. Confirmation that the project was a strategic infrastructure development (SID) was a part of the pre application process.

3.2 Consultation with Statutory and Non-Statutory Bodies

Letters and project descriptions were sent out to a list of statutory and non-statutory bodies that may have had an interest in the Proposed Development.

3.3 Information Drop to Nearby Residents

To inform local residents about the proposed Culmullin 220kV Substation, the Applicant distributed information and contact details to households within a radius of just over 1km of the proposed application site boundary. The information distributed to each household consisted of an information brochure on the Proposed Development. Residents were also given a letter inviting them to a drop-in public information event which was held on 10 November 2022.

In advance of the public information event, the Applicant also visited nearby residents to provide further information on 25 and 26 October 2022.

3.4 Public Information Event

The Applicant held a public information drop-in event in Moynalvey GFC Hall on 10 November 2022. Brochures and larger maps were available for attendees to take home. There were additional documents available to view, including photomontages and engineering drawings. The Energia project team were on hand to answer questions included electrical engineers, planning officers, project managers and community liaison officers.

3.5 Project Website

Energia Renewables launched a stand-alone project website for the Culmullin 220kV Substation www.culmullinsubstation.ie to keep members of the public informed about the Proposed Development.

Further consultation information consultation is included in Appendix C

4. Alternatives

A transmission system connection is required to export the power from the solar farms that will connect into Culmullin 220kV Station. Therefore, the alternative site locations considered for this development were based on the feasibility of connecting to the transmission system.

A “loop-in” to the Corduff-Mullingar 110kV OHL was considered but there is insufficient capacity in this line to take the power from the solar farms that will connect via the Culmullin 220kV Station.

The closest transmission station for a tailed connection is Woodland 220/400kV Station approximately 4km south of Dunshaughlin, Co. Meath. A cable route to this station was considered but ultimately ruled out as there is no spare bay for a generation connection and the deliverability and cost of a cable route.

Due to the unavailability of a tailed connection at 110 or 220kV, as well as loop-in options at 110kV, a 220kV loop-in option was considered. The Gorman-Maynooth 220kV OHL has sufficient capacity to take the power from the solar farms that will connect at Culmullin 220kV Station. A site was identified for this station in close proximity to the Gorman-Maynooth 220kV OHL. This site was selected primarily due to existing natural screening, accessibility from the road network and the opportunity to reduce the additional infrastructure required to facilitate the connection of the associated solar farms to the national electricity grid due to the central location of Culmullin 220kV Station.

This is the basis on which the proposed development was identified from several connection methods.

5. Population and Human Health

5.1 Introduction

This chapter presents an assessment of the impacts of the Proposed Development on population and human health. It defines the study area, the methodology used for developing the baseline and impact assessment, provides a description of the baseline environment in relation to population and human health and presents the findings of the impact assessment.

Impacts from the Proposed Development on population and human health have potential to arise from various aspects of the Proposed Development. The following chapter provides an assessment of impacts on:

- Land use and accessibility.
- Community severance.
- Employment.
- Human health.

Many of the potential population and human health effects of the Proposed Development arise from air quality, noise and vibration, visual and traffic effects. Therefore, the human health impact assessment relies on the assessments and draws on the findings of following chapters as necessary to assess the impacts on human health: Chapter 8 (Air Quality), Chapter 9 (Climate), and Chapter 10 (Noise and Vibration).

Reference should be made to Chapter 2 for a full description of the Proposed Development.

5.2 Legislation, Policy and Guidance

This chapter has been prepared with reference to the following:

- EIA Directive 2014/52/EU.
- EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022).
- EPA Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003).
- EPA 'Guidelines on the Information to be contained in Environmental Impact Statements' (EPA, 2002).
- 'Advice Notes for Preparing Environmental Impact Statements' (European Commission, 2017).
- Healthy Urban Development Unit (HUDU) guidance Fourth Edition, October 2019 (National Health Service (NHS, 2019).
- Guidelines on the Treatment of Tourism in an Environmental Impact Statement (Fáilte Ireland, 2011).

5.3 Methodology

5.3.1 Study Area

The study area for the population and human health assessment has considered the area of land that encompasses the likely impacts of the Proposed Development. The study area therefore includes the construction footprint/project boundary (including compounds). The study area used for the baseline analysis consists of the Electoral Division (ED) of Culmullin.

However, there is potential for effects to occur on receptors outside of this area. For example, it is not always possible to determine the catchment area for community facilities as residents of an area may utilise facilities located within different districts, counties, or regions without regard for statutory boundaries.

5.3.2 Determination of the Baseline Environment

The types of effects considered in the assessment of population and human health covers land use and accessibility, community severance, employment and human health. In order to assess the associated potential effects of the Proposed Development, it is necessary to determine the environmental or baseline conditions, resources and receptors that currently exist on site and in the surrounding area. The identification of the baseline conditions therefore involves predicting changes that are likely to happen in the intervening period, for reasons unrelated to the Proposed Development.

The methodology for determining the baseline environment for the population and human health assessment involved desktop review of publicly available information. The baseline includes a description of local communities within the

study area and a profile of the people which reside within these communities. This profile includes an analysis of population and population growth, age, demographics and health determinants. The presence of any vulnerable groups which could be disproportionately affected by the impacts of the Proposed Development are also identified in the baseline.

The baseline also includes a description of land uses in the local area, including the presence of:

- Private residential buildings and commercial properties.
- Community land (e.g. common land, open green space, allotments, sports pitches etc.) and amount of land which will be required/access affected by a project.
- Community facilities (e.g. village halls, healthcare facilities, education facilities, religious facilities etc.).
- The location of land allocated for employment and residential development by local authorities.

A planning search of granted and pending planning applications made within the vicinity of the Proposed Development within the last five years was also completed within the baseline, refer to the Planning Statement (AECOM, 2023) accompanying this application. This was used to determine how the area may change between now and the time when the Proposed Development is expected to start.

5.3.3 Determination of Sensitive Receptors

The sensitivity of the existing environment identifies the ability of the receptor to respond to potential effects. Receptors in the population & human health assessment are members of the local and wider community which have potential to be impacted by any of the effects described. The following section identifies the methodology for defining the sensitivity of receptors for each type of potential effect identified. Terminology used to describe the sensitivity of the receptor are as per the Environmental Protection Agency (EPA) Guidelines (EPA, 2022). The assessment of human health is assessed using Healthy Urban Development Unit (HUDU) guidance (National Health Service (NHS), 2019).

5.3.3.1 Land Use and Accessibility

The value and typical descriptors which have been applied to determine sensitivity to the impacts as a result of the Proposed Development have been based on professional judgement. Examples of the sensitivities typically assigned to different land uses are identified in Table 5.1. It is important to note, however, that other criteria are also used to inform the sensitivity of a resource to potential change. This includes how often the resource is used, how many users the resources have and whether the resource is maintained.

Table 5.1: Examples of Sensitivities Assigned to Different Land Uses

Sensitivity	Description
High	• Private residential buildings, or land allocated for development of housing. • Buildings used for employment use, and land allocated for development of employment uses. • Regularly used community buildings which have only limited alternatives available nearby. • National or regional walking, cycling and horse-riding routes, and other routes regularly used by vulnerable travellers such as the elderly. • Designated public open spaces, or open spaces which attract users nationally e.g. national parks. • Religious sites and cemeteries. • Regularly used agricultural land where the enterprise is dependent on the spatial relationship of the land to key agricultural infrastructure.
Medium	• Land associated with private residential buildings e.g. gardens. • Community buildings which are regularly used or where there are only limited alternatives available in the local area. • Open spaces which span over a regional area and attract visitors from a regional catchment e.g. country parks, forests. • Public rights of way and other routes close to communities which are used for recreational or utility purposes, but for which alternative routes can be taken. • Agricultural land holdings which are used semi-regularly and where the enterprise is partially dependent on the spatial relationship of land to key agricultural infrastructure.
Low	• Community buildings which are infrequently used or where there are many alternatives available in the local area. • Open spaces which are used for informal recreation (e.g. dog walking), and where there are alternative open spaces available. • Locally used community land e.g. local parks and playing fields.

Sensitivity	Description
	• Walking, cycling and horse-riding routes which have fallen into disuse through past severance, or which are scarcely used because they do not currently offer a meaningful route for either utility or recreational purposes. • Agricultural land which is used semi-regularly but where the enterprise is not dependent on the spatial relationship of land to key agricultural infrastructure.
Negligible	• Derelict or unoccupied buildings. • Agricultural land which is infrequently used on a non-commercial basis.

5.3.3.2 Community Severance

The receptors which have potential to experience severance effects are residents of the local community which use the roads and walking/cycling routes to travel in and around the study area to commercial properties, community facilities, places of work and educational facilities. No sensitivity values are assigned to receptors with potential to experience severance effects.

5.3.3.3 Employment

The receptor which has potential to experience employment effects is the workforce in Culmullin/Kilmore and the surrounding area. This includes the construction industry and the local supply chain.

Receptors within the construction workforce/local supply chain are likely to have different sensitivities to change due to the range of circumstances which may apply. Therefore, no single sensitivity value is assigned in the employment effects assessment.

5.3.3.4 Human Health

The assessment of human health is assessed using guidance set out in the HUDU Health Impact Assessment Tool Fourth Edition 2019 (NHS, 2019). Sensitivities are not defined for receptors.

5.3.4 Describing Potential Effects

The assessment of significance is a professional appraisal based on the sensitivity of the receptor and the magnitude of effect. Within any area, the sensitivity of individuals in a population will vary. As such, it would be neither representative of the population, nor a fair representation of the range of sensitivities in a population, were an overall sensitivity classification assigned to the population in question.

5.3.4.1 Land Use

This assessment includes all direct and indirect effects on community resources and private assets in the study area. Direct effects include land-take and/or impacts on access, i.e., properties and/or facilities being cut off or split.

Indirect effects include significant impacts on the amenity of residents of properties and/or users of community resources in the study area.

5.3.4.2 Severance

Severance is defined as the separation of residents from facilities and services they use within their community caused by new or improved roads or by changes in traffic flows. The Proposed Development has the potential to severance effects by changing levels of traffic congestion on existing roads and/or introducing traffic management measures. This may lead to separation of residents from facilities and services which they use. The magnitudes for effects on severance have been identified based on a three-point scale: high, medium and low.

Table 5.2 outlines the criteria used to determine the magnitude of effect on severance.

Table 5.2: Magnitude of Effect Criteria Used to Assess Severance

Magnitude of Effect	Description
High	People are likely to be deterred from making trips to an extent enough to induce reorganisation of their habits. Considerable hindrance would be caused to people trying to make their existing journeys for a prolonged period.
Medium	Some people are likely to be dissuaded from making trips. Other trips would be made longer or less attractive.
Low	In general, the current journey pattern is likely to be maintained, but there would probably be some hindrance to movement for limited amount of time.

5.3.4.3 Employment

This assessment includes all potential direct, indirect and induced effects on the workforce in the study area and the surrounding area. There is no consolidated methodology or practice for assessing the impact on employment in EPA guidance. The impacts of the Proposed Development on employment have therefore been assessed qualitatively based on the number of jobs which the Proposed Development will create.

5.3.4.4 Human Health

Constraints on human health consider the health of residents of properties and users of community resources in the study area, and will include accounting for effects on air quality, noise and vibration, visual and traffic effects. An initial scoping exercise was undertaken to determine the criteria within the HUDU guidance (NHS, 2019) which is relevant to this assessment. The criteria which will be assessed as part of this chapter are listed below. Other criteria in HUDU guidance (NHS, 2019) but not in the list below, have been scoped out for this assessment:

- Air quality, noise and neighbourhood amenity.
- Access to work and training.
- Climate change.

5.3.4.5 Magnitude of Impact

The assessment of human health is a qualitative rather than quantitative assessment, due to the diverse nature of health determinants and health outcomes which are assessed. Although the assessment of human health effects describes the likely qualitative health outcomes, it is not possible to quantify the severity or extent of the effects which give rise to these impacts.

As such, the potential health impacts are described as outlined in Table 5.3, based on broad categories for the qualitative effects identified. Where an effect has been identified, actions have been recommended to mitigate negative impact on health, or opportunities to enhance health benefits. It should be noted that in many cases, embedded controls to reduce these effects or measures to enhance certain benefits already form part of the Proposed Development and the assessment has considered these impacts as such.

Table 5.3: Human Health Impact Categories

Impact Category	Impact Symbol	Description
Positive	+	A beneficial impact is identified
Neutral	0	No discernible health impact is identified
Negative	-	An adverse impact is identified
Uncertain	?	Where uncertainty as to the overall impact

5.4 Baseline Environment

5.4.1 Population and Demographics

At the time of writing this report, preliminary data from the 2022 was available at the time of preparing this report, detailed reports were unavailable, therefore 2016 census data has informed the baseline environment. Table 5.4 presents the population change from 2006 to 2016 for Ireland, the MCC area and the study area using available census data. These results indicate that the population within the study area increased by 8.3% between 2011 and 2016.

The Proposed Development is located within a rural area therefore no urban area or dense residential settlements are present. The rural settlements that do exist within the study area are not located within the vicinity of the Proposed Development.

Table 5.4: Population and Population Growth in the Study Area and its Comparator Areas

Area	2016	2011	2006	Change between 2011-2016 (%)	Change between 2006-2011 (%)
Study Area	1,142	1,054	-	8.3	-
County Meath	195,044	184,135	-	5.9	-
Ireland	4,761,865	4,588,252	4,239,848	3.8	8.2

Table 5.5 presents the total population for the study area and its comparator areas by age band. In 2016, 55.0% of the residents in the study area were aged between 18 and 64 years. The proportion of working age residents in the

study area was relatively higher than the average recorded for County Meath (60.1%) but lower than the average in Ireland (61.5%) as a whole. In addition, the study area had a slightly lower proportion of residents aged 17 years or under (27%) in comparison to County Meath (29.3%) and Ireland (25%). Similarly, the proportion of residents aged 65 years or older in the study area (18%) was significantly higher than the average for County Meath (10.7%) and Ireland (13.4%).

Table 5.5: Percentage of Total Population in Each Age Band for the Study Area and its Comparator Areas

Area	% Of Total Population by Age Band						
	0-4	5-12	13-18	19-24	25-44	45-64	65+
Study Area	8	13	6	5	24	26	18
County Meath	8.1	13.9	7.3	7.3	29.4	23.4	10.7
Ireland	7.0	11.5	6.5	8.2	29.5	23.8	13.4

5.4.1.1 Local Community Facilities

There are no local community facilities within the vicinity of the Proposed Development.

5.4.1.2 Open Spaces/Amenity Areas

There are no open spaces or amenities within the vicinity of the Proposed Development.

5.4.1.3 Education and Skills

Table 5.6 presents the level of education as a percentage of population within the study area, County Meath and Ireland. County Meath's population has similar levels of education compared to the rest of the country. Within Meath, 26.4% of residents are qualified to Ordinary bachelor's degree/professional qualification and above, which is below the recorded national average (28.5%). Similarly, Meath recorded a higher proportion of residents who attained technical/vocation education or completed an apprenticeship (16.6%) in comparison to the national average (14.7%).

Table 5.6: Percentage of Population - Education and Skills

Indicator	Study Area		Meath		Ireland	
	No.	%	No.	%	No.	%
No formal education	11	1%	1,672	1%	52,214	2%
Primary	66	8%	11,622	10%	334,284	11%
Lower secondary	97	12%	18,264	15%	449,766	14%
Upper secondary	139	18%	24,214	20%	573,643	19%
Technical/vocational	78	10%	11,844	10%	271,532	9%
Advanced certificate/completed apprenticeship	48	6%	8,302	7%	182,318	6%
Higher certificate	45	6%	6,768	6%	153,351	5%
Ordinary bachelor's degree/professional qualification or both	68	9%	9,770	8%	237,117	8%
Honours bachelor's degree/professional qualification or both	105	14%	12,136	10%	331,293	11%
Postgraduate diploma or degree	78	10%	9,444	8%	284,107	9%
Doctorate (Ph.D.)	11	1%	739	1%	28,759	1%
Not stated	31	4%	6,604	5%	198,668	6%
Total	777	-	121,379	-	3,097,052	-

5.4.1.4 Occupational Profile

The number of persons on the Live Register of unemployment fell in the State from 428,876 in February 2013 to 179,761 in August 2021. The Coronavirus pandemic resulted in a significant and sudden increase in unemployment on the Pandemic Unemployment Payment Scheme from 2020 to late 2021.

Table 5.7 presents the occupational profile as a percentage of population within the study area and comparator areas. In 2016, the relative proportion of population in the 'Semi-Skilled' (7%) and 'Unskilled' (4%) social classes in the study

area was similar to the average for County Meath (10.3% and 3.6%) and the average for Ireland (10.5% and 3.6%). However, the study area had a slightly lower proportion of population in the 'Skilled' social class (7%) in comparison to Ireland (14.1%) and County Meath (16%).

At the time of Census 2016, the study area had a significantly higher proportion of population in the 'Professional' social class (13%) in comparison to County Meath and the national average (7.7% and 8.1%). Similarly, the study area had a significantly higher proportion of population in the 'Managerial/Technical' social class (37%) in comparison to the national average (28.1%) but lower than in County Meath (30.5%). Table 5.8 presents the proportion of population in each occupation group for study area and comparator areas.

Table 5.7: Percentage of Total Population in Each Social Class for Study Area and Comparator Areas

Area	% of Total Population by Social Class						
	Professional	Managerial/ Technical	Non-Manual	Skilled Manual	Semi-Skilled	Un-skilled	Other
Study Area	13%	37%	19%	11%	7%	4%	9%
County Meath	8%	30%	18%	16%	10%	4%	13%
Ireland	8%	28%	18%	14%	11%	4%	18%

Table 5.8: Percentage of Total Population in each Occupation Group for Study Area and Comparator Areas

	% of Total Population by Occupation									
Area	Managers, Directors and Senior Officials	Professional	Associate Professional and Technical Occupations	Administrative and Secretarial Occupations	Skilled Trades Occupations	Caring, Leisure and Other Service Occupations	Sales and Customer Service Occupations	Process, Plant and Machine Operatives	Elementary Occupations	Not stated
Study Area	12%	19%	14%	12%	17%	7%	5%	4%	6%	3%
County Meath	9%	15%	11%	11%	15%	8%	6%	8%	8%	8%
Ireland	7%	17%	11%	10%	14%	7%	7%	7%	9%	10%

5.4.1.5 Income

Median household income reflects the increase of employment observed in 2021 as previously mentioned. Table 5.9 illustrates the study area (46,689-51,120€) is within a high earning community compared to County (44,352€) and national (45,256€) averages.

Table 5.9: Median Household Income, 2016

Indicator	Study Area	Meath	Ireland
Household median gross income (€)	46,689 - 51,120	44,352	45,256

5.4.2 Travel Patterns and the Existing Transport Network

Travel time to work, school or college is a useful tool indicating the travel patterns within an area as well as the standard of existing transport networks. This can provide information when considering potential impacts associated with traffic and noise. Table 5.10 presents travel time as a percentage of population under average time frames within a given area. The results show that residents in the study area travel similar distances to work, school or college compared to residents in County Meath but longer distances than Ireland as a whole. Approximately 53% of respondents from the study area reported spending 29 minutes or less travelling to these destinations, compared to 54.8% in County Meath and 61.1% in Ireland.

Table 5.10: Travel Time to Work, School or College

Area	% of Total Population by Travel Time to Work, School or College						
	Under 15 mins	15-29 mins	30-44 mins	45-60 mins	1-1.5 hours	>1.5 hours	Not Stated
Study Area	28	25	19	9	12	2	4
County Meath	31	24	16	8	11	4	6
Ireland	32	29	17	6	6	2	7

Table 5.11 shows the modes of transport most commonly used to travel to work, school, and college for residents of the study area and its comparator areas in 2016. The results show that residents in the study area rely primarily on private vehicles.

Table 5.11: Travel Mode to Work, School or College

Area	Foot	Bicycle	Bus or Coach	Train	Car/Van Driver	Car Passenger	Other	Not Stated
Study Area	3	1	7	4	53	24	1	1
County Meath	12	1	11	1	48	19	0	3
Ireland	14	3	10	3	43	19	0	4

5.4.3 Human Health

Information on general health is represented in Table 5.12. The health conditions in the study area are better than the averages for County Meath and Ireland. In 2016, 91% of the population aged 15 years and over in the study area considered themselves to be in very good or good health, which is lower than the rate for Meath (89.6%) and the overall rate for Ireland (87.0%).

At the time of Census 2016, 1.3% of residents in the study area considered themselves to be in bad or very bad health, which is broadly in line with the rate for Meath (1.2%) but lower than the overall rate for Ireland (1.6%).

Table 5.12: Proportion of the Population by General Health for the Study Area and its Comparators

Area	Proportion of Population by General Health (%)					
	Very Good	Good	Fair	Bad	Very Bad	Not Stated
Study Area	67	24	6	1	0	2
County Meath	63	26	7	1	0	2
Ireland	59	28	8	1	0	3

5.4.3.1 Mental Health

County Health Profiles (HSE, 2021) for County Meath indicate suicide levels from 2007 to 2013 were relatively low compared to the national average. However, records of deliberate self-harm from 2012 for both males and females in Co. Meath were similar to the national average.

5.4.4 Land Use

The Irish national CORINE 2018 dataset has identified the area within the Site as 'Agricultural Areas', 'Arable land' (EPA, 2022).

5.4.4.1 Land Zoning

The current Meath County Development Plan (CDP) 2021-2027 includes land use zoning with the objective of ensuring land is available and meets the criteria of anticipated developments (MCC, 2021).

The Site of the Proposed Development is currently not zoned for development within the Meath CDP 2021-2027. The Site is zoned 'Rural Area' (RA), with the zoning objective – '*to protect and promote in a balanced way, the development of agriculture, forestry and rural-related enterprise, biodiversity, the rural landscape, and the built and cultural heritage'*.

This type of development is not excluded from any land use zones within the Proposed Development study area.

5.5 Potential Impacts

5.5.1 Construction Phase

There are no receptors that would experience land use or severance effects in the vicinity of the Proposed Development during construction.

The impact on direct employment has been identified by the number of workers required onsite. The main construction activities associated with the Proposed Development are expected to last 24 months. During this period, the number of workers will vary considerably though the maximum required onsite during working hours is expected to be 50 persons. Given the size, nature and duration of the Proposed Development, it has potential to create some temporary employment in Culmullin ED and its surrounding area. The Proposed Development is assessed to have a slight, positive impact on employment.

A potential temporary nuisance to the local population may occur during the construction works, particularly in terms of noise, air quality and traffic effects. These are addressed within their relevant sections in this report. However, given no sensitive receptor is located in proximity of the Proposed Development, the impact on air quality, noise and neighbourhood amenity as a determinant of human health is therefore assessed to be neutral (0).

The Proposed Development has the potential to create new jobs during the construction phase. Therefore, the impacts of the Proposed Development on access to work and training as a determinant of human health is assessed to be positive (+).

5.5.2 Operational Phase

No likely significant impacts are anticipated to human health during the operational phase of the Proposed Development.

No direct impacts on employment are expected as a result of the operation of the Proposed Development.

5.6 Mitigation Measures

5.6.1 Construction Phase

An Outline Construction Environmental Management Plan (oCEMP) is included as part of this planning application. The oCEMP will be developed by the contractor into a detailed CEMP and implemented by the contractor during the construction phase, which will ensure best practice methods are used throughout the construction phase and that potential noise and traffic disturbances are minimised.

The Proposed Development will facilitate temporary employment. This impact is positive. therefore, no mitigation measures are proposed.

5.6.2 Operational Phase

No impacts to population and human health are expected during the operational phase of the Proposed Development and therefore no mitigation measures are proposed.

5.7 Residual Effects

Following the inclusion of the mitigation measures described in Section 5.6, no residual significant effects on population and human health are anticipated as a result of the Proposed Development.

5.8 Cumulative Effects

Should the construction of the listed projects in Table 1.2 and the Proposed Development occur concurrently, there is potential for temporary indirect cumulative effects on population and human health due to increased construction traffic and nuisances associated with site activities (dust, noise). However, given the scale of the of the projects it is unlikely there will be a significant direct or indirect cumulative effect on population during construction. No significant direct or indirect cumulative effects on population or human health are predicted during the operation of the planned and Proposed Development.

6. Biodiversity

An Ecological Impact Assessment (EcIA) Report has been completed for the Proposed Development and is included in Appendix E.

7. Land, Soils and Geology

7.1 Introduction

This section examines the baseline environment in terms of land and soils in relation to the Proposed Development and assesses the potential impact of the Proposed Development. Mitigation and monitoring measures are also proposed to address the likely impacts to land, soils and geology.

Reference should be made to Chapter 0 for a full description of the Proposed Development.

7.2 Legislation, Policy and Guidance

The impact assessment has been informed by relevant guidance documents, including the following:

- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (EPA, 2003).
- EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022).
- European Communities, Environmental Impact Assessment of Projects, Guidance on the preparation of Environmental Impact Assessment Reports (Directive 2011/92/EU as amended by 2014/52/EU)' (EC, 2017).
- European Communities, Environmental Impact Assessment of Projects – Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU) (EC, 2017).
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).
- Guidelines for Preparation of Soils, Geology, Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013).

7.3 Methodology

7.3.1 Study Area

The study area for the geology and soils assessment is focused on land within the Site of the Proposed Development and outward to 2km. This area is considered appropriate for the consideration of impacts on geology and land use.

7.3.2 Determination of the Baseline Environment

The baseline assessment has been reviewed to identify sensitive receptors. The following is a list of sources of information that have been consulted for use in the baseline assessment:

- Ordnance Survey Ireland (OSI) online historical maps and aerial photographs.

- Geological Survey Ireland (GSI) online maps.
- EPA online maps.

7.3.3 Describing Potential Effects

A qualitative approach was used to determine the significance of impact as per the EPA's guidance (EPA, 2022) determination figure. It should be noted the control measures have been considered embedded in the project design and their application has been assumed in determining the significance of the impact. Mitigation measures will be devised for potential complete pollutant linkages (comprising a source, pathway and receptor), potential impacts to geology and potential impacts to land.

7.4 Baseline Environment

7.4.1 Existing Data

7.4.1.1 Geology

Quaternary Sediments

According to GSI mapping, the Site is underlain by till derived from Namurian sandstones and shales.

Bedrock Geology

The bedrock beneath the Site is Namurian, which comprises pale sandstone and dark shale.

7.4.1.2 Geological Features

Geological faults are recorded approximately 1.5km to the southeast and 2km to the northwest of the Site.

7.4.1.3 Geological Heritage Sites

Trim Esker, a 6km long section of a predominantly wooded esker ridge, is recorded approximately 1.6km to the west of the Site.

7.4.1.4 Land Use

Current

The Site and surrounding land are currently in agricultural use. The R125 regional road is approximately 2km east, with the L62051 and the L2207 local roads to the west and east of the site.

Historical

Based on a review of publicly available historical mapping, the Site has been in agricultural use since the first maps available in the 1830s.

Designated Sites

Designated sites are identified as potential environmental receptors in the context of land and soils, it is noted that there are no recorded Special Areas of Conservation (SAC), Special Protection Areas (SPAs) or Natural Heritage Areas (NHAs) within a 2km radius of the Site.

7.4.2 Site Investigation

No site investigation results have been provided for review. There are no publicly available borehole logs within 2km of the of the Site.

7.5 Potential Impacts

7.5.1 Construction Phase

Potential construction phase impacts include with the following:

- Excavation and stockpiling of soils, which could lead to soil erosion.
- Potential accidental spills of fuels, chemicals, concrete and lime to ground.
- Depletion of natural resources, through use of quarried material as fill.

7.5.2 Operational Phase

There is the potential for oils to be present within transformers and for fuels to be used in back-up generators and maintenance activities, but any such materials would be contained above sealed hardstanding, and in bunds where necessary.

There is the potential for spills/leaks of fuel/oil from parked vehicles to impact soils in the absence of mitigation measures.

The Proposed Development would remove land from agricultural use. However, given the scale of the Site and the availability of agricultural land in the wider area, this is not considered to be significant.

7.6 Mitigation Measures

7.6.1 Construction Phase

7.6.1.1 Management of Excavated Materials

Temporary storage of soil will be carefully managed in such a way as to prevent potential negative impact on the receiving environment and the soil material will be stored away from any surface water drains. It will be necessary to designate areas within the Site where stockpiles will be established in order to facilitate the efficient transfer of material within the Site. In order to minimise the potential environmental impact from stockpiles, it will be necessary to adopt the following mitigation measures:

- Store excavated topsoil for reuse in stockpiles less than 2m high to prevent damage to the soil structure. Other excavated materials of lower engineering quality can be stored in higher stockpiles.
- Segregate different grades of soil where they arise.
- Minimise movements of materials within the stockpiles in order to reduce the degradation of the soil structure.

In order to minimise the impact of the Proposed Development on local geology, where possible, excavated material will be reused on site and imported material including fill and hard standing will be obtained from local sources.

7.6.1.2 Fuel and Chemical Handling

The following mitigation measures will be implemented to reduce the potential for accidental spills and leaks during the construction phase:

- Designate a bunded storage area at the contractor's compound(s) and away from open ground and surface water gullies or drains for oils, solvents and paints used during construction. The fuel storage tanks shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area or 25% of the total capacity of all the tanks within the bund, whichever is the greater.
- Drainage from the bunded area shall be diverted for collection and safe disposal. All containers within the storage area will be clearly labelled, so that appropriate remedial action can be taken in the event of a spillage. When moving drums from the bunded storage area to locations within the site plot, a suitably sized spill pallet will be used for containing any spillages during transit.
- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in designated impermeable refuelling areas isolated from surface water drains.
- Where mobile fuel bowsers are used on the Site, in the event of a machine requiring refuelling outside of the designated area, fuel will be transported in a mobile double skinned tank.
- Adequate stocks of hydrocarbon absorbent materials (e.g. spill-kits and/or booms) shall be held onsite in order to facilitate response to accidental spills. Spill response materials shall also be stored on all construction vehicles.

7.6.1.3 Control of Concrete and Lime

All ready-mixed concrete will be brought to site by truck. Wash down and washout of concrete transporting vehicles will take place at an appropriate designated area and direct discharge of wash water to ground or surface waters will be strictly prohibited.

7.6.1.4 Sources of Aggregates and Clean Fill for the Project

The source of aggregate and fill material will be carefully selected and vetted in order to ensure that it is of a reputable origin and that it is 'clean' (i.e. will not contaminate the environment). The project contract and procurement procedures will be developed to ensure that aggregates are sourced from reputable sources. All potential suppliers will be vetted for the following criteria:

- Environmental management status.
- Regulatory and legal compliance status.

Only suppliers who are in compliance with the planning requirements will be considered for inclusion in the project. Likewise, 'clean' fill material will only be sourced from suppliers who comply with the above requirements.

The use of quarried material would lead to the depletion of a non-renewable natural resource. However, quantities of fill material required to be imported to site are likely to be extremely small, when compared to the national demand for aggregates.

7.6.1.5 Construction Environmental Management Plan

An Outline Construction Environmental Management Plan (oCEMP) is included as part of this application. The oCEMP will be developed by the contractor into a detailed CEMP and implemented by the contractor during the construction phase of the Proposed Development. The CEMP will set out relevant environmental avoidance or mitigation measures to reduce potential environmental impact. It will also include details of proposed environmental monitoring for the duration of the construction works, be this good practice or as a planning condition requirement.

7.6.2 Operational Phase

During the operational phase, maintenance checks will be undertaken to ensure any oils, fuels or chemicals stored on site are done so in line with guidance, and within bunded areas where necessary.

A sealed drainage system will be present, which would capture any potential leaks/spills from parked vehicles.

7.7 Residual Effects

There are no likely significant residual effects on the land and soils environment associated with the Proposed Development, assuming the mitigation measures outlined above are implemented during the construction and operational phases.

7.8 Cumulative Effects

Should the construction of the listed projects in Table 1.2 and the Proposed Development occur concurrently, there is potential for temporary indirect cumulative effects on land and soils. Potential emissions to soil and groundwater associated with the Proposed Development can be mitigated to the extent that the impact will not be significant. It is not unreasonable to assume that the listed projects in Table 1.2, will also implement standard and best practice mitigation measures to the extent that impacts are not significant. When the predicted effects of the Proposed Development are considered cumulatively with each planned project and cumulatively with all planned projects as a whole, it is concluded that there are no significant negative cumulative effects predicted on soils, geology or hydrogeology.

7.9 Summary

The potential land, soils and geology impacts arising from the Proposed Development have been considered with regards to the construction and operational phases.

Based on a review of available information, potential impacts to the land, soils and geology environment from the construction and operation of the Proposed Development are not considered to be significant.

No cumulative effects from other developments are expected.

8. Water

8.1 Introduction

This section examines the baseline environment in terms of surface water and groundwater in relation to the Proposed Development and assesses the potential impact of the Proposed Development. Mitigation and monitoring measures are also proposed to address the likely impacts to water.

Reference should be made to Chapter 2 for a full description of the Proposed Development.

8.2 Legislation, Policy and Guidance

There are a number of key legislative and Guidance documents applicable to the Proposed Development including:

- European Union Water Framework Directive (WFD) (2000/60/EC). The following legislation in Ireland governs the shape of the WFD characterisation, monitoring and status assessment programmes in terms of monitoring different water categories, determining the quality elements and undertaking characterisation and classification assessments:
    - European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003).
    - European Communities Environmental Objectives (Surface Water) Regulations, 2009 ('S.I. No. 272 of 2009 as amended'), as amended in 2012 (by S.I. No. 327/2012), 2015 (by S.I. No. 386/2015) and 2019 (by S.I. No. 77/2019).
    - European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 as amended), as amended in 2016 (S.I. No. 366 of 2016).
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (EPA, 2003).
- EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022).
- European Communities (Assessment and Management of Flood Risks) Regulations, 2010 (S.I. No. 122 of 2010).
- European Communities, Environmental Impact Assessment of Projects – Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU) (EC, 2017).
- Guidelines for Preparation of Soils, Geology, Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013).
- Guidelines on the Information to be Contained in Environmental Impact Statements (EPA, 2002).
- River Basin Management Plan 2018-2021 (DHPLG, 2018).
- The EU Floods Directive 2007/60/EC.

8.3 Methodology

8.3.1 Study Area

The study area includes the Site of the Proposed Development, as well as groundwater and surface waters within a 2km radius.

8.3.2 Determination of the Baseline Environment

The baseline environment has been determined through review of the following sources:

- Ordnance Survey historic mapping.
- OPW flood maps.
- GSI online mapping for groundwater wells and springs.
- The Flood Risk Assessment (FRA) which has been prepared for the Site and is included as Appendix B

The baseline assessment has been used to identify sensitive receptors with respect to the Proposed Development.

8.3.3 Describing Potential Effects

A qualitative approach was used to determine the significance of impact as per the EPA's guidance (EPA, 2022) determination figure. It should be noted the control measures, have been considered embedded in the project design and their application has been assumed in determining the significance of the impact. Mitigation measures will be devised to address potential impacts.

8.4 Baseline Environment

8.4.1 Topography

Based on topographical mapping, the site generally slopes down from southwest to northeast. The site's high point, on the western boundary, is at approximately 98m above Ordnance Datum (AOD) and the low point, on the northern boundary, is at approximately 92mAOD.

8.4.2 Hydrology

8.4.2.1 Surface Water Features

The Site lies within the Boycetown_010 River Sub-Basin of the Boyne_SC_060 Sub-catchment, as defined under the Water Framework Directive (WFD).

The topographical survey for the Site records minor ditches cutting through the northwest corner of the Site and immediately to the southwest, as well as streams approximately 120m to the northeast and 180m to the southeast of the Site. The ditches were observed to be dry during a site walkover by AECOM ecologists.

The closest surface water feature recorded on EPA mapper is the 'Arodstown' (Boycetown Stream), which flows from south to north, approximately 150m to the west of the of the Site. This flows towards the Derrypatrick River, which is approximately 1km to the north of the Site. This a tributary of the River Boyne, which it enters approximately 9.0km to the northwest of the Site.

Other surface water features in the area include the Moyleggan River, approximately 1.3km to the southeast, and the Knightsbrook/Clonymeath approximately 2.5km to the southwest of the Site, which are in the Boyne_SC060 and Tolka_SC_010 Sub-catchments, respectively.

8.4.2.2 Surface Water Quality

The Arodstown Stream, Derrypatrick River and Knightsbrook River are classified as having a 'Poor' river waterbody WFD status during the 2013-2018 monitoring period. The River Moyleggan and River Boyne are classified as having a 'Moderate' status. All of these waterbodies are considered 'at risk' under the WFD.

8.4.3 Hydrogeology

8.4.3.1 Aquifer Classification

The Site is underlain by a 'Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones', according to GSI mapping.

8.4.3.2 Groundwater Vulnerability

Groundwater vulnerability is classified as moderate beneath the majority of the Site and high beneath the southern boundary.

8.4.3.3 Groundwater Wells and Springs

A number of wells are recorded to the south of the Site, associated with the Cooney Estate. The position of the wells is only accurate to 1km and the yields of the wells are classed as poor to moderate. Further wells are recorded between 1.5km and 2km to the north (unspecified use), northeast (domestic use) and east (public supply) of the Site.

8.4.4 Flooding

A Flood Risk Assessment (FRA) was undertaken for the Proposed Development (Appendix B) and concluded the following, based on a review of available data:

- The flood risk from fluvial flooding is considered to be low as the Proposed Development is approximately 2.5km from the Clonymeath River. The Proposed Development is located within Flood Zone C.
- The pluvial flood risk to the Proposed Development is considered to be low.
- The groundwater flood risk to the Proposed Development is considered to be low.

As the FRA demonstrated the overall flood risk to the Proposed Development to be low, a Stage 2 Flood Risk Assessment was not progressed.

8.5 Potential Impacts

8.5.1 Construction Phase

The main potential impacts associated with the construction of the Proposed Development include:

- Vegetation removal, site stripping and bulk earthworks as part of the construction would leave deposits exposed to erosion by wind or rain and this could potentially lead to increases in sediment loading of the surface water network.
- Contamination of surface water from suspended sediments may also be caused by runoff from material stockpiles and dirt from vehicles.

During construction of the Proposed Development, there is a risk of accidental pollution of surface water and groundwater from the following sources:

- Spillage or leakage of oils, fuels, hydraulic fluids, paints and chemicals stored on site.
- Spillage or leakage of oils, fuels and hydraulic fluids from construction machinery or site vehicles.
- Spillage of oil or fuel from refuelling machinery on site.

8.5.2 Operational Phase

The potential adverse impacts during the operational phase, in the absence of adequate management and mitigation measures are as follows:

- Uncontained spillage of polluting materials stored on site, e.g. Oil and lubricants for maintenance.
- Fuel/oil leaks from parked vehicles.
- Potential changes to groundwater recharge rates due to the introduction of hardstanding cover over previously unsealed ground.

8.6 Mitigation Measures

8.6.1 Construction Phase

8.6.1.1 Sedimentation (Suspended Solids)

Drainage channels and streams will be clearly identified on site and shown on method statements and site plans.

During the construction activities there will be a requirement for diverting rainwater away from the construction areas, into nearby drainage channels and streams.

Visual inspections of roads and wheel washing at Site entry/egress points will be undertaken to prevent the accumulation of dirt.

Excavations will only remain open for limited time periods to reduce groundwater and surface water ingress and water containing silt will be passed through a settlement tank or adequate filtration system prior to discharge. A discharge consent will be obtained as necessary for disposal of dewatering water and groundwater arising from pumping (if any) or such water may be disposed of as construction site run off where appropriate. Spoil and temporary stockpiles including stone stockpile areas will be positioned in locations which are distant from drainage systems and retained drainage channels, away from areas subject to flooding. Runoff from spoil heaps will be prevented from entering watercourses by diverting it through onsite settlement ponds and removing material as soon as possible to designated storage areas.

Silt traps will be placed across the works boundary in any areas adjacent to watercourses to avoid siltation of watercourses. These will be maintained and cleaned regularly throughout the construction phase. Attention will also be paid to preventing the build-up of dirt on road surfaces, caused by trucks and other plant entering and exiting the Site.

8.6.1.2 Fuel and Chemical Handling

The following mitigation measures would be implemented to reduce the potential for accidental spills and leaks during the construction phase:

- Designate a bunded storage area at the contractor's compound(s) and away from surface water gullies or drains for oils, solvents and paints used during construction. The fuel storage tanks shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area or 25% of the total capacity of all the tanks within the bund, whichever is the greater.
- Drainage from the bunded area shall be diverted for collection and safe disposal. All containers within the storage area will be clearly labelled, so that appropriate remedial action can be taken in the event of a spillage. When moving drums from the bunded storage area to locations within the site plot, a suitably sized spill pallet will be used for containing any spillages during transit.
- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in designated impermeable refuelling areas isolated from surface water drains.
- Where mobile fuel bowsers are used on the site, in the event of a machine requiring refuelling outside of the designated area, fuel will be transported in a mobile double skinned tank.

- Adequate stocks of hydrocarbon absorbent materials (e.g. spill-kits and/or booms) shall be held onsite in order to facilitate response to accidental spills. Spill response materials shall also be stored on all construction vehicles.

8.6.1.3 Control of Concrete and Lime

All ready-mixed concrete will be brought to site by truck. Wash down and washout of concrete transporting vehicles will take place at an appropriate designated area and direct discharge of wash water to surface waters will be strictly prohibited.

8.6.1.4 Construction Environmental Management Plan

An Outline Construction Environmental Management Plan (oCEMP) is included as part of this application. The oCEMP will be developed by the contractor into a detailed CEMP and implemented by the contractor during the construction phase of the Proposed Development. The CEMP will set out relevant environmental avoidance or mitigation measures to reduce potential environmental impact. It will also include details of proposed environmental monitoring for the duration of the construction works, be this good practice or as a planning condition requirement.

8.6.2 Operational Phase

During the operational phase, fuels, oils and chemicals will be stored in appropriate containers, provided with bunds where necessary.

Interceptors will be present in the surface water drainage system, to protect surface waters from potential pollution from oil spills/leaks from parked cars and storage.

8.7 Residual Effects

There are no likely significant residual impacts on the water environment associated with the Proposed Development, assuming the mitigation measures outlined above are implemented during the construction and operational phases.

8.8 Cumulative Effects

Should the construction of the listed projects in Table 1.2 and the Proposed Development occur concurrently, there is potential for temporary indirect cumulative effects on hydrology and water quality. Potential emissions to soil and groundwater associated with the Proposed Development can be mitigated to the extent that the impact will not be significant. It is not unreasonable to assume that the listed projects in Table 1.2, will also implement standard and best practice mitigation measures to the extent that impacts are not significant. When the predicted effects of the Proposed Development are considered cumulatively with each planned project and cumulatively with all planned projects as a whole, it is concluded that there are no significant negative cumulative effects predicted on hydrology and water quality.

8.9 Summary

The potential water impacts arising from the Proposed Development have been considered with regards to the construction and operational phases.

Based on a review of available information, potential impacts to the groundwater and surface water environment from the construction and operational phases of the Proposed Development are not considered to be significant.

No cumulative effects from other developments are expected.

9. Air Quality

9.1 Introduction

This chapter assesses the potential air quality impacts associated with the Proposed Development.

The potential air quality impacts arising from the Proposed Development have been considered under the following scenarios:

- Construction phase dust impact.
- Construction phase road traffic impacts.

No significant sources of emissions to air are expected during the operational phase of the Proposed Development, with emissions limited to those associated with the maintenance vehicles. Therefore, operational air quality impacts have been scoped out of the assessment.

Reference should be made to Section 0 for a full description of the Proposed Development.

9.2 Legislation, Policy and Guidance

9.2.1 European and National Legislation

The Air Quality Standard Regulations 2011 implement the European Union Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe (CAFE) and designate the EPA as the competent authority responsible for assessing ambient air quality in the territory of the State. They also establish Limit Values (LVs) and alert thresholds for concentrations of certain pollutants in ambient air, to prevent or reduce harmful effects on human health and the environment. LVs were published for seven pollutants, with alert thresholds for an additional five pollutants.

These European Union Limit Values (EULVs) are legally binding and of the seven pollutants for which EULVs have been set, national assessments have demonstrated that there is no risk of carbon monoxide (CO), 1,3-butadiene, benzene, lead and sulphur dioxide (SO_2) concentrations exceeding the limits due to emissions from traffic anywhere in Ireland and therefore not considered in this assessment. Volatile organic compounds (VOCs) as a group are similarly scoped out. There are no EULVs for VOCs as a group, and as discussed above, benzene and 1,3-butadiene, which are types of VOCs, are not at risk of exceedance.

The EULVs for the remaining pollutants are displayed in Table 9.1**.** These are nitrogen dioxide (NO_2) and particulate matter in the fractions of <10 µm (PM_{10}) and <2.5 µm ($PM_{2.5}$) and are the pollutant most commonly associated with combustion emissions from vehicles and energy plant. Limit values are expressed in one of two ways: as annual mean concentrations which are not to be exceeded without exception, due to their chronic effects or as shorter term (24-hour or one-hour) mean concentrations for which only a specified number of exceedances are permitted within a specified time frame, due to their acute effects.

Table 9.1: National Air Quality Standards

Pollutant	Averaging Period	Concentration (µg/m^3)	Permitted Exceedances
NO_2	Annual mean	40	None
	1-hour mean	200	Not to be exceeded more than 18 times a year
PM_{10}	Annual mean	40	None
	24-hour mean	50	Not to be exceeded more than 35 times a year
$PM_{2.5}$	Annual Mean	25	None

Source: The Air Quality Standards Regulations 2011

An annual mean LV for nitrogen oxides (NOx) of 30 µg/m3 is set for the protection of vegetation. In addition, critical loads (CL) for nitrogen and acid deposition have been determined which represent (according to current knowledge) the exposure below which there should be no significant harmful effects on sensitive elements of the ecosystem. The purpose of these LVs and CLs is to protect habitats at designated sites for nature conservation. Upon review of maps available on the National Parks and Wildlife Service (NPWS) website[4], no such designated sites (Special Areas of Conservation, Special Protection Areas or Natural Heritage Areas) are located in the vicinity of the Site, and as such, no air quality impacts are possible. The impact of emission to air on designated nature conservation sites is not considered any further in this assessment.

There are no national or EU limits for dust deposition. however, the Technical Instructions on Air Quality Control (Technische Anleitung zur Reinhaltung der Luft (BMU)5 provide a guideline for the rate of dust deposition of 350mg/m^2/day averaged over one year. The EPA concurs that this guideline may be applied, although applied as a 30-day average (Environmental Management in the Extraction Industry (non-scheduled minerals, EPA, 2006)).

9.2.2 National Planning Policy

Project Ireland 2040 is the Government's long-term overarching strategy for future development and infrastructure in Ireland. It consists of several documents, including the National Planning Framework (NPF), which is the Government's high-level strategic Plan for shaping the future growth and development of Ireland up to 2040[6].

[4] Available at: https://www.npws.ie/protected-sites
[5] Erste Allgemeine Verwaltungsvorschrift zum Bundes–Immissionsschutzgesetz (Technische Anleitung zur Reinhaltung der Luft – TA Luft) Vom 24. Juli 2002.
[6] Government of Ireland (2018). Project Ireland 2040 National Planning Framework.

The NPF includes the following overarching aim that is relevant to this assessment:

> *"Creating a Clean Environment for a Healthy Society:*
>
> *…Promoting Cleaner Air: Addressing air quality problems in urban and rural areas through better planning and design."*

The NPF includes National Policy Objective 64, which stresses the importance of improving ambient air quality:

> *"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."*

9.2.3 Local Planning Policy

The Meath Development Plan 2021-2027[7] was adopted on 3 November 2021. It sets out guiding policies and objectives for the development of County Meath in terms of physical growth and renewal, economic, social and cultural activity, and environmental protection and enhancement.

Under climate change objectives, it states that the council aims:

> *"To support the implementation of the Climate Action Plan 2019 and to facilitate measures which seek to reduce emissions of greenhouse gases in the Electricity, Enterprise, Built Environment, Transport, Agriculture and Waste sector."*

Transport Infrastructure Ireland (TII – formerly the National Roads Authority) published guidance relating to the assessment of local air quality impacts for National Roads Schemes in 20118. Whilst not wholly relevant to the Proposed Development, it is the only guidance in Ireland to provide an approach to assessing air quality impacts not relating to Environmental Licencing. The TII Guidance, when published in 2011, incorporated contemporary guidance from other organisations, including that published by Highways England and Environmental Protection UK.

9.2.4 Institute of Air Quality Management Guidance

The Institute of Air Quality Management (IAQM) published guidance on the assessment of dust from demolition and construction in 2014[9]. The guidance provides a means by which the risk of dust impacts from construction activities can be estimated to determine the level of mitigation required.

9.3 Methodology

9.3.1 Construction Dust

During the construction phase, there is the potential for works to generate dust and finer particle emissions caused by the disturbance of soil, the handling and storage of soil and construction materials, abrasive construction activities and the movement of construction vehicles on and off site. There is also the potential for site plant (including non-road mobile machinery) and construction vehicle movements to increase emissions of pollutants associated with diesel fuel combustion (namely, oxides of nitrogen, including nitrogen dioxide, and particulate matter (PM_{10} and $PM_{2.5}$)).

Due the scale of the construction works proposed, the number of site plant and construction-related vehicles, and associated emissions, is considered to be too low to contribute to a potential significant effect. Emissions associated with these sources will be delt with in the assessment in a qualitative manner.

The occurrence and significance of dust and finer particulates generated by construction activities on site depositing beyond the site boundary is difficult to estimate and depends upon the weather conditions, ground conditions and location of the work relative to receptors, the timing and the nature of the actual activity being carried out. Dust emissions and subsequent deposition and soiling at sensitive locations have the potential to harm the amenity of the users of that sensitive land use and or harm vegetation by affecting the rate of photosynthesis. Particulate emissions at sensitive locations is associated with increased risk of harm to human health.

[7] Meath County Council (2021). Meath County Development Plan 2021-2027.
[8] TII (formerly the NRA) (2011), Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes.
[9] Holman et al., (2014), IAQM Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London.

The Institute of Air Quality Management (IAQM) provides guidance for good practice qualitative assessment of risk of dust emissions from construction and demolition activities. The guidance considers the risk of dust emissions from unmitigated activities to cause human health (PM_{10}) impacts, dust soiling impacts, and ecological impacts. The appraisal of risk is based on the scale and nature of activities and on the sensitivity of receptors, and the outcome of the appraisal is used to determine the level of good practice mitigation required for adequate control of dust.

The steps from the IAQM construction dust methodology are set out below:

- Identify receptors within the IAQM screening distance of the construction Site boundary.
- Identify the magnitude of impact through consideration of the scale, duration and location of activities being carried out (including demolition (if any), earthworks, construction and trackout – where construction vehicles carry mud from site onto the public highway).
- Establish the sensitivity of the area through determination of the individual sensitivity and number of receptors and their distance from construction activities.
- Determine the risk of significant impacts on receptors occurring as a result of the magnitude of impact and the sensitivity of the area, assuming no additional mitigation (beyond the identified development design and impact avoidance measures) is applied.
- Determine the level of additional best practice mitigation required based on the level of risk, to reduce potential impacts at receptors to not significant or negligible.
- Summarise the potential residual effects of the mitigated works.

A detailed description of the IAQM construction dust assessment methodology is provided in Appendix F of this report.

For amenity effects from dust and particulates associated with construction activities, the aim of the guidance document referred to is to bring forward a scheme, including additional mitigation measures where necessary, that would control impacts so that they give rise to negligible or minor effects (at worst) at the closest sensitive receptors. Determination of whether an effect is likely to be significant or not is based on professional judgement (from experience of similar projects), taking account of whether effects are permanent or temporary, direct or indirect, constant or intermittent and whether any secondary effects are caused (in this instance, secondary effects refer to dust that is generated and deposited (primary impact) and then re-suspended and deposited again by further activity).

The classification of amenity impacts (from dust soiling) and health effects on receptors exposed to impacts has been assessed using the relationship between the magnitudes of effects identified, in combination with receptor sensitivity and other related factors where appropriate (as described in the relevant guidance (IAQM 2014), which results in a classification of effects as defined in Table 9.2.

Table 9.2: Selected Sensitive Receptors

Magnitude of Effect	Change in dust deposition and short term PM_{10} Concentrations	Significance of Effects
High	Dust impact is likely to be intolerable for any more than a very brief period of time and is very likely to cause complaints from local people. Increase in PM_{10} concentrations at a location where concentrations are already elevated and to the extent that the short term PM_{10} air quality objective is likely to be exceeded.	Significant to Profound: A significant Impact that is likely to be a material consideration in its own right.
Medium	Dust impact is likely to cause annoyance and might cause complaints but can be tolerated if prior warning and explanation has been given. Increase in PM_{10} concentrations at a location where concentrations are already elevated and to the extent that the short term PM_{10} air quality objective is at risk of being exceeded.	Moderate: A significant effect that may be a material consideration in combination with other significant impacts but is unlikely to be a material consideration in its own right.
Low	Dust impact may be perceptible, but of a magnitude or frequency that is unlikely to cause annoyance to a reasonable person or to cause complaints. Limited increase in PM_{10} concentrations.	Not significant to Slight: An impact that is not significant but that may be of local concern.
Negligible	Dust impact is unlikely to be noticed by and/or have an effect on sensitive receptors. Negligible increase in PM_{10} concentrations.	Imperceptible: An impact that is not significant.

In terms of the significance of the effects (consequences) of any adverse impacts, an effect is reported as being either significant or not. If the overall effect of the Proposed Development on local air quality or on amenity is found to be 'Moderate' (where a large proportion of sensitive receptors are affected and/or there is risk of Air Quality Standards and Environmental Assessment Levels being exceeded) or 'Significant' to 'Profound', this is deemed to be significant for assessment purposes. Effects found to be 'Moderate' (where limited sensitive receptors are affected

and there is no risk of exceedance of an Air Quality Standard or Environmental Assessment Level) to 'Imperceptible' are not considered to be significant.

9.3.2 Construction Traffic

The incomplete combustion of fuel in vehicle engines results in the presence of a variety of pollutants including hydrocarbons, such as benzene, 1,3-butadiene, SO_2 and carbon monoxide (CO) in the exhaust emissions. However, it is the emission of NO_X, mainly in the form of nitric oxide (NO), which is then converted to NO_2 in the atmosphere, and particulate matter (PM_{10} and $PM_{2.5}$) in exhaust emissions, which are the main pollutants of concern, due to their association with adverse effects on human health. Although SO_2, CO, benzene and 1,3-butadiene are present in motor vehicle exhaust emissions, detailed consideration of the associated impacts on local air quality is not considered relevant in the context of the Proposed Development. This is because the concentrations of release and the number of vehicles involved are not likely to give rise to significant effects. In particular, no areas within the vicinity of the study area are considered to be at risk of exceeding the relevant objectives for these species (pollutants), and the risks to achievement of the relevant air quality objectives from the Proposed Development is considered negligible.

Construction of the Proposed Development is anticipated to generate additional traffic movements on the local road network, with vehicles accessing the stie via the R125 and a local farm access road. The R125 is a local road and between the Site and the M3 motorway which links isolated properties and hamlets.

Construction of the site is anticipated to take 24 months additional traffic movements are expected to peak at 80 vehicles per day, with 30 of those movements being Heavy Goods Vehicle (HGV).

TII guidance states that an assessment of construction phase traffic emissions impacts is required on roads where construction traffic generates a 10% change in 24-hour AADT flow from future baseline flows. The TII guidance was published to consider air quality impacts associated with major infrastructure schemes where base traffic flows are likely to be in the tens-of-thousands, and construction traffic of 10% or more has the potential to cause a significant impact. It is not intended to consider such impacts on roads where base traffic flows are likely to be considerably less than that.

Alternative guidance, published by the Institute of Air Quality Management, suggests that a detailed assessment of air quality emissions impacts from traffic is only likely required where 24-hour AADT increases by 100 HGV movements or more. Where traffic is not anticipated increase to that extent, a detailed assessment is not required.

In this instance, due to the nature of the roads in the study area and the low baseline flows anticipated, the likely good standard of air quality and the number of additional HGV movements being less than 100 per day, it is considered that a detailed assessment of air quality impacts is not required and the impact of the Proposed Development not significant.

9.3.3 Study Area

The study area for construction dust assessment impacts is defined within the IAQM Construction dust guidance referred to in the assessment and includes all dust sensitive receptors (such as residential properties, commercial properties, areas of amenity and designated ecological sites) within 350m of the Site boundary and those located within 50m of a public road used by construction traffic that is within 500m of a site access point.

9.3.4 Determination of the Baseline Environment

To inform the air quality assessment background information has been obtained from the following sources:

- EPA Air Quality in Ireland Report[10].
- EPA air quality monitoring data[11].

The state of the baseline environment has been determined through the gathering of data from secondary sources. Secondary sources include a review of pollutant monitoring data undertaken by the EPA, under the requirements of the Air Quality Standards Regulations.

9.3.5 Determination of Sensitive Receptors

The IAQM Construction dust guidance referred to in the assessment considers all dust and particulate matter sensitive receptors within 350m of the site boundary and 50m of a public road that is within 500m of the site access.

[10] EPA (2020), Air Quality in Ireland 2019.
[11] EPA (2022). Air Quality maps.

For impacts associated with harm to amenity, including those associated with dust deposition and soiling, the type and sensitivity of receptors is determined by the level of amenity associated with the land use and the typical duration of exposure. For impacts associated with harm to health, such as an increase in exposure to PM_{10}, the sensitivity of receptors has already been determined through the implementation of the air quality standards, which have been set below the level of concentration in which the most vulnerable members of society are likely to be affected. The sensitive receptors considered in this assessment are summarised in Table 9.3.

Table 9.3: Selected Sensitive Receptors

Receptor ID	X	Y	Description	Distance and Orientation from the Site
R1*	n/a	n/a	Residential properties adjacent to access road and construction route on R125	<50m
R2	n/a	n/a	Agricultural land	<5m all directions

* Representing multiple properties adjacent to the access road and R125 near to the access point

9.3.6 Describing Potential Effects

The description of potential effects associated with dust and particulate emissions has been undertaken in line with the IAQM guidance on assessing the impact of dust from construction and demolition (Holman *et al*., 2014). As the duration of the Proposed Development covers multiple years and because the nature of the project requires large scale earthworks and a large frequency of HGV movements, the assessment has also referred to sections of the IAQM guidance on assessing the impact of dust from mineral sites.

According to the IAQM, the main effects (referred to in the guidance as “impacts”) that may arise due activities like those carried out for the Proposed Development are:

- Dust deposition, resulting in the soiling of surfaces.
- Visible dust plumes, which are evidence of dust emissions.
- Elevated PM_{10} concentrations resultant of dust generating activities onsite.

Activities carried out onsite for the Proposed Development are classified into the following categories for the purpose of assessment:

- Earthworks.
- Onsite vehicle movements.
- Offsite vehicle movements.

Onsite plant emissions, such as those associated with combustion from generators and NRMM, have the potential to increase public exposure to airborne concentrations of NO_2, PM_{10} and $PM_{2.5}$, at locations close to onsite emission sources. However, IAQM guidance states that:

> *“Experience of assessing the exhaust emissions from onsite plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed”.*

Emissions from site plant for energy generation purposes will be limited. The Site will maintain and utilise the existing high and low voltage power supply that currently exists.

Emissions from site plant and NRMM (non-road mobile machinery) associated with the Proposed Development will be controlled via the application of the NRMM standards and through best practice mitigation measures presented in the contractor’s CEMP for the Proposed Development. The number of site plant in operation at any one time will be limited, due to the phased nature of the works. However, there could be a number of NRMM operating in unison at any one time. The effect from such emission would also be restricted by the limited number of sensitive receptors in close proximity to the actual working areas, as well as the fact that such emissions will be temporary and intermittent in nature. NRMM will operate on an as and when required basis, at times during the proposed working hours.

It is considered unlikely that emissions from site plant and NRMM could contribute to a significant impact on local air quality.

9.4 Baseline Environment

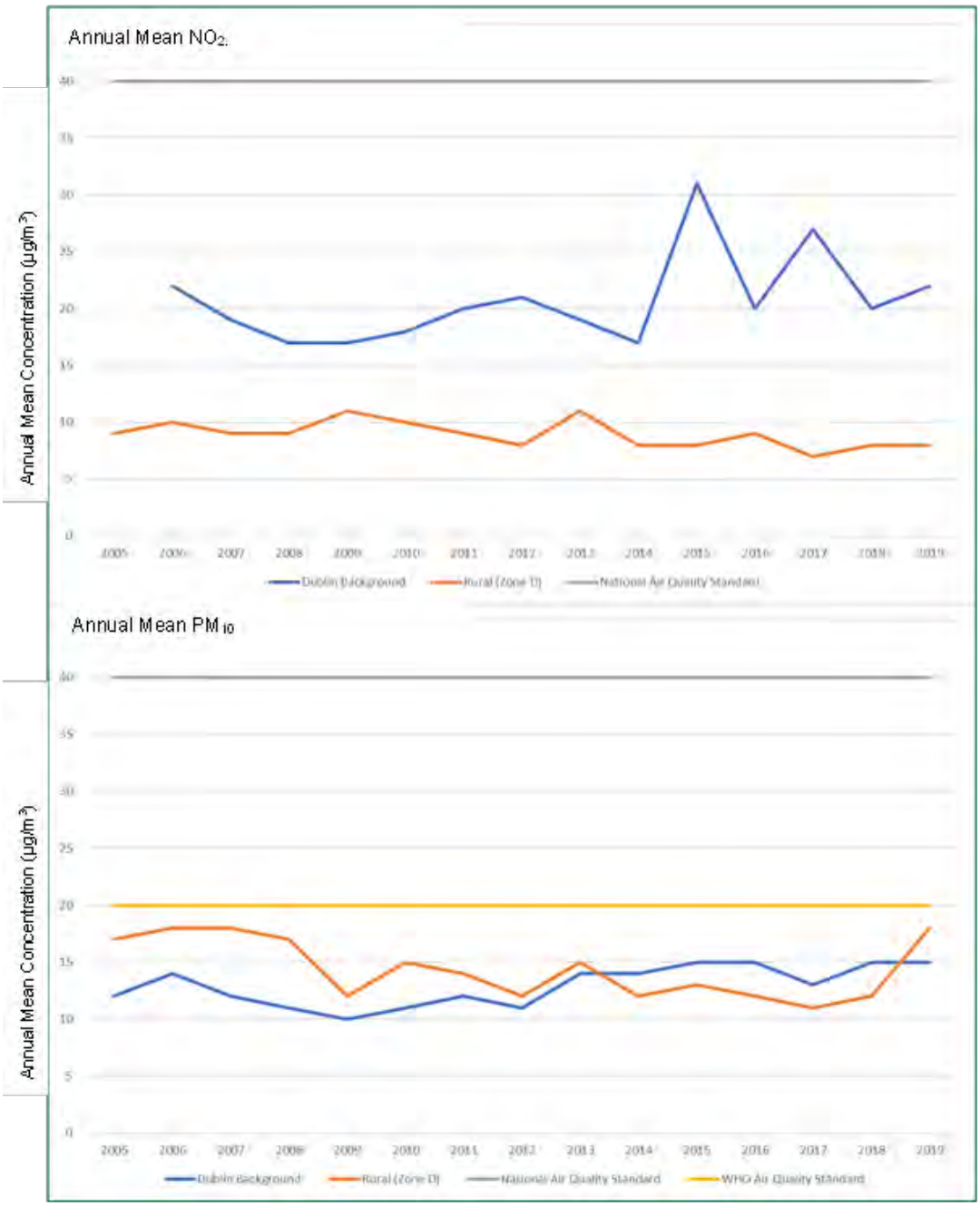
Due to the rural nature of the study area, there is limited air quality monitoring data in the vicinity of the Site. In the absence of local data, a review of representative data has been undertaken with reference to monitoring data gathered by the EPA at background locations in rural locations across Ireland.

Figure 9-1 provides a summary of background pollutant data gathered in these areas over a number of years up to 2019. Reference to monitoring data beyond 2019 is not provided due to the effect of the Covid-19 pandemic on air quality levels.

Figure 9-1 suggests that background annual mean NO_2 concentrations in the area are likely to be <10 µg/m^3 and background annual mean PM_{10} concentrations are likely to be around 18 µg/m^3.

There is no dust deposition data to report for the study area or the wider region. Baseline dust deposition is likely to be typical of much of rural Ireland, with short-term episodes associated with farming activity on nearby farmland.

Figure 9-1: Background Air Quality Data



9.5 Potential Impacts

9.5.1 Construction Phase

As described in Section 9.3, the construction dust and particulate matter assessment follows the step-by-step approach set out in relevant IAQM guidance (2014). This process is summarised in the sub-sections below.

9.5.1.1 Identify Receptors within the Screening Distance of the Site Boundary

Step 1 of the IAQM construction dust guidance is to screen the requirement for a more detailed assessment. According to the guidance, no further assessment is required if there are no receptors within a certain distance of the works. The screening distances set by the IAQM guidance are:

- Receptors sensitive to amenity and human health impacts within 350m of the construction site boundary and/or within 50m of a public road used by construction traffic that is within 500m of the site entrance.
- Nature conservation receptors located within 50m of the construction site boundary and/or within 20m of a public road used by construction traffic that is within 500m of the site entrance.

There are a limited number of high sensitivity amenity and human health sensitive receptors within 50m of the construction access and within 50m of the R125 that is within 500m of the Site access point. There is also low sensitivity farmland adjacent to the Site in all directions. There are no designated sites for nature conservation within the area covered by the screening distances.

Due to the presence of the high sensitivity amenity and human health sensitive receptors within the screening distances set by the guidance, the more detailed assessment is required and is set out below.

9.5.1.2 Identify the Magnitude of Effects

Step 2A requires the determination of the dust emission magnitude, which the guidance states is based on the scale of the anticipated works with the following activities: demolition. earthworks. construction (i.e. the building and erection of structures). trackout (the deposition of dust and particulate matter onto public roads by construction vehicles), and should be classified as Small, Medium, or Large. In this instance, the construction works will only be concerned with earthworks. construction and trackout. No demolition work is proposed.

Earthworks: The Site is anticipated to require earthworks associated with soil-stripping, ground levelling and excavation works. For the purpose of this assessment, the area of earthworks is considered to exceed 10,000m^2 and require the handling of a large mass of materials and multiple earth-moving vehicles. of material. As such, the dust emissions magnitude of effect for earthworks is Large.

Construction: Potentially dusty materials that may be in use during construction works are concrete (if delivered dry), sand and hard core, which will be stored and handled at the site throughout construction. Other construction materials are likely to be prefabricated with little dust emissions potential. For the purpose of this assessment, the volume of construction work is considered to be between 25,000 and 100,000m^3 and require the storage and handling of potentially dusty material. As such, the dust emissions magnitude of effect for construction is Medium.

Trackout: Additional traffic movements are expected to peak at 80 vehicles per day, with 30 of those movements being HGVs. There is also anticipated to be periods when onsite haul routes are not surfaced, particularly during the earlier phases of construction. As such, the dust emissions magnitude of effect for trackout is Large.

9.5.1.3 Establish the Sensitivity of the Area

Step 2B of the IAQM construction dust guidance requires the determination of the sensitivity of the area to construction dust impacts. According to the guidance, this is based on the sensitivity of individual receptors, the proximity and number of those receptors, background PM_{10} concentrations and site-specific factors, such as local terrain, meteorology and natural and existing windbreaks.

In this instance, there are a limited number of High sensitivity amenity and human health receptors within 50m of a public road used by construction traffic that is within 500m of the Site access road, and a large area of Low sensitivity within 20m of the Site boundary. This equates to an area of Low sensitivity for dust soiling amenity impacts overall. Background PM_{10} concentrations are estimated to be around 17 µg/m^3 and this, coupled with the limited number of receptors and their proximity to the construction site, means that the sensitivity of the area to health impacts is also Low.

9.5.1.4 Determine the Risk of Significant Effects

Step 2C of the IAQM construction guidance then concerns the determination of the risk of dust impacts, which is informed by the dust emission magnitude identified in Step 2A and the sensitivity of the area identified in Step 2B.

For dust soiling amenity and human health impacts, the large dust emission magnitude identified for earthworks and trackout equate to a low risk of dust impacts during those activities. The Medium dust emission magnitude identified for construction works also equates to a low risk of dust impacts.

9.5.2 Operational Phase

No significant sources of emissions to air are expected during the operational phase of the Proposed Development, with emissions limited to those associated with the maintenance vehicles. Therefore, operational air quality impacts have been scoped out of the assessment.

9.6 Mitigation Measures

9.6.1 Construction Phase

9.6.1.1 Site Specific Mitigation

Step 3 of the IAQM construction dust guidance then uses the risk of dust impacts identified in Step 2C to compile an appropriate list of dust mitigation to offset that risk and ensure that a significant effect does not occur. The IAQM guidance relevant to the construction dust assessment lists measures that should be applied, if practical, relative to the risk identified.

In this instance, a Low risk of dust impacts was identified due the potential dust emission magnitude and the sensitivity of the area. Therefore, the list of IAQM recommended mitigation measures provided below is proportionate to the risk identified.

An Outline Construction Environmental Management Plan (oCEMP) is included as part of this planning application. The oCEMP will be developed by the contractor into a detailed CEMP and the mitigation measures will be implemented by the contractor during the construction phase of the Proposed Development.

IAQM recommended dust (and particulate matter) mitigation measures for Low risk sites are as follows:

- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary.
- Display the head or regional office contact information.
- Develop and implement a dust management plan (DMP).
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
- Undertake daily onsite and offsite inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues onsite when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens/barriers or enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used onsite cover as described below.

- Cover, seed or fence long-term stockpiles to prevent wind whipping.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost maximum-speed-limits on surfaced and unsurfaced haul roads and work areas.
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression technique.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment if it is fitted.
- Ensure equipment is readily available onsite to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Avoid bonfires and burning of waste materials.
- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out.
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Record all inspections of haul routes and any subsequent action in a site logbook.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). Ensuring that there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

9.6.2 Operational Phase

Whilst operational air quality impacts have been scoped out of the assessment, it is considered good practice to reduce emissions to air as far as reasonably practical.

9.7 Residual Effects

9.7.1 Construction Phase

9.7.1.1 Determine Significant Effects

Step 4 of the IAQM construction dust guidance is to determine whether not the effects after the application of the identified level of mitigation are significant or not. The IAQM guidance states that:

> *"For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'".*

Therefore, providing a sufficient level of dust mitigation is implemented on site throughout the works, with reference to those recommended by the IAQM, which are considered standard practice on all well managed construction sites, it Is considered that the residual effects from the Proposed Development are not significant.

9.8 Cumulative Effects

Should the construction of the listed projects in Table 1.2 and the Proposed Development occur concurrently, there is potential for cumulative dust emissions during construction. Cumulative air quality impacts associated with the listed projects are not envisaged due to the low volume of construction required and the use of materials with a low dust generation potential. No significant sources of emissions to air are expected during the operational phase of the Proposed Development, with emissions limited to those associated with the maintenance vehicles. Thus, there is no

potential for any significant negative direct nor indirect cumulative impacts to arise from the Proposed Development in combination with the listed projects.

9.9 Summary

An air quality assessment has been undertaken to identify the potential for emissions to air to have a significant impact on local air quality.

The assessment has considered the potential for impacts associated with the following sources:

- Construction phase dust emissions.
- Construction phase road traffic emissions.
- Construction phase NRMM and site plant emissions.
- Operational road traffic emissions.

Due to the limited number of emissions sources and good standard of existing air quality, emissions to air associated with road traffic emissions during construction and operation, and NRMM and site plant emissions during construction, have been screened out of detailed assessment and the impact of those emissions is not significant.

A detailed assessment of construction phase dust impacts has been undertaken and has identified the risk of dust impacts occurring, based on the potential for dust emissions magnitude of construction activities and the sensitivity of the study area to dust impacts. In line with industry standard guidance, the assessment has identified the level of mitigation required to ensure that any impact is not significant. Providing that the mitigation measures outlined in Section 9.6 are implemented throughout the construction works, which are standard practice on all well managed construction sites, the impact of the Proposed Development is not considered to be significant. No cumulative effects from other developments are expected.

10. Climate

10.1 Introduction

This section considers the following aspects of climate change assessment for the Proposed Development:

- Lifecycle greenhouse gas (GHG) impact assessment - an assessment of the likely effect of GHG emissions arising from the Proposed Development on the climate during the lifecycle stages.
- Climate change resilience (CCR) review - the resilience of the Proposed Development to projected climate change impacts.

A transformational shift toward climate resilient and sustainable developments is required by Agenda 2030 (UN, 2015) and the Paris Agreement (UNFCCC, 2016). The Irish government has made commitments to tackle climate change and supports the adoption of a net zero target by 2050 at EU level. The Climate Action and Low Carbon Development (Amendment) Bill 2021 (Government of Ireland 2021) is the plan to transition to a climate resilient and climate neutral economy by no later than the end of 2050. Understanding the likely scale of GHG emissions from the Proposed Development and how it could be affected by climate change offers an opportunity to improve the resilience of the Proposed Development to both physical and transition climate risks.

Reference should be made to Chapter 2 for a full description of the Proposed Development.

10.2 Legislation, Policy and Guidance

This section describes the legislation, policy, and guidance of relevance to the assessment of potential climate impacts associated with the Proposed Development, considered on an international, national and local level.

10.2.1 International Legislation

- **Kyoto Protocol** (Department of Communications, Climate Action & Environment. 2017): An international agreement linked to the United Nations Framework Convention on Climate Change (UNFCCC), which commits its Parties by setting internationally binding emission reduction targets. Ireland is a Party to the Kyoto Protocol and its emission reductions targets are now binding. Under Article 4 of the Kyoto Protocol, the EU created an Effort Sharing Regulation that requires the setting of individual binding GHG emission reduction targets for each of its Member States. The current Effort Sharing Decision (ESD) commits Ireland to a 39% reduction in GHG emissions for the period 2021 to 2030.

- **UN Paris Agreement** (Conference of the Parties No.21, 2016) (UNFCCC. 2016): A legally binding agreement within the UN framework convention on climate change which requires all signatories to strengthen their climate change mitigation efforts to keep global warming to below 2°C this century.

10.2.2 National Policy

- **Climate Action and Low Carbon Development (Amendment) Act 2021** (Government of Ireland, 2021). The Irish Government published the 'Climate Action and Low Carbon Development National Policy Position' in April 2014, committing Ireland to an 80% reduction in carbon emissions in the energy sector compared to 1990 levels by 2050. However, a more ambitious target has now been committed to in law through the Climate Action and Low Carbon Development (Amendment) Act 2021 which establishes a 2050 net zero emissions target, compared to 1990 levels, and introduces a system of successive 5-year carbon budgets starting in 2021.
- **Project Ireland 2040: National Planning Framework** (Government of Ireland, 2018) highlights the importance of reducing GHG emissions to accelerate action on climate change, adopting principles of the circular economy and managing waste in a more sustainable manner.
- **Project Ireland 2040: National Development Plan 2021-2030** (Government of Ireland, 2021). The National Development Plan 2021-2030 sets out the investment priorities that will underpin the implementation of the National Planning Framework (above). This Development Plan emphasises the need to support the government's climate ambitions through investment in climate action, sustainable mobility, green transition, and sustainable management of water and other environmental resources.
- **National Energy and Climate Plan 2021-2030** (Government of Ireland, 2020) sets out Ireland's objectives regarding the five EU energy dimensions together with planned policies and measures to ensure that these objectives are achieved.
- **Climate Action Plan 2023** (Government of Ireland, 2023) sets out Irelands intention to meet a 51% reduction in its greenhouse gas emissions by 2030 and to achieve net-zero emissions no later than 2050.

10.2.3 Local Guidance

- **Regional Planning Guidelines for the Greater Dublin Area 2010-2022** (Dublin Regional Authority, Mid-East Regional Authority, 2010) aim to create an integrated policy approach in order to enable the creation of sustainable regions with the capability to be resilient to future climate change.
- **Meath County Council Climate Action Strategy 2019-2027** (MCC, 2019) details actions to support County Meath adapt to and mitigate against climate change. Targets include reducing CO_2 emissions by at least 40% by 2030 and ensuring that the county can continue to run effectively during more extreme weather.

10.2.4 Assessment Guidance

- **PAS 2080 Carbon Management in Infrastructure** is a global standard for managing infrastructure carbon.
- The **Greenhouse Gas Protocol** provides standards and guidance for companies and other types of organisations in preparing a GHG inventory (WRI & WBCSD, 2004).
- The **International Organization for Standardization** (ISO) 14064-1:2019 and 14064-2:2019 (ISO, 2018a and b, respectively) provides specifications for organisational-level and project-level guidance for the quantification and reporting of GHG emissions and removals.
- The **Inventory of Carbon and Energy** (ICE) Database (Version 3) and the Cement, Mortar and Concrete Model (Version 1), Bath University, UK (2019): The ICE Database is the world's leading source of embodied energy and carbon data. This database has been used to source appropriate carbon factors to estimate the embodied carbon of materials used for demolition and remediation works of the Proposed Development.
- **GHG Emission Factors** (UK Government, 2021): UK government annually publish 'GHG Conversion Factors for Company Reporting'. These will be used as a proxy where Sustainable Energy Authority of Ireland (SEAI) emissions factors are not available, to quantify GHG emissions to convert the activity data into emissions.
- **Institute of Environmental Management and Assessment** (IEMA) Environmental Impact Assessment (EIA) Guide to Assessing Greenhouse Gas Emissions (IEMA 2017). While we are not undertaking an EIA, this is the most appropriate guidance for this assessment. It provides a framework for the consideration of greenhouse gas emissions in the EIA process, in line with the EIA Directive. The guidance sets out how to:
    - Identify the greenhouse gas emissions baseline in terms of GHG current and future emissions.

- Identify key contributing GHG sources and establish the scope and methodology of the assessment.
- Assess the impact of potential GHG emissions and evaluate their significance.
- Consider mitigation in accordance with the hierarchy for managing project related GHG emissions (avoid, reduce, substitute, and compensate).

- **IEMA** Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation (IEMA, 2020): provides a framework for effective consideration of climate change resilience and adaptation in the EIA process.
- **Guidance for the Calculation of Land Carbon Stocks** (European Commission, 2010): These Guidelines provide a calculation methodology for calculating carbon stocks from land use.

10.3 Methodology

10.3.1 Lifecycle GHG Impact Assessment

10.3.1.1 Determining the GHG Baseline Environment

The GHG assessment study area considers direct GHG emissions arising from activities within the Site of the Proposed Development and indirect emissions from activities outside the Site (for example, the transportation of materials to the Site and embodied carbon within construction materials). The baseline is a Do Minimum scenario whereby the Proposed Development does not go ahead, using forecast GHG emissions and GHG reduction targets for Ireland.

10.3.1.2 Determining Sensitive Receptors

IEMA guidance states that all GHG emissions contribute to global climate change (IEMA, 2017). The identified receptor for GHG emissions is the global climate. As the effects of GHGs are not geographically constrained, all GHG emissions have the potential to result in a cumulative impact in the atmosphere.

10.3.1.3 Determining Potential Effects

The lifecycle approach considers emissions from different lifecycle stages of the Proposed Development as a whole including land clearance, construction products and fuel use, worker transport, waste transportation and disposal, operational energy use, and maintenance.

Where activity data have allowed, expected GHG emissions arising from activities, and embodied carbon in materials of the Proposed Development, have been quantified using a calculation-based methodology as per the following equation:

Activity data x GHG emissions factor = GHG emissions value

In line with the GHG Protocol, when defining potential impacts (or 'hot spots'), the seven Kyoto Protocol GHGs have been considered, specifically:

- Carbon dioxide (CO_2).
- Methane (CH_4).
- Nitrous oxide (N_2O).
- Sulphur hexafluoride (SF_6).
- Hydrofluorocarbons (HFCs).
- Perfluorocarbons (PFCs).
- Nitrogen trifluoride (NF_3).

These GHGs are broadly referred to in this chapter under an encompassing definition of 'GHG emissions', with the unit of tCO_2e (tonnes CO_2 equivalent).

Sustainable Energy Authority of Ireland (SEAI, 2019) emission factors will be used to calculate emissions where available. Where SEAI emissions factors are not available, UK Government 2021 emissions factors will be used. Land use change has been calculated according to the methodology and factors set out in the EU Commission's guidelines for the calculation of land carbon stocks (2010). Where data is not available, a mix of assumptions, industry benchmarks and a qualitative approach to addressing GHG impacts will be followed, in line with IEMA guidance.

Table 10.1 summarises the key anticipated GHG emissions sources associated with the Proposed Development.

Table 10.1: GHG-Emitting Activities

Lifecycle Phase	Activity	Primary Emission Sources
Construction Phase	Land clearance	Loss of carbon sink.
	Materials	Embodied GHG emissions.
	Onsite construction activity	Energy (electricity, fuel, etc.) consumption from plant, vehicles and generators on site.
	Transport of construction workers	GHG emissions from fuel consumption for transportation of construction workers.
	Disposal and transportation of construction waste	GHG emissions from energy use and from fuel consumption for transportation of waste.
	Provision and treatment of water	GHG emissions from the supply of potable water, and the disposal and treatment of wastewater.
Operational Phase (operational use)	Operational energy consumption	GHG emissions from electricity consumption e.g. power for lighting.
	Worker transportation	GHG emissions from fuel consumption for transportation of workers.
	Maintenance	Embodied carbon associated with replacement materials and any maintenance equipment.

10.3.1.4 Significance of Effect

All GHG emissions are classed as being capable of being significant on the basis that all emissions contribute to climate change (IEMA, 2017). The global climate has been identified as the receptor for the purposes of the GHG assessment. The sensitivity of the climate to GHG emissions is considered to be 'high'. The rationale supporting this includes:

- GHG emission impacts could compromise the Ireland's ability to reduce its GHG emissions, in line with international and national future carbon targets.
- the need to reduce GHG emissions to reduce the risks and impacts of climate change, as broadly identified by the climate science community and by the Paris Agreement which aims to keep global temperature rise this century below two degrees above pre-industrial levels, (UNFCCC, 2016). Additionally, the Intergovernmental Panel on Climate Change (IPCC) highlight the importance of limiting global warming below 1.5°C (IPCC, 2018).
- a disruption to global climate is already having diverse and wide-ranging impacts to the environment, society, economic and natural resources. Known effects of climate change include increased frequency and duration of extreme weather events, temperature changes, rainfall and flooding, and sea level rise and ocean acidification. These effects are largely accepted to be negative, profound, global, likely, long-term to permanent, and are transboundary and cumulative from many global actions.

IEMA (2017) guidance states that all GHG emissions have the potential to be significant and as such there is no defined threshold or significance criteria published. Therefore, it is considered good practice to contextualise emissions against pre-determined carbon budgets to understand the magnitude of the impact (IEMA, 2017). In the absence of relevant Irish carbon budgets, the national GHG Inventory and carbon reduction targets can be used to contextualise the level of significance.

PAS 2050 Specification (2011) allows emissions sources of <1% contribution to be excluded from emission inventories, and these inventories to still be considered complete for verification purposes. This exclusion of emission sources that are <1% of a given emissions inventory is on the basis of a 'de minimis' (relatively minimal) contribution. On this basis, where GHG emissions from the Proposed Development are equal to or more than 1% of the most recent Irish GHG inventory, the impact of the Proposed Development on the climate is considered to be of major adverse significance. This is summarised in Table 10.2. As published by the EPA (2021), the total Irish emissions in 2019 have been estimated to be 59,777.6 kt CO_2e (59.8 Mt CO_2e).

Table 10.2: Magnitude Criteria for GHG Emissions

Magnitude of the Effects	Magnitude Criteria Description	Sensitivity of Receptor

High	Estimated GHG emissions equate to equal to or more than 1% of the estimated Irish GHG Inventory in the year which they arise.	Major adverse significance
Low	Estimated GHG emissions equates to less than 1% of the estimated Irish GHG Inventory in the year that they arise.	Minor adverse significance

10.3.2 Climate Change Resilience Review

10.3.2.1 Determining the CCR Baseline Environment

The 'current baseline' for the climate change resilience assessment is the historic climate in the location of the Proposed Development. Historic climate data from Met Éireann (2021) recorded at Dunsany Meteorological Station (the closest station to the Proposed Development for which sufficient historic data is available, approximately 5km north of the Site) for the period of 1981-2000 has been used to determine the 'current baseline', in line with the baseline period for the climate change projections used for the 'future baseline' scenario.

An Environmental Protection Agency report (EPA, 2015) on the regional climate model projections for Ireland, presenting climate change projections for mid-century (2041-2060) against a baseline period of 1981-2000, has been used to determine the 'future baseline' scenario. These climate change projections have been used to identify chronic and acute climate hazards that may affect the location of the Proposed Development, such as increased temperature and increases in winter rainfall. The resilience of the Proposed Development to climate change has been reviewed in the context of these climate projections.

10.3.2.2 Determining Sensitive Receptors

The receptor for the climate change resilience review is the Proposed Development itself and associated users (including residents, workers and visitors).

10.3.2.3 Determining Potential Effects

The review covers resilience against both gradual climate change, and the risks associated with an increased frequency of extreme weather events. It considers the strategic aims and objectives encompassed within local and national planning strategies and policies, which have the overarching aim of minimising the adverse impacts of climate change, whilst requiring new developments to take climate change considerations into account within design.

Potential climate change impacts have been identified using relevant projections and conclusions from the EPA (2015) and considers the potential consequences to receptors and likelihood of occurrence, taking into account any measures incorporated into the design of the Proposed Development. Receptors may include the Proposed Development's assets and its operation and maintenance (i.e., structures, earthworks and drainage, technology assets, etc.). end-users (i.e., staff and commercial operators etc.).

Measures to adapt the Proposed Development are identified where potential climate change consequences are identified as being significant and are reported in this report.

10.3.2.4 Significance of Effect

The identification and assessment of climate change resilience within environmental assessment is an area of emerging practice. There is no single prescribed format for undertaking such assessments. therefore, the approach adopted to undertaking and reporting the assessment has drawn on good practice from other similar developments and studies and is aligned with existing guidance such as that of IEMA (2020).

This assessment of climate change resilience is undertaken for the Proposed Development to identify potential climate change impacts, and to consider their potential consequence and likelihood of occurrence, taking account of the measures incorporated into the design of the Proposed Development. The CCR review identifies potential climate change impacts using climate change projections, available from the EPA (2015), and considers their likelihood of occurrence and consequence to the infrastructure and assets of the Proposed Development.

10.3.3 Limitations and Assumptions

As is usual with projects of this nature, a detailed design of the enabling works and construction activities has not been undertaken for this stage of design, the GHG emissions calculations are based on the following conditions using a mixture of data from similar projects, industry benchmarks and professional judgement. The following assumptions, inclusions and exclusions, made on a precautionary basis, have been used in this calculation:

- The embodied carbon within materials and transportation of materials has the potential to contribute to GHG emissions. GHG emissions for construction of the Proposed Development have been calculated based on estimated material quantities in inverters, transformers, switchgear, li-on batteries from similar projects. Material quantities for the Proposed Development have been estimated using published Lifecycle

Assessments as benchmarks. Harrison *et al.* (2010) was used to estimate material quantities within transformers assuming that, by weight, 52% of each transformer is steel, 14% is copper, 22% is oil, and 12% is 'other' (plastic, aluminium, glass, iron, paint and rubber). Embodied energy benchmarks for PV inverters and battery energy storage systems (BESS) inverters have been assumed using Rajput and Singh (2017) to calculate kilograms of CO_2 equivalent ($kgCO_2e$).

- Based on similar studies (Sunnica, 2020), it is assumed that many of the materials will have a long-distance transportation due to components being sourced from abroad (China or South Korea) and as such emissions from transportation of materials are relatively high in comparison to other schemes. The DEFRA 2021 emissions factors for 'Rigid HGV – 7.5-17t' for 100% laden HGV transport, and 'Products tanker – Average' for sea freight have been applied, including WTT emissions.
- At this stage, the construction worker distance travelled is unknown. Professional judgement and conservative estimates have been used to calculate GHG emissions associated with worker transportation to site. An average distance of 30km has been assumed for workers to travel to site, using the UK Government emissions factor for an 'Average Car' including well-to-tank (WTT) emissions. It is assumed that there will be 50 workers during peak construction phases travelling to site each day. Also based on similar studies, the GHG calculations have assumed a two-year construction period with a five-day working week.
- It has been assumed that 15% of construction waste would be sent to landfill and 85% would be recovered, in line with standard permit requirements for an 85% recovery rate for construction and demolition wastes.

10.4 Baseline Environment

10.4.1 Lifecycle GHG Impact Assessment

The baseline conditions for the GHG impact assessment is a Do Minimum scenario where calculations mainly consist of the carbon stock that will be lost assuming the Proposed Development does not go ahead. The land within the boundary of the Proposed Development currently consists of agricultural land.

10.4.2 Climate Change Resilience Review

The current baseline for the climate change resilience assessment is the current climate in the location of the Proposed Development. Historic climate data obtained from Met Éireann (Met Éireann, 2021) recorded at Dunsany Meteorological Station (the closest station to the Site for which sufficient historic data was available, approximately 5km north of the Site) for the 20-year period of 1981-2000, is summarised in Table 10.3.

Table 10.3: Historic Climate - Current Baseline

Climatic Factor	Month	Value
Average annual maximum daily temperature (ºC)	-	13.1
Warmest month on average (ºC)	July	19.5
Coldest month on average (ºC)	February	2.6
Mean annual rainfall levels (mm)	-	747
Wettest month on average (mm)	December	77
Driest month on average (mm)	July	47

The future baseline will be used to determine the resilience of the Proposed Development to climate change and to identify where potential climate adaption measures are required. EPA (2015) regional climate model projections for Ireland present the following projections for mid-century (2041-2060), against a baseline period of 1981-2000:

- Temperature projections suggest an increase in mean annual temperatures of 1.2-1.6°C, with the largest increases expected in the east of the country.
- Average annual rainfall is projected to decrease.
- Rainfall projections indicate a significant decrease in average precipitation levels for summer. "Likely"[12] reductions in summer rainfall of 3% to 20% are anticipated.
- Projections for average winter precipitation are less certain.

[12] where over 66% off the ensembles agree

- "Likely" increases in the number of 'wet days' and 'very wet days' for winter of 24% and 30%, respectively.
- The number of extended dry periods (defined as at least 5 consecutive days for which the daily precipitation is less than 1mm) is also expected to increase over the year, particularly in summer and autumn, with "likely" values ranging from a 12% to 40% increase.
- Storms affecting Ireland are anticipated to decrease in frequency, but increase in severity, increasing the risk of damage to infrastructure.
- Wind energy is projected to decrease in spring summer and autumn, while projected increases in wind energy in the winter were found to be statistically insignificant.

Recent climate hazards experienced by the County include extreme rainfall and strong winds, flooding, heatwaves and droughts (Met Éireann, 2021a. MCC 2020a). Climate change-induced changes to these variables are summarised in Table 10.4.

Table 10.4: Summary of Future Climatic Projections

Climate Variable	Projected Change in Likelihood
Temperature	
Average annual temperature	↑
Average summer temperature	↑
Average winter temperature	↑
Rainfall	
Annual rainfall	↓
Average summer rainfall	↓
Average winter rainfall	↑
Extreme Events	
Heat waves	↑
Droughts	↑
Storms- frequency	↓
Storms- intensity	↑

10.5 Potential Impacts

10.5.1 Lifecycle GHG Impact Assessment

10.5.1.1 Construction Phase

The total GHG emissions from construction are estimated to be 5,763 tCO_2e. The primary GHG emissions sources and the breakdown of the calculated GHG emissions are shown in Table 10.5. The greatest contribution to construction emissions is from worker travel, accounting for 35% of construction emissions.

Table 10.5: Construction GHG Emissions

Project Activity/Emissions Source	Total GHG Emissions (tCO_2e)	Percentage of Construction Emissions
Loss of carbon sink (land use change)	291	5%
Construction materials/embodied carbon in products	610	11%
Water use	0.03	0%
Fuel use	297	5%
Transport of materials	1,383	24%
Worker travel	2,025	35%
Waste disposal	1,158	20%
Total tCO_2e construction stage emissions	5,763	-
Annual tCO_2e from construction stage	2,882	-

Project Activity/Emissions Source	Total GHG Emissions (tCO_2e)	Percentage of Construction Emissions
2-year construction period		

To contextualise the magnitude of impact, these emissions have been compared to the current Irish national GHG inventory (EPA, 2021). Emissions from the construction phase of the Proposed Development would not contribute to more than 0.01% of the latest Irish GHG inventory. The magnitude of effect during construction would therefore be considered low and the significance of effects would be minor adverse.

10.5.1.2 Operational Phase

The total GHG emissions from operation of the Proposed Development are estimated to be 15,493 tCO_2e. The primary GHG emissions sources and the breakdown of the calculated GHG emissions are shown in Table 10.6. The operational GHG footprint is considered to reflect a robust worst-case as the calculations have been carried out using current emissions factors. Embodied carbon and emissions associated with energy and fuel use are anticipated to be lower in the future as a result of grid decarbonisation and machinery and vehicle electrification in line with Ireland's net zero carbon emissions target for 2050.

Table 10.6: Operational GHG Emissions

Project Activity/Emissions Source	Total GHG Emissions (tCO_2e)	Percentage of Annual Operational Emissions
Operational energy use[13]	227	59%
Worker transportation	12	3%
Maintenance	148	38%
Annual tCO2e (1st year of operation)	387	-
Total tCO2e of design life occupied (40 years)	15,493	-

The Climate Action Plan 2023 sets a binding target of cutting greenhouse gases in Ireland by 51% by 2030 based on a 2018 baseline, with the aim of reaching carbon neutrality by 2050. Ireland's GHG emissions in 2018 were 60,935 $ktCO_2e$, and a 51% reduction would see 2030 emissions being 29,858 $ktCO_2e$ (SEAI).

Emissions from the operational phase of the Proposed Development would not contribute to more than 0.03% of the 2030 reduction target levels. The magnitude of effect during operation would therefore be considered low and the significance of effects would be minor adverse. The operational GHG footprint is considered to reflect a worst-case as the calculations have been carried out using current emissions factors. Embodied carbon and emissions associated with energy and fuel use are anticipated to be lower in the future as a result of grid decarbonisation and machinery and vehicle electrification in line with Ireland's net zero carbon emissions target for 2050.

10.5.2 Climate Change Resilience Review

During the construction process, receptors may be vulnerable to a range of climate risks. These could include:

- An inaccessible construction site due to severe weather event (flooding, snow and ice, storms) restricting working hours and delaying construction.
- Health and safety risks to the workforce during severe weather events.
- Unsuitable conditions (due to very hot weather or very wet weather, for example) for certain construction activities.
- Damage to construction materials, plant and equipment, including damage to temporary facilities/assets within the site boundary, such as offices, compounds, material storage areas and worksites, for example from stormy weather.

During the operational phase, the Proposed Development may be vulnerable to a range of climate risks. These could include:

- Increased frequency and severity of extreme weather events (such as heavy and/or prolonged precipitation, storm events and heatwaves) leading to:
- Damage to utilities due to stormy periods and intense rainfall.

[13] This is for energy consumed during the night. It is assumed that energy consumed during the day is from the solar PV park rather than the grid.

- Flooding from drainage systems during intense or prolonged rainfall leading to loss or inability of the substation to function.
- Increased winter precipitation leading to surface water flooding and standing waters.
- Surface infrastructure foundations affected by summer drought and consequent ground movement, leading to mechanical damage.
- Increased summer and winter temperatures leading to increased heat stress on infrastructure (e.g. Switchgear affected by temperature rise, reducing rating).

10.6 Mitigation Measures

It is recommended that the following GHG mitigation measures are implemented:

- An Outline Construction Environmental Management Plan (oCEMP) is included as part of this planning application. The oCEMP will be developed by the contractor into a detailed CEMP and implemented by the contractor during the construction phase of the Proposed Development. The CEMP sets out various measures required by contractors to reduce GHG emissions, including:
    - Specification of locally sourced materials with lower embodied carbon content where feasible, in line with circular economy principles.
    - Turning off machinery engines when not in use.
    - Ensuring regular maintenance of construction machinery.
    - Handling materials efficiently on site to minimise the waiting time for loading and unloading, thereby reducing potential emissions.
    - A requirement for the appointed contractor to implement an energy management system (EMS) for the duration of the works.

In terms of resilience to climate change, a Flood Risk Assessment (FRA) (Appendix B for the Proposed Development was carried out which identified any fluvial, pluvial and groundwater flood risks. Also, the Meath County Council contingency plan (MCC, 2020b) sets out the County Council's response to emergencies such as severe weather conditions affecting the population, infrastructure or the environment. For example, the Met Éireann provide a 24-hour service of early warning systems for severe weather. The objectives of MCC's response in an emergency include protection and care of the public at times of vulnerability. early and appropriate response. efficient, coordinated operations. There is also a specific Flood Emergency Plan which provides for a timely response by MCC staff (MCC, 2020a).

It is recommended that the following CCR mitigation measures are implemented:

- The Substation to be constructed at a level above any potential flooding.
- Have a policy in place for flood defence which is reviewed on a regular basis. For example, portable flood defence equipment deployed at strategic locations (e.g. aqua sack, barriers, high speed pumps).
- Substation equipment (e.g. cables) to be specified for use in higher temperatures projected in the future.
- Maximise the use of natural ventilation to keep internal temperatures within plant and equipment operating within their optimum parameters.

10.7 Residual Effects

As per the EPA, the effects from the impacts that remain after all assessment and mitigation are referred to as 'Residual Effects' (EPA, 2017). There would be unavoidable GHG emissions resulting from both the construction phase and the operational phase of the Proposed Development as materials, energy use, fuel use, and transport would be required. Table 10.7 provides a summary of residual effects on climate, following the implementation of mitigation and monitoring measures.

Table 10.7: Climate Summary of Potential Effects

Description of Impact	Sensitivity of Receptor	Nature of Effect /Geographic Scale	Magnitude of Effect	Initial Classification of Effect (with embedded mitigation	Additional Mitigation	Residual Effect Significance
Construction						

Description of Impact	Sensitivity of Receptor	Nature of Effect /Geographic Scale	Magnitude of Effect	Initial Classification of Effect (with embedded mitigation)	Additional Mitigation	Residual Effect Significance
GHG emissions	High	Long term/ Global	Low	Minor	None	Minor (Low significance)
Operation						
GHG emissions	High	Long term/ Global	Low	Minor	None	Minor (Low significance)

10.8 Cumulative Effects

Significant impacts to climate are not predicted as a result of the listed projects in Table 1.2 as there are no direct emissions to atmosphere during operation. Construction vehicles and machinery may give rise to some GHG emissions during construction, however, due to the small scale of the development and the predicted low volume of machinery required GHG emissions are not considered to be significant. The cumulative impact to climate is overall imperceptible and therefore there is no potential for any significant negative direct nor indirect cumulative impacts to arise from the Proposed Development in combination with the listed projects Table 1.2.

10.9 Summary

10.9.1 Lifecycle GHG Impact Assessment

- The construction phase has been quantitatively assessed in terms of expected GHG emissions arising from on-site construction activities, loss of carbon sink through land use change, embodied carbon in the construction materials, transportation of construction materials and workers, and waste disposal.
- In relation to Ireland's national GHG inventory, the impact of GHG emissions during the construction phase of the Proposed Development have been found to be **minor** (low significance).
- The operational phase has been quantitatively assessed in terms of expected GHG emissions arising from operational energy use.
- In relation to Ireland's national GHG inventory, the impact of GHG emissions during the operation of the Proposed Development have been found to be **minor** (low significance).

There would be unavoidable GHG emissions resulting from both the construction phase and the operational phase of the Proposed Development. Although the effects are not classified as major, all GHG emissions have the potential to be significant, therefore it is recommended that a CEMP is prepared prior to construction.

10.9.2 Climate Change Resilience Review

During the construction process, receptors may be vulnerable to a range of climate risks. These could include:

- An inaccessible construction site due to severe weather event (flooding, snow and ice, storms) restricting working hours and delaying construction.
- Health and safety risks to the workforce during severe weather events.
- Unsuitable conditions (due to very hot weather or very wet weather, for example) for certain construction activities.
- Damage to construction materials, plant and equipment, including damage to temporary facilities/assets within the site boundary, such as offices, compounds, material storage areas and worksites, for example from stormy weather.

During the operational phase, the Proposed Development may be vulnerable to a range of climate risks. These could include:

- Increased frequency and severity of extreme weather events (such as heavy and/or prolonged precipitation, storm events and heatwaves) leading to:
    - Damage to utilities due to stormy periods and intense rainfall.
    - Damage to drainage systems due to flooding from intense rainfall.
    - Flooding from drainage systems during intense or prolonged rainfall.
- Increased winter precipitation leading to surface water flooding and standing waters.

- Increased summer and winter temperatures leading to increased heat stress on infrastructure and assets.

It is recommended that climate change resilience measures are built into the design of the Proposed Development which considered to be appropriate in the context of the climate change projections, as outlined in Section 10.6.

11. Noise and Vibration

11.1 Introduction

This chapter assesses the potential noise impacts associated with the Proposed Development. The potential noise impacts arising from the Proposed Development have been considered under the following scenarios:

- Short-term noise impacts arising during the construction and commissioning phase.
- Long term noise impacts arising during the operational phase.

No significant vibration generating activities are expected during the construction or operational phases of the Proposed Development. Therefore, vibration impacts have been scoped out of the assessment.

Refer to Chapter 0 for a full description of the Proposed Development.

11.2 Legislation, Policy and Guidance

11.2.1 National Policy Objective 65

National Policy Objective 65 identified in the Government of Ireland document Project Ireland 2040 National Planning Framework14 states the following aim:

> *"Promote the pro-active management of noise where it is likely to have significant adverse impacts on health and quality of life and support the aims of the Environmental Noise Regulations through national planning guidance and Noise Action Plans."*

11.2.2 Meath County Development Plan 2021-2027

The Meath County Development Plan 2021-202715 states the council's noise policy:

> *"To continue to monitor air and noise quality results submitted from selected locations throughout the County in co-operation with the Health Service Executive and the Environmental Protection Agency."*

The County Meath Noise Action Plan (2019)[16], states:

> *"The Council will adopt a strategic approach to managing environmental noise pollution and will aim to assess and prioritise the limitation of environmental noise levels where they are potentially harmful and protect areas which are considered to be desirably quiet or which offer a sense of tranquillity. The Council will take cognisance of acoustical planning in the planning process to endeavour to ensure that future developments include provisions to protect the population from the harmful effects of environmental noise in the interests of residential amenity and public health."*

11.2.3 NRA Guidelines

Transport Infrastructure Ireland (TII)17 is the only government body in Ireland to publish construction noise limits, which are presented in the document *Guidelines for the Treatment of Noise and Vibration in National Road Schemes*[18] (NRA Guidelines).

It is acknowledged the limits presented relate to construction works for road schemes, however it is assumed that noise sensitive receptors are likely to be equally sensitive to construction noise from other project types. The criteria presented in this document are given in Table 11.1.

Table 11.1 Maximum Permissible Noise Levels at the Façade of Dwellings During Construction

Period	$L_{Aeq,1hr}$ dB	$L_{p(max)\ slow}$ dB
Monday to Friday - 07:00 to 19:00	70	80
Monday to Friday - 19:00 to 22:00	60*	65*
Saturday - 08:00 to 16:30	65	75

[14] Government of Ireland (2018). *Project Ireland 2040 National Planning Framework.*
[15] Meath County Council (2021). *Meath County Development Plan 2021-2027.*
[16] Meath County Council (2019). County Meath Noise Action Plan.
[17] formerly the National Roads Authority.
[18] National Roads Authority (2004). *Guidelines for the Treatment of Noise and Vibration in National Road Schemes*

Period	$L_{Aeq,1hr}$ dB	$L_{p(max)\ slow}$ dB
Sundays and Bank Holidays - 08:00 to 16:30	60*	65*

* Construction activity at these times, other than that required in respect of emergency works, will normally require the explicit permission of the relevant local authority.

Source: Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRA 2004)

11.2.4 BS 5228

The potential noise and vibration impacts arising from construction site activities can also be assessed accordance with the methods and guidance in BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites'19 (BS 5228).

The 'ABC' method (detailed in BS 5228 Section E.3.2) has been used to develop criteria for use in this assessment. Using this method, the construction noise limit for the Proposed Development can be determined by rounding the ambient noise level at receptor positions to the nearest 5 dB and then comparing this level to the Category A, B and C values given in BS 5228, detailed in Table 11.2.

Table 11.2 BS 5228 Construction Noise Criteria

Assessment Category and Threshold Value Period	Threshold Value L_{Aeq},T dB		
	Category A (a)	Category B (b)	Category C (c)
Night-time (23:00-07:00)	45	50	55
Evenings and weekends (d)	55	60	65
Daytime (07:00-19:00) and Saturdays (07:00-13:00)	65	70	75

NOTE 1: A potential significant effect is indicated if the $L_{Aeq,T}$ noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.

NOTE 2 If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise.

NOTE 3: Applies to residential receptors only.

(a) Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

(b) Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as Category A values.

(c) Category C: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than Category A values.

(d) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays, 07:00 – 23:00 Sundays.

Source: BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites (BSI, 2014)

11.2.5 NG4

Guidance on permissible noise emission limits for industrial facilities such as the Proposed Development is contained in the document *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities* (NG4)[20].

NG4 provides criteria for use in noise assessments which vary depending on whether the location of the development is in a 'Quiet Area' or an 'Area of Low Background Noise'.

A 'Quiet Area' is defined as a location that meets the following criteria:

- At least 3km from urban areas with a population >1,000 people.
- At least 10km from any urban areas with a population >5,000 people.
- At least 15km from any urban areas with a population >10,000 people.
- At least 3km from any local industry.
- At least 10km from any major industry centre.
- At least 5km from any National Primary Route, and.
- At least 7.5km from any Motorway or Dual Carriageway.

[19] BSI Group (2014) BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites*
[20] EPA (2016). *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities*

An 'Area of Low Background Noise' is a location that meets 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.

The resulting criteria presented in NG4 are detailed in Table 11.3.

Table 11.3 Recommended Noise Limit Criteria

Scenario	Daytime Noise Criterion dB $L_{ar,T}$ (0700 to 1900 hours)	Evening Noise Criterion dB $L_{ar,T}$ (1900 to 2300 hours)	Night-time Noise Criterion dB $L_{ar,T}$ (2300 to 10700 hours)
Quiet Area	Noise from the licenced site to be at least 10 dB below the average daytime background noise level measured during the baseline survey	Noise from the licenced site to be at least 10 dB below the average evening background noise level measured during the baseline survey	Noise from the licenced site to be at least 10 dB below the average night-time background noise level measured during the baseline survey
Areas of Low Background Noise	45 dB	40 dB	35 dB
All other Areas	55 dB	50 dB	45 dB

Source: Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (EPA,2016)

The criteria are given in terms of a Rated Noise Level ($L_{ar,T}$) which is defined in NG4 as:

> *The Rated Noise Level, equal to the L_{Aeq} during a specified time interval (T), plus specified adjustments for tonal character and/or impulsiveness of the sound.*

The method for applying adjustments for tonal and/or impulsive characteristics are described in NG4 and have been considered in this assessment.

11.2.6 Design Manual for Roads and Bridges LA111 Noise and Vibration – Version 2 (LA111)

No specific Irish guidance containing criteria for noise impacts from construction traffic has been published.

The impact of construction phase traffic has therefore been considered in accordance with the criteria provided in the Highways England document Design Manual for Roads and Bridges LA111 Noise and vibration (LA111). These criteria are given in terms of change in noise level and are presented in Table 11.4.

Table 11.4 Magnitude of Impact at Noise Sensitive Receptors from Construction Traffic

Change in Sound Level (LA10,18hr dB)	Magnitude of Impact (Short-Term)
0	No Change
0.1 to 0.9	Negligible
1.0 to 2.9	Minor
3.0 to 4.9	Moderate
5+	Major

11.2.7 Calculation of Road Traffic Noise (CRTN)

Noise levels arising from road traffic can be calculated using the methodology described in the Calculation of Road Traffic Noise (CRTN)21. LA111 and the NRA Guidelines refer to the CRTN methodology for determining the potential increase in noise levels resulting from changes to road traffic flows.

Noise from a stream of traffic is not constant, but to assess the noise impact a single figure estimate of the overall noise level is necessary. The index adopted in CRTN to assess traffic noise is LA10,18h. This value is determined by taking the highest 10% of noise readings in each of the 18 one-hour periods between 06:00 and 00:00, and then calculating the arithmetic mean. As noted in LA111, a reasonably good correlation has been shown to exist between this index and the perception of traffic noise by residents over a wide range of noise exposures.

[21] Department of Transport, Welsh Office (1988). *Calculation of Road Traffic Noise (CRTN).* HMSO, London

11.3 Methodology

11.3.1 Study Area

The study area for on-site construction and operational noise and vibration is defined as the area extending from the Site which includes the nearest sensitive receptor (NSR) locations.

If compliant levels are noise and vibration are predicted at the location of the nearest NSR locations, it follows that compliant levels will be achieved at all other locations.

11.3.2 Determination of the Baseline Environment

A baseline survey has not been carried out at the site of the Proposed Development. Instead, assumptions have been made based on a desktop assessment and professional judgement. This is discussed further below.

11.3.3 Determination of Sensitive Receptors

The closest noise sensitive receptors are 950m east, 1km southwest, and 875m west of the Proposed Development, as shown in Figure 11-1.

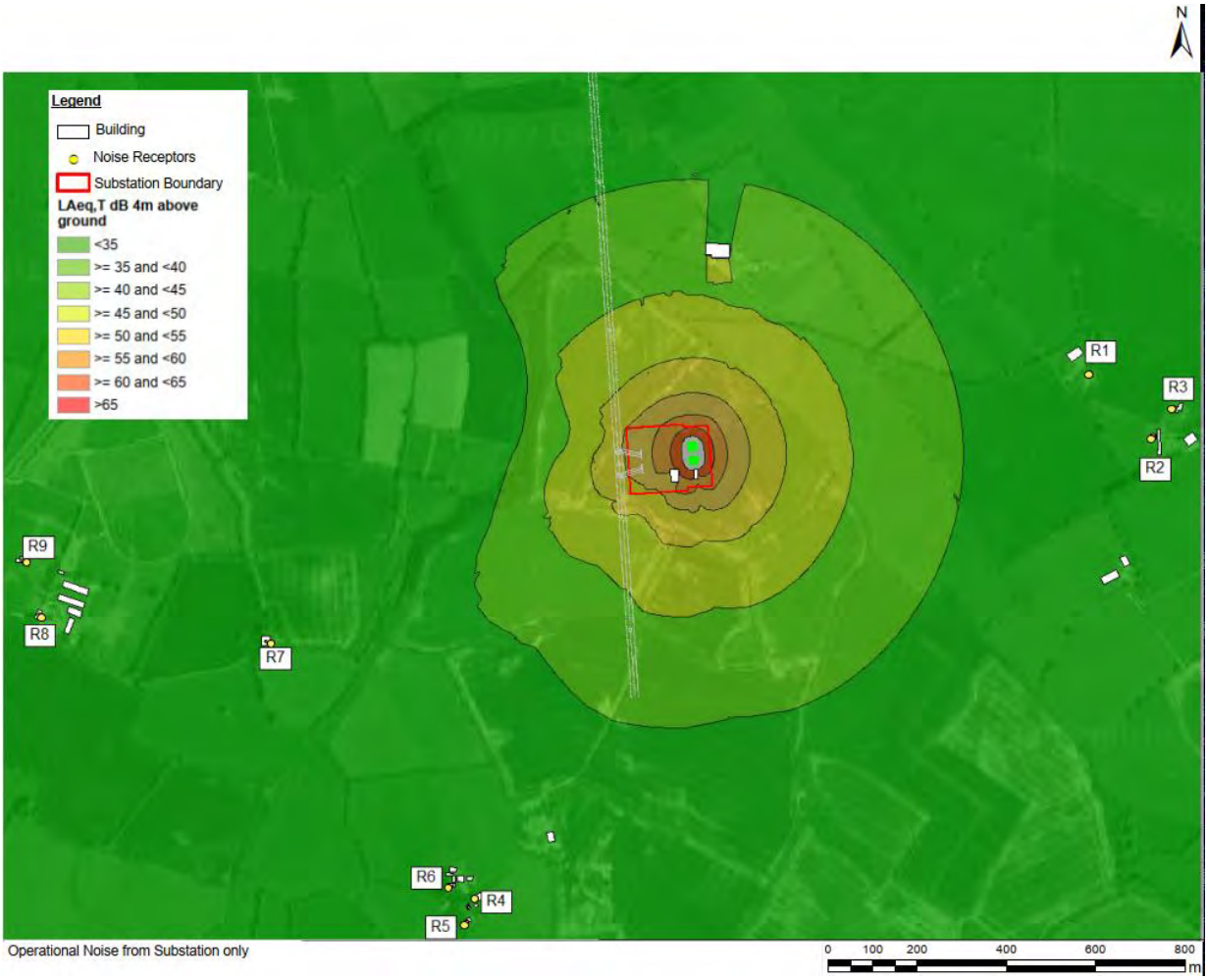


Figure 11-1 Operational Noise Contour Grid from Substation

11.3.4 Describing Potential Effects

The Environmental Protection Agency (EPA) document *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*[22] are guidelines written to facilitate EU Directive 2014/52/EU in the Republic of Ireland. This document covers the assessment and description of environmental impacts.

[22] EPA (2022). *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*.

Effects are described under various headings, including Quality, Significance, Extent and Context, Probability, Duration and Frequency. Of particular relevance are the definitions of significance and duration, which have been reproduced in Table 11.5 and Table 11.6.

Table 11.5 Describing the Significance of Effects

Aspect	Description
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.
Source: Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022).	

Table 11.6 Describing the Duration and Frequency of Effects

Aspect	Description
Momentary Effects	Effects lasting from seconds to minutes
Brief Effects	Effects lasting less than a day
Temporary Effects	Effects lasting less than a year
Short-Term Effects	Effects lasting from one to seven years
Medium-Term Effects	Effects lasting from seven to fifteen years
Long Term Effects	Effects lasting from fifteen to sixty years
Permanent Effects	Effects lasting over sixty years
Reversible Effects	Effects that can be undone, e.g. through remediation or restoration
Frequency of Effects	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)
Source: Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022)	

11.4 Baseline Environment

The Proposed Development site is set in a rural area with agricultural land, farm buildings and a few residential properties nearby. The baseline acoustic environment is expected to comprise low levels of road traffic sound and agricultural sources (birdsong, animal sounds etc.).

11.5 Potential Impacts

Noise and vibration from the Proposed Development will potentially occur during the construction and operational phases of the Proposed Development. Construction activities will include the following elements as shown in Table 11.7.

Table 11.7 Main Construction Elements and Associated Activities

Element	Description of activities
Site Preparation and Enabling Works	• Site establishment. • Site clearance. • Construction of temporary site drainage. • Bulk earthworks including excavation and removal of topsoil/soil and berm construction. • Minor earthworks at passing bay locations. • Infilling of material for internal access road, site compound and laydown area. • Landscaping/reinstatement.

Element	Description of activities
Underground Cables	• Trenching and installation of underground cables, cable joint bays and pulling pits. • Installation of the associated above ground infrastructure (cable marker posts, communication boxes and access points).
OHL Loop-In	• The site preparation required for the loop-in overhead lines will be limited with minimal site clearance required. • Excavation and berm construction. • Pouring of concrete foundations for mast structures. • Backfill and tower body installation.
Substation Construction	• Pouring of concrete foundations (potentially piling works if required). • Erection of steel frame and cladding walls and roofs for any required buildings. • Permanent foul and surface water drainage works. • Installation of above ground and underground cabling. • Electrical installation, commissioning and operation. • Other miscellaneous civil works including erection of fencing, provision of site entrance, paving etc.

Construction activities, and associated noise emissions, will gradually phase out from pre-construction followed by commissioning and testing of the Substation and equipment. The highest noise levels are expected to occur during the early stages of site preparation and enabling works, mainly due to earthwork processes. Increases in road traffic on the existing road network may also give rise to noise impacts, again principally due to vehicle movements associated with earthworks (i.e., transportation of material).

Once constructed, the Proposed Development will incorporate some sound generating elements, in particular two 180 MVA transformers. Potential noise impacts associated with these sources are discussed further below. Due to the nature of the Proposed Development, once constructed, no significant increase in road traffic is expected on the existing road network. Therefore, no assessment of operational phase road traffic noise has been carried out.

11.5.1 Construction Phase

11.5.1.1 Construction

Noise limits for construction works are provided by the NRA Guidelines and BS 5228 and described in Section 10.2. The NRA Guidelines provide fixed limits, whereas BS 5228 provides limits which vary depending on the ambient sound levels at the receptors.

As the ambient sound levels at the receptors are unknown at the time of this assessment the lowest noise limit provided by the 'ABC' method in BS 5228 (Category A threshold values) should be used. Where the NRA guidelines and BS 5228 differ, the most stringent criteria will be used.

Category A threshold values from BS 5228 and the maximum permissible sound levels from the NRA guideline have been compared and the most stringent criteria chosen. For different times of day these are outlined in Table 11.8.

Table 11.8 Construction Noise Limit at Receptors

Period	Noise limit LAeq, T
Weekday Daytime (07:00 to 19:00)	65
Weekday Evening (19:00 to 23:00)	55
Saturday Mornings (07:00 to 13:00)	65
Saturday Afternoons and Evenings (13:00-23:00)	55
Sundays and Bank Holidays Daytime (08:00 to 16:30)	55
Night-time (23:00-07:00)	45

Table 2.1 in Section 2.1.2 describes the stages of construction and the activities that will be involved. At the time of writing, the construction programme for the Proposed Development is at a relatively early stage. Therefore, the details required to complete a quantitative assessment of construction noise were not available. Instead, a qualitative assessment has been carried out based on the best practice recommendations presented in BS5228.

For the construction of the substation the distances between the construction site and nearby sensitive receptors are relatively large (950m or greater, depending on the receptor). Therefore, it is expected to be relatively straightforward to achieve the limits detailed in Table 11.8 through the adoption appropriate noise mitigation and site management measures. These are discussed further in Section 11.6.

The construction of the cable route follows the L62051 where there are properties on both sides of the road at quite small distances (some at less than 22 meters). Due to the small distances involved it is likely that the limits detailed in Table 14-7 are exceeded at the receptors during the construction. However, the length of time the noise limit is exceeded at each receptor is not anticipated to be long las long as the construction moves along the route.

11.5.1.2 Changes to Traffic Due to Construction

Full details of the construction phase traffic flows are not available at the time of writing this chapter. However, indicative calculations carried out based on the landscaping requirements indicate that, at peak periods additional traffic movements are expected to peak at 80 no vehicles per day, with 30 of those movements being HGVs on the existing road network per day to service the construction of the Proposed Development.

Baseline traffic flows are not known at this time. However, this is a relatively small number of additional vehicles and therefore is not expected to result in a sufficient increase in traffic levels to result in a significant adverse impact.

11.5.2 Operational Phase

A 3D sound model was constructed using CadnaA 2020 acoustic modelling software. Details of the sound modelling methodology is given in Section 11.3.

The inputs to the model are as follows:

- Topographical information, site location and layout drawing produced by AECOM.
- Typical transformer dimensions provided by Energia.
- Google earth satellite imagery.

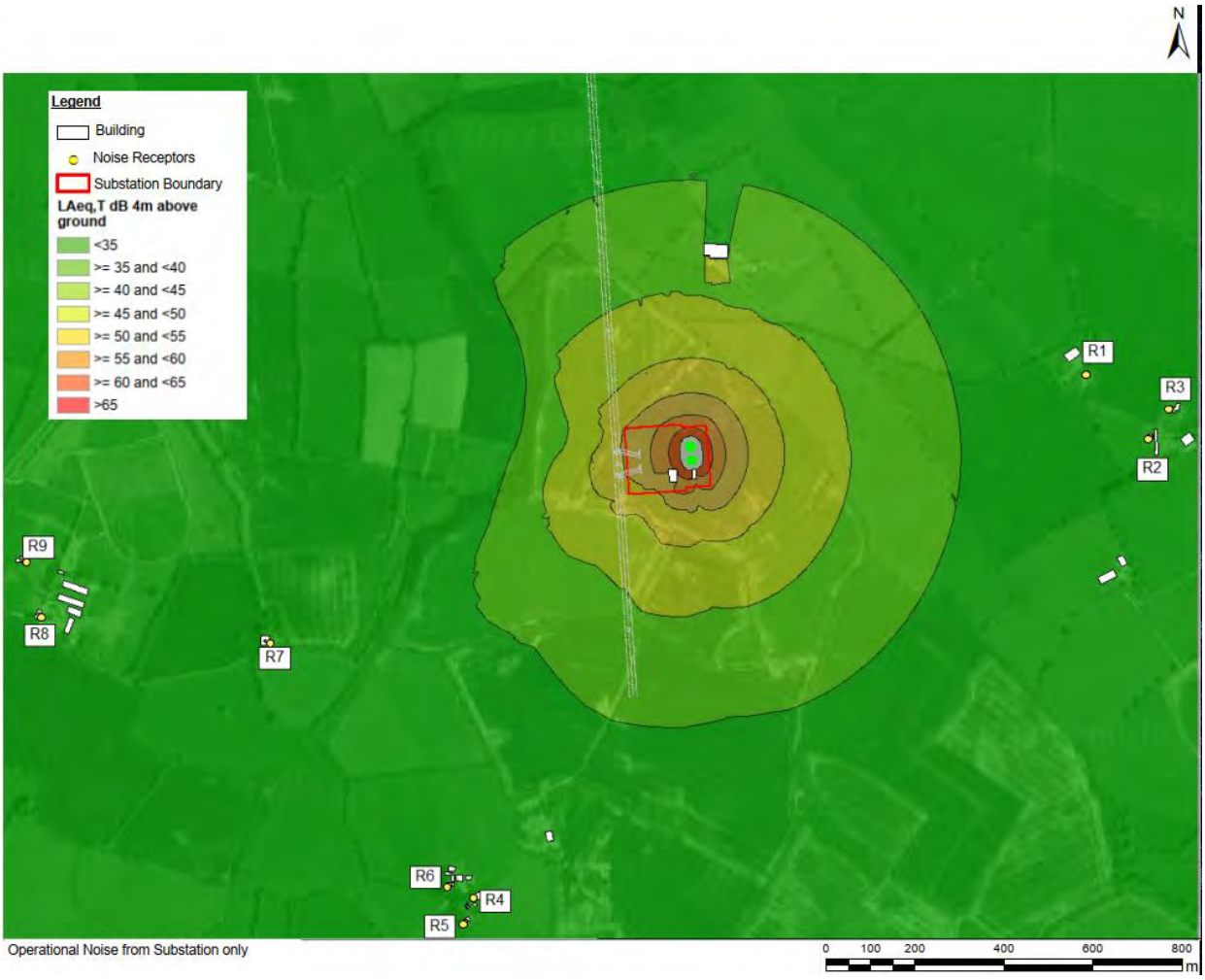
The sound sources at the Proposed Development are understood to be two 180 MVA transformers. No other significant sound sources are proposed.

The applicant has confirmed the transformers will not have a sound pressure level greater than 75 dB $L_{Aeq,T}$ at 1 metre. This will be controlled via a contractual arrangement with the nominated supplier. It has been assumed there is no acoustic enclosure or barrier surrounding the transformer for a worst-case assessment.

The resulting sound levels at all receptors are predicted to be below the night-time criterion for ‘Areas of Low Background Noise’ (35 dBA). The Proposed Development is approximately 5.6km southwest of the M3, therefore it does not meet the criteria set out in NG4 for a ‘Quiet Area’. On this basis, no adverse impact is predicted with regards operational phase sound emissions.

Figure 11-2 shows the noise contours associated with the substation operational noise modelling.

Figure 11-2 Substation Operational Noise Contours



11.6 Mitigation Measures

11.6.1 Construction Phase

All plant items used during the construction phase of the Proposed Development should comply with standards outlined in 'European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations,' (1998).

Reference is made to 'BS 5228: Noise control on construction and open sites', which offers detailed guidance on the control of noise from construction activities.

The following various practices should be adopted during construction, including:

- Limiting the hours during which noisy site activities occur to 07.00-19.00 Monday to Friday and 08.00 to 14.00 on Saturday inclusive.
- Appointing a site representative responsible for matters relating to noise.
- Establishing channels of communication between the contractor/applicant, MCC and residents.

Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These include:

- Selection of construction plant with low inherent potential for generation of noise and/or vibration.
- Erection of temporary barriers around items such as construction generators or high duty compressors. For maximum effectiveness, the barrier will be positioned as close as possible to either the noise source or receiver. The barrier will be constructed of material with a mass of > 7kg/m^2 and have no gaps or joints in the barrier material. As a rough guide, the length of a barrier will be five times greater than its height. A shorter barrier would be bent around the noise source, so no part of the noise source is visible from the receiving location.

- Siting of noisy construction plant as far away from sensitive properties as permitted by site constraints.

With the above mitigation in place, there should be no impacts due to construction noise or vibration.

11.6.2 Operational Phase

No operational phase mitigation is expected to be necessary.

11.7 Residual Effects

Following the inclusion of the mitigation measures described in Section 11.6, no residual significant effects from noise and vibration are anticipated from the Proposed Development at the nearby receptors.

11.8 Cumulative Effects

Should the construction of the listed projects in Table 1.2 and the Proposed Development occur concurrently, there is potential for temporary indirect cumulative effects from noise and vibration, however, the listed projects are at least 4.6km away (with the exception of the Woodtown Solar Farm) and will not result in any cumulative noise and/or vibration impact to the surrounding environment. There are no potential significant noise sources identified with respect to Woodtown Solar Farm, and therefore no operational noise impacts are predicted. On the basis of the assessments presented, the cumulative impact of this development coupled with the Proposed Development under consideration here is therefore negligible. Therefore, there is no potential for any significant negative direct nor indirect cumulative impacts to arise from the Proposed Development in combination with the listed projects.

11.9 Summary

The potential noise and vibration impacts arising from the Proposed Development have been considered with regards to short-term noise impacts arising during the construction and commissioning phase and long-term noise impacts arising during the operational phase.

No significant vibration generating activities are expected during the construction or operational phases. Therefore, vibration impacts have been scoped out of the assessment. Furthermore, due to the nature of the Proposed Development, no significant increase in road traffic is expected on the existing road network during the operational phase. Therefore, no assessment of operational phase road traffic noise has been carried out.

A qualitative assessment of construction phase noise emissions was carried out. Provided the measures detailed in Section 10.6 are adopted, no significant adverse impact is expected arising from noise during the construction phase.

A quantitative assessment of operational phase noise emissions was carried out. The resulting sound levels at all receptors are predicted to be below the night-time criterion for ‘Areas of Low Background Noise’ (35 dBA) and hence no adverse impact is predicted with regards operational phase sound emissions.

No cumulative effects from other developments are expected.

12. Material Assets

12.1 Introduction

This section presents an assessment of the potential impacts of the Proposed Development on material assets. For each material asset assessed, this chapter defines the study area. The methodology used for developing the baseline and impact assessment. Provides a description of the baseline environment. Presents the findings of the impact assessment.

Reference should be made to Chapter 0 for a full description of the Proposed Development.

12.2 Legislation, Policy and Guidance

This section evaluates the impacts, if any, which the Proposed Development may have on Material Assets as defined in Directive 2014/52/EU, the EPA Guidelines 2022 and EPA Draft Advice Notes for EIS 2015.

12.3 Methodology

The EPA's 'Guidelines on the information to be contained in an Environmental Impact Assessment Report' (EPA, 2022) describes material assets to be taken to mean 'built services' (i.e., utilities networks including electricity, telecommunications, gas, water supply and sewerage), 'waste management' and 'infrastructure' (e.g. roads and buildings). The following section provides an assessment of impacts on:

- Utilities networks including:
  - Electricity network.
  - Telecommunications (including phone and broadband).
- Gas distribution networks.
- Water supply networks.
- Drainage network (including stormwater and sewerage effluent).
- Infrastructure: land use and property (non-agricultural). An assessment of impacts on private properties and commercial properties, including full or partial acquisitions, demolition and/or severance, or other changes likely to alter the character and use of the surroundings and therefore effect viability of property/land use.

12.3.1 Study Area

This chapter assesses ownership and access (including buildings and other structures), built services and infrastructure. The potential impacts on built services and infrastructure, if any, are assessed in terms of the following:

- Power and electricity supply.
- Telecommunications.
- Surface water infrastructure.
- Foul drainage infrastructure.
- Water supply.

12.3.2 Determination of the Baseline Environment

A desktop assessment of client provided, and publicly available information was undertaken to determine the baseline utility arrangements within the study area. The information reviewed included the Site utility plans and preliminary design information. Data gathered included:

- Location and description of existing utilities network.
- Location of residential development land and number of units that would be affected by the Proposed Development.
- Existing land uses in the study area including, residential and commercial properties, amenity and public facilities.
- CPO data.
- Land registry maps.

- Amount of waste (by weight) that will be recovered and diverted from landfill either onsite or offsite (i.e., for use on other projects).
- Types and quantities of waste arising from the Proposed Development requiring disposal to landfill.
- Details of onsite storage and segregation arrangement for waste and any supporting logistical arrangements.
- Potential for generation of hazardous waste (type and quantity).

12.3.3 Determination of Sensitive Receptors

The sensitivity of the existing environment identifies the ability of the receptor to respond to potential effects and can be determined by describing changes to the environment that could limit the access to, or use of, the material asset (EPA, 2003). For the purpose of this assessment, the sensitive receptors are regarded as the existing utilities network, land use and properties and the waste management infrastructure capacity within the study area.

12.3.4 Describing Potential Effect

Terminology used to describe the sensitivity of the receptor are as per the EPA Guidelines (EPA, 2022). As descriptors for sensitivity are not outlined within Irish guidance, the descriptors are based on professional judgement.

The methodology used for evaluating impact levels and the terminology for describing the quality, significance, extent, probability and duration of effects on existing land use, properties and utilities network is in line with the EPA Guidelines (EPA, 2022). In summary, it involves combining a sensitivity of a receptor with a description of an impact on that receptor (its quality, type, frequency, duration, probability and magnitude) to determine a significance of an effect.

Specific assessment criteria are outlined in the following sections. As specific criteria are not outlined within Irish guidance, the criteria are based upon professional judgement.

12.3.4.1 Utilities

A development could impact existing utilities networks if it involves any of the following:

- Demolition of a utility.
- Diversion of a utility.
- Modification of a utility.
- Connection works to existing utilities infrastructure.
- Additional demand on existing supply (during construction and operation).

12.3.4.2 Land Use and Property

Impacts from a development on existing land use and properties can include:

- Acquisition of land.
- Changes to accessibility and severance.
- Demolition of residential and commercial properties/or
- Revaluation of or change in the development potential of adjoining lands/properties.

12.4 Baseline Environment

12.4.1 Land Use

As outlined in Section 2.1.1, the redline boundary of the Proposed Development covers an approximate area of 7.3ha with the substation boundary covering approximately 2.24ha.

The land is predominately flat with hedgerows delineating field boundaries. One off housing and agricultural buildings are present in the wider vicinity.

12.4.2 Public Utilities

Information regarding surface water and foul drainage infrastructure is described in Section 12.4.2.2 and 12.4.2.3.

A FRA has been undertaken and describes the existing, permitted, and proposed surface water environment.

12.4.2.1 Electricity Network

The availability of power is a key consideration in site selection for the Proposed Development. Power demand for the Proposed Development will be provided by a connection through an existing 100kV busbar in the existing Finglas 220kV Substation via underground power cable.

In addition, low voltage cable installation will provide a house power supply to the proposed substation.

12.4.2.2 Water Supply

The water demand for the Proposed Development will be minimal. The Applicant has consulted with Irish Water and proposed to connect to the existing water network, subject to a valid connection agreement being put in place prior to project execution. It is proposed to take a 100mm connection from an external watermain to the northwest of the site to provide adequate water services for the Proposed Development, subject to agreement and connection with Irish Water.

The underground 110 kV cable circuits do not require any water supply.

12.4.2.3 Sewerage Effluent

12.4.2.4 Foul effluent arising from welfare facilities will be temporarily stored onsite and removed by tanker to a licensed disposal facility. Telecommunications

The Proposed Development included a purpose-built telecommunications mast for operating and communication with (but not limited to) the proposed substation.

The connection into the wider telecommunications network will be undertaken by a statutory telecommunications operator.

12.5 Potential Impacts

12.5.1 Construction Phase

Construction works associate with the Proposed Development have the potential to temporarily disrupt existing utility services in the area causing an inconvenience to residential and commercial premises.

12.5.1.1 Power and Electricity

Power and electricity will be required for heating and lighting of the site and for the use of construction equipment during the construction period. The construction compound and temporary power supply established for the construction of the Proposed Development will be utilised during construction. Where possible during the construction phase, the working areas will be powered by existing mains supplies, but if not available, via a diesel generator. It is predicted that power requirements for the construction phase will be relatively minor.

12.5.1.2 Water Supply

A temporary connection to the mains water supply would be established for the construction phase, subject to agreement with Irish Water. The water demand during the construction phase would not be significant enough to affect existing pressures. It is understood that there is adequate capacity within the existing watermain network to supply the Proposed Development.

12.5.1.3 Telecommunication

A new telecommunications mast will be required in the connection compound at the substation site. The fibre optic cables laid along the cable route will be used for operation and control purposes

Telecommunications required during the construction phase will be provided via a temporary mobile connection.

The extension of the network within the overall landholding will have a temporary imperceptible effect on the environment.

12.5.2 Operational Phase

There is sufficient capacity available in the electricity and power, water and telecommunications supply to accommodate the Proposed Development.

Effects from the permanent acquisition of land would be as per the construction phase and there would be no additional operational phase impacts to existing non-agricultural land uses and properties in the study area.

12.6 Mitigation Measures

12.6.1 Construction Phase

The excavation of trenches within the vicinity of existing electrical services will be carried out in consultation with ESB Networks to ensure that there is no impact on existing users. Once the construction of the Proposed Development is completed, ESB Networks personnel will be mobilised to complete the commissioning.

As the connection works required by the Proposed Development are entirely within the Site, there will be no potential offsite impact. There are no potential impacts associated with telecommunications for the Proposed Development for the construction phase.

No remedial or mitigation measures are required in relation to foul drainage infrastructure and water supply.

12.6.2 Operational Phase

There are no potential impacts associated with power and electrical supply, water supply and telecommunications supply for the Proposed Development during the operational phase. No remedial or mitigation measures are required in relation to material assets during the operational phase.

12.7 Residual Effects

The implementation of mitigation measures will ensure that the predicted impacts on the material assets assessed in this section will be short-term, neutral and imperceptible for the construction phase.

The predicted residual effects on power and electrical supply, telecommunications, surface water infrastructure, foul storage infrastructure and water supply will be long-term, neutral and imperceptible for the operation phase.

12.8 Cumulative Effects

Should the construction of the listed projects in Table 1.2 and the Proposed Development occur concurrently, here is the potential for cumulative effects on material assets by means of greater demand on existing services and utilities in the area. A potential slight negative and temporary direct cumulative effect is identified. Likely significant cumulative effects are not predicted.

Should the construction of the Proposed Development occur once the some of the listed projects are operational, there may be some cumulative effects of existing material assets due to potential disruption to some utilities in the area. A potential slight negative and temporary cumulative effect is therefore identified, however likely significant cumulative effects are not predicted.

13. Cultural Heritage

13.1 Introduction

This section of the assessment is concerned with the cultural heritage resource. This comprises archaeological assets, architectural heritage and designed landscapes such as gardens and demesnes. This baseline also considers the setting of these heritage assets, which can be described as the surroundings in which the heritage assets are experienced and appreciated.

The main objectives of the Archaeological desk-based assessment are:

- To identify cultural heritage assets within the Site and study area.
- To assess the baseline information and offer an analysis of the potential for currently unrecorded archaeological assets within the Site.
- To assess the importance of the cultural heritage assets.
- To assess the potential impact of the Proposed Development on cultural heritage assets and their setting within the Site and study area.

Refer to Chapter 0 for a full description of the Proposed Development.

13.2 Legislation, Policy and Guidance

This archaeological assessment has been undertaken in accordance with all relevant legislation, policies and guidelines. The documents utilised in the preparation of this study include:

- National Monuments Acts (1930-2004).
- The Heritage Act 1995 and 2018.
- National Heritage Plan (2002).
- Planning and Development Acts 2000-2011.
- Meath County Development Plan 2021-2027.

13.2.1 Meath County Development Plan 2021-2027

The Meath County Development Plan 2021-2027 was published in 2021 and aims to establish a framework for the sustainable development of County Meath. As part of this framework, specific sections and policies governing development in relation to Cultural Assets were produced and included. The policies within the County Meath Development Plan reflect the overarching aims of legislation and planning policy including the Regional Planning Guidelines for the Greater Dublin Area 2010-2022.

In consideration of the archaeological heritage of County Meath, the council have established a number of policies to govern Proposed Development in the area and to further promote the archaeological heritage. These policies are:

HER POL1 – To protect sites, monuments, places, areas or objects of the following categories:

- Sites and monuments included in the Sites and Monuments Record as maintained by the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht [now the Department of Tourism, Culture, Arts, Gaeltacht, Sports and Media].
- Monuments and places included in the Record of Monuments and Places as established under the National Monuments Acts.
- Historic monuments and archaeological areas included in the Register of Historic Monuments as established under the National Monuments Acts.
- National monuments subject to Preservation Orders under the National Monuments Acts and national monuments which are in the ownership or guardianship of the Minister for Culture, Heritage and the Gaeltacht or a local authority.
- Archaeological objects within the meaning of the National Monuments Acts. Wrecks protected under the National Monuments Acts or otherwise included in the Shipwreck Inventory maintained by the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht.

HER POL 2 – To protect all sites and features of archaeological interest discovered subsequent to the publication of the Record of Monument and Places, in situ (or at a minimum preservation by record) having regard to the advice and recommendations of the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht and The Framework and Principles for the Protection of the Archaeological Heritage (1999).

HER POL 3 – To require, as part of the development management process, archaeological impact assessments, geophysical survey, test excavations or monitoring as appropriate, for development in the vicinity of monuments or in areas of archaeological potential. Where there are upstanding remains, a visual impact assessment may be required.

HER POL 4 – To require, as part of the development management process, archaeological impact assessments, geophysical survey, test excavations or monitoring as appropriate, where development proposals involve ground clearance of more than half a hectare or for linear developments over one kilometre in length. Or developments in proximity to areas with a density of known archaeological monuments and history of discovery as identified by a suitably qualified archaeologist.

HER POL 5 – To seek guidance from the National Museum of Ireland where an unrecorded archaeological object is discovered, or the National Monuments Service in the case of an unrecorded archaeological site.

These policies are supplemented with a number of objectives to help to achieve the aims of the policies above. These objectives are a material consideration in the planning process. The objectives state:

HER OBJ 1 – To implement in partnership with the County Meath Heritage Forum, relevant stakeholders and the community the County Meath Heritage Plan and any revisions thereof.

HER OBJ 2 – To seek to protect important archaeological landscapes from inappropriate development.

HER OBJ 3 – To protect important archaeological landscapes from inappropriate development.

HER OBJ 4 – To encourage the management and maintenance of the County's archaeological heritage, including historic burial grounds, in accordance with best conservation practice that considers the impact of climate change..

HER OBJ 5 – To promote awareness of, and encourage the provision of access to, the archaeological resources of the county.

HER OBJ 6 – To work in partnership with key stakeholders to promote County Meath as a centre for cultural heritage education and learning through activities such as community excavation and field/summer schools.

The architectural heritage, or historic built environment, is considered in a series of policies designed to preserve those structures identified on the Record of Protected Structures. The policies state:

HER POL 14 – To protect and conserve the architectural heritage of the County and seek to prevent the demolition or inappropriate alteration of Protected Structures.

HER POL 15 – To encourage the conservation of Protected Structures, and where appropriate, the adaptive re-use of existing buildings and sites in a manner compatible with their character and significance. In certain cases, land use zoning restrictions may be relaxed in order to secure the conservation of the protected structure.

HER POL 16 – To protect the setting of Protected Structures and to refuse permission for development within the curtilage or adjacent to a protected structure which would adversely impact on the character and special interest of the structure, where appropriate.

HER POL 17 – To require that all planning applications relating to Protected Structures contain the appropriate accompanying documentation in accordance with the Architectural Heritage Protection Guidelines for Planning Authorities (2011) or any variation thereof, to enable the proper assessment of the proposed works.

HER POL 18 – To require that in the event of permission being granted for development within the curtilage of a protected structure, any works necessary for the survival of the structure and its re-use should be prioritised in the first phase of development.

There are in addition, several objectives set by the council with regards to the architectural heritage. These include:

HER OBJ 16 – To identify and retain good examples of historic street furniture, e.g. cast-iron post boxes, water pumps, light fixtures and signage, as appropriate.

HER OBJ 17 – To promote best conservation practice and encourage the use of appropriately qualified professional advisors, tradesmen and craftsmen, with recognised conservation expertise, for works to protected structures or historic buildings in an Architectural Conservation Area.

In addition to the protection given through the development plan to Protected Structures, the industrial heritage of County Meath is also protected through a specific policy. The policy states:

HER POL 25 – To protect and enhance the built and natural heritage of the Royal Canal and Boyne Navigation and associated structures and to ensure, in as far as practically possible, that development which may impact on these structures and their setting be sensitively designed with regard to their character and setting. Development of the project will be subject to the outcome of the Appropriate Assessment process.

Architectural conservation areas (ACA) are places, areas of groups of structures of a townscape which is of special interest and can also comprise areas which are of significance to Protected Structures. They provide a mechanism to protect buildings which are of interest but which do not meet the criteria of a Protected Structure, or perhaps buildings which individually do not merit placement on the Record, but together form a coherent or important example of their type. The policies within the development plan state:

HER POL 19 – To protect the character of Architectural Conservation Areas in Meath.

HER POL 20 – To require that all development proposals within or contiguous to an ACA be sympathetic to the character of the area, that the design is appropriate in terms of height, scale, plot density, layout, materials and finishes and are appropriately sited and designed with regard to the advice given in the Statements of Character for each area, where available.

The objectives relating to this are:

HER OBJ 20 – To identify places of special character, with a view to their designation as Architectural Conservation Areas and to modify existing ACAs, where necessary.

HER OBJ 21 – To prepare and review, where necessary, detailed character statements and planning guidance for each ACA.

HER OBJ 22 – To avoid the demolition of structures and the removal of features and street furniture which contribute to the character of an ACA. The Council will require that any planning application for demolition or alteration within an ACA be accompanied by a measured and photographic survey, condition report and architectural heritage assessment.

Designed landscapes, historic parks, gardens and demesnes are identified by the National Inventory of Architectural Heritage (NIAH) and placed on the inventory. They are not statutorily designated but are recognised by MCC as important heritage assets and provision has been made in the development plan for their protection. The policy states:

HER POL 26 – To encourage the protection and enhancement of heritage gardens and demesne landscapes, and to support, in consultation with the owners, the provision of public access to these sites as appropriate.

This policy is supported by the following objectives:

HER OBJ 28 – To discourage development that would adversely affect the character, the principal components of, or the setting of historic parks, gardens and demesnes of heritage significance.

HER OBJ 29 – To require that proposals for development in designated landscapes and demesnes include an appraisal of the landscape, designed views and vistas, including a tree survey, where relevant, in order to inform site appropriate design proposals.

13.3 Methodology

13.3.1 Study Area

A study area of 2km from the Site of the Proposed Development has been used to identify all known cultural heritage assets, which has been deemed appropriate for the scale and location of the Proposed Development. The size of this study area has enabled a detailed examination of the heritage assets surrounding the Site, in order to provide sufficient archaeological and historical contextual information and allow an assessment of the archaeological potential of the Site to be made.

Within the study area, detailed data was collated in relation to all cultural heritage assets and were identified using the data sources listed below.

13.3.1.1 Data and Information Sources

The preparation of the baseline was informed by material gathered and collated from various sources, including:

- National Monuments Service (NMS) and Archaeological Survey of Ireland (ASI) Record of Monuments and Places (RMP) (https://www.archaeology.ie/).
- National Inventory of Architectural Heritage (NIAH) (https://www.buildingsofireland.ie/).
- Database of Irish Excavation Reports (https://excavations.ie/).
- Geological Survey Ireland (GSI) (https://www.gsi.ie/).
- Ordnance Survey (OS) Ireland (https://www.osi.ie/) for historic mapping and aerial photographs.
- Irish Soil Information System (ISIS) (http://gis.teagasc.ie/soils/).

13.3.2 Determination of the Baseline Environment and Sensitive Receptors

A cultural heritage asset is defined as a monument, building, group of buildings and sites, which are the combined works of nature and man constituting the historic or built environment (World Heritage Convention 1972). A heritage asset's value is not solely expressed through any designated status but can also be exhibited through a series of values or special interests. These include architectural, historical, artistic, archaeological, cultural, scientific, social or technical interests. There is the potential for non-designated assets to display special interests equivalent to a designated asset. Therefore a "designated" status does not necessarily confer a set level of importance on an asset, rather professional judgement and an assessment of the special interest displayed by that asset are examined and a level of importance is assigned.

Section 2 of the 1930 National Monuments Act defines a 'national monument' as "*a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic, or archaeological interest attaching thereto.*" National Monuments are considered nationally important and any works carried out at, or in close proximity to, an archaeological site designated as a National Monument in the ownership or guardianship of the Minister or a Local Authority may require a Ministerial Consent.

National Monuments and Record of Monuments and Places (RMP) sites/Register of Historic Monuments (RHM) sites are not clearly differentiated in the National Monuments Acts 1930-2004. However, not all RMP and RHM sites and associated constraint areas demonstrate the same level or degree of heritage special interest as can be found in National Monuments. Therefore, they can be considered to be of either of national or regional importance and an assessment of the special interest of the asset and professional judgement is used to identify the appropriate level of importance.

Some archaeological and architectural heritage assets are also included on the Record of Protected Structures (RPS) of each county or city development plan, under Section 51(1) of the Planning and Development Act, 2000 (Revised). These protected structures are included in the RPS due to their special architectural, archaeological, artistic, cultural, historical, scientific, social or technical interest. Protected structures are considered to be of international, national or regional importance.

Architectural Conservation Areas are areas which are designated in a county development plan, under Section 81(1) of the Planning and Development Act, 2000 (Revised), in order to "*preserve the character of a place, area, group of structures or townscape*" that are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value. Or "*contributes to the appreciation of protected structures*." Architectural Conservation Areas are considered to be of either national or regional importance.

The National Inventory of Architectural Heritage (NIAH) was established to assist councils in assessing whether structures should be added to their Record of Protected Structures (RPS). These architectural heritage assets are rated to be of either international, national, regional, local or 'record only' importance.

The National Inventory of Architectural Heritage also contains a Garden Survey which includes designed landscapes such as parks, gardens and demesnes. These can be divided into those with substantially intact landscapes and features. Those where the landscape has been significantly eroded by later changes with only peripheral features intact. For the purposes of this assessment, the substantially intact landscapes are judged to be of international, national or regional importance while the denuded landscapes are judged to be of local importance.

Townlands are the lowest level, officially defined geographical area in Ireland and date to before the Anglo-Norman period (12th century). The boundaries of townlands boundaries are often visible in the landscape as walls, tree-lined ditches and embankments or natural features such as streams. They provide visible physical evidence of historical territory or political boundaries and are regarded as being of local importance as historic, cultural heritage features.

In order to assess the potential effects of a development upon a heritage asset, it must first be assigned a level of importance. This can be done in accordance with a four-point scale, refer to Table 13.1. This table has been derived from the following guidance, with reference to relevant legislation and policy, and using professional judgement:

- Department of Arts, Heritage and the Gaeltacht NIAH Handbook (DAHG 2017).
- Environmental Protection Agency (EPA) Guidelines on Information to be Contained in Environmental Impact Assessment Reports (EPA 2022).
- Code of Practice for Archaeology agreed between the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs and Transport Infrastructure Ireland, (DAHRRG 2017).
- National Roads Authority, Guidelines for the Assessment of Archaeological Heritage Impacts (particularly Appendix 2, Significance Criteria) (NRA 2005a).
- National Roads Authority, Guidelines for the Assessment of Architectural Heritage Impacts (particularly Table 8) (NRA 2005b).

Table 13.1 Factors Determining the Importance of Heritage Assets

Importance	Criteria
National/High	• National Monuments. • Recorded Monuments deemed to be of high importance using legislation, EPA guidance, NRA Significance Criteria and professional judgement. • Protected Structures deemed to be of high importance using legislation, EPA guidance, NIAH rating criteria and professional judgement. • Structures recorded by the NIAH Building Survey with a National Rating or deemed to be of high importance using legislation, EPA guidance, NIAH rating criteria and professional judgement. • Designed landscapes recorded by the NIAH Garden survey with main features substantially present and deemed to be of high importance using legislation, EPA guidance, NIAH rating criteria and professional judgement. • Architectural Conservation Areas containing structures and/or designed landscapes of predominantly national importance.

Importance	Criteria
	• Undesignated archaeological remains which are rare or complex in nature, and deemed to be of high importance using legislation, EPA guidance, NRA Significance Criteria and professional judgement.
Regional/Medium	• Recorded Monuments deemed to be of medium importance using legislation, EPA guidance, NRA Significance Criteria and professional judgement. • Protected Structures deemed to be of medium importance using legislation, EPA guidance, NIAH rating criteria and professional judgement. • Structures recorded by the NIAH Building Survey with a Regional Rating or deemed to be of medium importance using legislation, EPA guidance, NIAH rating criteria and professional judgement. • Designed landscapes recorded by the NIAH garden survey with main features substantially present and deemed to be of medium importance using legislation, EPA guidance, NIAH rating criteria and professional judgement. • Architectural Conservation Areas containing structures and/or designed landscapes of predominantly regional importance. • Undesignated architectural heritage assets which are deemed to be of medium importance using legislation, EPA guidance, NIAH rating criteria and professional judgement. • Undesignated archaeological remains which are neither particularly common nor uncommon, and/or of moderate complexity, and deemed to be of medium importance using legislation, EPA guidance, NRA Significance Criteria and professional judgement.
Local/Low	• Structures recorded by the NIAH Building Survey with a Local or Record Only Rating or deemed to be of low importance using legislation, EPA guidance, NIAH rating criteria and professional judgement. • Designed landscapes recorded by the NIAH garden survey with only peripheral features surviving, and deemed to be of low importance using legislation, EPA guidance, NIAH rating criteria and professional judgement. • Townland Boundary Features. • Undesignated architectural heritage assets which are deemed to be of low importance using legislation, EPA guidance, NIAH rating criteria and professional judgement. • Undesignated archaeological features which are particularly common or in poor condition, and deemed to be of low importance using legislation, EPA guidance, NRA Significance Criteria and professional judgement. • Parks/Gardens/Demesnes recorded by the NIAH Garden Survey which have poor historic legibility.

13.3.3 Limitations and Assumptions

The assessment is based upon currently available information at the time of writing. A site walkover survey has not been undertaken as part of this assessment.

13.4 Baseline Environment

13.4.1.1 Geology and Topography

The Site is located approximately 6km east of Summerhill and 7km west of Dunshaughlin, Co. Meath. The Site lies approximately 96m above Ordnance Datum (aOD) and ground level is relatively flat across the Site. The Site is located within a rural landscape of agricultural fields bounded by hedgerows, interspersed with small parcels of woodland and farm complexes.

The underlying geology across the Site is recorded as Namurian (undifferentiated) shale and sandstone. Superficial Till deposits derived from Namurian sandstones and shales are recorded overlying the bedrock (GSI). Soils are recorded at the Site as fine loamy drift with limestones (ISIS).

13.4.1.2 National Monuments

There are no sites or monuments under Preservation Order and no National Monuments in state care or ownership and guardianship of the Minister for Housing, Local Government and Heritage, within the Site.

Additionally, there are no sites or monuments under Preservation Order and no National Monuments in state care or ownership and guardianship of the Minister for Housing, Local Government and Heritage within the 2km study area extending from the Site.

13.4.1.3 Records of Monuments and Places (RMP)

There are no assets recorded on the Records of Monuments and Places (RMP) located within the Proposed Development Site boundary.

There are 21 assets recorded on the RMP located within the study area dating from the prehistoric to the post-medieval periods, refer to Figure 13-1 and Appendix G.

The earliest recorded asset located within the study area is a Bronze Age/Iron Age barrow (ME043-056) located approximately 1km southeast of the Site. These types of assets usually comprise an artificial mound of earth and stone, constructed to contain or conceal burials and are part of the Bronze Age/Iron Age (c. 2400 BC – AD 400) burial tradition. This asset has been classified as 'Barrow – unclassified' as the specific type of barrow is unknown.

Three early medieval ringforts/raths are recorded within the study area. These assets are usually circular or oval in area surrounded by an earthen bank with an external fosse and functioned as residences and/or farmsteads, dating to the 5th to 12th century. The asset (ME043-014) is located approximately 1.3km west of the Site, on a north-east facing slope. The visible profile of the asset had been removed by 1995. The asset (ME043-029) is located approximately 1.9km southwest of the Site on a fairly level landscape and is depicted on the 1836 Ordnance Survey Ireland map as a 'fort'. The asset (ME043-030) is located approximately 1.8km southeast of the Site on a west facing slope of a broad hill.

Figure 13-1 Heritage Assets[23]

A castle motte (ME043-018) comprising a flat-topped earthen mound is located approximately 1.35km east of the Site. This asset is recorded as late 12th to early 13th century in date. Built into the southwest side of the motte is a building (ME043-018002) which was first recorded on the Down Survey barony map of Deece (1658) as a two-storey house. The building is now a one-storey structure with a vault that is divided into two. Located adjacent to this building is a rectangular stone stoup (ME043-018003) with the date 1616 crudely engraved into one side.

A medieval (5th to 16th century AD) burial mound (ME043-013) is recorded approximately 1.9km west of the Site, south of the summit of a small hillock. It is not depicted on any historic maps and its visible profile seems to have been removed by 1995.

Located approximately 2km northwest of the Site is the medieval parish church of Derrypatrick (ME043-010). A church is recorded at Derrypatrick in the ecclesiastical taxation (1302-04) of Pope Nicholas IV and was amongst the possessions of St Thomas' Augustinian abbey in 1540. In 1622 the church was recorded as reasonably repaired but the chancel was in ruin. By the end of the 17th century, the walls of the church and chancel were still standing but had been unroofed since 1641. The church survives as wall-footings and a low grass-covered bank. The church is

[23] Source: https://maps.archaeology.ie/HistoricEnvironment/

set within a D-shaped graveyard (ME043-010001-) which contains a few 18th and 19th century headstones. A Bullaun stone (ME043-010002-) is recorded within the chancel of the church.

Approximately 60m south of the parish church of Derrypatrick ((ME043-010) are the remains of a 16th -17th century house (ME043-011). The house is recorded on the 1836 Ordnance Survey Ireland map as an oblong structure with a rectangular enclosure/bawn (ME043-011001) attached to the north-east. The enclosure/bawn is described as a defensive courtyard for a medieval house. A field system extended around the house, covering an area of approximately 30 acres, defined by earthen banks and silted drains. All of the earthworks associated with the house, enclosure and field system had been removed by approximately 2013.

The remains of the medieval parish church of Culmullin (ME043-017) are located approximately 1.3km east of the Site. A church at Culmullin is listed in the ecclesiastical taxation (1302-04) of Pope Nicholas IV. Historic records record the church as standing but roofless from 1641 onwards. The foundations of a building survive as grass-covered walls and banks within a five-sided graveyard (ME043-017001) which contains headstones dating from 1707 to 1966. The former location of the font (ME043-017002) is recorded here and its secondary location (ME043-018001) recorded approximately 240m south of the church, before it was moved permanently to the modern Roman Catholic Church of St Martin in Culmullin, located outside of the study area, approximately 1km west of the medieval parish church of Culmullin.

The remains of the medieval parish church of Arodstown (ME043-015) and associated graveyard and churchyard cross are located approximately 1.95km west of the Site. The church was recorded in 1622 as ruinous and the only remains surviving today comprises the overgrown southern wall with a gap that may be the location of a doorway. The remains are located within a sub-rectangular graveyard (ME043-015001) which contains a few headstones dating from 1740 to 1953. The head of a 19th century Latin cross (ME043-015002) had been buried outside the southern doorway of the church but has since been moved to the Roman Catholic Church of St Mary's at Moynalvy.

Located approximately 150m east of the remains of the parish church of Arodstown is the site of a castle (ME043-016) dated from the late 12th to 16th century. The castle is no longer extant, appearing to have been removed since 1969.

A holy well (ME043-045) known as St. Nicholas' Well is situated at the bottom of an E-facing slope at the southeast extent of the Site. This survives as a hollow occupied by a pump-house accessed directly from the road.

13.4.1.4 Zones of Notification

There are 11 Zones of Notification located within the study area, all of which are associated with the heritage assets discussed previously in Section 12.3. Such zones do not define the exact extent of the associated heritage asset but are intended to identify them for purposes of notification under Section 12 of the National Monuments Act (1930-2004) whereby a notification of proposed works must be submitted to the National Monument Service at least two months in advance of works commencing.

The Site extends into one Zone of Notification. The western extent of Layby 2 (Midpoint CH 249.90) extends into the Zone of Notification for the site of the ruined medieval parish church of Culmullin (ME043-017) and a five-sided graveyard (ME043-017001). Layby 2 does not cross over into the presently marked boundary of the graveyard, only into the Zone of Notification.

13.4.1.5 Record of Protected Structures

There are no Protected Structures, as recorded on the Meath County Development Plan 2021-2027, located within the Site or study area.

13.4.1.6 Architectural Conservation Areas

The Site is not part of an Architectural Conservation Area (ACA) and there are no ACA's within the study area.

13.4.1.7 National Inventory of Architectural Heritage (NIAH) Building Survey

There are no buildings recorded on the National Inventory of Architectural Heritage Buildings Survey within the Site or study area.

13.4.1.8 National Inventory of Architectural Heritage Gardens Survey

There are no historic gardens or designed landscapes recorded on the National Inventory of Architectural Heritage Gardens Survey within the Site or study area.

13.4.1.9 Townland Boundaries

The Site is located completely within the townland of Woodtown and its footprint does not include any boundaries between townlands which could be classed as historic landscape features.

13.4.1.10 Previous Archaeological Investigations

Examination of the Database of Irish Excavation Reports[24] noted two previous archaeological investigations within the study area.

Approximately 1.6km west of the Site, monitoring of topsoil stripping was undertaken in 2015 by Archaeological Consultancy Services Unit, prior to the construction of a residential building at Arodstown, Summerhill (Murphy, 2015). No features or deposits of archaeological origin were identified during the monitoring and it was apparent that the site had been previously stripped and subject to quarrying.

Approximately 2km north-east of the Site, monitoring was undertaken in a large, ploughed field on behalf of Margaret Gowen and Co. Ltd in 2001 (O'Donovan and Kerins, 2001). A sub-circular pit and a field ditch orientated north-south were identified within the field, both of which contained no finds. No further archaeological activity was identified within the Site.

13.4.1.11 Historic Cartographic Evidence

The First Edition 6-inch Ordnance Survey Ireland (OSI) map dated 1837 – 1842 shows the Site of the Proposed Development as a number of small irregular fields, forming part of the Townland of Woodtown (Map not reproduced). The landscape surrounding the Site is characterised by agricultural land and isolated farms, interspersed with areas of woodland.

The 1888-1913 series 25-inch OSI map does now show the Site in detail and individual fields cannot be identified (Map not reproduced).

Apart from some boundary changes including the removal of field boundaries to create larger fields, the Site and surrounding landscape has remained largely unchanged to date, characterised by a rural agricultural landscape, interspersed with isolated farms and woodland (Map not reproduced).

13.4.1.12 Aerial Photography

Examination of aerial photographs dated 1995 – 2005 via Ordnance Survey Ireland show the Site as it is today, being agricultural fields within a wider rural agricultural landscape, interspersed with farm buildings and woodland. No previously unrecorded archaeological assets are visible.

13.4.2 Summary of Baseline

There are no recorded heritage assets located within the Site.

There are 22 heritage assets recorded on the RMP located within the study area, all of which are located approximately 1 to 2km from the Site.

The setting of heritage assets includes their topographic locations, e.g. on hilltops and ridges; their relationship with springs and water courses; historic rural boundary patterns and minor roads; the contextual relationships between heritage assets, including cultural, intellectual, spatial or functional relationships; intervisibility of prehistoric funerary and ceremonial sites; and historical associations such as the broadly contemporary church and motte at Culmullin. These aspects contribute to the significance, character and special interest of heritage assets and the ability to appreciate that significance. It is assessed that these settings have the capacity to accommodate change without harm to the significance of the heritage asset or the ability to appreciate it.

Analysis of historic cartographic evidence and aerial photography shows the Site as agricultural land which has not been developed on. Evidence for activity dating to the Bronze Age/Iron Age and Early Medieval periods is recorded within the study area in the form of a barrow and ringforts/raths, all of which are on similar elevations to the Site. Activity dating to the medieval and early post-medieval periods includes ecclesiastical remains, a graveyard and a motte on Culmullin Hill. The Site therefore has a good potential to contain previously unrecorded archaeological remains. Any such deposits are likely to be of local or regional interest and of **low or medium** importance, as defined by the criteria in Table 13.1.

13.5 Potential Impacts

None of the recorded heritage assets within the study area will be physically impacted by the Proposed Development. The western extent of Layby 2 extends into the Zone of Notification for the site of the ruined medieval parish church of Culmullin (ME043-017) and its graveyard (ME043-017001).

The Proposed Development will not result in significant impacts upon the setting of heritage assets, and will not affect the significance, character or special interest of heritage assets. The Proposed Development will not impact upon

[24] www.excavations.ie

the setting of any assets highlighted in the Meath County Development Plan 2021-2027, including Protected Structures, the Royal Canal and Boyne Navigation and associated structures or any historic parks, gardens and demesnes of heritage significance.

The Proposed Development comprises the construction of a substation within agricultural fields. Groundworks associated with the construction of the Proposed Development (such as topsoil/subsoil stripping, excavation of foundation and service trenches, the creation of an access road and a construction compound) would severely impact upon any previously unrecorded archaeological remains that may exist within the Site.

There is the possibility that the Site may have been utilised in the past for settlement or other activities before becoming agricultural land. Evidence of such activity would exist, as yet previously undiscovered archaeological sites and features. Any such sites and features would likely be of local interest and low importance although the archaeological interest and importance of, as yet unrecorded assets can only be confirmed upon identification.

The potential impacts upon such archaeological sites and features would consist of the destruction of sites, features or deposits during construction and impacts upon sites, features or deposits to gain site access. The severity of these impacts can be reduced with appropriate mitigation.

13.6 Mitigation Measures

Given the potential for impacts to previously unrecorded archaeological remains, it is recommended that a programme of pre-development archaeological evaluation is undertaken in order to confirm the presence or absence previously unrecorded archaeological remains within the Site.

Archaeological testing will be carried out at the pre-construction phase in areas where the Proposed Development has the potential to impact upon archaeological remains. All archaeological works (which will be agreed by the Archaeological Consultant and the NMS) will be carried out in compliance with the National Monuments Acts 1930 – 2004 and Policy and Guidelines on Archaeological Excavation (Department of Arts, Heritage Gaeltacht and the Islands, 1999).

Archaeological work within the Zone of Notification for the site of the ruined medieval parish church of Culmullin (ME043-017) and its graveyard (ME043-017001) will require submission of notification of proposed works to the National Monument Service at least two months in advance of works commencing.

A suitably qualified and licensed Archaeological Contractor will be appointed to carry out the archaeological fieldwork. Relevant licenses will be acquired from the Department for Housing, Local Government and Heritage (DHLGH)/NMS and the National Museum of Ireland (NMI) for all archaeological works, which will be carried out in accordance with an Overarching Method Statement for Archaeological Works prepared by the Archaeological Consultant and agreed with the NMS. It is anticipated that all archaeological works will be completed pre-construction.

The programme of pre-development archaeological testing would likely consist of the mechanical excavation of test trenches down to sterile glacial tills and bedrock by means of a smooth toothless bucket at specified locations within the Site but in particular within areas where construction will require sub-surface excavation works. The appointed archaeologist will undertake full-time monitoring of the excavation of the test trenches and where appropriate, carry out archaeological investigation.

13.7 Cumulative Effects

The development of the listed projects in Table 1.2 will not result in likely significant or cumulative impact from an archaeological and cultural heritage perspective, when assessed in relation to the Proposed Development. A programme of pre-development archaeological evaluation will be undertaken in order to confirm the presence or absence previously unrecorded archaeological remains within the Site, therefore no significant cumulative effect on previously unrecorded archaeological remains is anticipated. Even where the listed project overlap with the Proposed Development, no cumulative impact will occur as there are no direct impacts to recorded monuments that will give rise to a significant impact.

13.8 Summary

There are no National Monuments recorded within the Site or study area. The Site does not form part of an Architectural Conservation Area (ACA), nor are any ACA's located within the study area. There are no buildings recorded on the National Inventory of Architectural Heritage (NIAH) Building Survey and no gardens or designed landscapes recorded on the NIAH Gardens Survey, located within the Site or study area.

There are no heritage assets recorded on the Records of Monuments and Places (RMP) located within the Site. There are 22 heritage assets recorded within the study area.

The Proposed Development will not result in physical impacts to any recorded heritage assets within the study area. It does, however, extend into one Zone of Notification: the site of the ruined medieval parish church of Culmullin (ME043-017) and its graveyard (ME043-017001).

The Proposed Development will not impact upon the settings of the heritage assets recorded within the study area, and it is assessed that the Proposed Development will not result in significant impacts on the character or special interest of heritage assets or the ability to appreciate it.

The Site is currently occupied by agricultural fields and any previous ground disturbance is likely to have been limited to agricultural activity. Therefore, there is the potential for unrecorded archaeological remains to exist within the Site which may be impacted as a result of groundworks associated with the construction of the Proposed Development.

Given the potential for impacts to previously unrecorded archaeological remains, it is recommended that a programme of pre-development archaeological evaluation (including supervised mechanical excavation) is undertaken in order to confirm the presence or absence previously unrecorded archaeological remains within the Site.

14. Landscape and Visual

14.1 Introduction

This chapter identifies and assesses the potential effects of the Proposed Development on the landscape and visual resource of the study area. It identifies likely adverse landscape and visual effects or the availability of possible mitigation and nearby compensation measures that will be implemented to prevent, reduce, offset or enhance potential beneficial effects. The report considers how:

- Landscape effects associated with a development relate to changes to the fabric, character and quality of the landscape resource and how it is experienced.
- Visual effects relate closely to landscape effects, but also concern changes in views as visual assessment is also concerned with people's perception and response to changes in visual amenity.

The assessment acknowledges that landscape and visual effects change over time as the existing landscape, internal and external to the Proposed Development, evolves. The assessment therefore reports on potential effects during both construction/operation and completion of the Proposed Development. The prominence of the Proposed Development in the landscape or view will vary according to the existing screening effects of local topography, intervening existing vegetation and building structures.

The Landscape and Visual Impact Assessment (LVIA) chapter is supported by the following technical document, which are included in Appendix H.

- Landscape designation map.
- Photomontage booklet (including photomontages 1-10).
- Residential visual amenity assessment (RVAA).

Reference should be made to Chapter 0 for a full description of the Proposed Development.

14.1.1 Interaction with Other Environmental Factors

The landscape and visual impact assessment is focused on the physical and visual appearance as well as the character of the landscape as it is experienced today.

Landscape is also a consideration under other environmental aspects and assessments, e.g. the natural landscape (refer to Chapter 6 (Biodiversity), and the cultural/historical landscape (archaeology and architecture, refer to Chapter 13 (Cultural Heritage), the human landscape (community, social, etc., refer to Chapter 0 (Population and Human Health)).

While it is evident that an interaction of effects exists between the landscape and visual environment and these other related landscape environments/environmental factors – not least in terms of potential for interactions of effects – assessments under these areas are generally addressed separately by other competent specialists in the relevant chapters of this ECR.

14.2 Legislation, Policy and Guidance

14.2.1 Guidance

The following sources and guidelines were used in the assessment:

- TII: Landscape Character Assessment (LCA) and Landscape and Visual Impact Assessment (LVIA) of Specified Infrastructure Projects – Overarching Technical Document, PE-ENV-01101, (December 2020).
- TII: Project Management Guidelines, PE-PMG-02041 (December 2020).
- EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022).
- Landscape Institute (UK) & IEMA. 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA), 3rd Edition, 2013, Landscape Institute (UK) & IEMA.
- Landscape Institute Advice Note 01/2011. 'Photography and Photomontage in Landscape and Visual Impact Assessment'.
- Landscape Institute, Technical Guidance Note 06/19. 'Visual Representation of Development Proposals', (17 September 2019).
- NRA/TII: Design Manual for Roads and Bridges.
- Meath County Development Plan (CDP) 2021-2027.
- Fingal Development Plan 2017-2023.
- Irishtrails (2021). Available at: https://www.sportireland.ie/outdoors/find-your-trails
- Ordnance Survey Ireland, 1:50,000 Discovery Mapping.

14.2.1.1 Legislation and Policy

European

The European Landscape Convention provides guidelines for managing landscapes. The Convention is not an EU Directive. Countries that sign and ratify the Convention make a commitment to upholding the principles it contains within the context of their own domestic legal and policy frameworks. The convention was ratified by Ireland in March 2002 and came into effects in Ireland in 2004. The European Landscape Convention requires "*landscape to be integrated into regional and town planning policies and in cultural, environmental, agricultural, social and economic policies, as well as any other policies with possible direct or indirect impacts on Landscape*".

National

The National Landscape Strategy (NLS) for Ireland 2015-2025 was launched in May 2015 and is to be implemented by the Government in the future. The NLS promotes the sustainable protection, management and planning for the landscape. The NLS states that the "*National Landscape Strategy will be used to ensure compliance with the European Landscape Convention and to establish principles for protecting and enhancing the landscape while positively managing its change. It will provide a high-level policy framework to achieve balance between the protection, management and planning of the landscape by way of supporting actions.*" It also states that "*The Strategy sets out Ireland's high-level objectives and actions with regard to landscape. It also positions landscape in the context of existing Irish and European strategies, policies and objectives, and outlines methods of ensuring co-operation at a sectoral and at a European level by the State.*"

Regional (County Meath)

Meath County Development Plan 2021-2027 (CDP)

This is the main strategic planning policy document guiding the future renewal and development of County Meath to 2027 and beyond. The Proposed Development is located within the jurisdiction of the MCDP. Relevant details on planning policies are described in the Planning Policy Context report included in the planning submission package. Meath CDP identifies and describes Landscape Character Areas, as identified in the Landscape Character Assessment of County Meath, which is included within the Meath CDP. The landscape character assessment for County Meath *""preservation of the character of the landscape where, and to the extent that…the proper planning and sustainable development of the area requires it, including the preservation of views and prospects and the amenities of places and features of natural beauty or interest" (refer to Landscape Character Assessment Appendix 5 MCDP 2021 – 2027).*

14.3 Methodology

This section sets out the methodology for the LVIA as a result of the Proposed Development.

14.3.1 Landscape and Visual Impact Assessment Criteria

This chapter has been prepared in accordance with the Environmental Protection Agency (EPA) guidance document 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports, 202225. Best practice guidance, such as the "Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, 2013, Landscape Institute (UK) & IEMA" provide specific guidelines for landscape and visual impact assessments. Therefore, a combination of the EPA Guidelines, the Landscape Institute guidelines and professional experience has informed the methodology for the assessment herein. The Landscape Institute guidelines require the assessment to identify, predict and evaluate the significance of potential effects to landscape characteristics and established views. The assessment is based on an evaluation of the sensitivity to change and the magnitude of change for each landscape or visual receptor. For clarity, and in accordance with best practice, the assessment of potential effects on landscape character and visual amenity, although closely related, are undertaken separately.

The assessment acknowledges that landscape and visual effects change over time as the existing landscape external to the Proposed Development evolves and proposed planting establishes and matures.

The significance of an effect or impact is determined by two distinct considerations:

The **Nature** of the receptor likely to be affected, namely:

- The value of the receptor.
- The susceptibility of the receptor to the type of change arising from the Proposed Developments.
- The sensitivity to change is related to the value attached to the receptor.

The **Magnitude** of the effect likely to occur, namely:

- The size and scale of the landscape and visual effect (for example, whether there is a complete or minor loss of a particular landscape element).
- The geographical extent of the areas that will be affected.
- The duration of the effect and its reversibility.
- The quality of the effect – whether it is neutral, positive or negative.

Table 14.1 provides the definition of the duration of both landscape and visual effects.

Table 14.1: Definition of Duration Effects

Duration	Description
Temporary	Effects lasting one year or less
Short Term	Effects lasting one to seven years
Medium Term	Effects lasting seven to fifteen years
Long Term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years

The quality of both landscape and visual effects is defined in Table 14.2.

Table 14.2: Definition of Quality of Effects

Quality of Effects	Description
Neutral	This will neither enhance nor detract from the landscape character or view.
Positive (Beneficial)	This will improve or enhance the landscape character or view.
Negative (Adverse)	This will reduce the quality of the existing landscape character or view.

14.3.2 Assessment Process

The assessment is undertaken based on the following key tasks and structure:

- Establishment of the Baseline or receiving environment.

[25] EPA (2022). *EPA Guidelines on the information to be contained in Environmental Assessment Reports*.

- Appreciation of the Proposed Development.
- Assessment of effects.

14.3.3 Establishment of the Receiving Environment

A baseline study has been undertaken through desk-based research in order to establish the existing conditions of the landscape and visual resources of the study area. Desk based research has involved a review of mapping and aerial photography, relevant planning and policy documents, the relevant Landscape Character Assessments and other relevant documents and publications.

14.3.4 Appreciation of the Proposed Development

In order to be able to accurately assess the full extent of likely effects on landscape character and visual amenity it is essential to develop a thorough and detailed knowledge of the Proposed Development. This includes a comprehensive understanding of its location, nature and scale and is achieved through a review of detailed descriptions of the Proposed Development and drawings (refer to the Planning Drawings accompanying this application) and an onsite appraisal.

14.3.5 Assessment of Effects

The landscape and visual impact assessment seeks to identify, predict and evaluate the significance of potential effects to landscape characteristics and established views. The assessments are based on an evaluation of the sensitivity to change and the magnitude of change for each landscape or visual receptor.

The assessment acknowledges that landscape and visual effects change over time as the existing landscape evolves and proposed planting establishes and matures. The assessment therefore reports on potential effects during both construction/operation and completion of the Proposed Development. The prominence of the Proposed Development in the landscape or view will vary according to the existing screening effects of local topography, structures and buildings, intervening existing vegetation and type and height of the proposed structures.

14.3.6 Scope

Study Area

A study area radius of 1.5km has been determined from the boundary of the Site for the assessment of landscape and visual effects. The extent of the study area is based on initial findings of the desktop study. It is acknowledged that the Proposed Development may be visible from locations beyond the study area, and as such it is important to note that the study area defines the area within which potential effects could be significant, rather than defining the extent of visibility.

Effects Scoped Out

The Proposed Development will become a permanent feature in the landscape following the completion and the implementation of landscape mitigation measures. The assessment takes account of this in the determination of residual landscape and visual effects.

14.3.7 Landscape Effects

Visual effects and Landscape effects describe the impact on the fabric or structure of a landscape or landscape character.

The assessment of landscape effects firstly requires the identification of the components of the landscape. The landscape components are also described as landscape receptors and comprise the following:

- Individual landscape elements or features.
- Specific aesthetic or perceptual aspects.
- Landscape character, or the distinct, recognisable and consistent pattern of elements (natural and man-made) in the landscape that makes one landscape different from another.

The assessment will identify the interaction between these components and the Proposed Development during construction and operational phases. The condition of the landscape and any evidence of current pressures causing change in the landscape will also be documented and described.

Landscape Value

Landscape value is frequently addressed by reference to international, national, regional and local designations, determined by statutory and planning agencies. However, absence of such a designation does not necessarily imply a lack of quality or value. Factors such as accessibility and local scarcity can render areas of nationally unremarkable quality, highly valuable as a local resource. The quality and condition are also considered in the determination of the value of a landscape. The evaluation of landscape value is undertaken with reference to the definitions stated in Table 14.3.

Table 14.3: Landscape Value

Landscape Value	Classification Criteria
High	Nationally designated or iconic, unspoilt landscape with few, if any, degrading elements.
Medium	Regionally or locally designated landscape, or an undesignated landscape with locally important landmark features and some detracting elements.
Low	Undesignated landscape with few if any distinct features or with several degrading elements.

Landscape Susceptibility

Landscape susceptibility relates to the ability of a particular landscape to accommodate the Proposed Development. Landscape susceptibility is appraised through consideration of the baseline characteristics of the landscape, and in particular the scale or complexity of a given landscape.

The evaluation of landscape susceptibility is undertaken with reference to a three-point scale, as outlined in Table 14.4.

Table 14.4: Landscape Susceptibility Criteria

Landscape Susceptibility	Classification Criteria
High	Small scale, intimate or complex landscape considered to be intolerant of even minor change.
Medium	Medium scale, more open or less complex landscape considered tolerant to some degree of change.
Low	Large scale, simple landscape considered tolerant of a large degree of change.

Landscape Sensitivity

Landscape sensitivity to change is determined by employing professional judgment to combine and analyse the identified landscape value, quality and susceptibility and is defined with reference to the scale outlined in Table 14.5.

Table 14.5: Landscape Sensitivity to Change Criteria

Landscape Sensitivity	Classification Criteria
High	Landscape characteristics or features with little or no capacity to absorb change without fundamentally altering their present character. Landscape designated for its international or national landscape value or with highly valued features. Outstanding example in the area of well cared for landscape or set of features that combine to give a particularly distinctive sense of place. Few detracting or incongruous elements.
Medium-High	Landscape characteristics or features with a low capacity to absorb change without fundamentally altering their present character. Landscape designated for regional or county-wide landscape value where the characteristics or qualities that provided the basis for their designation are apparent or a landscape with highly valued features locally. Good example in the area of a well-cared for landscape or set of features that combine to give a clearly defined sense of place.
Medium	Landscape characteristics or features with moderate capacity to absorb change without fundamentally altering their present character. Landscape designated for its local landscape value or a regional designated landscape where the characteristics and qualities that led to the designation of the area are less apparent or are partially eroded or an undesignated landscape which may be valued locally – for example an important open space. An example of a landscape or a set of features which is relatively coherent, with a good but not exceptional sense of place - occasional buildings and spaces may lack quality and cohesion.
Medium-Low	Landscape characteristics or features which are reasonably tolerant of change without determent to their present character. No designation present or of little local value. An example of an un-stimulating landscape or set of features. with some areas lacking a sense of place and identity.

Landscape Sensitivity	Classification Criteria
Low	Landscape characteristics or features which are tolerant of change without determent to their present character. An area with a weak sense of place and/or poorly defined character /identity. No designation present or of low local value or in poor condition. An example of monotonous unattractive visually conflicting or degraded landscape or set of features.

Magnitude of Landscape Change

Magnitude of change is an expression of the size or scale of change in the landscape, the geographical extent of the area influenced and the duration and reversibility of the resultant effect. The variables involved are described below:

- The extent of existing landscape elements that will be lost, the proportion of the total extent that this represents and the contribution of that element to the character of the landscape.
- The extent to which aesthetic or perceptual aspects of the landscape are altered either by removal of existing components of the landscape or by addition of new ones.
- Whether the effect changes the key characteristics of the landscape, which are integral to its distinctive character.
- The geographic area over which the landscape effects will be felt (within the project development site itself. The immediate setting of the project development site. At the scale of the landscape type or character area. On a larger scale influencing several landscape types or character areas).
- The duration of the effects (short term, medium term or long term) and the reversibility of the effect (whether it is permanent, temporary or partially reversible).

Changes to landscape characteristics can be both direct and indirect.

Direct change occurs where the Proposed Development will result in a physical change to the landscape within or adjacent to the Site.

Indirect changes are a consequence of the direct changes resulting from the Proposed Development. They can often occur away from the Site (for example, offsite construction staff parking) and may be a result of a sequence of interrelationships or a complex pathway (for example, a new road or footpath construction may increase public access and associated problems e.g. littering). They may be separated by distance or in time from the source of the effects. The magnitude of change affecting the baseline landscape resource is based on an interpretation of a combination of the criteria set out in Table 14.6.

Table 14.6: Magnitude of Landscape Change Criteria (Landscape Effects)

Magnitude of Landscape Change	Classification Criteria
None	No change.
Negligible	Little perceptible change.
Low	Minor change, affecting some characteristics and the experience of the landscape to an extent. Introduction of elements that is not uncharacteristic.
Medium	Noticeable change, affecting some key characteristics and the experience of the landscape. Introduction of some uncharacteristic elements.
High	Noticeable change, affecting many key characteristics and the experience of the landscape. Introduction of many incongruous developments
Very High	Highly noticeable change, affecting most key characteristics and dominating the experience of the landscape. Introduction of highly incongruous development.

14.3.8 Visual Effects

Visual effects are determined by the extent of visibility and the nature of the visibility (i.e., how a development is seen within the landscape), for example, whether it appears integrated and balanced within the visual composition of a view or whether it creates a focal point.

Negative visual effects may occur through the intrusion of new elements into established views, which are out of keeping with the existing structure, scale and composition of the view. Visual effects may also be beneficial, where an attractive focus is created in a previously unremarkable view or the influence of previously detracting features is

reduced. The significance of effects will vary, depending on the nature and degree of change experienced and the perceived value and composition of the existing view.

Receptors

For there to be a visual impact, there is the need for a viewer. Views experienced from locations such as settlements, recognised routes and popular vantage points used by the public have been included in the assessment. Receptors are the viewers at these locations. The degree to which receptors, i.e., people, will be affected by changes as a result of the Proposed Development depends on a number of factors, including:

- Receptor activities, such as taking part in leisure, recreational and sporting activities, travelling or working.
- Whether receptors are likely to be stationary or moving and how long they will be exposed to the change at any one time.
- The importance of the location, as reflected by designations, inclusion in guidebooks or other travel literature, or the facilities provided for visitors.
- The extent of the route or area over which the changes will be visible.
- Whether receptors will be exposed to the change daily, frequently, occasionally or rarely.
- The orientation of receptors in relation to the Proposed Development and whether views are open or intermittent.
- Proportion of the developments that will be visible (full, sections or none).
- Viewing direction, distance (i.e., short-, medium- and long-distance views) and elevation.
- Nature of the viewing experience (for example, static views, views from settlements and views from sequential points along routes).
- Accessibility of viewpoint (public or private, ease of access).
- Nature of changes (for example, changes in the existing skyline profile, creation of a new visual focus in the view, introduction of new man-made objects, changes in visual simplicity or complexity, alteration of visual scale, landform and change to the degree of visual enclosure).
- Nature of visual receptors (type, potential number and sensitivity of viewers who may be affected).

Value of the View

Value of the view is an appraisal of the value attached to views and is often informed by the appearance on Ordnance Survey of tourist maps and in guidebooks, literature or art. Value can also be indicated by the provision of parking or services and signage and interpretation. The nature and composition of the view is also an indicator. The value of the view is determined with reference to the definitions outlined in Table 14.7.

Table 14.7: Value of the View

Value	Classification Criteria
High	Nationally recognised view of the landscape, with no detracting elements.
Medium	Regionally or locally recognised view, or unrecognised but pleasing and well composed view, with few detracting elements.
Low	Typical or poorly composed view often with numerous detracting elements.

Visual Susceptibility

The GLVIA guidelines identify that the susceptibility of visual receptors to changes in views and visual amenity is a function of:

- The occupation or activity of people experiencing the view at a particular location.
- The extent to which their attention or interest may therefore be focused on the views and visual amenity they experience at particular locations.

For example, residents in their home, walkers whose interest is likely to be focused on the landscape or a particular view, or visitors at an attraction where views are an important part of the experience often indicate a higher level of susceptibility. Whereas receptors occupied in outdoor sport, where views are not important, or at their place of work, are often considered less susceptible to change. Visual susceptibility is determined with reference to the three-point scale and criteria outlined in Table 14.8.

Table 14.8: Visual Susceptibility

Susceptibility	Classification Criteria
High	Receptors for which the view is of primary importance and are likely to notice even minor change.
Medium	Receptors for which the view is important but not the primary focus and are tolerant of some change.
Low	Receptors for which the view is incidental or unimportant and is tolerant of a high degree of change

Visual Sensitivity

Sensitivity to change considers the nature of the receptor. for example, a person occupying a residential dwelling is generally more sensitive to change than someone working in a factory unit. The importance of the view experienced by the receptor also contributes to an understanding of the susceptibility of the visual receptor to change as well as the value attached to the view.

A judgement is also made on the value attached to the views experienced. This takes account of:

- Recognition of the value attached to particular views, for example in relation to heritage assets, or through planning designations.
- Indicators of the value attached to views by visitors, for example through appearance in guidebooks or on tourist maps, provision of facilities for their enjoyment (sign boards, interpretive material) and references to them in literature or art.
- Possible local value. it is important to note that the absence of view recognition does not preclude local value, as a view may be important as a resource in the local or immediate environment due to its relative rarity or local importance.

The visual sensitivity to change is based on interpretation of a combination of all or some of the criteria outlined in

Table 14.9.

Table 14.9: Sensitivity to Change Criteria

Visual Sensitivity	Classification Criteria
High	Users of outdoor recreational facilities, on recognised national cycling or walking routes or in nationally designated landscapes. Residential buildings.
Medium-High	Users of outdoor recreational facilities, in highly valued landscapes or locally designated landscapes or on local recreational routes that are well publicised in guidebooks. Road and rail users in nationally designated landscapes or on recognised scenic routes, likely to be travelling to enjoy the view.
Medium	Users of outdoor recreational facilities including public open space in moderately valued landscapes. Users of primary transport road network, orientated towards the Proposed Development, likely to be travelling for other purposes than just the view.
Medium-Low	People engaged in active outdoor sports or recreation and less likely to focus on the view. Primary transport road network and rail users likely to be travelling to work with oblique views of the project or users of minor road network.
Low	People engaged in work activities indoors, with limited opportunity for views of the Proposed Development.

Magnitude of Visual Change

Visual effects are direct effects of the magnitude of change within an existing view will be determined by the extent of visibility of the Proposed Development. The magnitude of the visual effect resulting from the development at any particular viewpoint or receptor is based on the size or scale of change in the view, the geographical extent of the area influenced and its duration and reversibility. The variables involved are described below:

- The scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the development.
- The degree of contrast or integration of any new features or changes in the landscape form, scale, mass, line, height, skylining, back-grounding, visual clues, focal points, colour and texture.
- The nature of the view of the Proposed Development, in relation to the amount of time over which it will be experienced and whether views will be full, partial or glimpses.

- The angle of view in relation to the main activity of the receptor, distance of the viewpoint from the development and the extent of the area over which the changes will be visible.
- The duration of the effects (short term, medium term or long term) and the reversibility of the effect (whether it is permanent, temporary or partially reversible).

The magnitude of visual effect resulting from the development at any particular viewpoint or receptor is based on the interpretation of the above range of factors and is set out in Table 14.10.

Table 14.10: Magnitude of Visual Change Criteria (Visual Effects)

Magnitude	Classification Criteria
None	No change in the existing view.
Negligible	The development will cause a barely discernible change in the existing view.
Low	The development will cause very minor changes to the view over a wide area or minor changes over a limited area.
Medium	The development will cause modest changes to the existing view over a wide area or noticeable change over a limited area.
High	The development will cause a considerable change in the existing view over a wide area or a significant change over a limited area.
Very High	The development will cause significant changes in the existing view over a wide area or a change which will dominate over a limited area.

14.3.9 Duration and Quality of Effects

Table 14.11 provides the definition of the duration of landscape and visual effects.

Table 14.11: Definition of Duration of Effects

Duration	Description
Temporary	Effects lasting one year or less.
Short Term	Effects lasting one to seven years.
Medium Term	Effects lasting seven to fifteen years.
Long Term	Effects lasting fifteen to sixty years.
Permanent	Effects lasting over sixty years.

The quality of both, landscape and visual effects, can be Beneficial (Positive), Adverse (Negative) or Neutral.

14.3.10 Significance Criteria

The objective of the assessment process is to identify and evaluate the potentially significant effects arising from the Proposed Development. The assessment will identify the residual effects likely to arise from the finalised design taking into account mitigation measures and the change over time.

The significance of effects is assessed by considering the sensitivity of the receptor and the predicted magnitude of effect in relation to the baseline conditions. In order to provide a level of consistency and transparency to the assessment and allow comparisons to be made between the various landscape and visual receptors subject to assessment, the assessment of significance is informed by pre-defined criteria as outlined in the table below. When assessing significance, individual effects may fall across several different categories of significance and professional judgement is therefore used to determine which category of significance best fits the overall effect to a landscape or visual receptor.

The significance of the effects can be adverse (negative) or beneficial (positive) according to the definitions set out in Table 14.12.

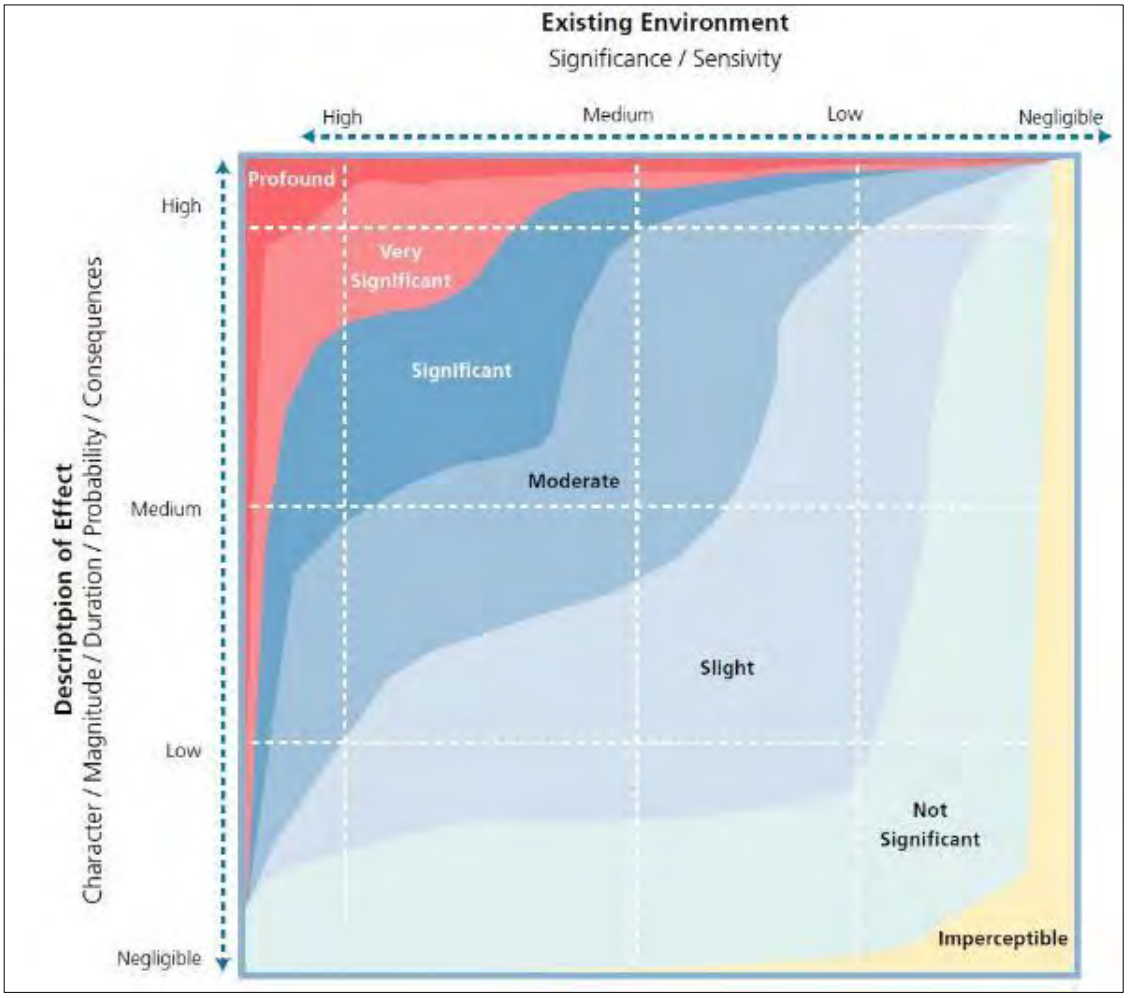
Table 14.12: Categories of Significance of Landscape and Visual Effects

Significance Category	Description of Effect
Profound	An effect that obliterates sensitive characteristics within the landscape and/or visual environment.

Significance Category	Description of Effect
Very Significant	An effect which, by its character, magnitude, duration, or intensity significantly alters most of a sensitive aspect of the landscape and/or visual environment.
Significant	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the landscape and/or visual environment.
Moderate	An effect that alters the townscape in a manner that is consistent with existing and emerging baseline trends.
Slight	An effect which causes noticeable changes in the landscape and/or visual environment without affecting its sensitivities.
Not Significant	An effect which causes noticeable changes in the landscape and/or visual environment but without significant townscape and/or visual consequences.
Imperceptible	An effect capable of measurement but without significant landscape and/or visual consequences.

The significance of the effect is determined by considering the magnitude of the effect and the quality of the baseline environment affected by the Proposed Development. The basis for consideration of the significance of effects is included in Figure 14-1.

Figure 14-1: Basis for Consideration of Significance of Effects [26]



Effects will be assessed for all phases of the Proposed Development. Construction effects are considered to be temporary, short-term effects which occur during the construction/decommission phase only. Operational/residual effects are those long-term effects, which will occur as a result of the presence or operation of the Proposed Development.

The quality of each effect is based on the ability of the landscape character or visual receptor to accommodate the Proposed Development, and the impact of the development within the receiving context. Once this is done, the quality

[26] Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports', May 2022.

of the effect is then assessed as being neutral, beneficial or adverse. A change to the landscape or visual resource is not considered to be adverse simply because it constitutes an alteration to the existing situation.

14.3.11 Cumulative Effects

The approach used to determine cumulative effects has drawn on guidance on cumulative impact assessment published by the GLVIA[3]. Cumulative landscape and visual effects may result from additional changes to the baseline landscape or views as a result of the Proposed Development in conjunction with other developments of a similar type and scale.

The cumulative assessment includes developments that are consented but not constructed, that are the subject of undetermined applications, or are currently at scoping which are similar in type and scale to the Proposed Development.

The list of cumulative developments has been compiled from known planning applications available on Planning Search of MCC website and known proposed public sector projects (see Appendix D).

Magnitude of Cumulative Effects

The principle of magnitude of cumulative effects makes it possible for the proposed scheme to have a major impact on a particular receptor, while having only a minor cumulative impact in conjunction with other existing developments.

The magnitude of cumulative effects arising from the proposed scheme is assessed as very high, high, medium, low or negligible, with intermediate categories, based on interpretation of the following parameters:

- The additional extent, direction and distribution of existing and other developments in combination with the Proposed Development.
- The distance between the viewpoint, the Proposed Development and the cumulative developments.
- The landscape setting, context and degree of visual coalescence of existing and Proposed Development and cumulative developments.

Significance of Cumulative Effects

As for the assessment of landscape and visual effects, the significance of any cumulative effects follows a same classification as illustrated in Section 14.3. Basis for consideration of significance of effects, in Section 13.2.10, and will be assessed as Profound, Very Significant, Moderate, Slight, Not Significant, Imperceptible.

Limitations of Cumulative Assessment

The cumulative assessment focuses on potential cumulative effects relating to the main permanent structure of each cumulative development. This is due to the uncertainty of the timing of construction activities for each of the identified developments. As a result, temporary structures and activity relating to construction have not been considered within the cumulative assessment.

14.4 Baseline Environment

14.4.1 Site Context

The Site of the Proposed Development is located at Woodtown, Co. Meath. The Site lies approximately 96m above Ordnance Datum (AOD) and ground level is relatively flat across the Site. The substation is located within a single field which is positioned at the centre of a number of fields currently used for crop production.

The R125 regional road is approximately 2km east, with the L62051 and the L2207 local roads to the west and east of the Site. The nearest residential settlements (towns and villages) to the Site are Summerhill, approximately 6km to the southwest, Trim approximately 12km to the northwest, Dunshaughlin, approximately 7km to the northeast, and Dunboyne approximately 13.5km to the southeast.

14.4.2 Existing Landscape Context

The study area is characterised by open fields with hedgerows delineating field boundaries. The Proposed Development site is located within the confines of an arable field with boundaries consisting of bands of mature hedgerows with semi-mature or mature trees. The hedgerow pattern varies throughout the study area with some areas of low well-kept hedgerows and some unmanaged hedgerows with gaps and trees of varying maturity.

It should be noted that this study area relates to the main elements of the development that are likely to have landscape and visual effects, most notably the proposed substation development. Other works, although not specifically referenced (including the access road and proposed passing bays on the L62051), are also included in

this assessment. The surrounding landscape character and the visual amenity is of a similar nature to the immediate site, with large fields and associated hedgerows. The existing overhead power line (which cuts through the site at its western boundary), is a notable light industrial feature on the landscape. The large metal pylons punctuate the cable corridor.

There are a small number of private dwellings located along both sides of the Cul de Sac to the south (off the Glen Road) and some individual properties are located along the L62051 - another Cul de Sac to the northeast off the R125. The nearest property is located approximately 900m northeast of the Site - dwellings located within a 1km radius will be assessed for a RVAA (see Appendix H). The nearest public road is the L2207 located approximately 1.7km west of the Proposed Development.

Two notable features of height on the wider landscape are Clarkstown Radio Transmitter (248m high) some 4km south of the site and an existing communication mast a short distance to the southeast.

A landscape designation map has been included in Appendix H.1

14.4.3 Landscape Character Assessment of County Meath

The Landscape Character Assessment, Appendix 5 contained within the Meath CDP (2021-2027), defines 4 overarching Landscape Character Types, the Site is identified as straddling the cusp of two Landscape Character Types: 'Central Lowlands' and 'Tara Skryne Hills' where the landscape character is considered to have a High/Exceptional Landscape Value with a Medium/High Sensitivity to change respectively. Therefore, this report considers it prudent to assess both.

The 'Central Lowlands' landscape of the Site environs includes pasture and arable farmland, rolling drumlins and thick wooded hedgerows – This area is of High landscape value, Medium landscape sensitivity and Regional landscape importance.

Views within the Central Lowlands Landscape Character area are often limited by roadside vegetation consisting of mature hedgerows and bands of trees. Gaps or stretches with low hedgerows open up views across a rural landscape with some large fields. The landscape is predominantly "*large lowland landscape [area] composed of rolling drumlins interspersed with numerous large estates and associated parkland. Thick wooded hedgerows, with some conifer plantations, and shelterbelts of ash and larch, separate medium to large fields. Deep roadside drainage ditches and banked hedgerows are a common feature of the landscape in the enclosed rural road corridors*." Many of the views in this area "*are generally limited by the complex topography and mature vegetation except at the tops of drumlins where panoramic views are available… Short-range views are channelled along narrow valleys between drumlins and often along road or river corridors*."

The Meath Landscape Character Assessment (LCA) describes the capacity of this Central Lowlands Landscape Character as "*Medium potential capacity to accommodate overhead cables, substations and communication masts due to the complexity of the area, which has a variety of land uses and a robust landscape structure*" It is recommended development in Central Lowlands "*Have particular regard to the retention of high quality landscapes on the tops of drumlins which are intervisible with the Hills of Tara and Skryne in LCA 12*".

Tara Skryne Hills is a particularly sensitive receiving environment with a high scenic value. "*The landscape comprises broad rolling hills, separated by a mixture of well-managed small and large fields, which are enclosed by thick thorn hedgerows and mature trees (ash, beech and oak*)". This Landscape Character type is comprised two areas, the upland aspect of the Hill of Tara is located approximately 9.5kms to the north the Site where distance, rolling drumlin topography and intervening vegetation prevent open vistas - This area is of Exceptional landscape value, High landscape sensitivity and National/International landscape importance.

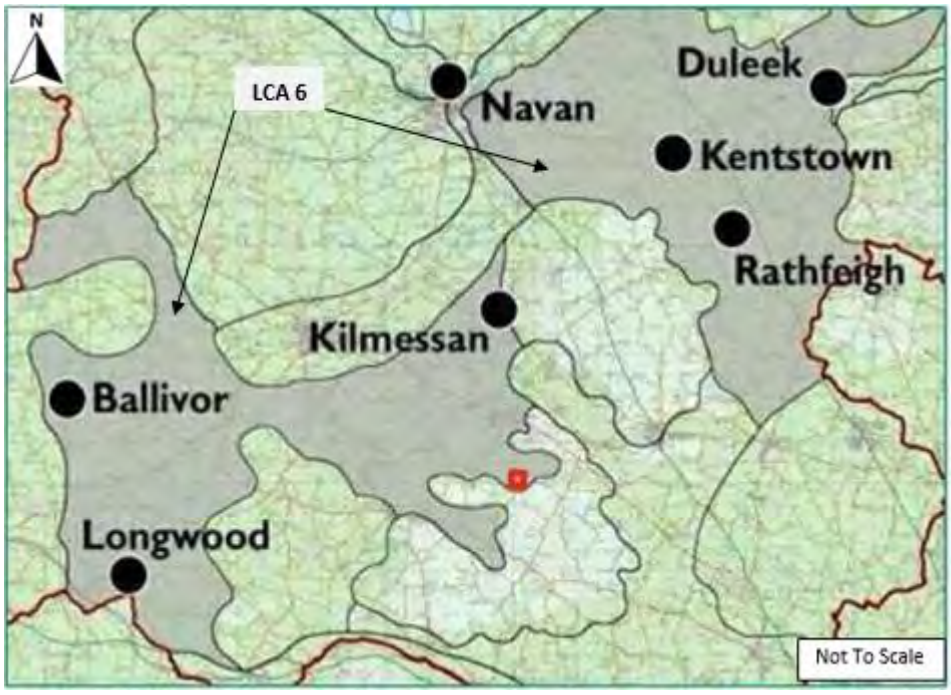
The Site is located in an area southeast of the M3 motorway corridor where the lower area of the Tara Skryne Hills Character Area wraps around the Central Lowlands Character Area.

The Meath LCA states Tara Skryne Hills Landscape Character as having a low potential capacity to accommodate overhead cables, substations and communication masts due to their visual prominence and the high sensitivity of this LCA, however, the Site will be serviced by the existing overhead power line.

The approximate Site location is indicated on Figure 14-2 and Figure 14-3.

Figure 14-2: LCA 12 from MCDP 2021–2027

Figure 14-3: LCA 6 from Meath CDP 2021–2027



14.4.4 Open Space, Vegetation and Green Infrastructure

There are no historic gardens or designed landscapes recorded on the National Inventory of Architectural Heritage Gardens Survey within the Site or study area.

Open spaces within the immediate area around the Site are mainly limited to the surrounding fields and where relevant, the roadside. Vegetation in the vicinity of the Proposed Development is largely limited to hedgerow field boundaries, shelterbelts and commercial forestry.

14.4.5 Protected Views and Prospects

Meath County Development Plan (CDP) 2021-2027

A number of protected views and prospects have been recognised in the Meath CDP. It is an objective of the Meath CDP, (HER OBJ 56) "*To preserve the views and prospects listed in Appendix 10, in Volume 2 and on Map 8.4 and to protect these views from development which would interfere unduly with the character and visual amenity of the landscape"* The views identified in County Meath are expansive, iconic or panoramic and tend to demonstrate a key feature or valuable element of the landscape.

The Site and the study area does not contain protected views and prospects recognised by the CDP.

14.4.6 Landscape Value

The Meath Landscape Character Assessment has recognised particular parts of the landscape as being of significant value - particularly the Tara Skryne Hills, as well as drumlin tops and the setting of heritage features. The landscape value of LCA 12 - Tara Skryne Hills has been classified as 'Exceptional Value'. The landscape value of LCA 6 - Central Lowlands has been classified as 'High Value'. Reference should be made to Figure 14-2 and Figure 14-3Figure 14-3.

14.4.7 Walking and Cycling Routes

There are no waymarked walking or cycling routes located within the study area.

14.5 Potential Impacts

The following potential visual effects, direct and indirect landscape effects, as well as the duration and nature of effects arising from the Proposed Development, have been identified.

14.5.1 Effects at Construction Phase

Areas experiencing landscape and visual effects during the construction stage will be experienced locally and may be glimpsed from the nearby local road network. The sensitivity of views on residential receptors is considered high, particularly for the residents located along the local roads to the north and east of the Proposed Developments location, however distance will be a mitigating factor given the 900m between the nearest dwelling to the Proposed Developments boundary. It is considered that there will be some available views of construction works within the wider area due to the nature of the development and the open views across the landscape, however, local vegetation will screen the majority of potential views of the construction site.

Construction effects will result in:

- Potential effects to landscape character or visual amenity within the locality or the wider study area as a result of the visibility of construction activities such as ground works and associated construction machinery.
- Effects of temporary site infrastructure such as site traffic and construction compounds especially those located in areas adjacent to sensitive landscape and visual receptors.
- Potential physical effects arising from construction of the development and in particular on the landscape resource within the site area.

Landscape and visual effects and their significance during construction works will be temporary. They will be highest within the immediate vicinity of the Site. The majority of significant views of construction works will likely be experienced within a radius of approximately 200m of the construction site and distant views can range up to 750m radius, for properties located northeast of the Proposed Development. The nearest property is located approximately 900m northeast of the substation site. Given the undulating topography and abundant vegetation, the potential for views of construction works from east, south and west is reduced significantly and/or removed. The magnitude of visual effects is considered Moderate to High in available close distance views. Their significance is considered Moderate-Significant Adverse. The visibility of construction works within the wider study area will be related to vehicular construction traffic along the L62051 and the R125 to the east of the Site. The landscape and visual effects and their significance at construction stage will be temporary, adverse and range from Low/Negligible in the wider

study area (approximately 200 to 600m and beyond) to Medium/High (within approximately 200m of the Site boundary). The significance will range from Slight/Not Significant Neutral in the wider study area to Moderate/Significant Adverse within approximately 200m radius from the boundary of the Proposed Development.

14.5.2 Effects at Operation

Sections of the landscape character north and south in close proximity of the Proposed Development have already been altered significantly in recent years due to the 220kV electrical line which runs through the study area. The introduction of which has added a light industrial appearance to the surrounding landscape character which was previously predominately rural in nature. Further changes to the landscape character due to the Proposed Development are therefore not uncharacteristic although they will result in an additional change to the remaining rural landscape character within the study area.

Operational phase effects will result in:

- Potential effects of the development on landscape resources and landscape character, including the perceptual qualities of the landscape, and upon designated landscapes where the primary focus of designations or sensitive landscapes is altered.
- Potential effects of the development on views and visual amenity such as the potential for the development to alter (beneficial or adverse) the composition of the view from a viewpoint.
- Potential cumulative effects of the Proposed Development in combination with other planned or permitted developments of similar type, nature and scale upon the landscape and visual resource of the study area.

Some of the key landscape and visual operational effects may relate to:

- The significant opportunity to improve views from within the local landscape.
- The extent to which the development may intrude into existing views or improve views experienced by residents and day to day users of the area.
- The extent to which users of the landscape such as tourists and visitors may be subject to effects (beneficial or adverse) arising from the Proposed Development.

14.5.2.1 Landscape Effects

The following potential direct and indirect landscape effects arising from the Proposed Development have been identified, along with their duration and quality.

Direct or indirect effects on the fabric of the landscape and its receptors are closely related to the nature and extent of visibility. The Site context is of agricultural land with an element of industrial character associated with the 220kV OHL routing through the immediate landscape. The introduction of the Proposed Development will modify the landscape character locally and introduce a further light industrial/infrastructural component to the area.

Direct and long-term change or modification will occur locally where the Proposed Development will be physically located. The Proposed Development will cause a change in character of the Site from rural to light industrial. The magnitude of landscape change is considered High and the resulting significance is Moderate Adverse. Indirect change will occur outside of the Proposed Development site boundary, where the visibility of the Proposed Development influences the perception of the character of the landscape. The indirect change in landscape character is greatest in its immediate and nearby surroundings within approximately 200m from the Proposed Development boundary, where infrastructure associated with Proposed Development, including masts, may be seen.

Beyond the immediate environment between 200m and 700m the magnitude of change in these areas is considered Low where partial views are obscured by intervening vegetation. The significance of landscape effects on the landscape character in these areas is therefore considered to be Slight - Moderate Adverse at operation, and Moderate Adverse temporarily during construction.

Indirect change and the significance of landscape effects will reduce quickly beyond approximately 200 to 300m distance from the site boundary due to intervening vegetation. Landscape effects range between negligible – low with a resulting significance of slight adverse and negligible neutral with increasing distance from the Proposed Development in the remaining study area.

A recognisable modification in the landscape character outside the field boundaries and beyond the immediate local roads in middle- and long-distance views, beyond 700m from or along the R125 to the south are unlikely to be noticed due the nature of the development, intervening vegetation and built structures. The landscape change at middle or long distances (700m to 1.7km and beyond) will range from Very Low to Negligible. The significance is considered

Not-Significant Neutral as the development site will integrate in the overall pattern of the surrounding landscape. A summary table for landscape effects has been provided below.

There are no receptors within 900m of the Proposed Development boundary, with the exception of farmers accessing the lands. When seen, the majority of the Site will continue to be screened by field hedgerow.

Table 14.13: Summary of Landscape Effects

Receptor	Sensitivity	Susceptibility	Magnitude of Landscape Change (at operation)	Quality of Landscape Effects	Significance of Landscape Effects
LCA 6 Central Lowlands Site and Immediate Environs 300m radius	High	Low	High	Adverse	Slight - Moderate
LCA 12 Tara Skryne Hills Site and Immediate Environs 300m radius	Exceptionally High	Low	High	Adverse	Moderate
LCA 6 Central Lowlands Local Environs 300m – 1km radius	High	High	Low-Negligible	Neutral	Slight - Not Significant
LCA 12 Tara Skryne Hills Local Environs 300m – 1km radius	Exceptionally High	High	Low-Negligible	Neutral	Slight - Not Significant
LCA 6 Central Lowlands Wider area beyond 1Km	High	High	Negligible – Very Low	Neutral	Not Significant
LCA 12 Tara Skryne Hills Wider area beyond 1Km	Exceptionally High	High	Negligible – Very Low	Neutral	Not Significant

14.5.2.2 Visual Effects

The Proposed Development of an electricity substation includes large vertical elements in the context of the Site's surrounding environs. Busbars and masts are the most visible elements associated with this type of development. The substation component of the Proposed Development is confined within the boundary of one agricultural field. Visual receptors associated with residential property are likely to be located beyond 900m northeast of the Site boundary. The majority of the Proposed Development's immediate site is currently visually screened by a network of hedgerow vegetation along the existing field boundaries.

The majority of visual effects will be localised and confined to locations in close proximity, within approximately 300m radius of the Proposed Development. There are no visual receptors located within 300m of the proposed substation boundary, with the exception of landowners and/or farmers tending livestock within the neighbouring field network - these Receptors for which the view is incidental or unimportant are tolerant of a high degree of change and are considered to have a Low Susceptibility to visual change. The highest visual effects will be experienced within the immediate surrounds, although the visual changes are not totally uncharacteristic due to an existing overhead powerline running through the Site.

Passing bays on the L62051 are also not considered to be uncharacteristic due to the existing road use and are considered to have a low magnitude of visual change. Given the low sensitivity of the occasional visual receptor within the immediate surrounds, the significance of change is considered Not Significant to Slight Adverse.

The proposed substation and access road will extend the change in visual character from rural to light industrial within the immediate environs. The Magnitude of visual change is considered high due to the introduction of a substation development within a previously arable field. Given the low sensitivity of the occasional visual receptor within the immediate surrounds, the significance of change is considered Not Significant to Slight Adverse.

Vertical elements of the Proposed Development will become visible in the middle distance when approximately 300m - 1km away. There are no visual receptors located within 900m of the Proposed Development boundary, (again, with the exception of landowners and/or farmers tending livestock). However, there are a small number of dwellings within a 1.5km radius and these group of visual receptors are considered to have a High Susceptibility to Visual Change. Visual effects at that distance are considered Low-Medium and their significance will be Slight-Moderate Adverse. Where visible, the taller elements of Proposed Development will be seen above the field hedgerows. It will not substantially alter the visual amenity in views at this distance.

The majority of the visual receptors are located beyond 1km away. A number of residential dwellings are set back from the local road along two Cul de Sac's. However, views beyond 700m become rare due to intervening topography and vegetation screening partially or fully the Proposed Development resulting in a Negligible or No visual effects and a significance ranging between Not Significant to Imperceptible Neutral. Views of the Proposed Development from the Cul de Sac directly south (off the Glen Road) are fully screened due to the undulating topography. Views from the L62051 Cul de Sac to the northeast and the L2207 at Derrypatrick are possible, the change will be barely discernible given the distance between the proposed substation and access road and the receptors along these routes.

Table 14.14: Summary of Visual Effects

Receptor	Sensitivity	Susceptibility	Magnitude of Visual Change (at operation)	Quality of Visual Effects	Significance of Visual Effects
Immediate views within approx. 300m from the centre of the Proposed Development	Low	Low	High	Adverse	Not significant – Slight
Medium-distance views approximately 300m-1km from the centre of the Proposed Development	High	High	Low-Medium	Adverse	Slight - Moderate
Long-distance views beyond approximately 1km from the centre of the Proposed Development	High	High	Low - None	Neutral	Not-Significant - Imperceptible

A total of 10 photomontages (cumulative view and viewpoints 1 to 9)) from representative viewpoint locations have been prepared illustrating the nature of visibility of the proposal at various distances and contexts. The Photomontages are included in Appendix H.

Considering the nature of the Proposed Development, the magnitude of visual change is considered long-term. A description of effects on visual receptors for Photomontages 1-9, including an overview map showing the viewpoint locations is provided in Table 14.15.

A description of the cumulative view is included in Section 14.8 Cumulative Effects in conjunction with other solar farms further afield.

Figure 14-4: Map and Direction of Viewpoint Locations

Table 14.15: Photomontage Locations Summary

Photomontage	Baseline View/Permitted View	Sensitivity/Susceptibility to Visual Change	Proposed Change	Magnitude of Visual Change	Significance/Quality of Visual Effects
Photomontage 1 View north from adjacent field Distance: 560m	Baseline View This is an open view of the wider landscape taken from an adjacent field on slightly higher ground south of the Site. The view captures the gently undulating land and irregular shaped field patterns with hedgerows in various conditions. The existing electricity 220 pylons cross the Site in a roughly north – south alignment. The tyre track in the foreground provides internal field access associated with local agricultural activities. A belt of woodland to the left of this image provides a vegetative screen on the landscape along the original field boundary and to the right, the edge of a stand of commercial forestry in visible. Receptors: The position of this view is not publicly accessible nor does not represent a sensitive receptor in the area, however it does permit an open view of the receiving environment.	High/Low	The Proposed Development will introduce a new electricity Substation into the landscape. The Proposed Development introduces an industrial element to the landscape. While the proposal is relatively low lying on the landscape, the proposed telecom mast protrudes above the skyline from this viewpoint position.	High	Significant/Adverse
Photomontage 2 View north from Cul de Sac off The Glen Road Distance: 1060m	Baseline View This view is taken from the of Cul de Sac off The Glen Road – south of the Site. The farm gate in the centre of this image accesses private property which allows agricultural access to the fields adjacent to the Site – see View 1. Receptors: This view represents the residents along the Cul de Sac closest to the Proposed Development.	High/High	The Proposed Development is not visible from this location.	None	None
Photomontage 3 View north from Cul de Sac off The Glen Road Distance: 1690m	Baseline View This view is taken from midway along the Cul de Sac off The Glen Road south of the Site. A small number of residential properties are located along road. Receptors: Vehicular traffic, pedestrians, residents. The sensitivity and susceptibility of these receptors is considered Low (Vehicular), Medium (Pedestrians) and High (Residents).	High/High	The Proposed Development is not visible from this location.	None	None
Photomontage 4 View north from The Glen Road Distance: 2300m	Baseline View This view is taken from The Glen Road south of the Site. The gate entrance provides a vista across the landscape towards the Site. This local road has a number of individual residential properties located along both sides. Receptors: Vehicular traffic, pedestrians, residents. The sensitivity and susceptibility of these receptors is considered Low (Vehicular), Medium (Pedestrians) and High (Residents).	High/High	The Proposed Development is not visible from this location.	None	None

Photomontage	Baseline View/Permitted View	Sensitivity/Susceptibility to Visual Change	Proposed Change	Magnitude of Visual Change	Significance/Quality of Visual Effects
Photomontage 5 View west from the R125 Road Distance: 2030m	Baseline View This view is taken from R125 east of the Site. This road is densely vegetated along both sides, however, this view of gently rolling landscape is typical of the views glimpsed through gaps in the hedgerow along this stretch of road. A number of residential properties are located along road. Receptors: Vehicular traffic, pedestrians, residents. The sensitivity and susceptibility of these receptors is considered Low (Vehicular), Medium (Pedestrians) and High (Residents).	High/High	The Proposed Development is not visible from this location.	None	None
Photomontage 6 View from Cul de Sac (L62051) Distance: 740m	Baseline View This view is taken from the Cul de Sac (L62051) northeast of the Site. The gate entrance provides a vista across the landscape towards the Site. This local road has a number of individual residential properties and farmsteads located along both sides. Receptors: Residents of the Cul de sac, light vehicular traffic, pedestrians. The sensitivity and susceptibility of these receptors is considered Low (Vehicular), Medium (Pedestrians) and High (Residents).	High/High	The proposed electricity Substation is visible from this location and will introduce an industrial element to the landscape in the mid-distance. The vertical elements of the proposal (Lighting masts at 25m and the proposed telecom mast at approximately 37m) protrude above the skyline from this location. The view was taken in winter when the field boundary vegetation is leafless, this photomontage provides a worst-case scenario.	Medium	Moderate/Adverse
Photomontage 7 View southwest from the R154 Road Distance: 3020m	Baseline View This view is taken from R154, a busy commuter route connecting Trim to the M3 motorway. The position is located close to the junction with the R125. This stretch of road is sparsely populated although a low hedgerow permits views across the landscape towards the site, however, the intervening field boundary vegetation screens much of the mid distance. Receptors: Vehicular traffic, pedestrians, residents. The sensitivity and susceptibility of these receptors is considered Low (Vehicular), Medium (Pedestrians) and High (Residents).	High/High	The Proposed Development is not visible from this location.	None	None
Photomontage 8 View south from Augherskea, local Road off the R154 Distance: 2430m	Baseline View This view is taken from north of the Site along a stretch of local road with several residential properties. The field entrance provides a vista across the landscape towards the Site. This local road has a number of individual residential properties and farmsteads located along both sides of the road. Receptors: Vehicular traffic, pedestrians, residents. The sensitivity and susceptibility of these receptors is considered Low (Vehicular), Medium (Pedestrians) and High (Residents).	High/High	The Proposed Development is not visible from this location	None	None

Photomontage	Baseline View/Permitted View	Sensitivity/Susceptibility to Visual Change	Proposed Change	Magnitude of Visual Change	Significance/Quality of Visual Effects
Photomontage 9 View southeast from local Road (L2207) at Derrypatrick Distance: 1775m	Baseline View The L2207 local road passes to the west of the Site in a roughly north – south alignment. There are a number of individual residential properties and farmsteads located along both sides of the road. This position provides a vista across the landscape towards the Site. An (existing) communications mast is visible on the horizon from this location further west of the site. Receptors: Vehicular traffic, pedestrians, residents. The sensitivity and susceptibility of these receptors is considered Low (Vehicular), Medium (Pedestrians) and High (Residents).	High/High	The Proposed Development is barely perceptible from this location. Some of the taller elements including the lightning protection masts protrude slightly above the field boundary vegetation however, the existing communications mast will remain the tallest element on the landscape.	Low	Not Significant/Neutral

14.6 Mitigation

The embedded landscape mitigation measures will maximise the retention of existing vegetation, where possible, particularly along the proposed access road to the substation. Spoil from the construction stage will be utilised to create a landscape berm approximately 0.6m in height with a slope gradient of 1:3 which will be planted with a mix of native shrubs and woodland and a native hedgerow will also be planted along the northeaster boundary of the proposed substation (refer Drawings 60657534-ACM-DWG-CM-528 to 530 included with this application) to increase screening from external areas. The selection of planting will be in coordination with the need for clearance beneath overhead transmission lines. The retention of existing vegetation, where possible, as well as the addition of raised shrub and woodland planting will retain existing screening from the east and increase screening effects in views from the northeast of the site.

As all mitigation is embedded in the Proposed Development and there is no additional mitigation, all effects described in the assessment of effects are residual.

14.7 Residual Effects

14.7.1 Do-Nothing Scenario

All components of the environment are constantly changing due to a combination of natural and human processes. When predicting likely direct and indirect effects it is important to remember that there are two available for comparison: the existing environment and the environment as it will be in the future if no development of any kind were to take place – the 'do-nothing impact'.

In landscape terms, if the Proposed Development did not go ahead, the Site will likely remain as a pattern of arable fields within the larger network. In visual terms, the content in available views will remain similar, although changes will occur to existing vegetation due to maturing, pruning or natural decay and the likelihood of additional housing being constructed along the local road network.

14.7.2 Landscape Effects

The Site is located in a pocket of countryside on the cusp of two designated Landscape Character areas, the 'Central Lowlands' and the 'Tara Skryne Hills' - the Site is therefore considered to have a High to Exceptionally High landscape Value with a Medium to High Landscape Sensitivity.

The Proposed Development will result in an increase of light industrial landscape character within the study area. However, the Proposed Development is confined to one field boundary with existing hedgerows and mature tree lines confining this change in landscape character to the Proposed Development's immediate surrounds without significantly extending landscape effects into the wider study area and beyond due to the gently rolling drumlin hills, the significant intervening vegetation providing screening and significant distance from receptors.

The Proposed Development will cause a significant change in character from rural/light industrial to a more intense industrial character where the Site is located. The change in landscape character is greatest in its immediate and nearby surroundings within approximately 200 to 300m from the Proposed Development boundary.

Landscape effects will reduce quickly beyond approximately 300m distance from the site boundary due to intervening vegetation. Landscape effects reduce to not significant with increasing distance from the Proposed Development in the remaining study area.

14.7.3 Visual Effects

The Proposed Development includes an electricity Substation with lightning and telecommunications masts being the most visible element associated with this type of development. The proposed substation and access road is confined within the boundary of agricultural fields. The embedded landscape mitigation measures will maximise the retention of existing vegetation, where possible, particularly along the proposed access road to the substation. Spoil from the construction stage will be utilised to create a landscape berm approximately 0.6m in height with a slope gradient of 1:3 which will be planted with a mix of native shrubs and woodland and a native hedgerow will also be planted along the northeaster boundary of the proposed substation (refer Drawings 60657534-ACM-DWG-CM-528 to 530 included with this application) to increase screening from external areas. The selection of planting will be in coordination with the need for clearance beneath overhead transmission lines. The retention of existing vegetation, where possible, as well as the addition of raised shrub and woodland planting will retain existing screening from the east and increase screening effects in views from the northeast of the site.

The nearest sensitive visual receptor associated with a residential property is located beyond 900m northeast of the substation boundary. The majority of the Proposed Development's immediate site is currently visually screened by a network of hedgerows and mature tree lines existing along field boundaries.

The majority of visual effects will be localised and confined to locations in close proximity, within an approximately 300m radius of the proposed substation and access road. There are no visual receptors located within 300m of the proposed substation boundary, with the exception of landowners and/or farmers tending livestock in the neighbouring fields. The visual change will be significant at the site itself due to the removal of an arable field. Significant visual effects will also be experienced within the immediate surrounds. The visual changes will not be totally uncharacteristic due to an existing overhead powerline running through the Proposed Development's boundary. Passing bays on the L62051 are also not considered to be uncharacteristic due to the existing road use

The upper sections of the Proposed Development will become visible in the middle distance, between 300m-1km away. This includes glimpsed views through hedgerow vegetation along the L 62051 Cul de Sac and the [unnamed] Cul de Sac to the south off the Glen Road. Visual effects decrease with distance and the nearest residential receptor is likely to be beyond 900m. The Proposed Development will not significantly alter the visual amenity in views at this distance.

The majority of sensitive visual receptors are located beyond 1km. The nearest public through road (the L2207) is located approximately 1.7km away from the Proposed Development boundary. Views beyond 1km become rare due to undulating topography and intervening vegetation screening partially or fully the Proposed Development resulting either no visibility or not significant visual effects.

14.8 Cumulative Effects

14.8.1 Cumulative Effects in Conjunction with Woodtown Solar Farm

Woodtown Solar Farm is a 206ha PV Energy Development, the site will wrap around the Application Site posing the potential for visual effects in Combination – "Where two or more features are seen together at the same time from the same place, in the same (arc of) view where their visual effects are combined" (GLVIA 2013). The solar farm consists of four individual Site Areas which extend across the wider landscape. The Proposed Development is centrally located within Site Area 2 of the solar farm layout/plan. The PV panels have a linear arrangement with an east - west alignment within the established field boundary hedgerows.

The majority of available cumulative visual effects will be localised and confined to locations in close proximity of the Proposed Development. There are no sensitive visual receptors located within the immediate area where highest visual cumulative effects will be experienced (with the exception of landowners and/or farmers tending livestock and these receptors for which the view is incidental or unimportant are tolerant of a high degree of change and are considered to have a Low Susceptibility to visual change). Cumulative visual effects from available views in the immediate area are considered Low. Their significance/quality is Slight/Adverse.

The contained nature of the Site within a larger field network, the undulating character of the study area and general hedgerow vegetation restrict the opportunity to experience cumulative effects to distance views from isolated locations along the L62051 Cul de Sac to the north. Where available, the in-combination views present both developments as integrated elements within a wider landscape context and will become quickly screened once the mitigation measures detailed in the Woodtown Solar Farm Landscape Plan (including further enclosure of field boundaries with new hedgerows and infill planting) are implemented and begin to mature. Cumulative visual effects from available views from the north are considered Low. Their significance/quality is Slight/Adverse.

Changes to the wider landscape character resulting from cumulative effects in-combination are considered low-negligible where the topography and the screening effects of vegetation will limit or fully screen the development. The overall cumulative visual effects are considered Low. Their significance/quality is Slight/Adverse.

14.8.2 Cumulative Effects in Conjunction with Other Listed Projects Further Afield

A number of developments of scale (solar farms, substation and battery storage) have been identified in the area. The listed projects are at least 4.6km away from the Proposed Development and will not result in any cumulative impact to the surrounding environment. Due to the scale, nature and distant location of the listed projects and given that the assessed impacts of the Proposed Development are not significant, this development does not have any potential to alter the significance of effects associated with the proposed development. Any cumulative effect will not be significant.

14.9 Summary

15. Traffic and Transport

A Traffic and Transport Assessment has been prepared and is included in Appendix I.

16. Conclusion

This Environmental Considerations Report (ECR) has assessed the likely environmental impacts associated with the Proposed Development (a 220kV AIS substation project, named Culmullin 220kV Substation). The potential environmental impacts arising from the Proposed Development have been considered with regards to the construction and operational phases.

In conclusion, there are no likely significant residual impacts associated with the Proposed Development, assuming the mitigation measures outlined in this report are implemented during the construction and operational phases. The potential impacts arising from the Proposed Development are considered not significant.

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- Geological Survey of Ireland at https://www.gsi.ie/en-ie/Pages/default.aspx.
- National Inventory of Architectural Heritage at http://buildingsofireland.ie/
- Ordnance Survey (OS) Ireland (https://www.osi.ie/)
- Irish Soil Information System (ISIS) (http://gis.teagasc.ie/soils/)

Appendix A Drawings

Drawing Reference	Title
60657534-ACM-DWG-CM-500	Culmullin 220kV Substation Site Location
60657534-ACM-DWG-CM-501	Culmullin 220kV Substation Layout
60657534-ACM-DWG-CM-502	Culmullin 220kV Substation & Indicative OHL to UGC Layout
60657534-ACM-DWG-CM-503	Culmullin 220kV Substation Layout of Sections & Elevations Sheet 1 Of 4
60657534-ACM-DWG-CM-504	Culmullin 220kV Substation Layout of Sections & Elevations Sheet 2 Of 4
60657534-ACM-DWG-CM-505	Culmullin 220kV Substation Layout of Sections & Elevations Sheet 3 Of 4
60657534-ACM-DWG-CM-506	Culmullin 220kV Substation Layout of Sections & Elevations Sheet 4 Of 4
60657534-ACM-DWG-CM-507	Culmullin 220kV Substation EirGrid Building Layout & Elevations
60657534-ACM-DWG-CM-508	Culmullin 220kV Substation Isometric View
60657534-ACM-DWG-CM-509	Culmullin 220kV Substation Drainage Layout
60657534-ACM-DWG-CM-510	Culmullin 220kv Substation Typical Drainage Details Sheet 1 Of 2
60657534-ACM-DWG-CM-511	Culmullin 220kV Substation Typical Drainage Details Sheet 2 Of 2
60657534-ACM-DWG-CM-512	Culmullin 220kV Substation Typical Substation Fence Details
60657534-ACM-DWG-CM-513	Culmullin 220kV Substation Typical Lighting Pole Details
60657534-ACM-DWG-CM-514	Culmullin 220kV Substation Elevations 1 To 4 Sheet 4 Of 4
60657534-ACM-DWG-CM-515	Culmullin 220kV Substation Typical Post & Rail Detail
60657534-ACM-DWG-CM-516	Culmullin 220kV Substation 220kV Line Cable Interface Mast Typical Details
60657534-ACM-DWG-CM-517	Culmullin 220kV Substation 220kV Underground Cable Trench Cross Sections
60657534-ACM-DWG-CM-520	Culmullin 220kV Substation Indicative Vehicle Tracking Sheet 1 of 8
60657534-ACM-DWG-CM-521	Culmullin 220kV Substation Indicative Vehicle Tracking Sheet 2 of 8
60657534-ACM-DWG-CM-522	Culmullin 220kV Substation Indicative Vehicle Tracking Sheet 3 of 8
60657534-ACM-DWG-CM-523	Culmullin 220kV Substation Indicative Vehicle Tracking Sheet 4 of 8
60657534-ACM-DWG-CM-524	Culmullin 220kV Substation Indicative Vehicle Tracking Sheet 5 of 8
60657534-ACM-DWG-CM-525	Culmullin 220kV Substation Indicative Vehicle Tracking Sheet 6 of 8
60657534-ACM-DWG-CM-526	Culmullin 220kV Substation Indicative Vehicle Tracking Sheet 7 of 8
60657534-ACM-DWG-CM-527	Culmullin 220kV Substation Indicative Vehicle Tracking Sheet 8 of 8
60657534-ACM-DWG-CM-528	Culmullin Landscape Plan
60657534-ACM-DWG-CM-529	Culmullin Landscape Section Plan
60657534-ACM-DWG-CM-530	Culmullin Landscape Planting Schedule
60657534-ACM-DWG-CM-001	Proposed Passing Bays on L62051 Site Location Plan
60657534-ACM-DWG-CM-002	Proposed Passing Bays on L62051 Overall Concept Plan
60657534-ACM-DWG-CM-003	Proposed Drainage Arrangement Along L62051
60657534-ACM-DWG-CM-004	Proposed Passing Bays (L62051) Layby 1 - Plan & Profile
60657534-ACM-DWG-CM-005	Proposed Passing Bays (L62051) Layby 2 - Plan & Profile
60657534-ACM-DWG-CM-006	Proposed Passing Bays (L62051) Layby 3 - Plan & Profile
60657534-ACM-DWG-CM-007	Proposed Passing Bays (L62051) Layby 4 - Plan & Profile
60657534-ACM-DWG-CM-008	Proposed Passing Bays (L62051) Layby 5 - Plan & Profile
60657534-ACM-DWG-CM-009	Typical Vehicle Tracking Scenarios
60657534-ACM-DWG-CM-010	Standard Details

Appendix B Flood Risk Assessment

Culmullin 220kV Substation

Flood Risk Assessment

Energia Solar Holdings

Project number: 60657534
Document reference: 60657534_ACM_RP_EN_CM_009_3

16 June 2023

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Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	29 June 2021	First Draft	RR	Richard Reid	Principal Engineer
1	21 July 2021	Second Draft	JD	Jason Doherty	Principal Engineer
2	02 June 2022	Final Draft	BC	Bernice Cahill	Associate Director
3	16 June 2023	Final	BC	Bernice Cahill	Associate Director

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Table of Contents

Figures

Tables

1. Introduction

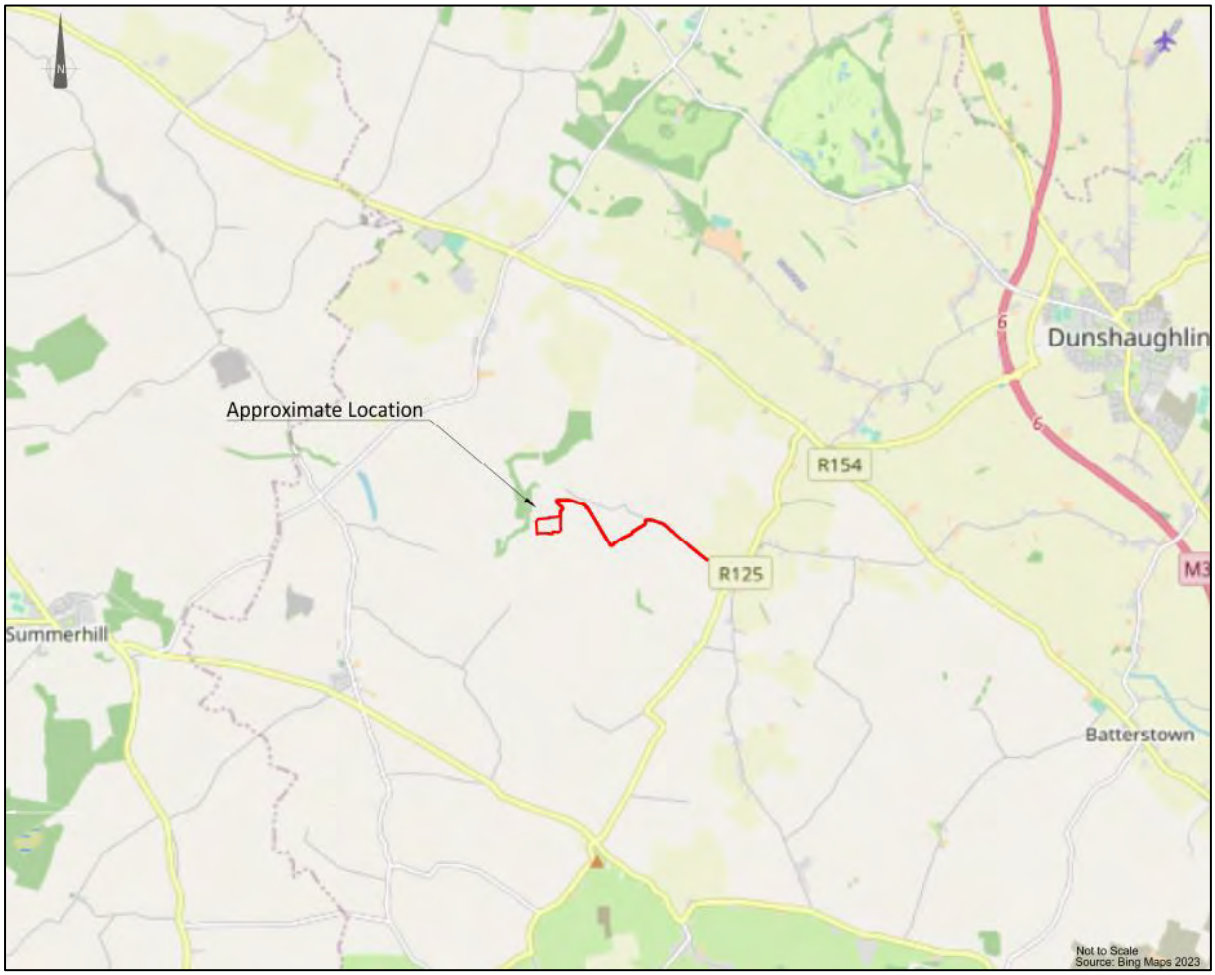
AECOM Ireland Limited (AECOM) has been commissioned by Energia Solar Holdings Limited (the Applicant) to provide Engineering Consultancy Services for the for the development of a 220 kilo Volt (kV) Air Insulated Switchgear (AIS) substation, looped into the existing Maynooth – Gorman 220 kV overhead line (OHL) directly to the west (hereafter referred to as the 'Proposed Development'). This report is a site-specific Flood Risk Assessment (FRA) to support the planning application.

The Site of the Proposed Development is located at Woodtown, Co. Meath (Coordinates: 53°29'33.15"N 6°38'37.32"W). The R154 (regional road) (Trim Road) is approximately 2.9km north, R125 is approximately 2.5km east, R156 is approximately 3.3km south and the L2207 local road is approximately 2.7km to the west. Refer to Figure 1-1.

The nearest residential settlements (towns and villages) to the Site are Summerhill, approximately 6km to the southwest, Trim approximately 12km to the northwest, Dunshaughlin, approximately 7km to the northeast, Dunboyne approximately 13.5km southeast.

The redline boundary of the Proposed Development covers an approximate area of 7.3 hectares (ha), with the substation boundary covering approximately 2.24ha, and the telecoms mast compound which is separate to the substation is 225m^2.

Figure 1-1 Site Location[1]



1.1 Background

In accordance with the '*The Planning System and Flood Risk Management – Guidelines for Planning Authorities*' there is a requirement to undertake a FRA Report, which will accompany the planning application.

[1] Source: EPA MAPs, Openstreet Maps (2022).

1.2 Scope of Services

AECOM is required to undertake a site-specific FRA for the proposed works.

This FRA study has been undertaken in consideration of the following guidance document:

- 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' DOEHLG 2009.

The assessment will demonstrate that the Proposed Development will:

- Not increase flood risk elsewhere and, if practicable, will reduce overall flood risk.
- Include measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible.
- Include measures to ensure that residual risks to the area and/or development can be managed to an acceptable level.

2. Site Information

2.1 Summary of the Proposed Development

The Proposed Development will comprise a new 220kV AIS substation (Culmullin 220 kV Substation) looped into the existing Maynooth – Gorman 220kV OHL. The Proposed Development is located at Woodtown, Co. Meath (Figure 1-1). The redline boundary of the Proposed Development covers an approximate area of 7.3 hectares (ha), with the substation boundary covering approximately 2.24ha.

It is intended that three solar energy projects will connect to the proposed substation via underground cables with a maximum voltage of 33kV which are considered to be exempted development under Class 26 of the Planning and Development Regulations 2001 (as amended). The substation is required to support, secure and transport the supply of electricity from these renewable energy developments, as part of its place on the wider solar scheme. Details of the solar projects which will connect to the proposed substation are included below:

- Woodtown (c. 120 megawatt (MW) MEC (export capacity)) at Culmullin, Woodtown, Arodstown & Summerhill, Co Meath. Permission for a solar PV Energy Development with a total site area of 206 ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 54 No. MV Power Stations, 2 No. Client Substations, 4 No. Temporary Construction Compounds, access tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works, accessed via two existing accesses along the L62051. A planning application was submitted to Meath County Council (MCC) in November 2021 and granted planning consent in June 2022 (Planning Ref: 212214 which has been referred to An Bord Pleanála, a decision on the case was due at the time of writing this report. .
- Derryclare (c. 70 MW MEC) near Derryclare, Cloneymeath, Ballygortagh and Moynalvy, Summerhill, Co. Meath. Permission for a for a Solar PV Energy Development with a total site area of 108.68ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 27 no. MV Power Stations, 3 No. Client Substations, 3 No. temporary construction compounds, access tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works. A planning application was submitted to MCC in May 2021 and was granted planning consent in January 2022 (Planning Ref: 21985).
- Bogganstown (c. 110 MW MEC), near Culmullin, Curraghtown, Cultromer, Gaulstown. Bogganstown, Cullendragh, Drumree, Co. Meath. Permission sought for a Solar PV Energy Development with a total site area of 171.34ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 47 No. MV Power Stations, 3 No. Client Substations, 3 No. Temporary Construction Compounds, tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works, with a 40 year operational period currently under determination by the local planning authority – MCC (Planning Ref: 221508).

The Substation and grid connection will be constructed by the applicant to EirGrid specifications and ownership will be transferred to Electricity Supply Board (ESB)/EirGrid following construction. All works will be contained within the boundary of the Site.

The Proposed Development comprises:

- A new 220kV substation compound (approximately 2.24ha) consisting of:
  - Outdoor AIS equipment rated for the system voltage of 220kV equipped with 4 number 220kV cable bays.
  - Two number single storey buildings including an EirGrid standard control building with ancillary services, and a customer Medium Voltage (MV) module.

  - Two 180 megavolt amperes (MVA) oil-filled step-down power transformers within bunded enclosures.
  - 14 lightning protection masts (25m in height).
  - A 2.6m tall palisade fence.
- Two new Line Cable Interface Mast (LCIMs), under existing OHL to facilitate the removal of a short section (approximately 60m) of the existing 220kV lines.
- Approximately 120m of new underground cables to connect the substation to the grid.
- Adjacent telecoms mast area (225m²) for substation communications between Maynooth and Gorman 220kV substations at either end of the existing 220kV OHL.
- Five passing bays on the L62051.

In addition to the above the Proposed Development will include the following:

- New site access off the L62051 and internal site access road.
- Car parking.
- Drainage infrastructure.
- All associated and ancillary site development works.

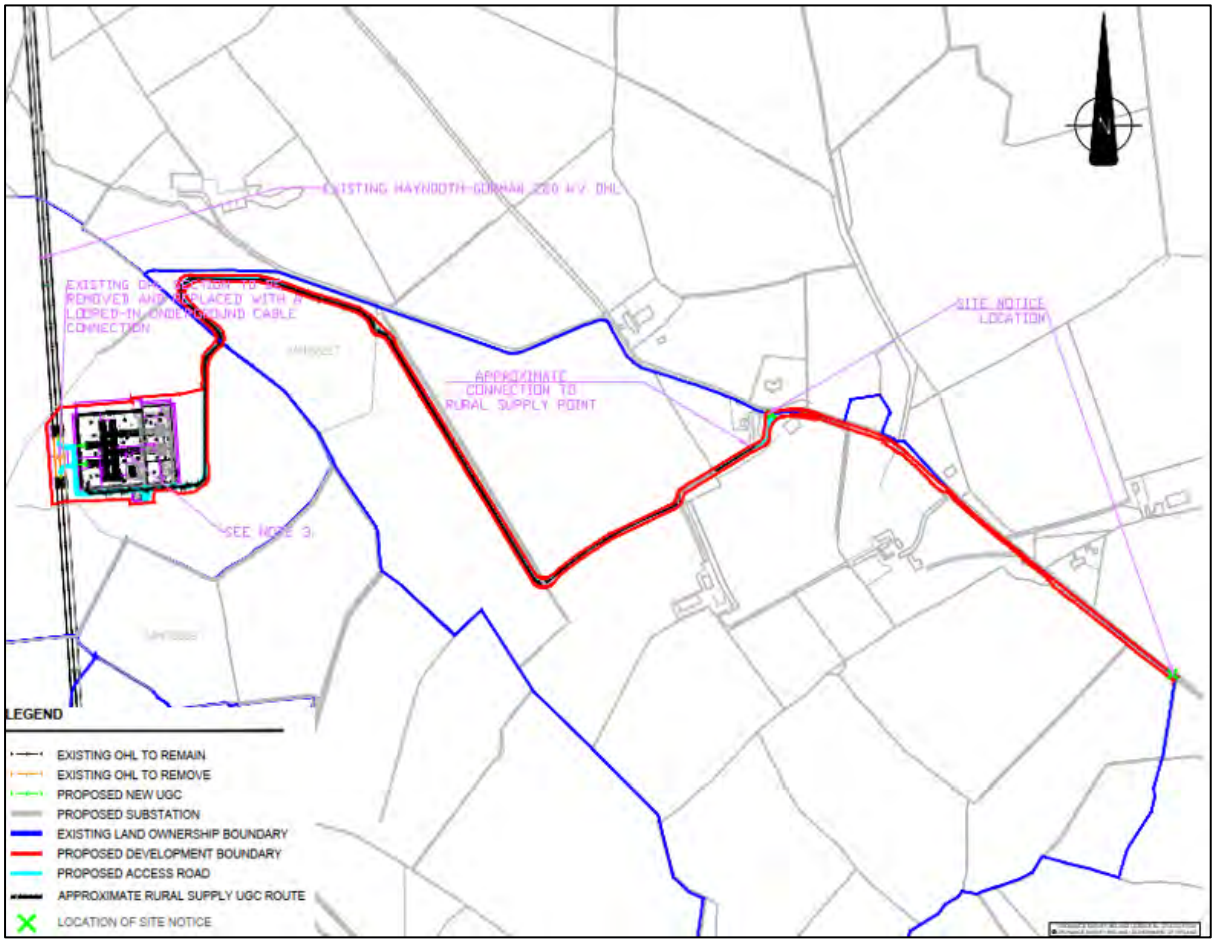


Figure 2-1 Proposed Development[2]

2.2 Local Hydrology and Existing Drainage

The closest major watercourses are the Derrypatrick River which flow approximately 1km northwest of the Proposed Development, and also the Clonymeath River which flows approximately 2.5km southwest of the Proposed Development.

Figure 2-2 shows the locations of the watercourses in relation to the Proposed Development and indicates a tributary to the Derrypatrick River flows approximately 270m west from the Proposed Development. Based on the topography surrounding the tributary (Figure 2-2), it is assumed the tributary flows in a north-westerly direction towards the Derrypatrick River. This also means the tributary naturally flows away from the Proposed Development and is therefore not seen as a potential flood source for the Site.

[2] Drawing Ref: 60657534-ACM-DWG-500

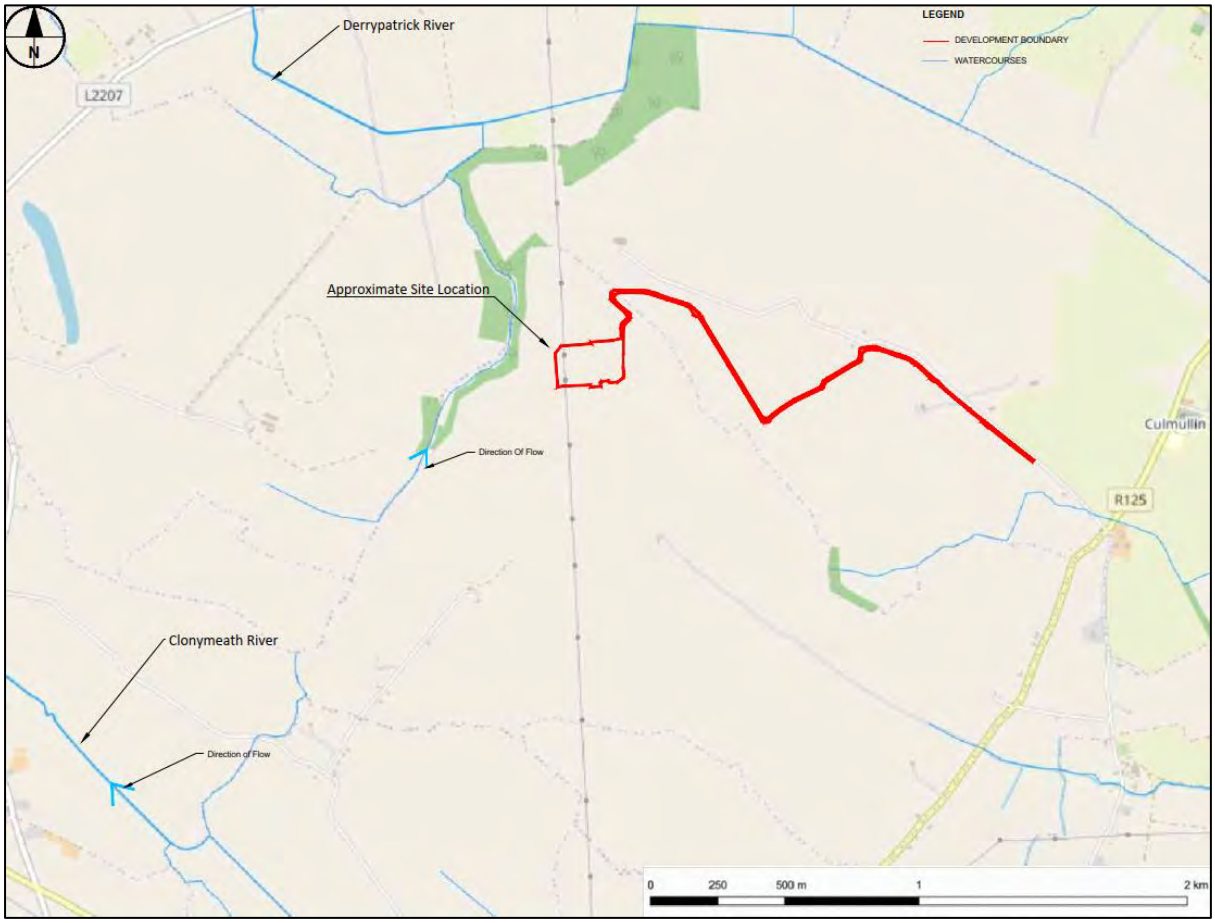


Figure 2-2 Watercourses[3]

2.3 Local Topography

A topographic survey of the Site is presented below in Figure 2-3. Figure 2-3 illustrates the location of the Proposed Development and in relation to existing site levels.

The topographic survey in Figure 2-3 indicates the Proposed Development is centred on approximately 95m to 96m Above Ordnance Datum (AOD). The land to the south-west is higher in comparison to the Proposed Development and comprise of maximum elevations of 110m AOD and 115m AOD respectively. The elevations of the lands to the north and northwest vary from 75m AOD to 85m AOD and comprise of the lowest areas within the development boundary.

[3] EPA Maps 2023

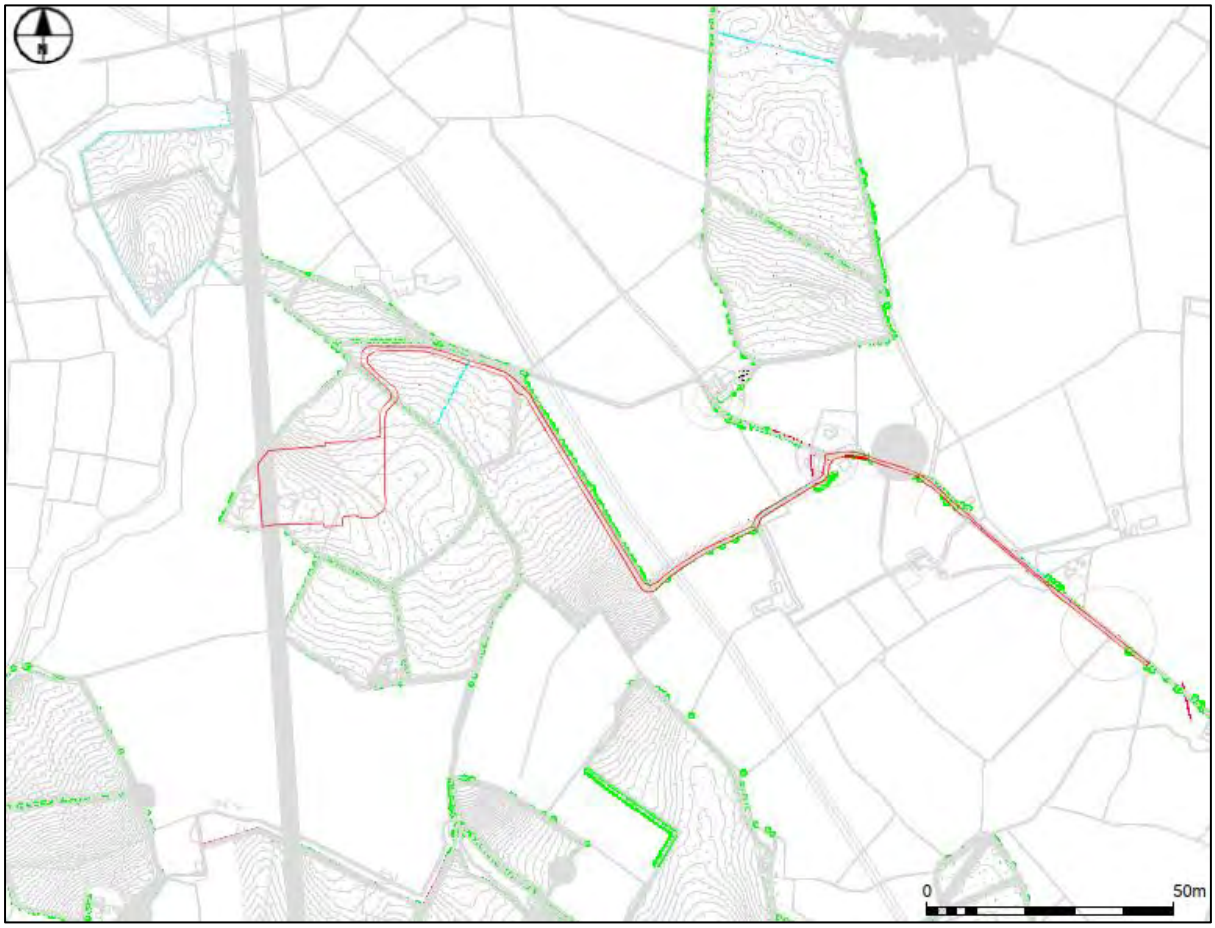


Figure 2-3 Site Topography

3. Stage 1 – Identification

The purpose of **Stage 1** is to establish whether a flood-risk issue exists or may exist in the future. If there is a potential flood risk issue then, in accordance with '*The Planning System and Flood Risk Management – Guidelines for Planning Authorities (DOEHLG 2009)*', the flood risk assessment procedure should move to '**Stage 2** – Initial Flood Risk Assessment'. If no potential flood risk is identified during Stage 1 then the overall flood risk assessment can be concluded.

The following information and data have been collated as part of the screening assessment for the Proposed Development.

3.1 Hydrometric Data

Existing sources of hydrometric data from the EPA (https://gis.epa.ie/EPAMaps/Water) were investigated, as summarised in Table 3-1. This investigation has determined that nearest gauging station is approximately 4.3km to the west of the Proposed Development.

Table 3-1 Hydrometric Gauging Stations

Station No.	Name	Status	Owner	Available Data
7024	Clonymeath	Inactive	Meath County Council	No information available

The presence of the Clonymeath gauging station is noted at this stage of the FRA however it is not located on any of the watercourses in proximity to the Proposed Development. Further, given the lack of data available for this station it can be discounted from further consideration.

3.2 OPW Flood Hazard Maps

The OPW Flood Hazard Maps Website (www.floodmaps.ie) was consulted in relation to available historical or anecdotal information on any flooding incidences or occurrence in the vicinity of the Proposed Development. No flood events have been recorded within the Proposed Development Boundary. Figure 3-1 below shows mapping from the aforementioned website, which indicates that there are a few historical records of flooding which have occurred in the wider surrounding area. The closest reported flooding event is located approximately 2.1km southeast from the Proposed Development on the R125. The details of these events are outlined in Table 3-2.

Figure 3-1 OPW Hazard Maps

Table 3-2 Historic Flood Events

ID No.	Event Type	Title	Description
ID-857	Recurring	Meeting with Area Engineer for Dunshaughlin, 15/03/05	Tributary of the Tolka overflows its banks after heavy rain. This occurs every year. Notable events November 2000 and November 2002. Road is liable to flood.
ID-860	Recurring (November 2002 and November 2002)	Meeting with Area Engineer for Dunshaughlin, 15/03/05	Low lying area floods after heavy rain. Runoff from brown fields (potatoes) Flooding occurs every year. Roads are liable to flood
ID-870	Recurring	Meeting with Area Engineer for Dunshaughlin, 15/03/05	Drain overflows every year after heavy rain and floods N2.
ID-872	Recurring	Meeting with Area Engineer for Dunshaughlin, 15/03/05	River overflows bank after heavy rain every year. Road is liable to flooding.

3.3 Groundwater Wells and Springs

An investigation into the rise and abstraction of water from underground wells and springs around the site was taken from the Department of Communications, Climate Change and Environment (http://dcenr.maps.arcgis.com). This was to identify if there are any areas of rising groundwater that could contribute to flooding.

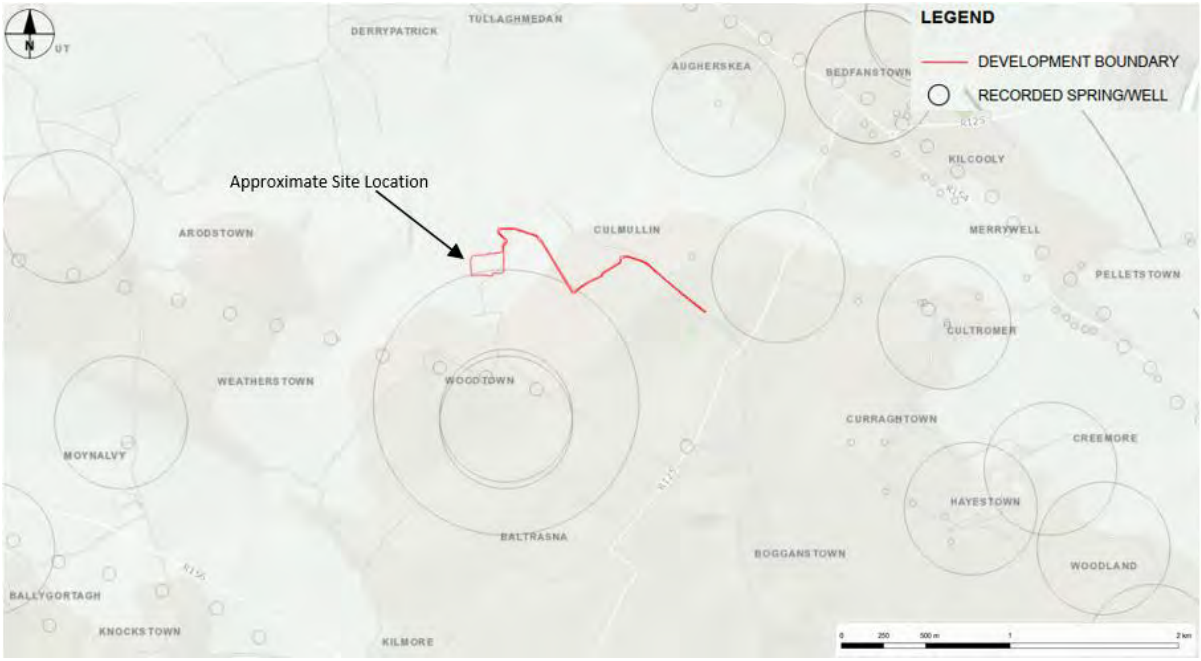


Figure 3-2 Groundwater Wells and Springs

Figure 3-2 indicates the closest springs or wells in close proximity to the Proposed Development to be approximately 110m south from the Proposed Development. There have been no recorded issues with these groundwater sources contributing to flooding within the area.

Groundwater Flooding[4] mapping indicates there are no recorded groundwater flooding incidents in the area.

3.4 OSI Historic Mapping

Figure 3-3 below shows the Proposed Development overlaid on historic 6" mapping (from GeoHive viewer; http://map.geohive.ie/). No historic flood areas (areas labelled as liable to floods) are identified in close proximity to the Proposed Development in this source.

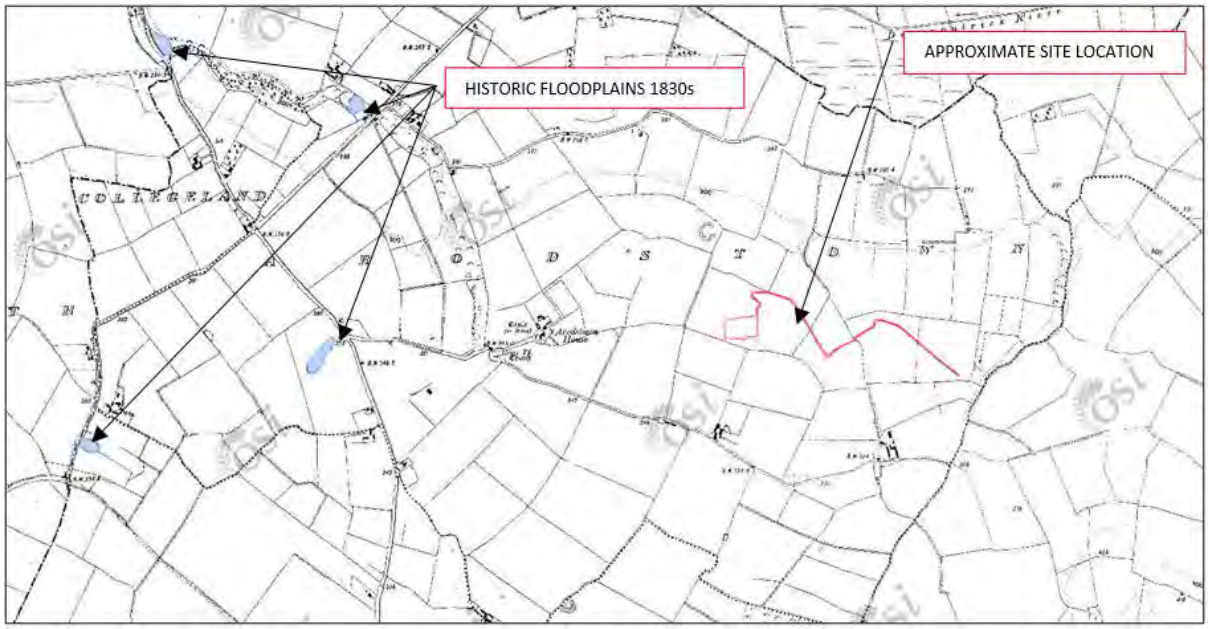


Figure 3-3 OSi Historic Mapping

[4] Department of the Environment, Climate and Communications, Groundwater Flooding Data Viewer. Available at: https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=848f83c85799436b808652f9c735b1cc.

3.5 OPW Land Benefitting Maps

The Proposed Development is located approximately 2.5km northeast from the closest major watercourse which is the Clonymeath River. Figure 3-4 indicates the Proposed Development is not in the vicinity of any OPW Arterial Drainage Schemes with the closest scheme being the C1/15 associated with the unnamed watercourse. The unnamed watercourse forms part of the OPW Channels Duff Arterial Drainage 2020-2024 programme and is defined as a 'Short Reach'[5].

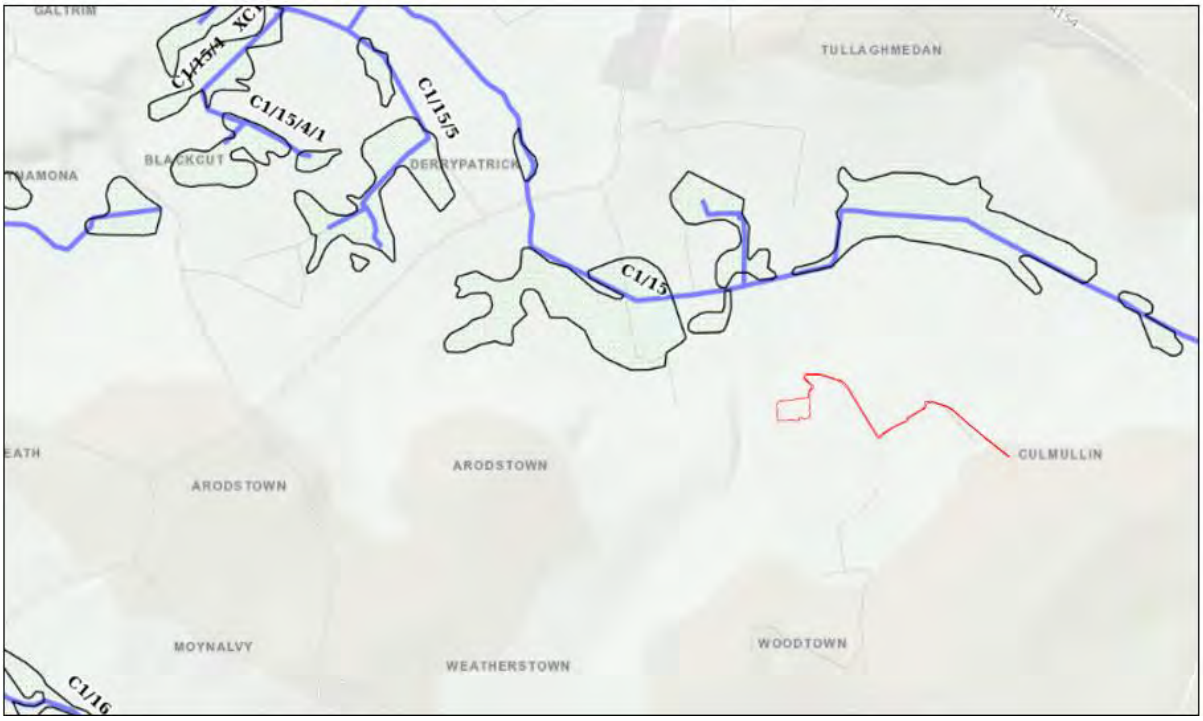


Figure 3-4 Land Benefitted from OPW Schemes

Arterial Drainage Schemes (ADSs) were carried out under the Arterial Drainage Act, 1945 to improve land for agriculture and to mitigate flooding. Rivers, lakes, weirs and bridges were modified to enhance conveyance, embankments were built to control the movement of flood water and various other work was carried out under Part II of the Arterial Drainage Act, 1945. The purpose of the schemes was to improve land for agriculture, to ensure that the 3-year flood was retained in bank this was achieved by lowering water levels during the growing season to reduce waterlogging on the land beside watercourses known as callows. Flood protection in the benefiting lands was increased as a result of the Arterial Drainage Schemes.

It is noted that these schemes were only designed to retain the 3-year flood which is a standard well below what would be required for development of any land.

3.6 OPW CFRAM Mapping

Draft mapping has been produced under the Catchment Flood Risk Assessment and Management (CFRAM) project by OPW. The CFRAM predictive mapping does not identify a direct risk to the Proposed Development from fluvial flooding from the Clonymeath River located 2.5km to the south-west of the Proposed Development.

The topographic survey (Figure 2-3 & Figure 2-4) indicate the existing ground levels where the proposed substation will be constructed vary from circa 94m AOD to 97m AOD. The Figure below which represents the topography of the wider Summerhill/Culmullin area indicates hills/lands with higher elevation (i.e., circa 110m AOD) is located between the Proposed Development and the Clonymeath River which has an elevation circa 90m AOD. This verifies the Proposed Development (i.e., the sub-station) falls in Flood Zone C, i.e., and would not be within the 1 in 100 or 1 in 1000-year predicted fluvial flood extent.

[5] Arterial Drainage Maintenance Works: Duff Arterial Drainage Scheme 2020 - 2024 Natura Impact Statement, Ryan Hanley, November 2019.

Figure 3-5 Topography of the Main River and Surrounding Areas

3.7 Flood Risk from Reservoirs

The map presented in Figure 3-6 indicates the land immediately adjacent to reservoir/artificial source comprise of higher elevations in comparison to the reservoir. Therefore, in the event of a breach in the reservoir's embankments, the Proposed development would not be at risk of flooding from the reservoir.

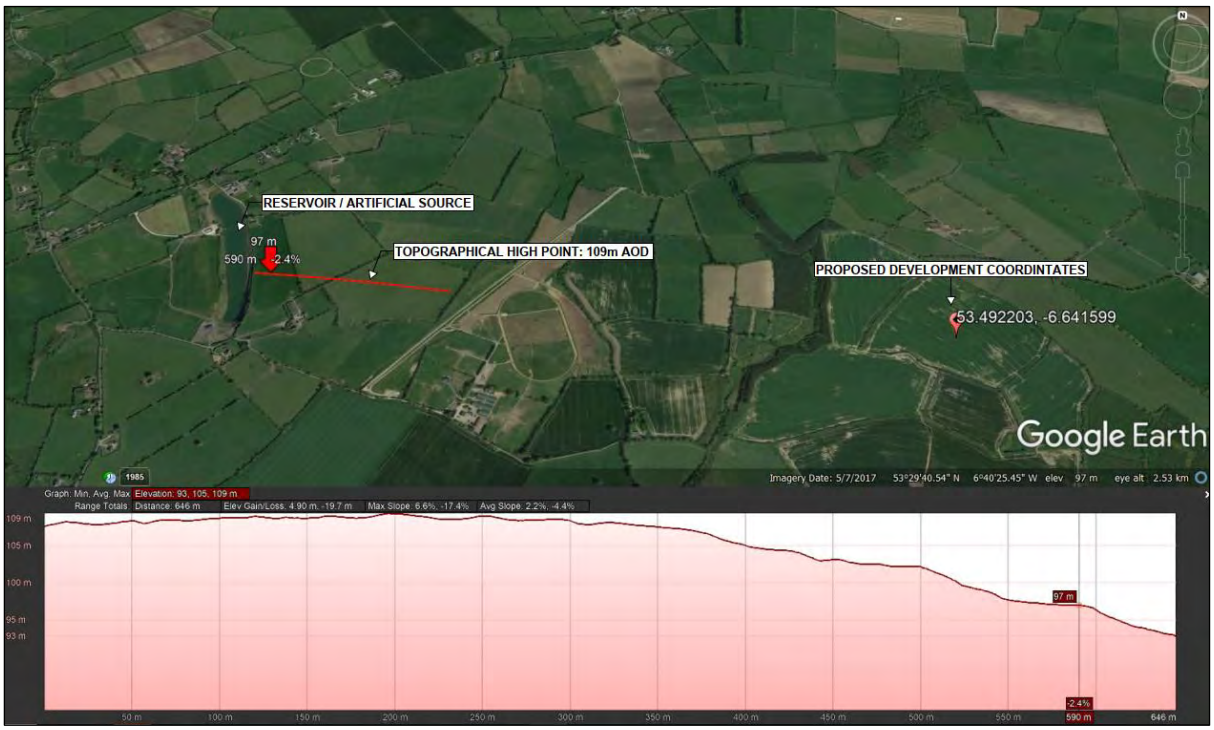


Figure 3-6 Flood Risk from Reservoirs

Furthermore, this is underpinned by the topographic levels shown on the mapping in Figure 2-2 which indicates the elevations to the north and west of the reservoir slope away from the Proposed Development.

3.8 Meath County Development Plan 2021-2027

The Meath County Development Plan (CDP) 2021 – 2027 outlines flooding policies and objectives to be applied in the preparation of future town development plans and in the assessment of planning applications, referring to the '*Flood Directive' (2007/60/EC)* and '*The Planning System and Flood Risk Management – Guidelines for Planning Authorities (DOEHLG 2009)'*. AECOM note that this CDP is currently in draft and not yet formally adopted.

Meath County Council outline a number of policies related to flooding including INF POL 18 and INF POL 20 which are as follows:

INF POL 18

To implement the "Planning System and Flood Risk Management – Guidelines for Planning Authorities" (DoEHLG/OPW, 2009) through the use of the sequential approach and application of Justification Tests for Development Management and Development Plans, during the period of this Plan.

INF POL 20

To require that a Flood Risk Assessment is carried out for any development proposal, where flood risk may be an issue in accordance with the "Planning System and Flood Risk Management – Guidelines for Planning Authorities" (DoECLG/OPW, 2009). This assessment shall be appropriate to the scale and nature of risk to and from the potential development and shall consider the impact of climate change

Also of note is objective INF OBJ 20 which is as follows:

INF OBJ 20

To implement the Planning System and Flood Risk Management-Guidelines for Planning Authorities (DoEHLG/OPW 2009) or any updated guidelines. A site-specific Flood Risk Assessment should be submitted where appropriate.

The Meath County Development Plan includes a Strategic Flood Risk Assessment as an appendix which also includes high level flood maps. This SFRA was undertaken for MCC by JBA Consulting. The Proposed Development is not located within the SFRA Flood Zone Mapping.

3.9 Screening Assessment Conclusion

The possible flooding mechanisms in consideration of the Proposed Development are summarised in Table 3-3 below.

The purpose of this screening assessment was to identify whether a potential risk of flooding exists and to what extent along the Proposed Development. This assessment is based on the collation and analysis of existing current information, historical information and data which may indicate the level or extent of any flood risk.

Table 3-3 Possible Flood Mechanisms

Source of Flooding	Significant?	Comment/Reason
Tidal/Coastal	No	The site is not located in an area subject to tidal/coastal flooding.
Fluvial	No	There are no watercourses in the vicinity of the Proposed Development which pose a potential flood risk.
Pluvial (Urban Drainage)	No	The existing site is a greenfield site. There are no records and no known instances of failure of the associated drainage systems.
Pluvial (Overland Flow)	No	Flooding is not likely to occur from overland flow.
Groundwater	No	There are no springs and groundwater discharges recorded in the immediate vicinity of the site.

Source of Flooding	Significant?	Comment/Reason
Reservoirs/Artificial Sources	No	The reservoir is located approximately 2km to the west of the Proposed Development, and the lands located in between the reservoir and the Proposed Development is significantly higher (i.e. approximately 109m AOD) in comparison to the approximate levels at the reservoir (i.e. 97m AOD). The lands to the north and west of the reservoir is also shown to fall away from the Proposed Development.

In consideration of the data sources assessment, this flood risk assessment **is not required** to proceed to '*Stage 2 - Initial Flood Risk Assessment*'.

The screening assessment shows that there is no flood risk to the Proposed Development from fluvial, pluvial or groundwater sources.

4. Conclusion

The flood risk from fluvial flooding is considered to be low as the Proposed Development is approximately 2.5km from the Clonymeath River. The Proposed Development is located within Flood Zone C. There is a tributary to the Derrypatrick River which flows approximately 270m west from the Proposed Development. Based on the topography surrounding the tributary, it is assumed the tributary flows in a north-westerly direction towards the Derrypatrick River. This also means the tributary naturally flows away from the Proposed Development and is therefore not seen as a potential flood source for the site. It is proposed that the Proposed Development be constructed at a level of 95 to 96m OD.

The application site comprises of existing greenfield land and it is assumed the land currently drains naturally. No historic overland flow flooding has been identified in the vicinity of the Proposed Development, and therefore the pluvial flood risk to the Proposed Development is considered to be low.

The Proposed Development is located near groundwater springs and well. The groundwater flooding map indicates there are no recorded groundwater flooding incidents in the area. Therefore, the groundwater flood risk to the Proposed Development is considered to be low.

As the flood risk assessment has demonstrated the overall flood risk to the Proposed Development to be low, a Stage 2 Flood Risk Assessment was not progressed.

Appendix C Consultation Report

Culmullin 220 kV Substation Development

Culmullin, Co. Meath

Dear Householder,

Energia Renewables are developing plans for a 220 kV transmission substation in the townland of Culmullin, near Drumree, Co. Meath.

The proposed Culmullin Substation will facilitate the export of renewable energy from Energia solar developments in the local area into the national grid. This will help Ireland to reach its 80% renewable electricity target by 2030, reducing our reliance on fossil fuels and increasing security of energy supply.

This brochure provides an overview of the proposed substation development and project timeline. A planning application for the proposed Culmullin 220 kV Substation is due to be submitted in the coming months.

Please don't hesitate to contact the project team with any questions you may have.

Yours sincerely,

Éanna Farrell
Solar Project Manager
Energia Renewables

Maria Eviston
Community Liaison Officer
Energia Renewables

Contents

1. Meet the team

Energia Renewables

Energia Renewables are part of the wider Energia Group - a modern, customer-centric utility provider, focusing on renewable technology. We are committed to our customers and trusted by thousands of homes and businesses throughout Ireland to meet their needs in an evolving energy environment.

We are a leading developer and operator of 15 onshore wind farm sites across the island of Ireland, generating over 300MW of green electricity.

The Group's ongoing €3bn 'Positive Energy' investment programme is developing onshore and offshore wind, solar, battery storage, bioenergy and green hydrogen production.

It is anticipated that this renewable energy programme will add 1.5 GW of additional renewable capacity to the system by 2030, facilitating the achievement of government Climate Action targets.

AECOM

AECOM is a leading provider of integrated design consultancy services across the Republic of Ireland and Northern Ireland, they have partnered with public and private sector clients, applying creative vision, technical excellence, interdisciplinary insight, and local expertise to solve their most complex challenges in new and better ways. Their agile teams provide multidisciplinary services and offer specialist expertise to every scale or project: from large regeneration schemes to local community-led initiatives. They connect across services, markets and geographies to deliver transformative outcomes, combining global expertise with local knowledge. From feasibility studies and detailed design, through to site supervision and construction, they support every stage of the development lifecycle, integrating sustainability and innovation in everything they do.

The Team

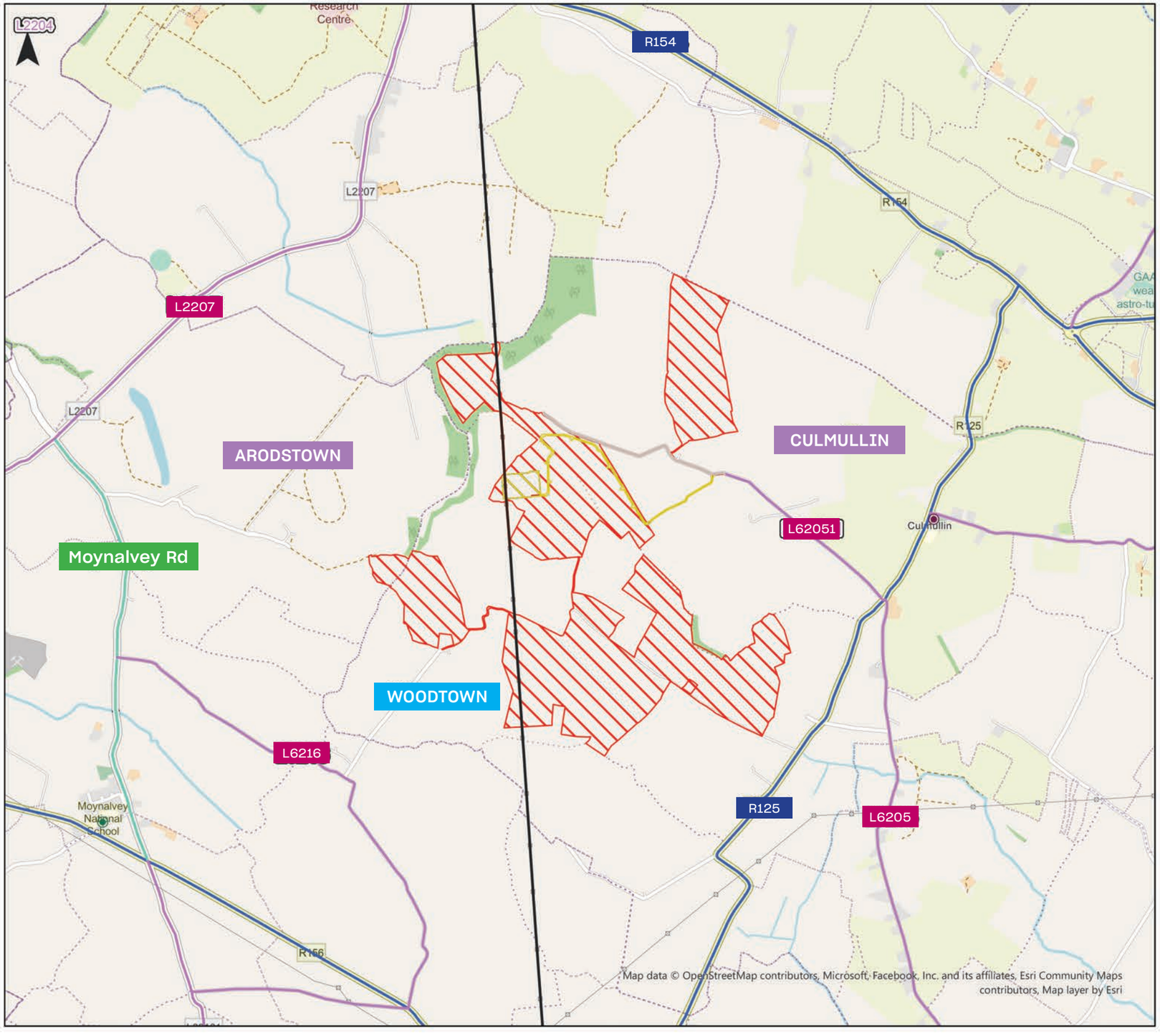
Éanna Farrell
Solar Project Manager
Energia Renewables

Richard Green
Corporate Development Manager
Energia Group

Sara Tinsley
Planning and Environmental Consents Manager
Energia Renewables

Maria Eviston
Community Liaison Officer
Energia Renewables

2. Proposed substation location and project overview

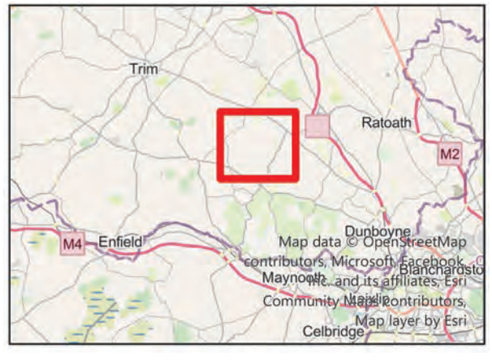


Culmullin 220 kV Substation

Energia Renewables plan to construct a new 220 kV transmission substation in the townland of Culmullin, Co. Meath, to facilitate the export of renewable energy from our solar developments in the local area into the national grid. The proposed Culmullin 220 kV Substation will help Ireland to achieve its 2030 Climate Action targets.

Key

- Woodtown Solar Farm
- Culmullin 220kV Station
- Existing Gorman Maynooth Overhead Line
- Culmullen Church
- Moynalvey National School
- Local Roads
- Moynalvey Road



* Project details are correct at time of publication and are subject to further development and alteration prior to lodgement of the planning application

3. About the site

The proposed substation site is located within an agricultural field and was identified based on a number of key considerations:

- The site is in a good location for connection to the existing national grid infrastructure.
- The site does not include any environmental designations, including Natural Heritage Areas, Special Areas of Conservation, Candidate Special Areas of Conservation or Special Protection Area.
- The site is accessible and close to main transport routes for the delivery of large components.
- The site has been subject to a comprehensive landscape and visual impact study to assess potential impacts on the landscape and sensitive receptors.

4. Planning process

The proposed Culmullin 220 kV Substation has been designated a Strategic Infrastructure Development (SID).

As this is an SID planning application, it means that it must be submitted directly to An Bord Pleanála (ABP).

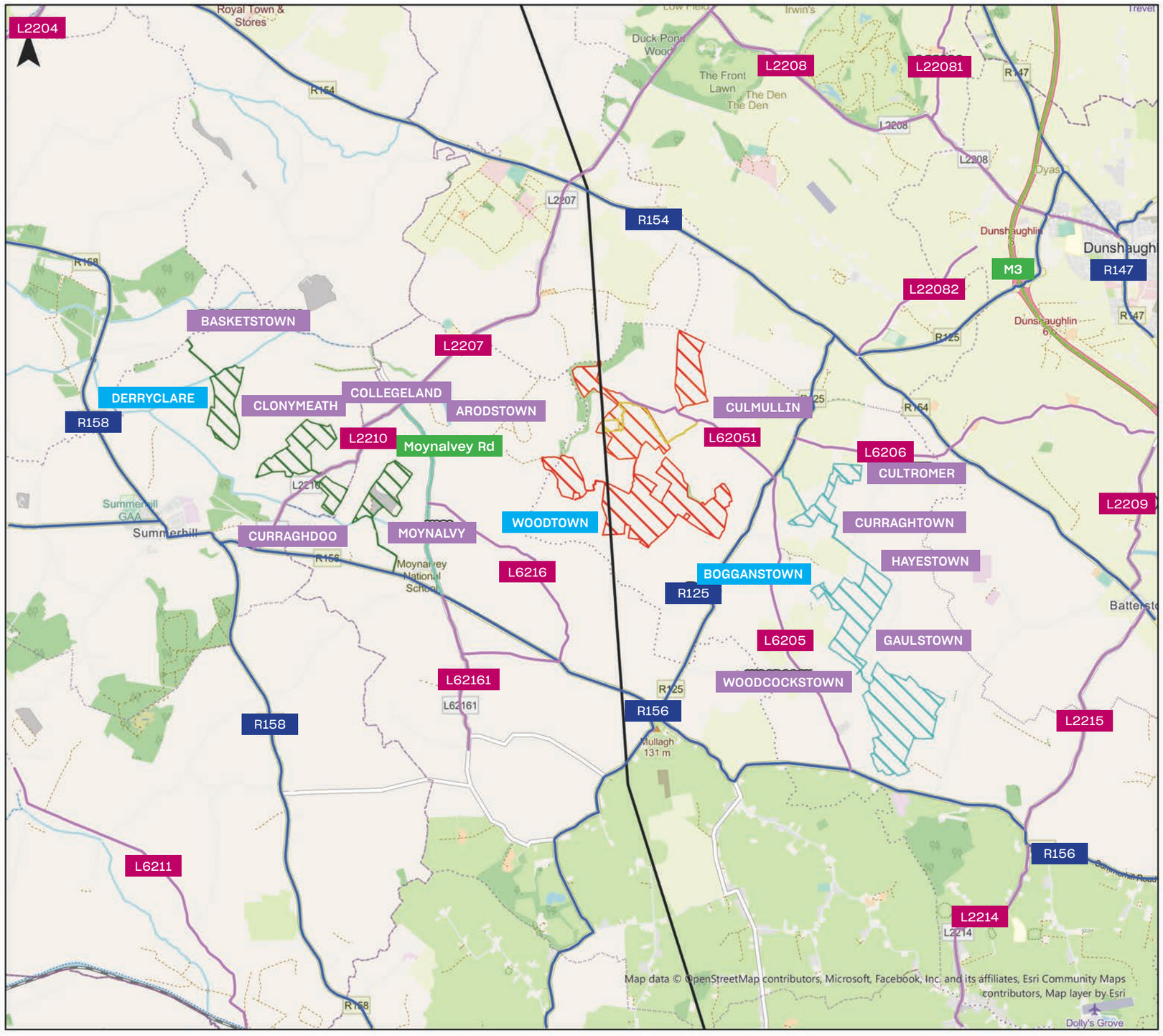
Meath County Council will submit a report to ABP as a statutory consultee.

Planning application documents will be available to view at the following locations:

- Meath County Council offices
- The Offices of An Board Pleanála
- An Board Pleanála's Online Planning Portal
- Project website: www.culmullinsubstation.ie

View of existing infrastructure

5. Map of proposed Culmullin 220 kV Substation and Energia solar developments



* Project details are correct at time of publication and are subject to further development and alteration prior to lodgement of the planning application

6. Project website

We have created a project website where you can view photomontages or visual representations of what the proposed Culmullin 220 kV Substation will look like from key viewing points around the site.

These photomontages can be viewed online at **www.culmullinsubstation.ie**

View of existing infrastructure

Visualisation of proposed infrastructure

7. What happens next

- A planning application for the proposed Culmullin 220 kV Substation is due to be submitted to An Board Pleanála in the coming months.
- Once the application is lodged, all planning documentation associated with the proposed substation development will be made available on our website at **www.culmullinsubstation.ie**
- Construction of the substation will take approximately two years. This will start with the initial site preparation works for access, followed by the construction of the substation compound and installation of the associated electrical equipment before the final commissioning and energisation stage.
- A traffic management plan will be put in place, setting out how we will manage construction traffic during the construction of the project.
- Our construction and community engagement team will liaise with local residents and businesses to minimise disruption.

8. Working with communities

The proposed Culmullin 220 kV Substation will serve Energia's three solar developments in the local area, which will operate substantial community benefit funds to support community groups, voluntary organisations and environmental projects.

Energia already operates a number of renewable energy benefit funds, which are all administered on our behalf by independent charitable trusts.

Our funds are set up in conjunction with local communities to ensure that our funding has a positive and lasting impact.

We begin allocating community project grants one year after the commencement of commercial operation and energy generation. When it's time for community groups to apply for funding, we will advertise extensively through local media, local authorities and mailing list contacts.


Scout group


Community Garden


Martial arts classes


Community playgroup

9. Working with schools

Once up and running, Energia will be happy to facilitate school and college visits to our local solar developments. In the meantime, the Energia Renewables and Operations team are keen to arrange school workshops and classroom talks on renewable energy.

- *Learn...* about solar energy
- *Discover...*how wind turbines generate electricity
- *Explore...* the need for climate action and energy transition

10. FAQs

Why is this substation necessary?
Once operational, the proposed Culmullin 220 kV Substation will facilitate the export of renewable energy from three local Energia solar farms, which are still in development, onto the national grid. The substation will help Ireland to reach its Climate Action targets and reduce our dependence on fossil fuels, while increasing security of energy supply.

How big is the site?
The overall application site boundary encompasses just under 6 hectares, with the substation component covering just over 2 hectares.

What about visual impact?
The retention of existing hedgerows will support the screening of potential residential views of the proposed substation. The site will also benefit from additional landscape planting post construction, which will increase existing hedgerow boundaries with appropriate native species.

Will new overhead lines be created?
No additional overhead lines will be installed. Two Line Cable Interface Masts will be installed beside the substation to facilitate a connection to the existing Gorman - Maynooth 220 kV overhead line. All cables from this existing overhead line into the proposed Culmullin 220 kV Station will be underground.

How close to properties will the substation and new infrastructure be?
The nearest properties are approximately 900m to the east and approximately 980m south-west of the main substation site.

Does a substation pose health risks to humans or animals?
Some people have concerns about the electric and magnetic fields (EMFs) found near electricity lines and cables. When electric current flows, EMFs are produced but register in the extremely low frequency end of the electro-magnetic spectrum. They occur in the home, in the workplace, or anywhere we use electricity. Natural sources of EMFs include the earth's geomagnetic field and electric fields from storm clouds. The consensus from health and regulatory authorities is that extremely low frequency EMFs do not present a health risk.

Is there audible sound from a substation?
The main noise heard from a substation is a low frequency 'hum' produced by the transformer. A typical new substation transformer will have a similar noise level of an outdoor air conditioning unit at approximately 1 metre distance. The sound level diminishes at a greater distance. For example, the sound will be barely perceptible at the substation perimeter fence. Noise surveys and reports are completed as part of the planning application and are available for review.

Will the substation be lit up at night?
Construction is planned to take place during daylight hours so that wildlife is not disturbed. If artificial lighting is required at any point during construction, it will be both temporary and directional and will only illuminate the section of the site where work is continuing.

Once energised and operational, the substation will not be lit up at night. However, emergency lighting will be installed to facilitate non-daylight hour access for emergency or non-routine repairs.

Will there be a fence around the substation?
A 2.6m palisade fence will be installed around the substation compound with an additional 1.4m post and rail fence positioned 3m along the outer perimeter boundary in line with EirGrid policy.

What safety measures will be in place?
The substation will be built to EirGrid and ESB Networks standards and will be subject to a rigorous design review process prior to the commencement of construction. The purpose of these design specifications and reviews are to ensure the safety of both the public and operational staff working in the substation. Safety is at the core of the development and construction of all our projects.

How often will maintenance be carried out?
Scheduled maintenance is generally completed on a monthly basis, with more intensive maintenance scheduled annually.

What about construction traffic?
A traffic management plan will be put in place, setting out how we will manage construction traffic during the construction of the project. Our construction and community engagement team will liaise with local residents and businesses to minimise disruption.

What are the next steps?
We are engaging with the local community to provide residents living near the proposed Culmullin substation site with project information and an opportunity to ask questions and have their say. Our Community Liaison team will be visiting homes and delivering information in the immediate area. We will also be holding a public information evening so that members of the public can drop in to meet the project team and find out more. Residents can also contact our Community Liaison Officer by email or by telephone.

Once submitted, planning application documents will be available to view at the following locations:

- Meath County Council offices
- The Offices of An Board Pleanála
- An Board Pleanála's Online Planning Portal
- Project website: **www.culmullinsubstation.ie**

energia
Renewables

Appendix B

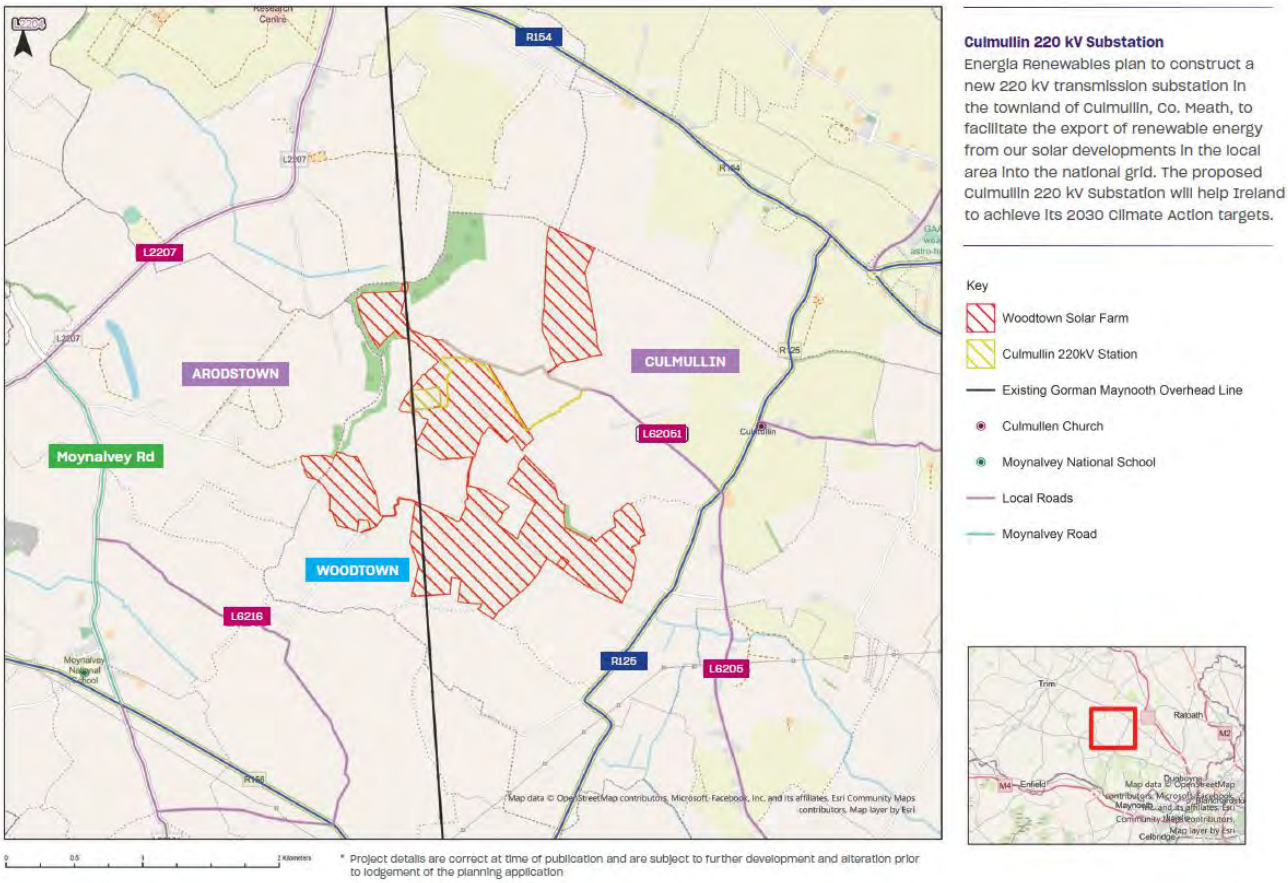
Mill House, Ashtown Gate, Navan Road, Dublin, D15 H70K
Telephone: +353 1 869 2000
www.energia.ie

October 2022

Dear Householder,

I called at your house today on behalf of Energia Group to inform you about our plans for a 220 kV substation development in the townland of Culmullin, which will facilitate the export of renewable energy from Energia solar developments in the area into the national grid.

Energia will be holding a drop-in information session in Moynalvey GFC on Thursday November 10th. Please come along at any time between 3pm and 8pm to meet the team and find out more.



About Energia Group

Energia Group is a modern, customer-centric utility provider, focusing on renewable technology and flexible electricity generation. We are committed to our customers and trusted by thousands of homes and businesses throughout Ireland to meet their needs in an evolving energy environment.

Energia has over 300MW of operational renewable energy projects in Ireland. Energia Group's ongoing €3 billion 'Positive Energy' investment programme is developing onshore and offshore wind, solar, battery storage, bioenergy and green hydrogen production.

It is anticipated that this renewable energy programme will add 1.5 GW of additional renewable capacity to the system by 2030, facilitating the achievement of government Climate Action targets.

Come along and meet the team

To find out more about this proposed development, please join us for our drop-in information session on Thursday November 10th from 3pm to 8pm in Moynalvey GFC.

In the meantime, please do not hesitate to contact me by email or phone: maria.eviston@energia.ie or call 087 364 4274.

Maria Eviston
Community Liaison Officer
Mob: +353 (0)87 364 4274
Email: maria.eviston@energia.ie

Garda Tom on the beat in Kells

KILSKYRE boy the newest recruit with Little Blue Heroes

NOELLE FINEGAN

Ready for suty... Garda Lisa Stephens, Bailieboro with Nikki and Tom Lynch from Kilskyre.

Tom on a visit to Kells Garda station.

NINE-YEAR-OLD Tom Lynch from Kilskyre was thrilled to recently be made an honorary garda with the Little Blue Heroes.

Tom was presented with his garda uniform from Garda Sandra Christie of Athboy Garda Station and Garda Tom Dooley and Sergeant Elaine Long of Kells Garda Station and his mum Nikki told how he loves dressing up in it.

One of his first outings to wear the uniform was the recent Bumblebee Run and trolley dash event in Smyths Toystore in Navan and Tom was in his element proudly showing it off.

Tom has encountered a lot of health problems over the past year and spent a lot of time in hospital so news that he was being made a Little Blue Hero gave him a great boost.

Sergeant Elaine Long said they were delighted to make Tom an honorary garda and she spoke of the little boy's incredible positivity and that of his family which had made a huge impression on them.

"I have never met a young lad in a situation like he is in, to be beaming positivity and happiness, they way he is. Both him and his family, and we are delighted to be involved with them. Everyone who knows Tom will tell you how positive he is. It is the first thing that struck us about Tom. And he never ever complains."

Tom was born with poor muscle tone and a huge fundraising drive was launched in 2016 for specialist therapy to help Tom fulfil his dream to walk.

His mum Nikki said at that point they didn't have a diagnosis for Tom and his treatment went well for the first two years.

"At that stage we had no diagnosis. Then in about 2018 we got a diagnosis through genetics that it was Dejerine Sottas Syndrome which basically meant that the energy going to the muscles isn't there. Through the peripheral nerves, the message is not getting to the muscle to tell it what to do.

"It is a slow progressive disorder. By the age of seven we learned that he definitely wasn't going to walk."

Tom is finding it more difficult to walk with his frame now and uses his wheelchair all the time but Nikki said his powered wheelchair gives him great independence and he is flying about in it.

Tom attends mainstream school in Kilskyre NS with the support of an SNA and is in third class. He loves going to school and spending time with his many friends. He also gets huge support from his big brother Charlie (15) and Lucy (13) who adore their little brother.

Since the diagnosis, Nikki explained that Tom's care hasn't changed. He doesn't need medicine, there is nothing to help him, but he has a lot of therapy and Nikki explained that occupational therapy is very important- having the right seating, wheelchair and sleep system.

"For the last year Tom has been in and out of hospital to do with his breathing. It kept happening at night. He wouldn't be able to breath and ended up in intensive care. They were trying to figure out what was wrong. He has bad scoliosis as well and we thought it was squashing his lungs but tests revealed he wasn't breathing out his carbon dioxide and it was basically poisoning him. He got hooked up to an bi-pap machine. He couldn't take a deep enough breath at night."

Nikki told how Tom had been very sick in hospital every couple of months and their nurse coordinator Irene had put Tom forward for the Little Blue Heroes. They forgot all about the application until one day, they got a call from one of the gardai at Kells Garda Station to say they were coming out to Tom to give him his uniform.

She said Tom was delighted and absolutely loves dressing up in his garda uniform.

Appendix D

Appendix D Planning History Search

A desktop search of proposed and existing planning applications was carried out on 8 September 2022 (and subsequently updated on 6 June 2023). The search used publicly available data from the MyPlan.ie's 'National Planning Application' database, ABP database and Council Planning Portals.

The scope of the search was based within a 5km radius from the approximate Centrepoint of the Proposed Development. A specified criteria informed the search and omitted any planning applications greater than five years old, refused, invalid and withdrawn applications. The criteria then focused on foreseeable developments to be considered in line with the Proposed Development. In respect of this, any small scale residential and extension type developments along with minor amendments, changes of use and small-scale farming/agricultural applications were omitted. Only reasonably foreseeable developments were considered.

The findings show the majority of planning applications for adjoining lands consist of mainly agriculture and rural dwelling related developments, however recent applications have shown a rise in renewable energy, recreational and tourism related development.

Table 18.1. Planning Search (5km Radius)

Planning Authority	Reference	Address	Proposed Development	Grant/Due Date	Distance from Subject Site
Meath CC	221508	Culmullin, Curraghtown, Cultromer , Gaulstown. Bogganstown, Cullendragh, Drumree, Co. Meath	a Solar PV Energy Development with a total site area of 171.34ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 47 No. MV Power Stations, 3 No. Client Substations, 3 No. Temporary Construction Compounds, tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works, with a 40 year operational period. A Natura Impact Statement (NIS) had be submitted to the Planning Authority with the Application. Significant further information/revised plans submitted on this application	24/07/2023	c.2.5km east
Meath CC	23527	Drumree Road, Readsland, Dunshaughlin, Co. Meath	the construction of 62 no. residential units comprising: - 27no. 2-storey houses (10 no. 3-bed and 17 no. 4-bed) and 35 no. apartments (14 no. 1-bed, 16 no. 2-bed and 5 no. 3-bed units) in a part 5-storey part 4- storey apartment building situated adjacent to the R125 Dunshaughlin link Road, with balconies on all elevations. And all associated site development, landscape and boundary works, including: - a new 4-arm roundabout junction on the R125 Dunshaughlin Link Road, connecting with an extended Dun Rioga Avenue to the southeast of the existing Dun Rioga estate providing new vehicular, cycle and pedestrian access and egress from the west, without alteration to the existing estate entrances at the Drumree Road; 1. 8m high acoustic fence to the west of the proposed apartment block extending c.50m in length alongside the R125; 98 no. car parking spaces; 83 no. secure bicycle parking spaces; public open space of c. 3,660 sq.m. including new children's playground; private communal open space of c. 233 sq.m. serving the apartments; private and communal bin stores; 1no. ESB substation	11/07/2023	c.5km northeast
Meath CC	23236	Martinstown, Crossakiel, Co Meath A82 F2C4	(1) construct a new building to be used as office space, welfare facilites and storage, (2) install a new proprietary effluent treatment system and percolation area and (3) all associated site services	01/06/2023	c.3.9km northwest
Meath CC	221664	Woodridge Stables, Killeen, Dunsany, Co Meath	(a) construction of a lunging ring, loading ramp, wash down area and machinery shed (b) erection of solar/pv panels (c) provision of internal staff facilities into one bay of existing barn to be connected to existing 6-8 person wastewater treatment system and polishing filters (d) the provision of all associated site works to upgrade existing farm complex including proposed internal service roads, beech hedging, timber fencing, general paddocks, nursery paddocks, all weather areas with individual horse shelters, external all	01/06/2023	c.5km northeast

Planning Authority	Reference	Address	Proposed Development	Grant/Due Date	Distance from Subject Site
			weather sand arena, cross country area, hunter & pony all weather area, trailer and horse box parking area, vegetable garden and external hen & pig area		
Meath CC	221505	Drumlargan, Kilcock, Co. Meath	development will consist of (a) modification of the existing agricultural field entry from the public road to accommodate the proposed development; (b) construct new equestrian facilities including horse stables building, barn building, manure pit/dungsted and associated seepage tanks, horse walker unit, lunge arena, gallops, sand arena, fenced paddocks and surface water system; (c) construct a part single-storey, part two-storey detached dwelling house, detached domestic garage, wastewater treatement system and landscaping; and (d) associated site works. Significant further information/revised plans submitted on this application	25/05/2023	c.4.8km southwest
Meath CC	221550	Woodland , Batterstown, Co. Meath	The development will consist of: 1. Installation of outdoor Air Insulated Switchgear (AIS) electrical apparatus, including an associated extension to the hardstand compound (approximately 4 hectares) to facilitate same. This includes: a. installation of an extension to both sides of the existing 400 kV busbar, with provision of an associated wing coupler at either end of the existing 400 kV busbar. b. additional apparatus and associated works to the two existing busbars to create what is known as sectionalising bays. c. relocation of existing transformer connections from existing busbar to adjacent location on new busbar. d. an associated single-story extension (approximately 80 m2) to the existing control building. 2. The erection of four new lightning masts and relocation of one existing mast (each approximately 45m high). 3. Two bays on opposite sides to the newly extended 400 kV busbars at the southern end of the substation, each bay to incorporate breakers, reactive compensation devices and cable sealing ends. These bays will facilitate the connection of the new 400 kV underground cable links from Dunstown and Belcamp substations respectively. 4. Renewal, alteration and/or removal of associated 400/220 kV electrical apparatus and equipment. 5. All ancillary site development works including site preparation works, site clearance and levelling; provision of hardstanding, internal access roads and temporary construction compound; associated underground cabling and earthgrid; associated extended surface water drainage network including a soakaway; associated palisade fencing and gates (approximately 2.65m high); lighting poles and landscaping as required to facilitate the development. Planning Permission is sought for a period of 10 years. Significant further information/revised plans submitted on this application	25/05/2023	c.5km southeast
Meath CC	221505	Drumlargan, Kilcock, Co. Meath	The development will consist of (a) modification of the existing agricultural field entry from the public road to accommodate the proposed development; (b) construct new equestrian facilities including horse stables building, barn building, manure pit/dungsted and associated seepage tanks, horse walker unit, lunge arena, gallops, sand arena, fenced paddocks and surface water system; (c) construct a part single-storey, part two-storey detached dwelling house, detached domestic garage, wastewater treatement system and landscaping; and (d) associated site works. Significant further information/revised plans submitted on this application	25/05/2023	c.3.3km southwest

Planning Authority	Reference	Address	Proposed Development	Grant/Due Date	Distance from Subject Site
Meath CC	23136	Creemore & Belshamstown, Batterstown, Co. Meath	permission for development at a c. 14.14 ha site, located at Creemore and Belshamstown, in Batterstown, Co. Meath, as permitted under MCC Reg. Ref. 22837 (which permitted a new battery energy facility and synchronous condenser.). The proposed development will consist of amendments to the previously permitted development (MCC Reg. Ref. 22837) including amendments to the previously approved internal access road layout; amendments to the previously approved attenuation pond to the south of the site and associated piped infrastructure, ducting and drainage arrangements. In addition, a previously permitted earthen berm to the centre of the site is to be omitted. No changes are proposed to the permitted vehicular access to the R154. Any associated amendments to changes in level and all associated site development, hard and soft landscaping and excavation works above and below ground are also included. Planning permission is sought for a period of 10 years.	16/05/2023	c.4.6km southeast
Meath CC	23263	Crumpstown or Marshallstown, Kilmessan, Co. Meath	an equestrian holiday centre, which will comprise four holiday cottages made up of conversion of two stable buildings each to a one-bedroom single storey dwelling, conversion of a shed to a two-bedroom single-storey dwelling, and refurbishment of a stone cottage to a two-bedroom single-storey dwelling, with a new sewage treatment system, three stable blocks containing four, six and nine horse cubicles respectively and associated site development works, outdoor riding arena, horse walker and associated site development works, access will be via the existing entrance serving the existing farmyard and dwelling	03/05/2023	c.4km northwest
An Bord Pleanála	ABP-312723-22	On lands including Derryclare, Cloneymeath, Ballygortagh and Moynalvy, Summerhill, Co. Meath.	Solar energy plant and ancillary equipment. Associated site development works. Significant Further information/Revised plans submitted on this application. NIS submitted with FI.	27/01/2023	c.5.0km west
Meath CC	221320	12 Loughmore Walk , Killeen Castle Demesne, Dunsany, Co. Meath	development comprising of alterations to design of 1 no. permitted 2 storey 5-bedroom C-type detached house & garage and associated site development and landscape works, with a site area of 0.28ha, at 12 Loughmore Walk, Killeen Castle Demesne, Dunsany, Co. Meath, being part of a previously permitted residential development of 22 houses at Loughmore Walk/The Burrows (Ref RA/191174). Alterations to include new rear extension, internal layout changes at ground and upper floors, attic conversion with new stairs, revisions to elevations of house and garage, new velux roof lights, extended garage with gym, new door and covered carport link to house, the vehicular access is as previously permitted via the existing internal roads & entrances to Killen Castle Demesne. All within the overall site of approx. 255 ha. (a protected structure)	20/01/2023	c.5km northeast
Meath CC	221209	Killeen Castle Demesne (a protected structure), Dunsany, Co Meath	the change of use for a temporary period of 4 years of 6 no. of the 22 no. courtyard dwellings (referred to as Hunters Yard) permitted under Reg Ref DA/802774 (as extended by Reg Ref RA/180960) from residential to ancillary hotel accommodation facilitating short term lettings in the form of 24 no. bedrooms (6 no. keys) in 6 no. 2 storey 4 bedroom units. To accommodate this temporary change of use, the following modifications are also required:- Amendments for all 6 no. units include: The replacement of permitted kitchen to facilitate 1 no. accessible double bedroom with ensuite and inclusion of a small kitchenette facitity in the permitted study's, Solar Panels omitted, Chimneys omitted, Corner	19/12/2022	c.5km northeast

Planning Authority	Reference	Address	Proposed Development	Grant/Due Date	Distance from Subject Site
			Lightbox/Lanterns omitted, Amendments for 4 no. units (House Type HYI, HYIH and HY3, HY3H) include: Omission of internal door, a Balcony column support added, Suite 1 walk in wardrobe replaces with ensuite bathroom, Walk in wardrobe with ensuite included for Suite 2 , Total 12 no. car parking spaces to be provided. Selected stone cladding removed from upper storey of House Type HYI, HYIH and HY3, HY3H, A minor change of Finished Floor Levels on site. The development also includes all associated landscape and site development works. There is no change to the building footprint or house design to those units permitted under Reg. Ref. DA/802774 (as extended by Reg Ref RA/180960). The design is in keeping with all other residential units proposed within the Killeen Castle Demesne. The vehicular access is as otherwise permitted via the existing internal road network and entrances to Killeen Castle Demesne		
Meath CC	22752	Augherskea, Drumree, Co Meath	the development consists of land recovery operation (being) reclamation of agricultural land and all associated site works comprising of the importation of natural materials of clay, silt, sand, gravel or stone and which comes within the meaning of inert waste, through deposition for the purposes of the improvement or development of land Class 5 of the waste management (Facility Permit and Registration) Regulations 2007-2008. A 5 year planning permission is requested and during the duration of this period 62,490 tons of inert soil and stone will be imported for the purpose of land reclamation. Entrance to the site will be via the existing farm road on adjoining site the subject of current Planning RA/170057 and WFP-MH17/0006/01	16/12/2022	c.2.4km northeast
Meath CC	221194	Teagasc Grange Research Facility, Derrypatrick Grange, Dunsany, Co. Meath C15 PW93	development will consist of the proposed green energy initiative development consisting of the alterations to an existing building unit consisting of the installation of Photovoltaic Panels on the existing roof structure, together with all associated site works	07/12/2022	c.3.5km north
Meath CC	22837	Creemore & Belshamstown, Batterstown, Co. Meath	the proposed development constitutes a new battery energy storage facility & synchronous condenser, with associated change of use on lands currently in agricultural use. The proposed development will comprise of rechargeable battery units with grid forming inverters contained within 253 no. 40 foot containers on site. (An associated Strategic Infrastructure Development planning application will be made to An Bord Pleanala in relation to a 220 kV Gas Insulated Substation and associated development on the adjoining lands to the east of the proposed development site, located at Creemore & Woodland, in Co. Meath, in accordance with Section 182A of the Planning and Development Act 2000, as amended). In addition, the proposed development includes a synchronous condenser within a c.983 sqm building (ranging in height from c. 11 to 13 m), with associated compound & plant; oil separator & collection pit; transformers; circuit breakers; underground cabling ducts & cable. The proposed development includes underground cable which will connect the new battery energy storage facility to the adjoining proposed 220 kV Gas Insulated Substation (the subject of the associated Strategic Infrastructure Development planning application as reference above). The proposed development will also include a battery storage control building (c. 400 sqm, 6.86 m in height); security gates & boundary treatments; hard & soft landscaping; well; bollards; plant & water storage tank; wastewater treatment system; SuDs; attenuation pond; installation of earthen berms; piped infrastructure & ducting; culverts; street lighting; lighting masts & CCTV columns; car parking; stoned access roads & the upgrading of the existing vehicular access to the R154;	07/12/2022	c.4.6km southeast

Planning Authority	Reference	Address	Proposed Development	Grant/Due Date	Distance from Subject Site
			changes in level & all associated site development & excavation works above & below ground. Planning Permission is sought for a period of 10 years. Significant further information/revised plans submitted on this application		
Meath CC	22629	Shanks Mare Public House, Collegeland and Arodstown, Summerhill, Co. Meath	the development consists of the erection of four 51.5 sqm. detached pods, each of which would be 3 metres tall and which would provide two bedrooms and a combined kitchen/ dining area, as well as bathroom accommodation, along with the use of these four structures for tourist accommodation purposes; The retention of an existing 54 sqm. timber log cabin which already occupies the site (whose removal is required under condition no. 4 of permission reg. RA/191557) and the use of this two-bedroom plus living area building for short-term residential occupation. The proposal also includes the decommissioning of a septic tank (which was permitted under reg. RA191557), the provision of a new soakaway, the installation of a mechanical aeration sewage treatment system and the construction of a 300 sqm. soil polishing filter, the closure of an existing entrance and upgrade works to an existing access which serves the adjacent Shanks Mare development and its use in connection with this proposal, a new turning circle for fire services and an extra parking area accommodating 11 new bays, which are in addition to the 21 spaces on the subject land. The application includes all site works, such as the removal of an existing stone wall, the raising of the land at Gate 1 by 300mm, the creation of a gravel surface, the provision of a wheelie-bin store and the removal of a gas tank. This development will be held in common ownership with the Shanks Mare development and will not be sold or leased separately. Included in this are all associated site works and services. Significant further information/revised plans submitted on this application	17/11/2022	c.2.9km northwest
An Bord Pleanála	ABP-314071-22	Boycetown, Dunsany, Co. Meath	Importation of materials for land reclamation and all associated site works. NIS and EIAR are included	15/11/2022	c.4.5km north
An Bord Pleanála	ABP-314058-22	On lands including Culmullin, Woodtown, Arodstown & Summerhill, Co Meath	Solar PV energy development and associated site works. NIS submitted to Planning Authority.	14/11/2022	c.800m southwest
Meath CC	22497	Knockmark, Drumree, Co Meath	The erection of a new dwelling and garage with associated site works	08/09/2022	c.3.7km northeast
Meath CC	22425	Derrypatrick , Drumree, Co. Meath	the development will consist of the following: (a) Construction of a new access road from existing farmyard to new farmyard (b) Construction of a new milking parlour, dairy, external milk silo & ancillary rooms, drafting & handling facilities, waiting yard, meal bin, water storage tank & underground slatted reception tank adjacent to existing circular overground slurry storage tank (c) Construction of agricultural livestock shed comprising of calving area, cubicles and underground slatted slurry reception tanks (d) Construction of calf rearing shed (e) Construction of 2 no. silage pits, maize pit & dungstead and all associated site works	15/07/2022	c.2.2km northwest

Planning Authority	Reference	Address	Proposed Development	Grant/Due Date	Distance from Subject Site
Meath CC	22425	Derrypatrick , Drumree, Co. Meath	The development will consist of the following: (a) Construction of a new access road from existing farmyard to new farmyard (b) Construction of a new milking parlour, dairy, external milk silo & ancillary rooms, drafting & handling facilities, waiting yard, meal bin, water storage tank & underground slatted reception tank adjacent to existing circular overground slurry storage tank (c) Construction of agricultural livestock shed comprising of calving area, cubicles and underground slatted slurry reception tanks (d) Construction of calf rearing shed (e) Construction of 2 no. silage pits, maize pit & dungstead and all associated site works	15/07/2022	c.1.8km northeast
Meath CC	22338	Plot 13, Loughmore Walk, Killeen Castle Demesne, Dunsany, Co. Meath	alterations and extension to previously approved two storey detached dwelling and detached garage and associated site development/landscaping works, with a site area of 0.29 Ha, being part of a previously permitted residential development of 22 houses at Loughmore Walk/The Burrows, (Reg. Ref.: RA/191174). The alterations will consist of A) omission of bay windows in living room (west elevation) and drawing room (south elevation) resulting in a reduction in floor area of 7.57sq/m, B) length of ground floor study and first floor bedroom 5 increased by 1.8 m at front (east elevation) resulting in additional floor area of 18 sq/m, C) increase in width and depth of detached garage (additional floor area of 8.7 sq/m) with covered area to rear (west) of garage and covered link between house and garage, D) additional windows and door on side (north) elevation, E) increase in width of bedroom no. 5window at front (east) elevation and F) increase in height of window of bedroom no. 5 window at front (east) elevation and F) increase in height of window of bedroom 2 at rear (west) elevation. The vehicular access is as previously permitted via the existing internal roads and entrances to Killeen Castle Demesne. All within the overall site of approx. 255Ha (a Protected Structure)	23/06/2022	c.5km northeast
Meath CC	212179	Boycetown, Dunsany, Co. Meath	The development will consist of the importation of natural materials of topsoil, soil or stone for the purposes of land reclamation for a beneficial agricultural afteruse (5.6 hectares), temporary Wheel Wash, Weighbridge, Office, access road, landscaping and all ancillary site development infrastructure. The project provides for the importation of topsoil, soil and stone to provide an access road and final landscaping under Article 27 as defined by the EPA for land reclamation and reinstatement purposes. The application is accompanied by an Environmental Impact Assessment Report (EIAR), Natura Impact Statement (NIS) and associated documents. The application relates to a reclamation development for the purpose of an activity requiring a Waste Permit to be issued by the Meath County Council. Significant further information/revised plans submitted on this application	17/06/2022	c.4.5km north
Meath CC	212214	On lands including Culmullin, Woodtown, Arodstown & Summerhill, Co Meath	For a solar PV Energy Development with a total site area of 206ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 54 No. MV Power Stations, 2 No. Client Substations, 4 No. Temporary Construction Compounds, access roads, boundary security fencing and security gates, CCTV, landscaping and ancillary works, accessed via two existing accesses along the L62051. The application is accompanied by a Natura Impact Statement (NIS).	15/06/2022	c. 800m southwest
An Bord Pleanála	ABP-311760-21	Clonymeath, Summerhill, Co Meath.	Solar PV development. NIS lodged at application stage.	24/05/2022	c.4.80km west

Planning Authority	Reference	Address	Proposed Development	Grant/Due Date	Distance from Subject Site
Meath CC	2250	Killeen Castle Demesne, Dunsany, Co Meath	alterations to 13 no. 2 storey detached house types (permitted Plot Nos. 62-74) and development for associated site development and landscape works of a previously permitted residential scheme under Reg Ref DA/802274 (as extended by Reg Ref RA/180960) comprising overall of 135 no. dwellings (comprising 83 no. detached dwellings, 49 no. courtyard house and 3 no. gate lodges). The development now proposed comprises alterations to 13 no. of the already permitted detached houses now proposed to comprise of 2 no. 4 bedroom 2 storey detached dwellings (House Type D) each with a detached single storey garage (c. 34sqm each) and on individual plots of between c0.24-c.0.25ha, 2 no. 4 bedroom 2 storey detached dwellings (House Type DC), each with an attached single storey garage/study (c.34sqm each) and on individual plots of between c 0.27-c 0.29ha, 6 no. 5 bedroom 2 storey detached dwellings (House Types A & C) each with a detached single storey garage(c 34sqm each) and on individual plots of between c 0.26-c.0.32ha, 3 no. 5 bedroom 2 storey detached dwellings (House Types AC & CC), each with an attached single storey garage/study (c 34sqm each) and on individual plots of between c 0.27-c. 0.35ha. Each unit is served by 2 no. carparking spaces (26 no. in total) and associated site development and landscape works to include; boundary treatments and adjustments to permitted plot boundaries at two no. house plots (permitted House Plot Nos. 62 and 74). The vehicular access is as otherwise permitted via the existing internal road network and entrances to Killeen Castle Demesne. All on a site of approximately c 3.63ha within the overall approx. 255ha Killeen Castle Demesne (a protected structure), Dunsany, Co Meath	29/04/2022	c.5km northeast
Meath CC	22264	Drumree, Co Meath	To construct a single storey dwelling house, detached garage, new wastewater treatment system and percolation area, new well, new entrance from public road and all associated site development works	21/04/2022	c.4.7km east
Meath CC	212144	Pelletstown, Drumree, Co Meath	A single storey detached dwelling and domestic garage, new domestic entrance onto public road, septic tank and percolation area, landscaping and all associated works	13/04/2022	c.5km northeast
Meath CC	212208	Knockmark, Drumree, Co. Meath	The development will consist of a) Demolition of existing agricultural sheds, b) Construction of a new farmyard entrance in place of existing roadside entrance, c) Construction of a stable & straw storage shed, d) Construction of a dungstead e) Construction of a machinery shed, f) Erection of a meal bin, g) Construction of a livestock shed & handling area with underground slatted slurry storage tanks and all associated site works	11/04/2022	c.4.4km east
Meath CC	22198	Branganstown, Kiltale, Co Meath	EXTENSION OF DURATION OF PLANNING PERMISSION REF TA/161305 - construction of 3 no. dormer/storey and a half style agri-tourism accommodation dwellings, accessed via existing private laneway, install proprietary waste water treatment systems and percolation areas and all associated site works. Significant further information/revised plans submitted on this application	11/04/2022	c.4.8km north
Meath CC	211844	Newtownrathganley, Kilcock, Co. Meath.	Construction of A) 2 no. new pig houses B) extension to 3 no. existing pig houses and C) 4 no. ancillary overground /underground storage tanks together with all ancillary structures and associated site works (to include an upgrading of the existing site entrance, the provision of an on-site wastewater treatment system and percolation area, and an on-site storm water attenuation swale), arising from the above development. The proposed works	05/04/2022	c. 5.0km southwest

Planning Authority	Reference	Address	Proposed Development	Grant/Due Date	Distance from Subject Site
			are to be completed in preference to, or in lieu of, any outstanding developments previously approved under planning ref DA101175, but not constructed to provide for and ensure higher environmental standards in line with BAT requirements, and improved animal welfare standards). The application relates to a development which is for the purposes of an activity requiring a Licence underpart IV of the Environmental Protection Agency (Licensing) Regulations 1994-2013. An Environmental Impact Statement Assessment Report (EIAR) and Natura Impact Statement (N.I.S) is submitted with this application.		
Meath CC	212117	Teagasc Grange Research Facilities , Grange, Dunsany, Co. Meath	The demolition of existing agricultural structures and construction of three new agricultural buildings consisting of a new slatted floor cattle feeding house, a new calf rearing unit and a new agricultural services store coupled with all associated site works	17/02/2022	c.3.1km north
Meath CC	212004	Tullaghmedan, Drumree, Dunsany, Co Meath	The removal of an existing telecommunications pole attached to a farm shed with a total height of 12 metres above ground level together with telecommunications equipment on it and replacement with a new 17.5 metres telecommunications structure carrying antennas, dishes, associated equipment, together with ground-based equipment cabinets, fencing and all associated site development works for wireless data and broadband services	31/01/2022	c.2.5km north
Meath CC	211982	Knockstown, Moynalvy, Summerhill, Co. Meath	A new two-storey detached dwelling and associated landscaping and site works including a new waste waterwastewater treatment system and percolation area and upgrading the existing site entrance onto the public road.	21/01/2022	c.3.2km southwest
Meath CC	21985	On lands including Derryclare, Cloneymeath, Ballygortagh and Moynalvy, Summerhill, Co. Meath	A Solar PV Energy Development with a total site area of 108.68ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 27 no. MV Power Stations, 3 No. Client Substations, 3 No. temporary construction compounds, access roads, boundary security fencing and security gates, CCTV, landscaping and ancillary works.	17/01/2022	c.5.0km west
Meath CC	211424	Clonymeath, Summerhill, Co. Meath	The development will consist of two storey dwelling, detached domestic garage, entrance and driveway. The development also includes the installation of new proprietary wastewater treatment system and polishing filter together with all associated site works.	16/12/2021	c.4.0km west
Meath CC	211220	Clonymeath, Summerhill, Co. Meath	Two storey dwelling, detached domestic garage, entrance and driveway. The development also includes the installation of new proprietary wastewater treatment system and polishing filter together with all associated site works.	11/11/2021	c.4.0km west
Meath CC	21546	Clonymeath, Summerhill, Co Meath	Permission for Solar Photovoltaic (PV) development within the townland of Clonymeath, Summerhill, Co Meath. Planning permission is sought for the construction and operation of a solar PV farm consisting of solar arrays on ground mounted steel frames, with a maximum overall height of 3 metres, over an area of 91.9 ha and ancillary equipment including up to 30 no. medium voltage power stations, 1 no. modular Battery Energy Storage Compound (comprising up to 5 no. battery containers) and all other associated site development works and services, including, internal solar PV farm, underground electrical cabling and ducting, 2 no. temporary construction compounds, security fencing, CCTV camera stands, replacement of an existing site entrance with a new gated site entrance via the L2210 local road, provision of new internal access roads including the upgrading and installation of span bridge structures, site drainage and landscaping, as required to facilitate the development. Planning permission is sought for a period of 10	29/09/2021	c.4.80km west

Planning Authority	Reference	Address	Proposed Development	Grant/Due Date	Distance from Subject Site
			years with an operational life of 35 years from the date of commissioning. The application is accompanied by a Natura Impact Statement (NIS). Significant Further information/Revised plans submitted on this application.		
Meath CC	RA201932	Leonardstown, Drumree, Co. Meath	Development will consist of a new two-storey detached dwelling house, a single-storey detached garage, proprietary wastewater treatment system and percolation area and all associated siteworks to include a new vehicular access from public road. Significant Further information /Revised plans submitted on this application.	05/07/2021	c.4.0km northeast
Meath CC	21141	Ballygortagh, Summerhill, Co. Meath	Storey and a half type dwelling house, detached garage, new wastewater treatment system and percolation area to proposed site, removal of existing septic tank and percolation area on site and to relocate adjoining dwelling house located to the west and all associated site development works. Significant further information/revised plans submitted on this application.	24/06/2021	c.4.0km southwest
Meath CC	RA201202	Kiltale Group Water Scheme , Pumping Station, Kiltale, Dunsany, Co. Meath C15 T923	The relocation of the existing entrance to the north eastern boundary of the site grounds. The development will include the construction of an in-situ concrete retaining wall along the site road boundary with palisade fence on top of the boundary wall with a land drain to its base with a petrol interceptor connected. Significant further information/revised plans submitted on this application.	14/04/2021	c.4.0km north
An Bord Pleanála	PL17.308034	Knockmark, Drumree, Co. Meath	Importation of uncontaminated soil and stones for the improvement of lands for agricultural purposes	02/03/2021	c.4.5km northeast
Meath CC	RA200607	Curraghtown, Drumree, Co. Meath	The development will consist of: 1. New dwelling and detached garage. 2. New domestic entrance. 3. Oakstown Wastewater Treatment system with Percolation area. 4. Landscaping & all associated site works.	17/12/2020	c.2.0km east
Meath CC	RA191754	Rathkilmore, Kilcock, Co. Meath	A new two storey dwelling with single storey living and lounge area to the west, associated domestic garage, open new vehicular entrance to site, new secondary wastewater treatment unit and polishing filter together with all associated site development works. Significant further information/revised plans submitted on this application.	27/11/2020	c.3.5km south
Meath CC	RA200497	Rathkilmore, Kilcock, Co Meath	A single storey dwelling & domestic garage. Permission is sought to upgrade existing agricultural entrance to facilitate shared domestic entrance and for the installation of a packaged wastewater treatment system and polishing filter and all associated site works.	24/11/2020	c.3.5km south
Meath CC	RA191502	Knockmark, Drumree, Co. Meath	The development will consist of the importation of uncontaminated soil and stones for the improvement of ground levels in rear garden to existing dwelling, in order to carry out landscaping works, gardens & lawns. Subsequent to planning a Certificate of Registration will be sought from Meath County Council Environment/Waste Section for the duration of the infilling process. Significant further information/revised plans submitted on this application.	24/09/2020	c.4.5km northeast
Meath CC	RA191557	Shanks Mare Public House,, Collegeland &	The development consists of retention of the partly-complete works for the conversion of the upper ground level of "Shanks Mare" Public house from a public house to four apartments for tourist accommodation (rental) purposes (291.46 sq.m.). Retention	14/09/2020	c.2.80km west

Planning Authority	Reference	Address	Proposed Development	Grant/Due Date	Distance from Subject Site
		Arodstown,, Summerhill, Co. Meath	permission is also being sought for a covered patio (17.52 sq.m.) which has been constructed to the west of the existing building, along with elevational changes to this structure, which was permitted under permission Reg. No. 71/598. The application also includes future works for the completion of the conversion of the upper ground floor of Shanks Mare to living accommodation, comprising of two number two-bedroom apartments and two number one-bedroom apartments, along with the use of these units for tourist rental purposes. These works shall include the provision of private deck areas to the rear (north-facing) elevation of these dwellings and associated elevational changes. Permission is sought for the change of use of store area (63.54m2) to a function room at lower ground floor level. Under this arrangement the lower ground floor and the uppermost levels within this building will remain in use for public house and residential purposes, respectively. Permission is sought to remove three unauthorised features which occupy the site comprising a perimeter fence, a log cabin and existing signage. Permission is also sought for a new proprietary effluent treatment system and polishing filter to replace the existing septic tank (to be decommissioned) and the closure of an existing entrance and upgrade works to an existing access, together with all associated site works. Significant further information/revised plan submitted on this application.		
An Bord Pleanála	ABP-307458-20	Shanks Mare Public House,, Collegeland & Arodstown,, Summerhill, Co. Meath.	Retention of the partly-complete works for the conversion of the upper ground level of "Shanks Mare" Public house from a public house to four apartments for tourist accommodation (rental) purposes.	28/08/2020	c.2.80km west
An Bord Pleanála	PL17.307021	Roestown, Readsland & Knocks, Dunshaughlin, Co. Meath	Amendments to a permitted residential scheme (Reg. Ref. DA120987, An Bord Pleanala Reg. Ref. PL17.241988}, overall comprising of a 142 residential scheme, a creche and associated site services.	27/07/2020	c.5km east
Meath CC	RA200003	Arodstown , Summerhill, Co. Meath	A two-storey dwelling house, domestic garage, creation of new entrance, private well, domestic wastewater treatment plant and all ancillary site works.	03/04/2020	c.1.7km northwest
An Bord Pleanála	PL17.305208	Larchill Stud, Newtownrathganley & Phepotstown, Kilcock, Co. Meath	New entrance and access road from the L6215 and associated upgrade works of the L6215 from the proposed new entrance to the junction with the R125.an activity requiring an Industrial Pollution Prevention and Control Licence (Now replaced by an Industrial Emissions Licence).	20/12/2019	c.5km south
Meath CC	RA180853	Curraghdoo, Summerhill , Enfield, Co. Meath	A two-storey dwelling with detached domestic garage, a domestic effluent treatment system, a well, new site entrance and all associated site works.	17/04/2019	c.4.0km west
Meath CC	RA181075	Bogganstown , Drumree , Co. Meath	Single storey replacement dwelling with detached domestic garage, a domestic effluent treatment system, new site entrance and all associated site works. The existing single storey dwelling is to be used as a farm office.	07/02/2019	c.3.0km southeast
Meath CC	RA180994	Glen Road,, Moynalvy , Kilcock, Co. Meath	A two-storey dwelling, detached domestic garage, wastewater disposal system, domestic site entrance and all associated site works.	05/12/2018	c.2.0km southwest
Meath CC	RA180692	Merrywell, Drumree, Co. Meath	Construction of a two-storey dwelling with domestic garage, proprietary wastewater treatment system, percolation area, new entrance off public road and all associated site works.	15/11/2018	c.4.0km southeast

Planning Authority	Reference	Address	Proposed Development	Grant/Due Date	Distance from Subject Site
Meath CC	TA180245	Martinstown, Kiltale, Co. Meath	Single storey dwelling incorporating domestic garage to rear, upgrade of existing entrance to form new shared dual entrance, driveway, connection to main water and sewerage together with all associated site works.	01/11/2018	c.4.0km northwest
Meath CC	RA170766	Knockstown & Clarkstown, Summerhill, Co. Meath	The development will consist of the following: Photovoltaic solar farm on a site of 23.6 hectares (58 acres) with an export capacity of approximately 8MW, comprising photovoltaic panels on ground mounted frames; 4 no. inverter stations; 1 no. interface substation; ducting and underground electrical cabling; perimeter fencing; pole mounted CCTV cameras; screen planting/landscaping; closing up of existing vehicular entrance and creation of a new vehicular entrance on the local road (L6215); new internal access road from the new vehicular entrance to connect with existing internal farm tracks, and all ancillary works necessary to facilitate the development. Significant further information/revised plans submitted on this application.	01/06/2018	c. 4.70km southwest

Appendix E Ecological Impact Assessment (EcIA) Report

Culmullin 220kV Substation

Ecological Impact Assessment (EcIA)(EcIA)

Energia Solar Holdings

26 June 2023

Delivering a better world

Quality information

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Table of Contents

Tables

1. Introduction

AECOM was commissioned by Energia Solar Holdings to carry out an Ecological Impact Assessment (EcIA) for a 220 kilo Volt (kV) Air Insulated Switchgear (AIS) substation, at Woodtown, Co. Meath (hereafter referred to as the 'Proposed Development'). The Proposed Development is shown on drawing 60657534-ACM-DWG-500 Culmullin 220kV Substation Site Location in this report.

This EcIA Report details the results of the desk study and field survey completed to establish the baseline conditions at the Site. The predicted effects arising from the Proposed Development on identified ecological features – which includes all designated nature conservation sites, habitats, flora and fauna species and ecosystems – are described and, where necessary, appropriate and proportionate mitigation measures are prescribed.

The purpose of this Ecological Impact Assessment (EcIA) is to provide a detailed appraisal of the potential ecological impacts associated with the Proposed Development.

1.1 Description of the Proposed Development

The Proposed Development will comprise a new 220 AIS substation, named Culmullin 220kV Substation, looped into the existing Maynooth – Gorman 220kV overhead line (OHL) directly to the west. The Substation Site is located at Woodtown, Co. Meath. The substation and grid connection will be constructed by the Applicant to EirGrid specifications and ownership will be transferred to ESB/EirGrid following construction.

The Proposed Development comprises:

- A new 220kV substation compound (approximately 2.24ha) consisting of:
  - Outdoor AIS equipment rated for the system voltage of 220kV equipped with 4 number 220kV cable bays.
  - Two number single storey buildings including an EirGrid standard control building with ancillary services, and a customer Medium Voltage (MV) module.
  - Two 180 megavolt amperes (MVA) oil-filled step-down power transformers within bunded enclosures.
  - 14 lightning protection masts (25m in height).
  - A 2.6m tall palisade fence.
- Two new Line Cable Interface Mast (LCIMs), under existing OHL to facilitate the removal of a short section (approximately 60m) of the existing 220kV lines.
- Approximately 120m of new underground cables to connect the substation to the grid.
- Adjacent telecoms mast area (225m²) for substation communications between Maynooth and Gorman 220kV substations at either end of the existing 220kV OHL.
- Five passing bays on the L62051.

In addition to the above the Proposed Development will include the following:

- New site access off the L62051 and internal site access road.
- Car parking.
- Drainage infrastructure.
- All associated and ancillary site development works.

The redline boundary of the Proposed Development covers an approximate area of 7.3 hectares (ha), with the substation footprint covering approximately 2.24ha, access road and passing bay works footprint covering approximately 1.05ha.

1.2 Overview of the Site

The Substation Site and Access Road Site of the Proposed Development is located at Woodtown, Co. Meath (ITM Coordinates: 690076, 750194). The R154 (regional road) (Trim Road) is approximately 2.9km north, R125 is approximately 2.5km east, R156 is approximately 3.3km south and the L2207 local road is approximately 2.7km to the west.

The Passing Bay Site of the Proposed Development is located in Culmullin, Co. Meath (ITM Coordinates: 691508, 749959). It is located along the existing Culmullin Road (L62051).

The nearest residential settlements (towns and villages) to the Site are Summerhill, approximately 6km to the southwest, Trim approximately 12km to the northwest, Dunshaughlin, approximately 7km to the northeast, Dunboyne approximately 13.5km southeast.

The majority of the Substation Site and Access Road Site is within agricultural fields encompassed by hedgerows. The majority of the Passing Bay Site is located on existing paved road with small sections of grassy verges. The land immediately surrounding the Site is predominately agricultural, with boundary hedgerows and small pockets of woodland.

1.3 Legislation and Planning Context

This EcIA has been undertaken in the context of the following relevant legislative instruments and planning policies:

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive').
- Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive').
- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy ('Water Framework Directive' or 'WFD').
- Regulation 1143/2014 on the prevention and management of the introduction and spread of invasive alien species (the 'Invasive Species Regulations').
- Convention on Wetlands of International Importance ('Ramsar Convention').
- European Communities (Birds and Natural Habitats) Regulations 2011-2021 (the 'Habitats Regulations').
- Wildlife Act 1976 and Wildlife (Amendment) Act (2000) including all amendments (together known as the 'Wildlife Acts').
- Flora (Protection) Order 2015 S.I 356/2015 (the 'Flora Protection Order').
- The Planning and Development Act, 2000-2014.
- Flora (Protection) Order 2015 S.I 356/2015 (the 'Flora Protection Order').
- National Biodiversity Plan 2017-2021[1].
- County Meath Biodiversity Plan[2].
- Project Ireland 2040 National Planning Framework (NPF)[3].
- Meath County Development Plan 2021-2027[4].

Relevant local planning policies concerning nature conservation within the Meath County Development Plan 2021-2027[5] are summarised in Table 1.

Table 1 Summary of Relevant Policies within the County Meath Development Plan

Planning Policy	Purpose
HER POL 27	To protect, conserve, and enhance the County's biodiversity where appropriate.
HER POL 35	To ensure, where appropriate, the protection and conservation of areas, sites, species and ecological/networks of biodiversity value outside designated sites and to require an appropriate level of ecological assessment by suitably qualified professional(s) to accompany development proposals likely to impact on such areas or species.
HER POL 33	To have regard to the views and guidance of the National Parks and Wildlife Service in respect of proposed development where there is a possibility that such development may have an impact on a designated European or National site or a site proposed for such designation.
HER POL 34	To undertake appropriate surveys and collect data to provide an evidence-base to assist the Council in meeting its obligations under Article 6 of the Habitats Directives (92/43/EEC) as transposed into Irish Law, subject to available resources.
HER OBJ 35	To ensure that development does not have a significant adverse impact, incapable of satisfactory avoidance or mitigation, on plant, animal or bird species protected by law.

[1] Department of Culture, Heritage and the Gaeltacht (2017), National Biodiversity Action Plan 2017-2021 https://www.npws.ie/sites/default/files/publications/pdf/National%20Biodiversity%20Action%20Plan%20English.pdf
[2] Meath County Council, County Meath Biodiversity Action Plan 2015-2020 https://www.meath.ie/system/files/media/file-uploads/2019-06/County%20Meath%20Biodiversity%20Plan%202015-2020.pdf
[3] https://npf.ie/project-ireland-2040-national-planning-framework/
[4] Meath County Council, (2021), Meath County Development Plan 2021-2027 Meath Adopted County Development Plan | Meath County Council Online Consultation Portal
[5] Meath County Council, (2021), Meath County Development Plan 2021-2027 Meath Adopted County Development Plan | Meath County Council Online Consultation Portal

Planning Policy	Purpose
HER POL 36	To consult with the National Parks and Wildlife Service, and take account of any licensing requirements, when undertaking, approving or authorising development which is likely to affect plant, animal or bird species protected by law.
HER POL 37	To encourage the retention of hedgerows and other distinctive boundary treatments in rural areas and prevent loss and fragmentation, where practically possible. Where removal of a hedgerow, stone wall or other distinctive boundary treatment is avoidable, mitigation by provision of the same type of boundary will be required.
HER POL 38	To promote and encourage planting of native hedgerow species in new developments and as part of the Council's own landscaping works
HER POL 39	To recognise the archaeological importance of townland boundaries including hedgerows and promote their protection and retention.

The third National Biodiversity Plan (2017-2021)[6] was launched in 2017. This Plan includes 119 targeted actions for public authorities in relation to their obligations for biodiversity and outlines six main objectives to meet commitments under the Convention on Biological Diversity (CBD) and EU Biodiversity Strategy. These objectives include:

- Mainstream biodiversity into decision-making across all sectors.
- Strengthen the knowledge base for conservation, management and sustainable use of biodiversity.
- Increase awareness and appreciation of biodiversity and ecosystem services.
- Conserve and restore biodiversity and ecosystem services in the wider countryside.
- Conserve and restore biodiversity and ecosystem services in the marine environment.
- Expand and improve management of protected areas and species.
- Strengthen international governance for biodiversity and ecosystem services.

One particularly important policy change in the plan (Objective 1) relates to the 'mainstreaming' of biodiversity into decision-making across all sectors. Specifically, there is an action on all Public Authorities to "*move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure*". This and other relevant policies in the plan have informed the valuation of ecological features, assessment of potential impacts and development of mitigation in this report, as relevant.

The County Meath Biodiversity Action Plan (BAP)[7] contains a series of actions which detail biodiversity objectives and actions. The BAP aims to raise awareness of biodiversity value, and address threats to habitats and species.

2. Methods

2.1 Target Ecological Features

For the purposes of all desk study and field survey, protected and notable habitats and species which were target features of this EcIA comprise:

- All habitats on Annex I of the Habitats Directive.
- All species listed on Annex II and Annex IV of the Habitats Directive.
- All species of birds on Annex I of the Birds Directive.
- All species listed under the Wildlife Acts 1976 to 2021.
- Plant species listed on the Flora (Protection) Order, 2015.
- Species and habitats listed on the National Biodiversity Action Plan 2017 - 2021.
- Invasive non-native species of plants and animals listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) (as amended) (hereafter 'scheduled invasive species'), those of EU concern under the EU Invasive Alien Species Regulation, and those listed by the National Biodiversity Data Centre as High Risk in Ireland.

Other species or habitats that may be rare, scarce or otherwise notable were also included where deemed appropriate through available information and/or professional judgement.

[6] Department of Culture, Heritage and the Gaeltacht (2017), National Biodiversity Action Plan 2017-2021 https://www.npws.ie/sites/default/files/publications/pdf/National%20Biodiversity%20Action%20Plan%20English.pdf
[7] Meath County Council, County Meath Biodiversity Action Plan 2015-2020 https://www.meath.ie/system/files/media/file-uploads/2019-06/County%20Meath%20Biodiversity%20Plan%202015-2020.pdf

2.2 Consultation

2.2.1 Pre-Application Consultation Meeting with An Bord Pleanála

Pre-application meetings were held with An Bord Pleanála (ABP) on the 22 November 2021 and 27 April 2022. The objective of the meetings was to outline the proposal and to discuss any concerns or comments that ABP may have in relation to the proposal. Confirmation that the project was a strategic infrastructure development (SID) was a part of the pre application process.

2.2.2 Consultation with Statutory and Non Statutory Bodies

Letters and project descriptions were sent out to a list of statutory and non-statutory bodies that may have had an interest in the proposed development.

2.2.3 Information Drop to Nearby Residents

To inform local residents about the proposed Culmullin 220kV Substation, the Applicant distributed information and contact details to households within a radius of just over 1km of the proposed application site boundary. The information distributed to each household consisted of an information brochure on the proposed development. Residents were also given a letter inviting them to a drop-in public information event which was held on 10 November 2022.

In advance of the public information event, the Applicant also visited nearby residents to provide further information on 25 and 26 October 2022.

2.2.4 Public Information Event

The Applicant held a public information drop-in event in Moynalvey GFC Hall on 10 November 2022. Brochures and larger maps were available for attendees to take home. There were additional documents available to view, including photomontages and engineering drawings. The Energia project team were on hand to answer questions included electrical engineers, planning officers, project managers and community liaison officers.

2.2.5 Project Website

Energia Renewables launched a stand-alone project website for the Culmullin 220kV Substation www.culmullinsubstation.ie to keep members of the public informed about the Proposed Development.

2.3 Desk Study

A desk study was carried out to identify nature conservation designations, and records of protected and notable habitats and species potentially relevant to the Proposed Development.

The desk study areas were defined using a stratified approach based on the likely 'zone of influence' of the Proposed Development on different ecological features and an understanding of the maximum distances typically considered by statutory consultees. Accordingly, the desk study sought to identify:

- International nature conservation designations within 15km of the Proposed Development.
- National statutory conservation designations within 2km of the Proposed Development.
- Records of protected and notable habitats and species within 1km of the Proposed Development.

Internationally designated sites within the search area are shown in Figure 1 attached.

The desk study was carried out using the sources detailed in Table 2.

Table 2 Desk Study Data Sources

Data source	Accessed	Data obtained
National Parks and Wildlife Service (NPWS) webpages (https://www.npws.ie/protected-sites) and (https://www.npws.ie/maps-and-data/designated-site-data/download-boundary-data)	June 2023	International statutory designations within 15km. Other statutory designations within 2km.
Environment Protection Agency (EPA) webpage (https://gis.epa.ie/EPAMaps/)	June 2023	Information on watercourses.
Meath County Council website (https://www.meath.ie/)	June 2023	Policies relevant to nature conservation. County Meath Biodiversity Action Plan.

Data source	Accessed	Data obtained
National Biodiversity Data Centre (NBDC) website (https://www.biodiversityireland.ie/)	June 2023	Notable and protected species records within 1km (records older than 50 years have not been considered).
Aerial photography (www.google.com/maps)	June 2023	Habitats and connectivity relevant to interpretation of planning policy and potential protected/notable species constraints.
National Survey of Native Woodland (NSNW) and Ancient Woodland inventory (https://www.npws.ie/maps-and-data)	June 2023	Information on woodlands within 1km
Ecological Impact Assessment Woodtown Solar Farm[8]	June 2023	Ecological Impact Assessment carried out for the Woodtown Solar Farm. The surveys overlap with the Substation Site and the Access Road Site.

2.4 Field Survey

All field surveys were carried out by experienced AECOM ecologists and had regard for relevant guidance including, but not limited to, the National Road Authority's (NRA) (now known as Transport Infrastructure Ireland (TII)) *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*[9].

Field surveys within the Substation Site and lands within the solar farm site boundary were carried out on 06 July 2021. An updated field survey was carried on 06 January 2023 to survey the additional proposed Passing Bay Site. The Access Road Site was not surveyed further as sufficient data was available from field surveys carried out by Neo Environmental[10] for this assessment.

2.5 Extended Fossitt Habitat Survey

A habitat survey was carried out using the Heritage Council classification system[11] and following and Heritage Council methodology[12]. Notes were made for each habitat of dominant, typical and notable plant species, and any relevant ecological characteristics, and these reflect conditions at the time of survey.

The surveyors recorded and mapped all habitat types in the survey area and any relevant ecological features, including invasive non-native plants. The survey area encompassed all safely accessible parts of the Substation Site boundary and adjacent habitats to a minimum distance of 50m. It also encompassed the boundary of the Passing Bay Site. The survey area is as shown on Figures 2a and 2b attached.

2.5.1 Appraisal of Potential Suitability of Habitats to Support Protected and Notable Species

An appraisal was made of the potential suitability of the habitats present to support protected and notable species of plants or animals. Field signs, habitat features with potential to support protected species and any sightings or auditory evidence were recorded when encountered. No detailed surveys were carried out for any particular species, apart from undertaking a preliminary bat roost appraisal of all trees and carrying out a badger survey within the Site.

2.6 Badger Survey

Survey for badger (*Meles meles)* was carried out in suitable habitat within the survey area. The survey followed guidance in published literature[13]. Evidence searched for included setts, spoil heaps, bedding, guard hairs, latrines, footprints, trails, scratch marks and foraging activity. If any badger activity or evidence was recorded this was mapped with the aid of aerial photography and GPS, with accompanying field notes.

[8] Neo Environmental (2021). Technical Appendix 2: Ecological Impact Assessment. Woodtown Solar Farm.
[9] NRA (2009). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. National Roads Authority, Ireland.
[10] Neo Environmental (2021). Technical Appendix 2: Ecological Impact Assessment. Woodtown Solar Farm.
[11] Fossitt, J.A. (2000). A Guide to Habitats in Ireland, The Heritage Council
[12] Smith, G.F., O'Donoghue, P. and Delaney, E. (2011). Best Practice Guidance for Habitat Survey and Mapping. The Heritage Council, Kilkenny.
[13] Harris et al (1989). Surveying Badgers, The Mammal Society

2.7 Bat Roost Suitability

The bat roost suitability of all trees within the survey area was assessed following guidance published by the Bat Conservation Trust[14]. Potential Roost Features (PRF) were identified from the ground, and trees were classified as having Negligible, Low, Moderate or High bat roost suitability, according to the definitions provided in the survey guidance[15].

PRF searched for included suitable holes, cracks or splits in trees. Where such features existed, evidence of bat use searched for included droppings, staining, foraging remains, auditory evidence and sightings of live or dead bats.

2.8 Ecological Impact Assessment

2.8.1 Scope of Assessment

The Proposed Development is considered to be permanent and there is no expectation of a 'decommissioning' phase. This EcIA therefore considers only the construction and operation of the Proposed Development.

The field survey did not include searches for protected/notable fish, protected/notable aquatic invertebrates, otter (*Lutra lutra*) red squirrel (*Sciurus vulgaris),* smooth newt (*Lissotriton vulgaris*) and common lizard (*Zootoca vivipara*) because they are considered absent from the relevant area for the reasons given below. Given their likely absence these features are not considered further in this EcIA.

The following ecological features were excluded from the field survey and will not be referred to any further within this assessment:

- Protected/notable fish, protected/notable aquatic invertebrates, and otter - no suitable habitat is present within the zone of influence of the Proposed Development, the nearest watercourses are approximately 190m distant from the Substation Site (Arodstown Stream) and 150m distant from the Passing Bay Site (Moyleggan Stream).
- Red squirrel - no survey was carried out because red squirrel is assumed to be absent from the area[16].
- Smooth newt - there are no suitable waterbodies within the Site or with connectivity to the Site in the surrounding area (within 250m), the ditches within the Site were dry or shallow at the time of survey, in addition there are no existing records of smooth newt within 1km of the Site.
- Common lizard - there is insufficient suitable habitat to support a sustainable common lizard population and thus this species are unlikely to be affected by the Proposed Development.

2.8.2 Assessment Method

Assessment of ecological impacts in this EcIA broadly follows guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM)[17]. The principal steps involved in the CIEEM approach can be summarised as:

- Baseline conditions are determined by obtaining data on potentially affected ecological features through targeted desk study and field survey (both at expected Proposed Development commencement and, for comparison, at a future point in the absence of the Proposed Development).
- The importance of ecological features identified in the baseline is evaluated in a geographic context, determining those that require more detailed assessment.
- The potential impacts of the Proposed Development that could affect ecological features are described, considering embedded mitigation, and accounting for best practice and legislative requirements.
- The likely effects on ecological features are assessed and if possible quantified.
- Measures are developed to mitigate (by avoidance or reduction), or if necessary, compensate for likely significant adverse effects, in conjunction with other design elements.
- The significance of residual effects (beneficial or adverse) is reported.
- Scope for ecological enhancement is considered.

The assessment employs the professional judgement of experienced ecologists as necessary.

[14] Collins (2016). Bat Surveys – Good Practice Guidelines (3rd Edition)
[15] Collins (2016). Bat Surveys – Good Practice Guidelines (3rd Edition)
[16] Meath County Council, County Meath Biodiversity Action Plan 2015-2020 https://www.meath.ie/system/files/media/file-uploads/2019-06/County%20Meath%20Biodiversity%20Plan%202015-2020.pdf
[17] Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland

2.8.3 Assessing the Importance of Ecological Features

An ecological feature is a site, habitat, or species of nature conservation value. Only those that are 'important' and could be significantly affected by the project require detailed assessment: "*it is not necessary to carry out detailed assessment of ecological features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable*"[18].

Existing data and criteria are considered when determining the importance of ecological features. Where these are lacking, it is necessary to apply professional judgement. Factors considered include:

- Abundance/rarity, endemicity, mobility and distribution (particularly if this changing).
- Size/extent, viability, rate of decline and vulnerability.
- Typicalness, species-richness, structure and connectivity/fragmentation.
- Function/value to other features (e.g. habitats of notable species or buffers against impacts).
- Restoration potential.

Requirements to comply with legislation are stated during the assessment, but legislative protection and priority listing does not necessarily translate to importance. For example, a transitory roost of a single bat would not be afforded the same importance as a regularly occurring maternity roost (although legal obligations must still be met), and areas of priority habitat could be unfavourably small or in poor condition and not practically restorable.

The importance of ecological features is described within a geographic scale. Examples of types of features which might fall into each geographic class are given in the table below:

Table 3 Geographical Scale of Importance

Scale	Example Features (Subject to Professional Judgement)
International/European	Internationally designated site (or candidate/proposed international site). Sustainable internationally significant population or site supporting one.
National (Ireland)	Nationally designated site (or site considered worthy of such designation). Sustainable area of a national priority habitat or notable Annex I habitat which is a significant proportion of the national resource. Sustainable nationally significant population (e.g. 1% of national resource) or site supporting one.
Regional (*e.g.,* Natural Heritage Areas)	Sustainable area of a priority habitat which is a significant proportion of the regional resource. Sustainable regionally significant population (e.g. 1% of regional resource) or site supporting one.
County, or other Local Authority-wide Area	Sustainable area of priority habitat which is a significant proportion of the county resource. Sustainable county-significant population (*e.g.,* 1% of county resource) or site supporting one.
Local (*e.g.,* 10km radius)	Priority habitat not large enough for higher importance or degraded with low restoration potential. Habitat or population which appreciably enriches the local resource. Sustainable population of a notable species not considered of higher importance.
Site	Common, heavily managed or modified habitat, and common and widespread species, of low ecological value and not of value for features of higher importance.

2.8.4 Assessment of Impacts

Impacts may occur during the construction, operation and decommissioning phases of a development. They may be direct or indirect (also termed 'secondary'). Direct impacts are attributable to an action associated with a development. Indirect impacts are often produced away from a development or as a result of other initial impacts.

Under the CIEEM guidance[19] there is a distinction between impact and effect. An impact is an action on an ecological feature (*e.g.,* hedgerow removal. loss of a bat roost). An effect is the outcome of that impact on an ecological feature (*e.g.,* effect of hedgerow loss on breeding birds. effect of bat roost loss on the conservation status of the bat species).

Likely impacts/effects are characterised using those parameters below that are necessary to understand them:

- **Direction**: whether the impact/effect be beneficial or adverse.
- **Magnitude**: the 'size', 'amount' or 'intensity' of an impact/effect, quantified as far possible.

[18] Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland
[19] Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland

- **Extent**: the spatial or geographical area or distance over which the impact/effect occurs.
- **Duration**: the time over which an impact/effect is expected to last before recovery or replacement (if possible) of the feature. Where appropriate, ecological aspects such as lifecycles are considered. The duration of an effect may be longer than the duration of an activity or impact.
- **Timing/frequency**: timing is important since an impact/effect might not occur if it avoids critical seasons or life stages. Frequency considers activity repetition, which may have greater impact.
- **Reversibility**: whether the impact/effect is temporary or permanent. A temporary impact/effect is one from which recovery is possible or for which effective mitigation is possible and enforceable. A permanent impact/effect is one from which recovery is either not possible or cannot be achieved within a reasonable timescale (in the context of the feature being assessed).

Consideration is given to conservation objectives, whether processes within sites will be altered, effects on habitats and species population size/viability, and whether these will have an effect on conservation status. Conservation status includes the abundance and distribution of species, and the extent, structure and function, and typical supported species of habitats.

Consideration is given to cumulative effects, since effects acting in combination may have a cumulative effect exceeding that of the separate effects. Cumulative effects may arise from a combination of effects from the development itself (e.g., effects at the construction and operation stages), or the combined effects from different developments.

2.8.5 Assessment of Significance

An effect (positive or negative) is significant at a specified geographical level if it affects the ecological integrity of a site or ecosystem or the conservation status of a species or habitat at that geographical level. If not significant at the level it was considered important, an effect could be significant at a lower geographic level (for example, an effect on a national priority species may not be significant to the national population). These assessments are based on quantitative evidence where possible, and as necessary through the professional judgement of experienced ecologists.

Initially, the effect significance does not consider mitigation (avoidance or reduction) or compensation measures unless these are explicitly embedded into the design. The residual effect significance takes account of additional agreed and enforceable mitigation or compensation measures that are considered necessary, with the aim that, wherever possible, residual effects are not significant or are significant at a lower geographic level than the unmitigated effects.

CIEEM advise that where there is reasonable doubt and a conclusion of no significant effect cannot be robustly reached, this uncertainty should be acknowledged and a significant effect assumed, in line with the precautionary principle.

2.8.6 Mitigation Approach

Where impacts on relevant ecological features are predicted, the approach to mitigation engages the following hierarchy:

- Avoid features where possible.
- Minimise impact by design, method of working or other measures, for example by enhancing existing features.
- Compensate for significant residual impacts (e.g., by providing suitable habitats elsewhere).

This hierarchy requires the highest level to be applied where possible. Only where this cannot reasonably be adopted are lower levels considered. The rationale for the proposed level of mitigation is provided, with sufficient detail to show that the measures are feasible and would be provided.

Further to mitigation, Policy HER POL 27 within the Meath County Development Plan aims to “protect, conserve, and seek to enhance the County’s biodiversity.” This EcIA has therefore considered the potential to secure biodiversity enhancement.

2.9 Appropriate Assessment Screening and Natura Impact Statement

An Appropriate Assessment (AA) Screening and Natura Impact Statement [20] has been completed, the purpose of which was to determine, in view of best available scientific knowledge, whether the Proposed Development, either alone or in combination with other plans or projects, could have adverse effects on the integrity of European sites

[20] AECOM (2023). Energia Solar Culmullin Substation Natura Impact Statement

identified within the ZoI of the Proposed Development, in view of the sites' conservation objectives. Note that the designated sites assessed in the AA Screening and Natura Impact Statement have not been identified based on arbitrary distances, but individually assessed as potentially relevant in relation to potential effects from the Proposed Development based on the "*the nature size and location of the project*" as per guidance published by the Department of Environment, Heritage and Local Government[21].

2.10 Limitations

Information obtained through desk study is intended to supplement fieldwork and relies on people and organisations having submitted records for the desk study area. As such, a lack of records for particular habitats or species does not necessarily equate to their absence from the desk study search area. Likewise, the presence of records for particular habitats and species does not imply their continued occurrence or relevance in the context of the Proposed Development.

Where habitat boundaries coincide with discernible boundaries on recent aerial photographs (where available) the resolution is as determined by the accuracy of the aerial photographs. Otherwise, habitat mapping is as estimated in the field. Where areas of habitat are given, they are approximate and should be verified by measurement on site where required for design or construction.

There are no other significant limitations to this Ecological Impact Assessment.

3. Baseline Conditions

3.1 Nature Conservation Designations

Two Special Areas of Conservation (SAC) and one Special Protection Area (SPA) were identified within 15 km of the Proposed Development, as detailed in Table 4. The locations of these sites are shown on Figure 1 attached.

There are no Natural Heritage Areas (NHA) or proposed Natural Heritage Areas (pNHA) within 2km of the Proposed Development.

Table 4 Sites for Nature Conservation within 15 km of the Proposed Development

Site Name	Summary of Qualifying Interests	Relationship to the Proposed Development
River Boyne and River Blackwater SAC	Alkaline fens [7230] Alluvial forests with alder *Alnus glutinosa* and ash *Fraxinus excelsior* [91E0] River lamprey *Lampetra fluviatilis* [1099] Atlantic salmon *Salmo salar* [1106] Otter *Lutra lutra* [1355]	Approximately 9.4 km west of the Substation Site. Approximately 10.3 km west of the Passing Bay Site. There is potentially hydrological connectivity between the Proposed Development and this SAC via surface water systems.
River Boyne and River Blackwater SPA	Kingfisher *Alcedo atthis* [A229]	Approximately 9.4 km west of the Substation Site. Approximately 10.3 km west of the Passing Bay Site. There is potentially hydrological connectivity between the Proposed Development and this SPA via surface water systems.
Rye Water Valley/Carton SAC	Petrifying springs with tufa formation [7220] Narrow-mouth whorl snail *Vertigo angustior* [1014] Desmoulin's whorl snail *Vertigo moulinsiana* [1016]	Approximately 12.3 km southeast of the Substation Site. Approximately 11.2 km southeast of the Passing Bay Site. No pathways have been identified between the Site and SAC.

3.2 Woodlands

There are no ancient woodlands within 1km of the Proposed Development and there are no native woodland blocks within or immediately adjacent to the Proposed Development.

[21] DoEHLG (2010). Appropriate Assessment of plans and projects in Ireland. Guidance for Planning Authorities. Department of Environment, Heritage and Local Government: Ireland

3.3 Habitats

The results of the Phase 1 habitat survey are described below and are shown on Figures 2a and 2b attached to this report. Photographs of the Site are presented within Appendix A.

3.3.1 Arable Crops (BC1) and Improved Agricultural Grassland (GA1)

The Substation Site almost entirely comprises an arable crop field, Photographs 1 and 2, Appendix A. The Passing Bay Site comprises two small sections of improved agricultural grassland that are frequently grazed by livestock.

The Access Road Site also mainly comprises arable crops and agricultural fields grazed by livestock. The agricultural fields generally include perennial rye grass (*Lolium perenne*), Yorkshire-fog (*Holcus lanatus*), creeping buttercup (*Ranunculus repens*), crested dog's-tail (*Cynosurus cristatus*), and cock's-foot (*Dactylis glomerata*)[22].

3.3.2 Drainage Ditches (FW4)

At the time of survey in January 2023, the drainage ditches had shallow water present in the northern section of the Passing Bay Site along the grassy verges adjacent to the existing road.

These wet drainage ditches were typically 0.3 to 1 m wide with leaf litter present at the bottom. The water generally had a moderately fast, northwestern flow.

3.3.3 Dry Meadows and Grassy Verges (GS2)

There were several areas of grassy verges within the Passing Bay Site. The footprint of the passing bays mainly comprises the hardstanding pavement and grassy verges along the existing road.

These grassy verges are typically associated with ditches. They are dominated by grasses including perennial rye grass, Yorkshire-fog, meadow grasses (*Poa* spp.), false-oat grass (*Arrhenatherum elatius*), cock's-foot (*Dactylis glomerata*). They usually include patches of bare soil and occasionally herbaceous species such as herb-Robert (*Geranium robertianum),* common nettle (*Urtica dioica*), meadowsweet (*Filipendula ulmaria*), dandelion (*Taraxacum officinale* agg.), cleavers (*Galium aparine*), creeping buttercup, and daisy (*Bellis perennis*).

3.3.4 Hedgerow (WL1)

An overgrown intact species-rich hedgerow (Photograph 5) is located adjacent to the Substation Site to the southwest. It comprises oak (*Quercus* sp.), ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), ivy (*Hedera helix*), dog rose (*Rosa canina*), hazel (*Corylus avellana*), blackthorn (*Prunus spinosa*), with thistle (*Cirsium* sp.), willowherb (*Epilobium* sp.), hogweed (*Heracleum sphondylium*), bush vetch (*Vicia sepium*), herb-Robert and hart's tongue fern (*Asplenium scolopendrium*). A dry ditch is located immediately adjacent to the hedgerow, species present include bittercress (*Cardamine* sp.), watercress (*Nasturtium officinale*) and horsetail (*Equisetum* sp.).

There are several hedgerows within the survey area for the Passing Bay Site. These hedgerows appear to be frequently cut and typically comprise beech (*Fagus sylvatica*), cherry laurel (*Prunus laurocerasus*) (non-scheduled, high-impact invasive species), blackthorn, hawthorn, and bramble (*Rubus fruticosus*). However, the only hedgerow within the Passing Bay Site boundary and footprint of Passing bay 2 as shown on the drawing 'Culmullin 220kV Substation Proposed Passing Bays on L62051 Overall Concept Plan' is a hedgerow dominated by the non-scheduled, high-impact invasive species cherry laurel.

3.3.5 Treeline (WL2)

A treeline with frequent gaps between trees (Photograph 3) is located adjacent to the Substation Site to the northwest. It comprises ash, hawthorn, blackthorn with broadleaved dock (*Rumex obtusifolius*) and rosebay willowherb (*Chamaenerion angustifolium).* A dry ditch (Photograph 4) is located adjacent to the treeline with creeping buttercup, meadow buttercup (*Ranunculus acris*) and thistle.

There are several treelines within the survey area for the Passing Bay Site. These treelines typically comprise mature trees that range between 10 to 18 m tall. They are typically dominated by beech, oak, and ash. Based on the drawing 'Culmullin 220kV Substation Proposed Passing Bays on L62051 Overall Concept Plan,' Passing bay 1 is adjacent to a treeline that ranges from 10 to 15 m tall and is dominated by beech and oak. Passing bay 5 is adjacent to a 15 m tall treeline dominated by mature beech with large gaps present between trees. There is also a short, frequently cut beech hedgerow below this treeline as well.

[22] Neo Environmental (2021). Technical Appendix 2: Ecological Impact Assessment. Woodtown Solar Farm.

3.3.6 Woodland (Mixed Broadleaved Woodland (WD1), Mixed Broadleaved / Conifer Woodland (WD2), and Mixed Conifer Woodland (WD3))

There are several small woodland parcels in the survey area for the Passing Bay Site. Two of these parcels are dominated by broadleaved species, four are an even mix of broadleaved and conifer species, and two parcels are dominated by conifer species.

The broadleaved woodlands are typically 18 m tall and comprise mature trees dominated by beech, maple (*Acer* spp.), and oak. The understory comprises bramble, ferns, ivy, and cherry laurel. The mixed broadleaved and conifer woodlands typically range between 15 and 20 m tall and are dominated by beech, oak, spruce (*Picea* spp.) and cedar (*Thuja* spp.), and Scot's pine (*Pinus sylvestris*). The understory is typically sparce with mainly bare soil and ivy present. There is occasional bramble and cherry laurel. The conifer woodlands range from 13 to 20 m tall and are typically dominated by spruce and cedar with bramble scrub below.

Although these woodlands are within the survey area, only three woodland parcels are adjacent to the footprint of the passing bays as per the drawing 'Culmullin 220kV Substation Proposed Passing Bays on L62051 Overall Concept Plan'. One mixed broadleaved woodland (WD1) parcel is adjacent to passing bay 2. One mixed broadleaved / conifer woodland (WD2) and one mixed conifer woodland (WD3) is adjacent to passing bay 4, however, no trees will be removed from these woodland parcels.

3.4 Protected and Notable Species

3.4.1 Protected and Notable Plant Species / Invasive Plant Species

No protected or notable plant species were recorded within the Site.

The non-scheduled, high impact invasive species cherry laurel is present throughout the survey area of the Passing Bay Site. It is located scattered throughout a woodland parcel, in a patch of woodland measuring approximately 10 x 5 m in area, and throughout two hedgerows. These locations are shown on Figure 3 attached.

Cherry laurel is only present in the hedgerow in passing bay 2 and passing bay 3. The other areas with cherry laurel are outside of the footprint of the passing bays.

3.4.2 Bats

No existing records of bat species were identified within 1km of the Site.

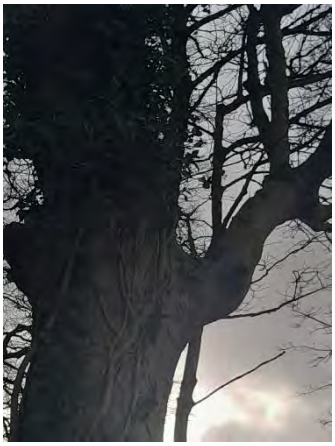
The hedgerows, treelines, and woodland features within and/or adjacent to the Site may support foraging and commuting bats.

Eight trees with Low bat roost suitability and one tree with Moderate bat roost suitability were identified within the survey area of the Passing Bay Site.[23] Furthermore, Neo Environmental identified a treeline north of the Access Road Site with mature oak and Scot's pine that has bat roosting potential.[24] These are displayed on Figure 3 attached to this report. The trees with bat roost suitability identified at the Passing Bay Site are described further in Table 5.

[23] Collins (2016). Bat Surveys – Good Practice Guidelines (3rd Edition)
[24] Neo Environmental (2021). Technical Appendix 2: Ecological Impact Assessment. Woodtown Solar Farm.

Table 5. Trees with Bat Roost Suitability

Tree Ref	Suitability	Feature Description	Photograph(s)
T01	Low	Beech tree with one large knothole facing southwest approximately 5 m high on the trunk of the tree. Another small knothole that may be closed on branch facing south approximately 8 m high.	 
T02	Low	Beech tree with two knotholes on branches approximately 9 m high on the tree facing south. Note that these holes may be closed, but it was difficult to assess this from the ground level.	 
T03	Low	Oak with two broken branches approximately 10 m high with potential small openings for bats.	 
T04	Low	Dying tree with small knotholes on branch facing north 6 m high. Also, there is a broken branch and lifting bark 8 m high.	 

Tree Ref	Suitability	Feature Description	Photograph(s)
T05	Low	Mature tree with knothole approximately 5 m high by the trunk facing southeast.	 
T06	Low	Beech tree with two knotholes 5.5 m high facing north and one knothole 9 m high on branch facing east.	 
T07	Low	Maple tree with one knothole on trunk facing north approximately 4 m high. Another knothole on a branch approximately 4 m high facing northwest and knothole facing east approximately 4.5 m high on tree trunk.	 
T08	Low	Mature tree with hole in branch facing down approximately 7 m high.	 

Tree Ref	Suitability	Feature Description	Photograph(s)
T09	Moderate	Mature tree, likely oak, with five knotholes along one tree branch closest to the road, two knotholes on trunk, multiple broken branches, and bat boxes present on other side of tree away from the road.	 

3.4.3 Badgers

There are six existing records of badger within 1km of the Site, with the latest being in 2016. Furthermore, three badger setts were identified by Neo Environmental in fields approximately 700m south of the Substation Site.

A mammal trail was identified by the treeline at the Substation Site, which was likely to be fox (*Vulpes vulpes*). No badger setts or evidence of badger was recorded during the survey. However, the habitats present within the Site could support foraging badger.

3.4.4 Breeding and Wintering Birds

The desk study identified the following relevant records of Red-Listed Birds of Conservation Concern (BoCC)[25]: barn owl (*Tyto alba*), grey partridge (*Perdix perdix*), grey wagtail (*Motacilla cinerea*), golden plover (*Pluvialis apricaria*), kestrel (*Falco tinnunculus*), meadow pipit (*Anthus pratensis*), redwing (*Turdus iliacus*), snipe (*Gallinago gallinago*), swift (*Apus apus*), woodcock (*Scolopax rusticola*) and yellowhammer (*Emberiza citrinella*) within 1km of the Site.

There are no habitats present within the Site which are suitable to support barn owl or kestrel. The linear habitats within the Site are highly likely to be used for nesting by a common assemblage of breeding birds. During winter the Site may also support a common and widespread wintering bird species.

3.4.5 Common Frog

The desk study identified existing records of common frog (*Rana temporaria*) within 1km of the Site.

There are two ditches within the Substation Site, both of which were dry during the survey, however they could have held water earlier in the year. The closest other potential waterbody is a watercourse located 190m west of the Substation Site boundary. There are also several ditches in the Passing Bay Site. However, the majority of these were dry, with the exception of one shallow wet ditch in the northernmost passing bay laydown area. The nearest watercourse to the Passing Bay Site is the Moyleggan Stream which is approximately 150m south.

The majority of the habitat present within the Site, i.e. the arable field, is sub-optimal terrestrial habitat, however the treeline and hedgerow do provide more suitable terrestrial habitat. The presence of common frog within the Site therefore cannot be ruled out.

3.4.6 Hedgehog

No existing records of hedgehog (*Erinaceus europaeus*) were identified within 1km of the Site.

No observations or evidence of hedgehog were recorded during field surveys; however they are nocturnal and field signs are less frequently observed than for other mammals. Suitable habitat for feeding, breeding, and hibernating hedgehogs is present within the Site, including treelines and hedgerows. Hedgehogs are protected under the Wildlife Acts.

[25] Gilbert, G., Stanbury, A. and Lewis, L. (2021). Birds of Conservation Concern in Ireland 4: 2020-2026. *Irish Birds* **43**, pp 1-22

3.4.7 Irish Hare

One record of Irish hare (*Lepus timidus hibernicus)* were identified within 1km of the Site in 1992.

Irish hare was not observed during field surveys. Given the absence of suitable habitat such as tussocky grassland within which hares could shelter, this species is considered likely to be absent from the Site.

3.4.8 Pine Marten

One existing record of pine marten (*Martes martes*) were found within 1km of the Site in 2012. In addition, when the surveyors were travelling to the Site on 06 July 2021 a pine marten was observed to the north of the Access Road Site, which is approximately 300m northeast of the Substation Site.

Habitat suitable to support this species is present within the surrounding area and this species may use the treelines/hedgerow within the Site.

3.4.9 Terrestrial Invertebrates

Existing records of marsh fritillary (*Euphydryas aurinia*), small blue (*Cupido minimus*) and wall butterfly (*Lasiommata megera*), were identified within 1km of the Site.

The habitats present within the Site are not suitable to support the above butterfly species as they favour grassland habitats, coastal grassland and dune (small blue/wall), damp grassland and/or marsh habitat (marsh fritillary).

Due to the limited ecological value of the habitats present, it is unlikely that any protected/notable terrestrial invertebrate species would be found within the Site.

3.4.10 Other Mammals

The Site may support Irish stoat (*Mustela erminea hibernica*) and pygmy shrew (*Sorex minutus*) which are both protected under the Wildlife Acts.

3.5 Future Baseline

3.5.1 Baseline at Time of Construction

The exact programme of works is yet to be finalised, but it is expected that:

- Application is made for Planning Permission in Q3 of 2023.
- Commence site enabling and construction works in Q4 of 2024 (subject to planning permission).
- Completion of construction and commissioning in Q4 of 2026.

Based on this, there is an expectation that in the interim period between field survey and construction there will be no substantial changes to the baseline conditions described in this document.

3.5.2 Baseline in the Absence of the Proposed Development

If construction of the Proposed Development did not take place, it is likely that the Substation Site and Access Road Site will continue to be used for agricultural purposes. The Site is not earmarked or designated as a future development area.

The Proposed Development footprint almost entirely covers the arable field and paved road which provides very limited ecological value and, should the field and paved road continue to be used for this purpose would continue to provide limited biodiversity value.

4. Impact Assessment

4.1 Features Excluded from Further Assessment

Relevant ecological features are those that are considered to be 'important' and have the potential to be affected by the Proposed Development[26]. In view of the baseline data obtained through desk study and field survey, the following features have been excluded from further assessment because there is considered to be no possible effect on them, through absence of the feature or clear absence of an impact pathway:

[26] Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland

- European sites including River Boyne and River Blackwater SAC and SPA, and Rye Water Valley/Carton SAC – the Natura Impact Statement[27] concluded that the Proposed Development will not result in adverse effects on the integrity of any European site, either individually or in-combination with other plans or projects.
- Ancient and native woodlands – there are no ancient woodlands within 1km of the Site and no woodland within or immediately adjacent to the Site.
- Arable, agricultural fields, grassy verges along roads, drainage ditches, and hardstanding – these habitats are of very little ecological value.
- Irish hare – likely to be absent from the Site due to lack of suitable habitats.
- Terrestrial invertebrates – unlikely to be protected/notable species within the Site.

4.2 Importance of Ecological Features

Ecological features identified in the baseline conditions and not scoped out of detailed assessment, *i.e.,* those that are considered 'important' (following CIEEM guidance[28]), are set out in Table 6 below together with the rationale. Ecological importance has been assessed on a geographic scale following CIEEM guidance.

Table 6 Importance of Ecological Features

Ecological Feature	Importance	Rationale
Hedgerow (WL1)	Local	This habitat is present in the Site and surrounding area and is very common and widespread. No direct loss of the habitat is anticipated. However the hedgerow adjacent to the Substation Site and Access Road Site is species-rich and provides valuable connectivity to the surrounding area.
Treeline (WL2)	Local	This habitat is present in the Site and surrounding area and is very common and widespread. One tree at passing bay 3 will may be removed for the Proposed Development. It also provides some connectivity to the surrounding area.
Woodland (WD1, WD2 and WD3)	Local	This habitat is present adjacent to the Passing Bay Site. No direct loss of the habitat is anticipated. However, it provides connectivity to the surrounding area.
Invasive non-native species	Local	There are four areas within and/or adjacent to the Passing Bay Site with the non-scheduled, high-impact invasive species cherry laurel present.
Bats	Local	The linear features within the Site likely support foraging and commuting bats. These habitats will not be lost and there are similar habitats present within the surrounding area. There are nine trees with bat roost suitability (eight Low trees and one Moderate tree) at the Passing Bay Site. Therefore, the Site is likely to be of Local importance to bats.
Badger	Site	Badger are common and widespread within the area. No setts or evidence of badger was recorded within the Site. However, badger may use the Site for foraging purposes.
Birds (breeding and wintering)	Site	Suitable habitat for breeding and wintering bird is present on Site and common and widespread species are likely to occur. No specially protected breeding/wintering species are likely to be present. Given that the species present can reliably be expected to be abundant, with wide distributions that are adapted to arable environments, the breeding/wintering bird assemblage is likely to be of Site importance only.
Common frog	Local	No suitable habitats for breeding common frog were present during the Site survey, however there were two dry ditches adjacent to the Substation Site, dry ditches within the Passing Bay Site, and shallow wet ditches in the Passing Bay Site which may hold water during spring. There is also a watercourse located approximately 190 m from the Substation Site boundary and 150 m from the Passing Bay Site boundary. The presence of common frog within the Site cannot be ruled out due to the presence of suitable terrestrial habitat (treeline and hedgerow) within the Site and connectivity to potential breeding habitat. The Site is therefore likely to be of Local importance to common frog.
Hedgehog, pine marten and other mammals (Irish stoat and pygmy shrew)	Site	These species may use the treeline and hedgerow habitats within the Site. The remainder of the Site (arable and agricultural fields) is not optimal habitat for these species. These species are relatively widespread and common and are deemed to be important at a Site level only.

4.3 Embedded Mitigation

Embedded mitigation are those measures which have been incorporated into the design of a development and which aim to avoid or reduce adverse effects, including on ecological features. Embedded mitigation which is achieved through the design of a development can be considered at the impact assessment stage whereas mitigation measures which are not an integral part of the design ('specific mitigation') are considered following an

[27] AECOM (2023). Energia Solar Culmullin Substation Natura Impact Statement
[28] Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland

initial assessment of the ecological impacts, giving rise to an assessment of residual effects which would occur following the implementation of mitigation.

4.4 Predicted Impacts and Effects

Predicted impacts and effects of construction and operation of the Proposed Development are provided in Table 7 below, alongside mitigation to be adopted. An assessment of the residual effects of the Proposed Development following implementation of mitigation is then provided.

Table 7 Predicted Impacts and Effects

Ecological Feature	Summary of Baseline	Importance (see Table 5 for rationale)	Construction Impacts and Effects	Operational Impacts and Effects	Specific Mitigation	Residual Effects
Hedgerow	A hedgerow is located to the south of the Substation Site and along the boundaries of the Access Road Site. There is one hedgerow that is almost entirely composed of the invasive non-native species cherry laurel that will likely be removed for the Passing Bay Site.	Local	*Loss of or physical damage to hedgerow* No hedgerows will not be lost as a result of the Proposed Development, with the exception of a hedgerow at the Passing Bay Site that is dominated by cherry laurel. All other hedgerows will be protected to ensure that there is no damage during construction activities.	None.	As outlined in the outline Construction Environmental Plan (oCEMP) that accompanies this planning application, a Construction and Environmental Management Plan (CEMP) and/or relevant Method Statement(s) must be produced by the appointed Contractor describing how damage to the hedgerow will be avoided. Such mitigation must be implemented in full. Replacement planting of any vegetation lost will occur. This will include planting native species of the local area. No non-native invasive species will be planted	Negligible
Treeline	A treeline is located to the northwest of the Substation Site and Access Road Site. There are also several treelines adjacent to the Passing Bay Site.	Local	*Loss of or physical damage to treeline* One tree at passing bay 3 may be removed for the Proposed Development. The other treelines will be retained and protected during construction.	None.	As outlined in the oCEMP that accompanies this application, a CEMP and/or relevant Method Statement(s) must be produced by the appointed Contractor describing how loss or damage to the treelines will be avoided. Such mitigation must be implemented in full. Root protection zones should be implemented. If required, replacement planting of the tree to be felled will occur.	Negligible
Woodland	There are several woodland parcels adjacent to the Passing Bay Site.	Local	*Loss of or physical damage to woodland* No woodlands will be lost as a result of the Proposed Development. These woodlands will be protected to ensure that there is no damage during construction activities.	None	As outlined in the oCEMP that accompanies this application, a CEMP and/or relevant Method Statement(s) must be produced by the appointed Contractor describing how damage to the woodlands will be avoided. Such mitigation must be implemented in full.	Negligible
Invasive non-native species	There are four areas with the non-scheduled, high-impact invasive species cherry laurel within the vicinity of the Passing Bay Site.		*Spread of non-native invasive species* There are four areas with the non-scheduled, high-impact invasive species cherry laurel present. One of these hedgerows with cherry laurel will likely need to be removed for the construction of the passing bays.	*Spread of non-native invasive species during construction phase* Cherry laurel could spread to other areas during the	Non-native invasive species (i.e. cherry laurel) within the Site will be avoided and fenced off where possible. If these areas with cherry laurel cannot be avoided and fenced off, this species should be managed and eradicated from the Site. An appropriate Method Statement outlining the specific management should be produced under ecologist guidance.	

Ecological Feature	Summary of Baseline	Importance (see Table 5 for rationale)	Construction Impacts and Effects	Operational Impacts and Effects	Specific Mitigation	Residual Effects
				construction phase if these areas are not avoided or not managed appropriately.		
Bats	Eight trees with Low bat roost suitability and one tree with Moderate bat roost suitability were identified within the survey area of the Passing Bay Site. Suitable habitat (hedgerow and treeline) for foraging and commuting bats was identified within the Substation and Access Road Sites immediately adjacent to the Proposed Development.	Local	*Loss/disturbance to roosting habitat* Felling of a tree with bat roost suitability could permanently remove a bat roost. One tree with Low bat roost suitability (Tree T05) is located near passing bay 3 and may need to be removed for the Proposed Development. However, it is not anticipated that any other trees with bat roost suitability will be removed. Inappropriately placed construction lighting has the potential to prevent roosting bats from using trees with bat roost suitability. *Loss/disturbance to foraging and commuting habitat* No loss of linear features is anticipated (except for a small ornamental hedge at the Passing Bay Site). The retained hedgerows and treelines will be protected during construction works. Inappropriately placed construction lighting has the potential to prevent the use of certain areas by foraging or commuting bats.	*Disturbance to roosting, foraging and commuting habitat* Operational light spill, if required, could permanently affect bats potentially roosting in trees with bat roost suitability and could also affect linear features which may be used by foraging and commuting bats.	Trees with bat roost suitability will be retained where feasible. However, if the tree with Low bat roost suitability at passing bay 3 (Tree T05) may need to be felled for the Proposed Development, a suitability experienced ecologist will advise on any requirements for further survey, the felling methodology (NRA guidelines[29]) for this tree, any licences that may be required from the NPWS, and further mitigation including installing bat boxes, which must be followed. Construction works must be restricted to the hours of daylight. Should artificial lighting be required for construction, this must be directional and illuminate the intended working area only, with light spill onto adjacent habitats managed with the use of cowls etc. Trees with bat roost suitability, treelines, hedgerows, and woodland must be protected from light spill. Any additional lighting required for the Proposed Development must be designed to prevent light spill onto the adjacent habitats or any trees with bat roost suitability.	Negligible
Badger	No confirmed evidence of badger within the Site, however they may use the Site for foraging purposes.	Site	*Loss of foraging habitat* The Proposed Development will result in the permanent loss of 3.29ha of arable field which may be used by badgers for foraging, although the presence of badger has not been confirmed within the Site. As there is alternative suitable habitat immediately outside the Site and in the wider area, the loss of this relatively small area of potential	None.	If construction works take place more than 18 months from the time of surveys informing this EcIA, pre-construction checks for the presence of badgers will be required. Should the presence of a badger sett be identified within the Proposed Development then appropriate mitigation will be implemented as described below and detailed within the oCEMP.	Negligible

[29] NRA (2008). Guidelines on the Treatment of Bats during the Construction of National Road Schemes. National Roads Authority.

Ecological Feature	Summary of Baseline	Importance (see Table 5 for rationale)	Construction Impacts and Effects	Operational Impacts and Effects	Specific Mitigation	Residual Effects
			foraging habitat is not considered to be a significant impact to badger. *Injury/death/disturbance* Where excavations are required as part of any works there is potential for badger to become trapped and injured or killed.		To prevent injury/death to badger during construction, excavations will be covered overnight to prevent animals from falling in and provided with a means of escape (means of escape includes battering of slopes sufficient to allow badger or other mammals to escape).	
Breeding and wintering birds	The Site provides suitable habitat for common and widespread breeding and wintering birds.	Site	*Habitat loss* 3.29ha of arable field will be lost to the Proposed Development. This will result in a loss of wintering bird habitat. The arable field is unlikely to be used by nesting birds, however birds nesting nearby may use it for feeding. The bird species present on Site can reliably be expected to be common and widespread, both locally and nationally, and a large area of suitable wintering habitat will remain both on Site and in the wider area. As such, the overall populations/conservation status of species likely to be present will not be affected. However, if vegetation clearance works take place within the bird nesting season, obstruction and/or destruction of active birds' nests may occur.	None.	Vegetation removal required to facilitate works for the Proposed Development will be carried out outside the bird nesting season (taken to be from March to August, inclusive) as feasible. Where there is no alternative but to clear vegetation in the bird breeding season, a suitably experienced ecologist will check for active bird nests prior to the clearance taking place. Where active nest(s) are found, the ecologist will establish exclusion zone(s) of appropriate size from which machinery, personnel and materials will be excluded until the nesting attempt(s) have finished. Note that it is difficult to locate all bird nests in extensive habitat, therefore checking for nests will be treated as a last resort, and vegetation clearance in the period September to February is preferred.	Negligible
Common frog	The habitats present within the Site may support common frog due to suitable drainage ditches and terrestrial habitat.	Local	*Habitat loss* There will be a loss of drainage ditches at the Passing Bay Site. However, this habitat was sub-optimal for common frog as the majority of the ditches were dry or only had shallow water present. *Injury/death /disturbance* Where excavations are required as part of any works there is potential for this species to become trapped and injured or killed.	None.	Standard measures to ensure that this species is not killed or injured to include: Excavations to be covered overnight to prevent animals from falling in, and a means of escape to be provided., standard pollution prevention measures to be implemented.	Negligible
Hedgehog, pine marten and other mammals (Irish stoat and pygmy shrew)	The habitats present within the Site may support these species.	Site	*Habitat loss* 3.29ha of arable field will be lost to the Proposed Development. This habitat is considered to be sub-optimal for these species, and the loss of this area will not result in a significant impact.	Disturbance to foraging and commuting habitat Operational light spill, if	Preparation of Method Statement to ensure these species are not killed/injured and habitats that may support these species are retained and protected during construction activities, as far as possible. To prevent injury/death to mammal species during construction, excavations will be covered overnight to	Negligible

Ecological Feature	Summary of Baseline	Importance (see Table 5 for rationale)	Construction Impacts and Effects	Operational Impacts and Effects	Specific Mitigation	Residual Effects
			Injury/death/disturbance Where excavations are required as part of any works there is potential for these species to become trapped and injured or killed. Inappropriately placed construction lighting has the potential to prevent the use of certain areas by foraging or commuting mammals.	required, could permanently affect linear features and woodland habitats which may be used by foraging and commuting mammals.	prevent animals from falling in and provided with a means of escape (means of escape includes battering of slopes sufficient to allow mammals to escape). Construction works must be restricted to the hours of daylight. Should artificial lighting be required for construction, this must be directional and illuminate the intended public area only, with light spill onto adjacent habitats managed with the use of cowls etc. Treelines, hedgerows, and woodlands must be protected from light spill. Any additional lighting required for the Proposed Development must be designed to prevent light spill onto the adjacent habitats.	

4.5 Cumulative Assessment

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location.

As concluded in the AA Screening and Natura Impact Statement for this Proposed Development other plans or projects do not have potential to have an in-combination effect on the integrity of any European sites.[30]

A desktop search of proposed and existing planning applications was undertaken of publicly available data from MyPlan.ie 'National Planning Application' database, MCC planning application portal and ABP online database.

An overview of the planning history search is included in Appendix B.

This assessment considers whether any of these existing/approved projects will likely have significant cumulative effects in combination with the Proposed Development. The assessment also considers whether all of the existing/approved projects taken together as a whole will likely have significant cumulative effects in combination with the Proposed Development. There are many projects listed on the planning databases considered, however, the focus for this assessment was on the proximity, scale and nature of those projects in relation to the Proposed Development and on those which could potentially exacerbate environmental effects and thus be of significance to the cumulative effects assessment. Particular attention was given to those projects which were designated as Strategic Infrastructure Developments (SID) in proximity to the proposed development given the larger scale and nature of these developments. Those projects where EIARs or NIS's accompanied the planning applications were also given due regard at review stage. Live or proposed projects which have not yet been permitted were not considered in this assessment.

Arising from this review, a number of existing and/or approved projects (as listed in Table 8) were identified which could have the potential for likely significant cumulative effects.

Table 8 List of Planned Projects Identified as Having a Potential Cumulative Effect of the Proposed Development

Reference	Address	Proposed Development	Planning Status	Distance from Site
221550	Woodland , Batterstown, Co. Meath	The development will consist of: 1. Installation of outdoor Air Insulated Switchgear (AIS) electrical apparatus, including an associated extension to the hardstand compound (approximately 4 hectares) to facilitate same. This includes: a. installation of an extension to both sides of the existing 400 kV busbar, with provision of an associated wing coupler at either end of the existing 400 kV busbar. b. additional apparatus and associated works to the two existing busbars to create what is known as sectionalising bays. c. relocation of existing transformer connections from existing busbar to adjacent location on new busbar. d. an associated single-story extension (approximately 80 m2) to the existing control building. 2. The erection of four new lightning masts and relocation of one existing mast (each approximately 45m high). 3. Two bays on opposite sides to the newly extended 400 kV busbars at the southern end of the substation, each bay to incorporate breakers, reactive compensation devices and cable sealing ends. These bays will facilitate the connection of the new 400 kV underground cable links from Dunstown and Belcamp substations respectively. 4. Renewal, alteration and/or removal of associated 400 / 220 kV electrical apparatus and equipment. 5. All ancillary site development works including site preparation works, site clearance and levelling; provision of hardstanding, internal access tracks and temporary construction compound; associated underground cabling and earthgrid; associated extended surface water drainage network including a soakaway; associated palisade fencing and gates (approximately 2.65m high); lighting poles and landscaping as required to facilitate the development. Planning Permission is sought for a period of 10 years. Significant further information/revised plans submitted on this application	Conditional Grant 25/05/2023	c.5km southeast
22837 23136	Creemore & Belshamstown, Batterstown, Co. Meath	The proposed development constitutes a new battery energy storage facility & synchronous condenser, with associated change of use on lands currently in agricultural use. The proposed development will comprise of rechargeable battery units with grid forming inverters contained within 253 no. 40 foot containers on site. (An associated Strategic Infrastructure Development planning application will be made to An Bord Pleanala in relation to a 220 kV Gas Insulated	Conditional Grant 7/12/2022 Conditional grant 16/05/2023	c.4.6km southeast

[30] AECOM (2023). Energia Solar Culmullin Substation Natura Impact Statement

Reference	Address	Proposed Development	Planning Status	Distance from Site
		Substation and associated development on the adjoining lands to the east of the proposed development site, located at Creemore & Woodland, in Co. Meath, in accordance with Section 182A of the Planning and Development Act 2000, as amended). In addition, the proposed development includes a synchronous condenser within a c.983 sqm building (ranging in height from c. 11 to 13 m), with associated compound & plant; oil separator & collection pit; transformers; circuit breakers; underground cabling ducts & cable. The proposed development includes underground cable which will connect the new battery energy storage facility to the adjoining proposed 220 kV Gas Insulated Substation (the subject of the associated Strategic Infrastructure Development planning application as reference above). The proposed development will also include a battery storage control building (c. 400 sqm, 6.86 m in height); security gates & boundary treatments; hard & soft landscaping; well; bollards; plant & water storage tank; wastewater treatment system; SuDs; attenuation pond; installation of earthen berms; piped infrastructure & ducting; culverts; street lighting; lighting masts & CCTV columns; car parking; stoned access roads & the upgrading of the existing vehicular access to the R154; changes in level & all associated site development & excavation works above & below ground. Planning Permission is sought for a period of 10 years. Significant further information/revised plans submitted on this application Permission for development at a c. 14.14 ha site, located at Creemore and Belshamstown, in Batterstown, Co. Meath, as permitted under MCC Reg. Ref. 22837 (which permitted a new battery energy facility and synchronous condenser.). The proposed development will consist of amendments to the previously permitted development (MCC Reg. Ref. 22837) including amendments to the previously approved internal access road layout; amendments to the previously approved attenuation pond to the south of the site and associated piped infrastructure, ducting and drainage arrangements. In addition, a previously permitted earthen berm to the centre of the site is to be omitted. No changes are proposed to the permitted vehicular access to the R154. Any associated amendments to changes in level and all associated site development, hard and soft landscaping and excavation works above and below ground are also included. Planning permission is sought for a period of 10 years		
MCC 21985 ABP-312723-22	On lands including Derryclare, Cloneymeath, Ballygortagh and Moynalvy, Summerhill, Co. Meath.	A Solar PV Energy Development with a total site area of 108.68ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 27 no. MV Power Stations, 3 No. Client Substations, 3 No. temporary construction compounds, access tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works. Solar energy plant and ancillary equipment. Associated site development works. Significant Further information/Revised plans submitted on this application. NIS submitted with FI.	MCC Conditional Grant 17/01/2022 ABP Conditional Grant 27/01/2023	c.5.0km west
212214 ABP-314058-22	On lands including Culmullin, Woodtown, Arodstown & Summerhill, Co Meath	For a solar PV Energy Development with a total site area of 206ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 54 No. MV Power Stations, 2 No. Client Substations, 4 No. Temporary Construction Compounds, access tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works, accessed via two existing accesses along the L62051. The application is accompanied by a Natura Impact Statement (NIS).	MCC Conditional Grant 15/06/2022 ABP Decision Pending	c.800m southwest
MCC 21546 ABP-311760-21	Clonymeath, Summerhill, Co Meath.	Permission for Solar Photovoltaic (PV) development within the townland of Clonymeath, Summerhill, Co Meath. Planning permission is sought for the construction and operation of a solar PV farm consisting of solar arrays on ground mounted steel frames, with a maximum overall height of 3 metres, over an area of 91.9 ha and ancillary equipment including up to 30 no. medium voltage power stations, 1 no. modular Battery Energy Storage Compound (comprising up to 5 no. battery containers) and all other associated site development works and services, including, internal solar PV farm, underground electrical cabling and ducting, 2 no. temporary construction compounds, security fencing, CCTV camera stands, replacement of an existing site entrance with a new gated site entrance via the L2210 local road, provision of new internal access tracks including the upgrading and installation of span bridge structures, site drainage and landscaping, as required to facilitate the development. Planning permission is sought for a period of 10 years	MCC Conditional Grant 29/09/2021 ABP Conditional Grant 24/05/2022	c.4.80km west

Reference	Address	Proposed Development	Planning Status	Distance from Site
		with an operational life of 35 years from the date of commissioning. The application is accompanied by a Natura Impact Statement (NIS). Significant Further information/Revised plans submitted on this application. Solar PV development. NIS lodged at application stage.		
RA170766	Knockstown & Clarkstown, Summerhill, Co. Meath	The development will consist of the following: Photovoltaic solar farm on a site of 23.6 hectares (58 acres) with an export capacity of approximately 8MW, comprising photovoltaic panels on ground mounted frames; 4 no. inverter stations; 1 no. interface substation; ducting and underground electrical cabling; perimeter fencing; pole mounted CCTV cameras; screen planting/landscaping; closing up of existing vehicular entrance and creation of a new vehicular entrance on the local road (L6215); new internal access track from the new vehicular entrance to connect with existing internal farm tracks, and all ancillary works necessary to facilitate the development. Significant further information/revised plans submitted on this application.	MCC Conditional Grant 1/6/2018	c. 4.70km southwest

In addition to the projects listed in Table 8 a number of consented solar developments within the wider surrounding areas have been considered, these are summarised in Table 9.

Table 9 Additional Solar Projects Considered in the Cumulative Assessment

Site	Potential MW MEC	Planning Reference	Planning Status	Description	Distance from Site (km)
Paddock	70	21180 ABP-311066-21	Approved by Meath CC and ABP	The development will consist of permission for a Solar PV Energy Development with a total site area of 82.5ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 21 No. MV Power Stations, 7No. Battery Storage Containers, 1 No. Temporary Construction Compound, access tracks, hardstanding area, boundary security fencing and security gates, CCTV, landscaping and ancillary works.	13.6
Fieldstown	70	F21A/0042	Planning approved by Fingal CC	Permission for a Solar PV Energy Development with a total site area of c 105 ha, to include solar panels mounted on steel supports, associated cabling and ducting, 1 no. client substation, 33 no. MV Power Stations, 8 No. Battery Storage Containers, 1 no. Temporary Construction Compound, access tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary site works.	20.4
Ballaghaweary	18	211436	Planning approved by Meath CC	A Solar PV Energy Development with a total site area of 34.4ha. to include solar panels mounted on steel support structures, associated cabling and ducting, 7 No. MV Power Stations, 1 No. Client Substation, 1 No Temporary Construction Compound, access tracks, hardstanding area, boundary security fencing and security gates, CCTV, landscaping and ancillary works. Significant further information/revised plans submitted on this application.	18.7

Due to the intervening distance between the Proposed Development and the Arodstown, the distance from the Arodstown to the downstream European sites, and with implementation of industry-standard good practice pollution prevention measures, there will be no adverse effect on the integrity of the River Boyne and River Blackwater SAC. Similarly, there will be no adverse effects on species of interest of the River Boyne and River Blackwater SPA, the kingfisher, due to the distance from the Site to the habitat.

An Ecological Impact Assessment and Natura Impact Statement has been prepared for the Woodtown Solar Farm development (Planning Reference 212214), which is adjacent to the Proposed Development site. The Ecological Impact Assessment and Natura Impact Statement for this development also includes measures to prevent pollution from entering watercourses. Furthermore, other ecological mitigation measures have been included for Woodtown Solar Farm, including buffers from potentially sensitive ecological receptors, retention of trees, and hedgerow planting. Therefore, given the mitigation measures included in the Ecological Impact Assessment and Natura Impact Statement for both the Proposed Development and for the Woodtown Solar

Farm, no in-combination effect on any European site, including the River Boyne and River Blackwater SAC and SPA is predicted from these developments.

Furthermore, the remaining planning applications described in Appendix B and Table 3 either have no possible pathway to result in the predicted impacts described in Section 4.4, such as waterborne pollution, are located at a large distance from the Proposed Development, and/or have included mitigation measures, such as habitat retention and replacement, in an Ecological Impact Assessment and/or Natura Impact Statement. Therefore, given the nature of the developments assessed and mitigation measures to be implemented, no in-combination effects are predicted.

4.6 Enhancement and Monitoring Proposals

4.6.1 Enhancement Measures

Enhancement of the treeline and hedgerow with native species by the Substation Site (that are appropriate to the locality) of local provenance could be carried out. Non-native species should not be included. Enhancement could also include strengthening the treeline which has substantial gaps to provide a more beneficial linear habitat, increasing connectivity to the wider area.

The provision of bat boxes within the Proposed Development Site could be considered as enhancement. These would have to be of appropriate specification for the species likely to be present and suitably located, specifically not within areas which may be lit as a result of the Proposed Development.

Bird nest boxes could also be installed as inexpensive, simple but valuable enhancement.

4.6.2 Monitoring

No specific ecological monitoring is recommended.

Pre-construction surveys may be required, especially if survey data becomes more than 18 months old.

5. Summary and Conclusions

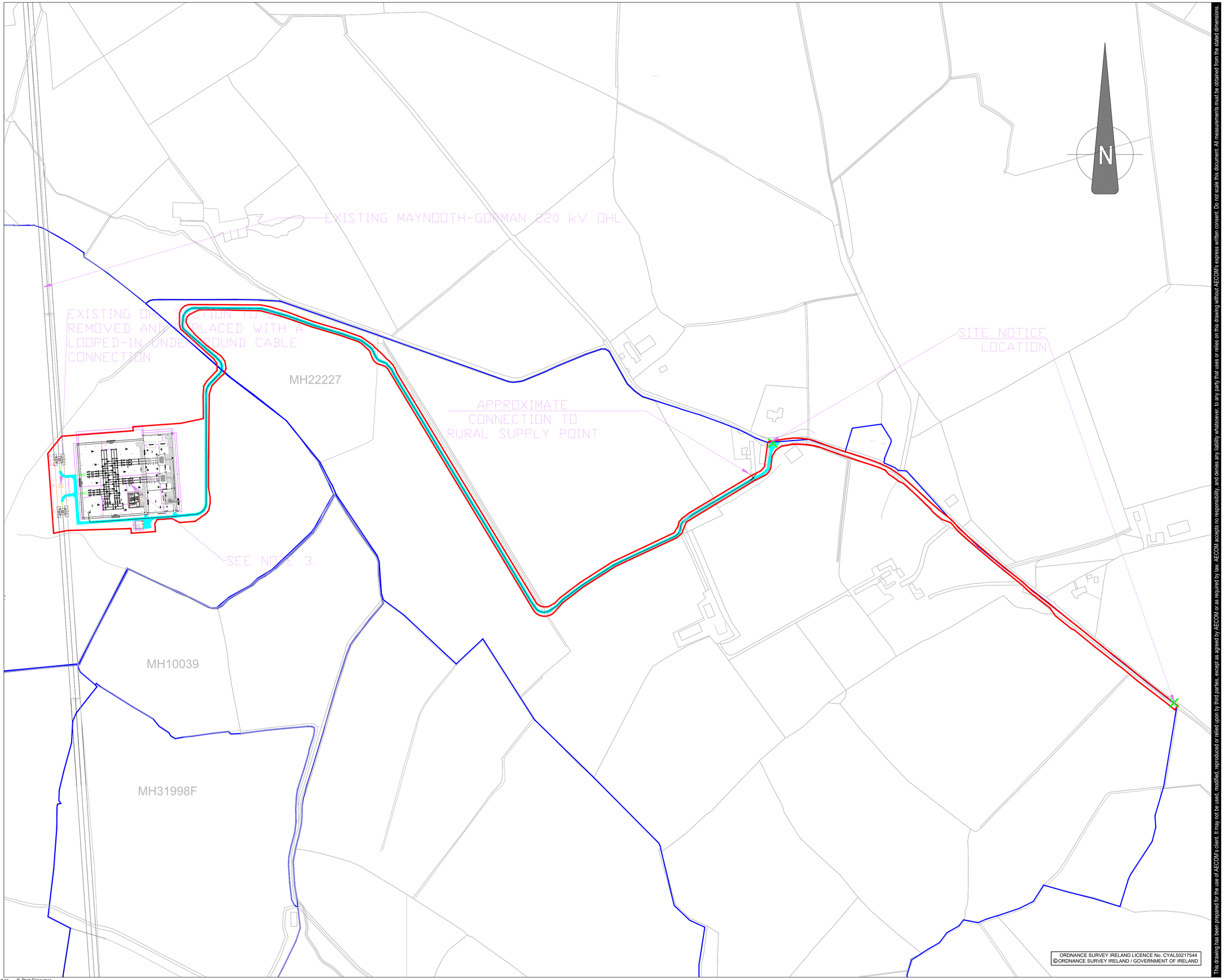
In summary, the Proposed Development is anticipated to result in **negligible** (not significant) effects on ecological features following the implementation of mitigation. Beneficial effects are achievable via the improvement of habitats, planting of native species within the Site and installation of bat and bird boxes.

Summary of required mitigation:

- Careful design of the Proposed Development to avoid loss or damage to the hedgerow and treeline.
- As outlined in the oCEMP included with this planning application, a CEMP and/or relevant Method Statement(s) to be produced, detailing:
  - General environmental management measures, including in relation to pollution prevention, and the roles and responsibilities of Site personnel. The CEMP will include, as a minimum, Construction Method Statement(s), Pollution Prevention Plan (PPP) and Species Protection Plan (SPP).
  - All Site personnel involved in the construction and operation of the Proposed Development will be made aware of the ecological features present and the mitigation measures and working procedures which must be adopted. This will be achieved as part of the Site induction process through the delivery of a toolbox talk. In addition, as required, briefings will be provided to all Site personnel in advance of works which are considered to present an increased risk of impacting upon ecological features.
- Root protection zones will be clearly demarcated around retained trees and hedgerow. No machinery will enter these areas, nor will any material be stored within them.
- Construction works must be restricted to daylight hours. Should construction take place and artificial lighting be required outside the hours of 08:00 to 18:00, lighting must be directional and illuminate the works area only, with light spill onto adjacent habitats managed with the use of cowls etc.
- Trees with bat roost suitability will be retained where possible. If not possible (particularly for Tree T05 at passing bay 3) a suitability experienced ecologist will provide guidance on requirements for further survey, felling procedures, and any licence and mitigation requirements.
- Any lighting will be designed to prevent light spill onto notable features such as trees with bat roost suitability, hedgerows, treelines, and woodland.
- Any vegetation clearance required must be replaced with habitats of similar species composition.

- Non-native invasive species will be avoided and fenced off where possible. If areas with non-native invasive species cannot be avoided and fenced off, an appropriate Method Statement outlining the specific management will be produced under ecologist guidance.
- Excavations to be covered and provided with a means of escape overnight (means of escape includes battering of slopes sufficient to allow otter/badger or other mammals to escape).
- Preparation and implementation of a method statement for common frog, hedgehog, pine marten and other notable mammals to ensure that these species are not harmed during construction activities.
- Vegetation clearance to be undertaken in the period September to February, inclusive, to avoid the breeding bird season (taken to be March to August, inclusive) where possible. Where vegetation clearance must take place in the bird breeding season a suitably experienced ecologist will check for active bird nests prior to the clearance taking place.
- Pre-construction surveys for badger, if more than 18 months elapse between the surveys described in this assessment and commencement of works.

Figures



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AECOM

PROJECT

CULMULLIN 220 kV SUBSTATION

CLIENT

ENERGIA SOLAR HOLDINGS LTD.

energia

CONSULTANT

AECOM
Adelphi Plaza
Georges Street Upper
Dun Laoghaire
County Dublin
Ireland
T +353 (0)1 2383100
www.aecom.com

LEGEND

- EXISTING OHL TO REMAIN
- EXISTING OHL TO REMOVE
- PROPOSED NEW UGC
- PROPOSED SUBSTATION
- EXISTING LAND OWNERSHIP BOUNDARY
- PROPOSED DEVELOPMENT BOUNDARY
- PROPOSED ACCESS ROAD
- APPROXIMATE RURAL SUPPLY UGC ROUTE
- LOCATION OF SITE NOTICE

NOTES

1. DRAWINGS ARE FOR PLANNING ONLY AND SHOULD NOT BE USED FOR DETAILED DESIGN, EQUIPMENT DIMENSIONS MAY CHANGE ONCE EXACT SPECIFICATIONS ARE DETERMINED;
2. THE SUBSTATION IS BASED ON THE LATEST EIRGRID STANDARD (XDN-LAY-ELV-STND-F-001-R02 AS OF 13/02/2020);
3. SUBSTATION COMPOUND COORDINATES ARE 53°29'33.16"N, 6°38'33.31"W;
4. THIS DRAWING IS NOT TO BE SCALED, ALL DIMENSIONS ARE IN METERS.

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P7	13/06/2023	UPDATE SITE NOTICES
P6	26/05/2023	CLIENT COMMENTS
P5	24/05/2023	BOUNDARY UPDATE
P4	11/11/2022	SITE NOTICE LOCATION ADDED
P3	09/11/2022	CLIENT COMMENTS
P2	10/10/2022	CLIENT COMMENTS
P1	19/09/2022	CLIENT COMMENTS
P0	27/05/2022	FIRST ISSUE FOR PLANNING

STATUS

FOR PLANNING

PROJECT NUMBER **SCALE**

60657534 1:3000 @ A1

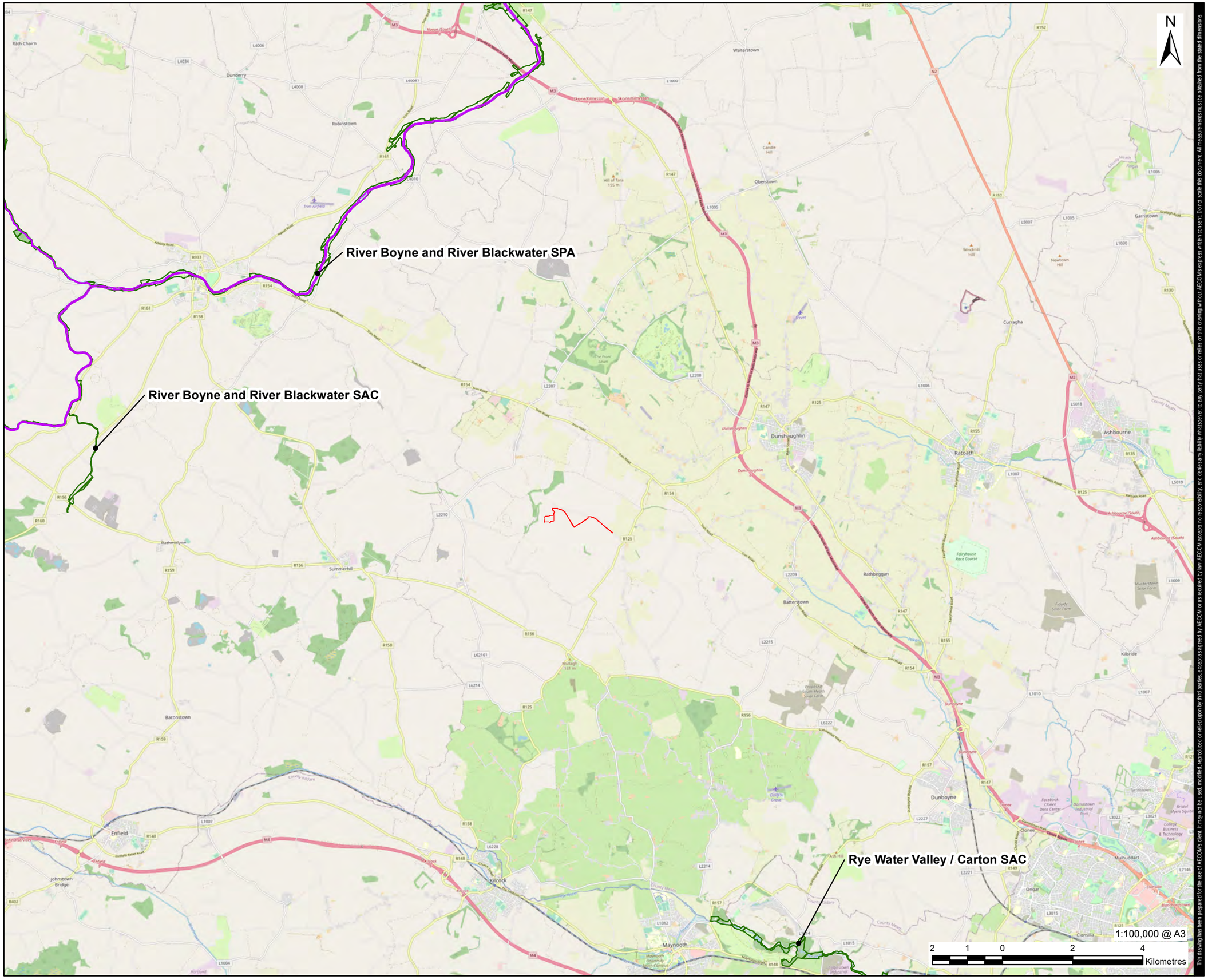
SHEET TITLE

CULMULLIN 220 kV SUBSTATION
SITE LOCATION

SHEET NUMBER **REV**

60657534-ACM-DWG-500 P7

Revision: 0 Drawn: LC Checked: TS Approved: TM Date: 2023-06-08



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Culmullin

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LEGEND

- Site
- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60657534

FIGURE TITLE

Designated sites

FIGURE NUMBER

Figure 1

Revision: 0 Drawn: LC Checked: TS Approved: TM Date: 2023-06-08

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PROJECT

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LEGEND

- Site

Habitats (Fossitt)

- FW4 Drainage ditches
- WL1 Hedgerows
- WL2 Treelines
- BC1 Arable crops
- BL3 Buildings and artifical surfaces
- GA1 Improved agricultural grassland
- GA2 Amenity grassland (improved)
- GS2 Dry meadows and grassy verdges
- WD1 (Mixed) broadleaved woodland
- WD2 Mixed broadleaved/conifer woodland
- WD3 (Mixed) conifer woodland
- WD4 Conifer plantation
- WS1 Scrub

NOTES

1: Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60657534

FIGURE TITLE

Habitats

FIGURE NUMBER

Figure 2a

Revision: 0 Drawn: LC Checked: TS Approved: TM Date: 2023-06-08

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LEGEND

- Site

Habitats (Fossitt)

- FW4 Drainage ditches
- WL1 Hedgerows
- WL2 Treelines
- BC1 Arable crops
- BL3 Buildings and artifical surfaces
- GA1 Improved agricultural grassland
- GA2 Amenity grassland (improved)
- GS2 Dry meadows and grassy verdges
- WD1 (Mixed) broadleaved woodland
- WD2 Mixed broadleaved/conifer woodland
- WD3 (Mixed) conifer woodland
- WD4 Conifer plantation
- WS1 Scrub

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60657534

FIGURE TITLE

Habitats (Passing Bay Site)

FIGURE NUMBER

Figure 2b

Revision: 0 Drawn: LC Checked: TS Approved: TM Date: 2023-06-08

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PROJECT

Culmullin

CLIENT

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CONSULTANT

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LEGEND

- Site

Trees with bat roost suitability

- Low suitability
- Moderate suitability

Non-scheduled, high-impact invasive species

- Cherry laurel in a 10x5m area
- Cherry laurel hedging
- Cherry laurel scattered throughout woodland

NOTES

1: Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60657534

FIGURE TITLE

Ecological constraints

FIGURE NUMBER

Figure 3

Appendix A Substation Site Photographs

Table B1. Substation Site Photographs

Photograph Number	Photograph
1	
2	

Photograph Number	Photograph
3	
4	

Photograph Number	Photograph
5	

Appendix B Cumulative Planning Search

A desktop search of proposed and existing planning applications was carried out on 8 September 2022 (and subsequently updated 6 June 2023). The search used publicly available data from the MyPlan.ie's 'National Planning Application' database, ABP database and Council Planning Portals.

The scope of the search was based within a 5 km radius from the approximate Centrepoint of the Proposed Development. A specified criteria informed the search and omitted any planning applications greater than five years old, refused, invalid and withdrawn applications. The criteria then focused on foreseeable developments to be considered in line with the Proposed Development. In respect of this, any small scale residential and extension type developments along with minor amendments, changes of use and small-scale farming / agricultural applications were omitted. Only reasonably foreseeable developments were considered.

The findings show the majority of planning applications for adjoining lands consist of mainly agriculture and rural dwelling related developments, however recent applications have shown a rise in renewable energy, recreational and tourism related development.

Table 10 Planning Search (5km Radius)

Planning Authority	Reference	Address	Proposed Development	Grant / Due Date	Distance from Subject Site
Meath CC	221508	Culmullin, Curraghtown, Cultromer , Gaulstown. Bogganstown, Cullendragh, Drumree, Co. Meath	a Solar PV Energy Development with a total site area of 171.34ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 47 No. MV Power Stations, 3 No. Client Substations, 3 No. Temporary Construction Compounds, tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works, with a 40 year operational period. A Natura Impact Statement (NIS) had be submitted to the Planning Authority with the Application. Significant further information/revised plans submitted on this application	24/07/2023	c.2.5km east
Meath CC	23527	Drumree Road, Readsland, Dunshaughlin, Co. Meath	the construction of 62 no. residential units comprising: - 27no. 2-storey houses (10 no. 3-bed and 17 no. 4-bed) and 35 no. apartments (14 no. 1-bed, 16 no. 2-bed and 5 no. 3-bed units) in a part 5-storey part 4- storey apartment building situated adjacent to the R125 Dunshaughlin link Road, with balconies on all elevations. And all associated site development, landscape and boundary works, including: - a new 4-arm roundabout junction on the R125 Dunshaughlin Link Road, connecting with an extended Dun Rioga Avenue to the southeast of the existing Dun Rioga estate providing new vehicular, cycle and pedestrian access and egress from the west, without alteration to the existing estate entrances at the Drumree Road; 1. 8m high acoustic fence to the west of the proposed apartment block extending c.50m in length alongside the R125; 98 no. car parking spaces; 83 no. secure bicycle parking spaces; public open space of c. 3,660 sq.m. including new children's playground; private communal open space of c. 233 sq.m. serving the apartments; private and communal bin stores; 1no. ESB substation	11/07/2023	c.5km northeast
Meath CC	23236	Martinstown, Crossakiel, Co Meath A82 F2C4	(1) construct a new building to be used as office space, welfare facilites and storage, (2) install a new proprietary effluent treatment system and percolation area and (3) all associated site services	01/06/2023	c.3.9km northwest
Meath CC	221664	Woodridge Stables, Killeen, Dunsany, Co Meath	(a) construction of a lunging ring, loading ramp, wash down area and machinery shed (b) erection of solar/pv panels (c) provision of internal staff facilities into one bay of existing barn to be connected to existing 6-8 person wastewater treatment system and polishing filters (d) the provision of all associated site works to upgrade existing farm complex including proposed internal service roads, beech hedging, timber fencing, general	01/06/2023	c.5km northeast

Planning Authority	Reference	Address	Proposed Development	Grant / Due Date	Distance from Subject Site
			paddocks, nursery paddocks, all weather areas with individual horse shelters, external all weather sand arena, cross country area, hunter & pony all weather area, trailer and horse box parking area, vegetable garden and external hen & pig area		
Meath CC	221505	Drumlargan, Kilcock, Co. Meath	development will consist of (a) modification of the existing agricultural field entry from the public road to accommodate the proposed development; (b) construct new equestrian facilities including horse stables building, barn building, manure pit/dungsted and associated seepage tanks, horse walker unit, lunge arena, gallops, sand arena, fenced paddocks and surface water system; (c) construct a part single-storey, part two-storey detached dwelling house, detached domestic garage, wastewater treatement system and landscaping; and (d) associated site works. Significant further information/revised plans submitted on this application	25/05/2023	c.4.8km southwest
Meath CC	221550	Woodland , Batterstown, Co. Meath	The development will consist of: 1. Installation of outdoor Air Insulated Switchgear (AIS) electrical apparatus, including an associated extension to the hardstand compound (approximately 4 hectares) to facilitate same. This includes: a. installation of an extension to both sides of the existing 400 kV busbar, with provision of an associated wing coupler at either end of the existing 400 kV busbar. b. additional apparatus and associated works to the two existing busbars to create what is known as sectionalising bays. c. relocation of existing transformer connections from existing busbar to adjacent location on new busbar. d. an associated single-story extension (approximately 80 m2) to the existing control building. 2. The erection of four new lightning masts and relocation of one existing mast (each approximately 45m high). 3. Two bays on opposite sides to the newly extended 400 kV busbars at the southern end of the substation, each bay to incorporate breakers, reactive compensation devices and cable sealing ends. These bays will facilitate the connection of the new 400 kV underground cable links from Dunstown and Belcamp substations respectively. 4. Renewal, alteration and/or removal of associated 400 / 220 kV electrical apparatus and equipment. 5. All ancillary site development works including site preparation works, site clearance and levelling; provision of hardstanding, internal access tracks and temporary construction compound; associated underground cabling and earthgrid; associated extended surface water drainage network including a soakaway; associated palisade fencing and gates (approximately 2.65m high); lighting poles and landscaping as required to facilitate the development. Planning Permission is sought for a period of 10 years. Significant further information/revised plans submitted on this application	25/05/2023	c.5km southeast
Meath CC	221505	Drumlargan, Kilcock, Co. Meath	development will consist of (a) modification of the existing agricultural field entry from the public road to accommodate the proposed development; (b) construct new equestrian facilities including horse stables building, barn building, manure pit/dungsted and associated seepage tanks, horse walker unit, lunge arena, gallops, sand arena, fenced paddocks and surface water system; (c) construct a part single-storey, part two-storey detached dwelling house, detached domestic garage, wastewater treatement system and landscaping; and (d) associated site works. Significant further information/revised plans submitted on this application	25/05/2023	c.3.3km southwest

Planning Authority	Reference	Address	Proposed Development	Grant / Due Date	Distance from Subject Site
Meath CC	23136	Creemore & Belshamstown, Batterstown, Co. Meath	permission for development at a c. 14.14 ha site, located at Creemore and Belshamstown, in Batterstown, Co. Meath, as permitted under MCC Reg. Ref. 22837 (which permitted a new battery energy facility and synchronous condenser.). The proposed development will consist of amendments to the previously permitted development (MCC Reg. Ref. 22837) including amendments to the previously approved internal access road layout; amendments to the previously approved attenuation pond to the south of the site and associated piped infrastructure, ducting and drainage arrangements. In addition, a previously permitted earthen berm to the centre of the site is to be omitted. No changes are proposed to the permitted vehicular access to the R154. Any associated amendments to changes in level and all associated site development, hard and soft landcaping and excavation works above and below ground are also included. Planning permission is sought for a period of 10 years	16/05/2023	c.4.6km southeast
Meath CC	23263	Crumpstown or Marshallstown, Kilmessan, Co. Meath	an equestrian holiday centre, which will comprise four holiday cottages made up of conversion of two stable buildings each to a one-bedroom single storey dwelling, conversion of a shed to a two-bedroom single-storey dwelling, and refurbishment of a stone cottage to a two-bedroom single-storey dwelling, with a new sewage treatment system, three stable blocks containing four, six and nine horse cubicles respectively and associated site development works, outdoor riding arena, horse walker and associated site development works, access will be via the existing entrance serving the existing farmyard and dwelling	03/05/2023	c.4km northwest
An Bord Pleanála	ABP-312723-22	On lands including Derryclare, Cloneymeath, Ballygortagh and Moynalvy, Summerhill, Co. Meath.	Solar energy plant and ancillary equipment. Associated site development works. Significant Further information/Revised plans submitted on this application. NIS submitted with FI.	27/01/2023	c.5.0km west
Meath CC	221320	12 Loughmore Walk , Killeen Castle Demesne, Dunsany, Co. Meath	development comprising of alterations to design of 1 no. permitted 2 storey 5-bedroom C-type detached house & garage and associated site development and landscape works, with a site area of 0.28ha, at 12 Loughmore Walk, Killeen Castle Demesne, Dunsany, Co. Meath, being part of a previously permitted residential development of 22 houses at Loughmore Walk/The Burrows (Ref RA/191174). Alterations to include new rear extension, internal layout changes at ground and upper floors, attic conversion with new stairs, revisions to elevations of house and garage, new velux roof lights, extended garage with gym, new door and covered carport link to house, the vehicular access is as previously permitted via the existing internal roads & entrances to Killen Castle Demesne. All within the overall site of approx. 255 ha. (a protected structure)	20/01/2023	c.5km northeast
Meath CC	221209	Killeen Castle Demesne (a protected structure), Dunsany, Co Meath	the change of use for a temporary period of 4 years of 6 no. of the 22 no. courtyard dwellings (referred to as Hunters Yard) permitted under Reg Ref DA/802774 (as extended by Reg Ref RA/180960) from residential to ancillary hotel accommodation facilitating short term lettings in the form of 24 no. bedrooms (6 no. keys) in 6 no. 2 storey 4 bedroom units. To accommodate this temporary change of use, the following modifications are also required:- Amendments for all 6 no. units include: The replacement of permitted kitchen to facilitate 1 no. accessible double bedroom with ensuite and inclusion of a small kitchenette facitity in the permitted study's, Solar Panels omitted,	19/12/2022	c.5km northeast

Planning Authority	Reference	Address	Proposed Development	Grant / Due Date	Distance from Subject Site
			Chimneys omitted, Corner Lightbox/Lanterns omitted, Amendments for 4 no. units (House Type HYI, HYIH and HY3, HY3H) include: Omission of internal door, a Balcony column support added, Suite 1 walk in wardrobe replaces with ensuite bathroom, Walk in wardrobe with ensuite included for Suite 2 , Total 12 no. car parking spaces to be provided. Selected stone cladding removed from upper storey of House Type HYI, HYIH and HY3, HY3H, A minor change of Finished Floor Levels on site. The development also includes all associated landscape and site development works. There is no change to the building footprint or house design to those units permitted under Reg. Ref. DA/802774 (as extended by Reg Ref RA/180960). The design is in keeping with all other residential units proposed within the Killeen Castle Demesne. The vehicular access is as otherwise permitted via the existing internal road network and entrances to Killeen Castle Demesne		
Meath CC	22752	Augherskea, Drumree, Co Meath	the development consists of land recovery operation (being) reclamation of agricultural land and all associated site works comprising of the importation of natural materials of clay, silt, sand, gravel or stone and which comes within the meaning of inert waste, through deposition for the purposes of the improvement or development of land Class 5 of the waste management (Facility Permit and Registration) Regulations 2007-2008. A 5 year planning permission is requested and during the duration of this period 62,490 tons of inert soil and stone will be imported for the purpose of land reclamation. Entrance to the site will be via the existing farm road on adjoining site the subject of current Planning RA/170057 and WFP-MH17/0006/01	16/12/2022	c.2.4km northeast
Meath CC	221194	Teagasc Grange Research Facility, Derrypatrick Grange, Dunsany, Co. Meath C15 PW93	development will consist of the proposed green energy initiative development consisting of the alterations to an existing building unit consisting of the installation of Photovoltaic Panels on the existing roof structure, together with all associated site works	07/12/2022	c.3.5km north
Meath CC	22837	Creemore & Belshamstown, Batterstown, Co. Meath	the proposed development constitutes a new battery energy storage facility & synchronous condenser, with associated change of use on lands currently in agricultural use. The proposed development will comprise of rechargeable battery units with grid forming inverters contained within 253 no. 40 foot containers on site. (An associated Strategic Infrastructure Development planning application will be made to An Bord Pleanala in relation to a 220 kV Gas Insulated Substation and associated development on the adjoining lands to the east of the proposed development site, located at Creemore & Woodland, in Co. Meath, in accordance with Section 182A of the Planning and Development Act 2000, as amended). In addition, the proposed development includes a synchronous condenser within a c.983 sqm building (ranging in height from c. 11 to 13 m), with associated compound & plant; oil separator & collection pit; transformers; circuit breakers; underground cabling ducts & cable. The proposed development includes underground cable which will connect the new battery energy storage facility to the adjoining proposed 220 kV Gas Insulated Substation (the subject of the associated Strategic Infrastructure Development planning application as reference above). The proposed development will also include a battery storage control building (c. 400 sqm, 6.86 m in height); security gates & boundary treatments; hard & soft landscaping; well; bollards; plant & water storage tank; wastewater treatment system; SuDs; attenuation pond; installation of earthen berms; piped infrastructure & ducting; culverts; street lighting; lighting masts & CCTV columns; car parking; stoned access roads & the	07/12/2022	c.4.6km southeast

Planning Authority	Reference	Address	Proposed Development	Grant / Due Date	Distance from Subject Site
			upgrading of the existing vehicular access to the R154; changes in level & all associated site development & excavation works above & below ground. Planning Permission is sought for a period of 10 years. Significant further information/revised plans submitted on this application		
Meath CC	22629	Shanks Mare Public House, Collegeland and Arodstown, Summerhill, Co. Meath	the development consists of the erection of four 51.5 sqm. detached pods, each of which would be 3 metres tall and which would provide two bedrooms and a combined kitchen/ dining area, as well as bathroom accommodation, along with the use of these four structures for tourist accommodation purposes; The retention of an existing 54 sqm. timber log cabin which already occupies the site (whose removal is required under condition no. 4 of permission reg. RA/191557) and the use of this two-bedroom plus living area building for short-term residential occupation. The proposal also includes the decommissioning of a septic tank (which was permitted under reg. RA191557), the provision of a new soakaway, the installation of a mechanical aeration sewage treatment system and the construction of a 300 sqm. soil polishing filter, the closure of an existing entrance and upgrade works to an existing access which serves the adjacent Shanks Mare development and its use in connection with this proposal, a new turning circle for fire services and an extra parking area accommodating 11 new bays, which are in addition to the 21 spaces on the subject land. The application includes all site works, such as the removal of an existing stone wall, the raising of the land at Gate 1 by 300mm, the creation of a gravel surface, the provision of a wheelie-bin store and the removal of a gas tank. This development will be held in common ownership with the Shanks Mare development and will not be sold or leased separately. Included in this are all associated site works and services. Significant further information/revised plans submitted on this application	17/11/2022	c.2.9km northwest
An Bord Pleanála	ABP-314071-22	Boycetown, Dunsany, Co. Meath	Importation of materials for land reclamation and all associated site works. NIS and EIAR are included	15/11/2022	c.4.5km north
An Bord Pleanála	ABP-314058-22	On lands including Culmullin, Woodtown, Arodstown & Summerhill, Co Meath	Solar PV energy development and associated site works. NIS submitted to Planning Authority.	14/11/2022	c.800m southwest
Meath CC	22497	Knockmark, Drumree, Co Meath	The erection of a new dwelling and garage with associated site works	08/09/2022	c.3.7km northeast
Meath CC	22425	Derrypatrick , Drumree, Co. Meath	the development will consist of the following: (a) Construction of a new access road from existing farmyard to new farmyard (b) Construction of a new milking parlour, dairy, external milk silo & ancillary rooms, drafting & handling facilities, waiting yard, meal bin, water storage tank & underground slatted reception tank adjacent to existing circular overground slurry storage tank (c) Construction of agricultural livestock shed comprising of calving area, cubicles and underground slatted slurry reception tanks (d) Construction of calf rearing shed (e) Construction of 2 no. silage pits, maize pit & dungstead and all associated site works	15/07/2022	c.2.2km northwest

Planning Authority	Reference	Address	Proposed Development	Grant / Due Date	Distance from Subject Site
Meath CC	22425	Derrypatrick , Drumree, Co. Meath	The development will consist of the following: (a) Construction of a new access road from existing farmyard to new farmyard (b) Construction of a new milking parlour, dairy, external milk silo & ancillary rooms, drafting & handling facilities, waiting yard, meal bin, water storage tank & underground slatted reception tank adjacent to existing circular overground slurry storage tank (c) Construction of agricultural livestock shed comprising of calving area, cubicles and underground slatted slurry reception tanks (d) Construction of calf rearing shed (e) Construction of 2 no. silage pits, maize pit & dungstead and all associated site works	15/07/2022	c.1.8km northeast
Meath CC	22338	Plot 13, Loughmore Walk, Killeen Castle Demesne, Dunsany, Co. Meath	alterations and extension to previously approved two storey detached dwelling and detached garage and associated site development/landscaping works, with a site area of 0.29 Ha, being part of a previously permitted residential development of 22 houses at Loughmore Walk/The Burrows, (Reg. Ref.: RA/191174). The alterations will consist of A) omission of bay windows in living room (west elevation) and drawing room (south elevation) resulting in a reduction in floor area of 7.57sq/m, B) length of ground floor study and first floor bedroom 5 increased by 1.8 m at front (east elevation) resulting in additional floor area of 18 sq/m, C) increase in width and depth of detached garage (additional floor area of 8.7 sq/m) with covered area to rear (west) of garage and covered link between house and garage, D) additional windows and door on side (north) elevation, E) increase in width of bedroom no. 5window at front (east) elevation and F) increase in height of window of bedroom no. 5 window at front (east) elevation and F) increase in height of window of bedroom 2 at rear (west) elevation. The vehicular access is as previously permitted via the existing internal roads and entrances to Killeen Castle Demesne. All within the overall site of approx. 255Ha (a Protected Structure)	23/06/2022	c.5km northeast
Meath CC	212179	Boycetown, Dunsany, Co. Meath	The development will consist of the importation of natural materials of topsoil, soil or stone for the purposes of land reclamation for a beneficial agricultural afteruse (5.6 hectares), temporary Wheel Wash, Weighbridge, Office, access track, landscaping and all ancillary site development infrastructure. The project provides for the importation of topsoil, soil and stone to provide an access track and final landscaping under Article 27 as defined by the EPA for land reclamation and reinstatement purposes. The application is accompanied by an Environmental Impact Assessment Report (EIAR), Natura Impact Statement (NIS) and associated documents. The application relates to a reclamation development for the purpose of an activity requiring a Waste Permit to be issued by the Meath County Council. Significant further information/revised plans submitted on this application	17/06/2022	c.4.5km north
Meath CC	212214	On lands including Culmullin, Woodtown, Arodstown & Summerhill, Co Meath	For a solar PV Energy Development with a total site area of 206ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 54 No. MV Power Stations, 2 No. Client Substations, 4 No. Temporary Construction Compounds, access tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works, accessed via two existing accesses along the L62051. The application is accompanied by a Natura Impact Statement (NIS).	15/06/2022	c. 800m southwest
An Bord Pleanála	ABP-311760-21	Clonymeath, Summerhill, Co Meath.	Solar PV development. NIS lodged at application stage.	24/05/2022	c.4.80km west

Planning Authority	Reference	Address	Proposed Development	Grant / Due Date	Distance from Subject Site
Meath CC	2250	Killeen Castle Demesne, Dunsany, Co Meath	alterations to 13 no. 2 storey detached house types (permitted Plot Nos. 62-74) and development for associated site development and landscape works of a previously permitted residential scheme under Reg Ref DA/802274 (as extended by Reg Ref RA/180960) comprising overall of 135 no. dwellings (comprising 83 no. detached dwellings, 49 no. courtyard house and 3 no. gate lodges). The development now proposed comprises alterations to 13 no. of the already permitted detached houses now proposed to comprise of 2 no. 4 bedroom 2 storey detached dwellings (House Type D) each with a detached single storey garage (c. 34sqm each) and on individual plots of between c0.24-c.0.25ha, 2 no. 4 bedroom 2 storey detached dwellings (House Type DC), each with an attached single storey garage/study (c.34sqm each) and on individual plots of between c 0.27-c 0.29ha, 6 no. 5 bedroom 2 storey detached dwellings (House Types A & C) each with a detached single storey garage(c 34sqm each) and on individual plots of between c 0.26-c.0.32ha, 3 no. 5 bedroom 2 storey detached dwellings (House Types AC & CC), each with an attached single storey garage/study (c 34sqm each) and on individual plots of between c 0.27-c. 0.35ha. Each unit is served by 2 no. carparking spaces (26 no. in total) and associated site development and landscape works to include; boundary treatments and adjustments to permitted plot boundaries at two no. house plots (permitted House Plot Nos. 62 and 74). The vehicular access is as otherwise permitted via the existing internal road network and entrances to Killeen Castle Demesne. All on a site of approximately c 3.63ha within the overall approx. 255ha Killeen Castle Demesne (a protected structure), Dunsany, Co Meath	29/04/2022	c.5km northeast
Meath CC	22264	Drumree, Co Meath	To construct a single storey dwelling house, detached garage, new wastewater treatment system and percolation area, new well, new entrance from public road and all associated site development works	21/04/2022	c.4.7km east
Meath CC	212144	Pelletstown, Drumree, Co Meath	A single storey detached dwelling and domestic garage, new domestic entrance onto public road, septic tank and percolation area, landscaping and all associated works	13/04/2022	c.5km northeast
Meath CC	212208	Knockmark, Drumree, Co. Meath	The development will consist of a) Demolition of existing agricultural sheds, b) Construction of a new farmyard entrance in place of existing roadside entrance, c) Construction of a stable & straw storage shed, d) Construction of a dungstead e) Construction of a machinery shed, f) Erection of a meal bin, g) Construction of a livestock shed & handling area with underground slatted slurry storage tanks and all associated site works	11/04/2022	c.4.4km east
Meath CC	22198	Branganstown, Kiltale, Co Meath	EXTENSION OF DURATION OF PLANNING PERMISSION REF TA/161305 - construction of 3 no. dormer/storey and a half style agri-tourism accommodation dwellings, accessed via existing private laneway, install proprietary waste water treatment systems and percolation areas and all associated site works. Significant further information/revised plans submitted on this application	11/04/2022	c.4.8km north
Meath CC	211844	Newtownrathganley, Kilcock, Co. Meath.	Construction of A) 2 no. new pig houses B) extension to 3 no. existing pig houses and C) 4 no. ancillary overground /underground storage tanks together with all ancillary structures and associated site works (to include an upgrading of the existing site entrance, the provision of an on-site wastewater treatment system and percolation area,	05/04/2022	c. 5.0km southwest

Planning Authority	Reference	Address	Proposed Development	Grant / Due Date	Distance from Subject Site
			and an on-site storm water attenuation swale), arising from the above development. The proposed works are to be completed in preference to, or in lieu of, any outstanding developments previously approved under planning ref DA101175, but not constructed to provide for and ensure higher environmental standards in line with BAT requirements, and improved animal welfare standards). The application relates to a development which is for the purposes of an activity requiring a Licence underpart IV of the Environmental Protection Agency (Licensing) Regulations 1994-2013. An Environmental Impact Statement Assessment Report (EIAR) and Natura Impact Statement (N.I.S) is submitted with this application.		
Meath CC	212117	Teagasc Grange Research Facilities , Grange, Dunsany, Co. Meath	The demolition of existing agricultural structures and construction of three new agricultural buildings consisting of a new slatted floor cattle feeding house, a new calf rearing unit and a new agricultural services store coupled with all associated site works	17/02/2022	c.3.1km north
Meath CC	212004	Tullaghmedan, Drumree, Dunsany, Co Meath	The removal of an existing telecommunications pole attached to a farm shed with a total height of 12 metres above ground level together with telecommunications equipment on it and replacement with a new 17.5 metres telecommunications structure carrying antennas, dishes, associated equipment, together with ground-based equipment cabinets, fencing and all associated site development works for wireless data and broadband services	31/01/2022	c.2.5km north
Meath CC	211982	Knockstown, Moynalvy, Summerhill, Co. Meath	A new two-storey detached dwelling and associated landscaping and site works including a new waste waterwastewater treatment system and percolation area and upgrading the existing site entrance onto the public road.	21/01/2022	c.3.2km southwest
Meath CC	21985	On lands including Derryclare, Cloneymeath, Ballygortagh and Moynalvy, Summerhill, Co. Meath	A Solar PV Energy Development with a total site area of 108.68ha, to include solar panels mounted on steel support structures, associated cabling and ducting, 27 no. MV Power Stations, 3 No. Client Substations, 3 No. temporary construction compounds, access tracks, boundary security fencing and security gates, CCTV, landscaping and ancillary works.	17/01/2022	c.5.0km west
Meath CC	211424	Clonymeath, Summerhill, Co. Meath	The development will consist of two storey dwelling, detached domestic garage, entrance and driveway. The development also includes the installation of new proprietary wastewater treatment system and polishing filter together with all associated site works.	16/12/2021	c.4.0km west
Meath CC	211220	Clonymeath, Summerhill, Co. Meath	Two storey dwelling, detached domestic garage, entrance and driveway. The development also includes the installation of new proprietary wastewater treatment system and polishing filter together with all associated site works.	11/11/2021	c.4.0km west
Meath CC	21546	Clonymeath, Summerhill, Co Meath	Permission for Solar Photovoltaic (PV) development within the townland of Clonymeath, Summerhill, Co Meath. Planning permission is sought for the construction and operation of a solar PV farm consisting of solar arrays on ground mounted steel frames, with a maximum overall height of 3 metres, over an area of 91.9 ha and ancillary equipment including up to 30 no. medium voltage power stations, 1 no. modular Battery Energy Storage Compound (comprising up to 5 no. battery containers) and all other associated site development works and services, including, internal solar PV farm, underground electrical cabling and ducting, 2 no. temporary construction compounds, security fencing,	29/09/2021	c.4.80km west

Planning Authority	Reference	Address	Proposed Development	Grant / Due Date	Distance from Subject Site
			CCTV camera stands, replacement of an existing site entrance with a new gated site entrance via the L2210 local road, provision of new internal access tracks including the upgrading and installation of span bridge structures, site drainage and landscaping, as required to facilitate the development. Planning permission is sought for a period of 10 years with an operational life of 35 years from the date of commissioning. The application is accompanied by a Natura Impact Statement (NIS). Significant Further information/Revised plans submitted on this application.		
Meath CC	RA201932	Leonardstown, Drumree, Co. Meath	Development will consist of a new two-storey detached dwelling house, a single-storey detached garage, proprietary wastewater treatment system and percolation area and all associated siteworks to include a new vehicular access from public road. Significant Further information /Revised plans submitted on this application.	05/07/2021	c.4.0km northeast
Meath CC	21141	Ballygortagh, Summerhill, Co. Meath	Storey and a half type dwelling house, detached garage, new wastewater treatment system and percolation area to proposed site, removal of existing septic tank and percolation area on site and to relocate adjoining dwelling house located to the west and all associated site development works. Significant further information/revised plans submitted on this application.	24/06/2021	c.4.0km southwest
Meath CC	RA201202	Kiltale Group Water Scheme , Pumping Station, Kiltale, Dunsany, Co. Meath C15 T923	The relocation of the existing entrance to the north eastern boundary of the site grounds. The development will include the construction of an in-situ concrete retaining wall along the site road boundary with palisade fence on top of the boundary wall with a land drain to its base with a petrol interceptor connected. Significant further information/revised plans submitted on this application.	14/04/2021	c.4.0km north
An Bord Pleanála	PL17.308034	Knockmark, Drumree, Co. Meath	Importation of uncontaminated soil and stones for the improvement of lands for agricultural purposes	02/03/2021	c.4.5km northeast
Meath CC	RA200607	Curraghtown, Drumree, Co. Meath	The development will consist of: 1. New dwelling and detached garage. 2. New domestic entrance. 3. Oakstown Wastewater Treatment system with Percolation area. 4. Landscaping & all associated site works.	17/12/2020	c.2.0km east
Meath CC	RA191754	Rathkilmore, Kilcock, Co. Meath	A new two storey dwelling with single storey living and lounge area to the west, associated domestic garage, open new vehicular entrance to site, new secondary wastewater treatment unit and polishing filter together with all associated site development works. Significant further information/revised plans submitted on this application.	27/11/2020	c.3.5km south
Meath CC	RA200497	Rathkilmore, Kilcock, Co Meath	A single storey dwelling & domestic garage. Permission is sought to upgrade existing agricultural entrance to facilitate shared domestic entrance and for the installation of a packaged wastewater treatment system and polishing filter and all associated site works.	24/11/2020	c.3.5km south
Meath CC	RA191502	Knockmark, Drumree, Co. Meath	The development will consist of the importation of uncontaminated soil and stones for the improvement of ground levels in rear garden to existing dwelling, in order to carry out landscaping works, gardens & lawns. Subsequent to planning a Certificate of Registration will be sought from Meath County Council Environment/Waste Section for the duration of	24/09/2020	c.4.5km northeast

Planning Authority	Reference	Address	Proposed Development	Grant / Due Date	Distance from Subject Site
			the infilling process. Significant further information/revised plans submitted on this application.		
Meath CC	RA191557	Shanks Mare Public House,, Collegeland & Arodstown,, Summerhill, Co. Meath	The development consists of retention of the partly-complete works for the conversion of the upper ground level of "Shanks Mare" Public house from a public house to four apartments for tourist accommodation (rental) purposes (291.46 sq.m.). Retention permission is also being sought for a covered patio (17.52 sq.m.) which has been constructed to the west of the existing building, along with elevational changes to this structure, which was permitted under permission Reg. No. 71/598. The application also includes future works for the completion of the conversion of the upper ground floor of Shanks Mare to living accommodation, comprising of two number two-bedroom apartments and two number one-bedroom apartments, along with the use of these units for tourist rental purposes. These works shall include the provision of private deck areas to the rear (north-facing) elevation of these dwellings and associated elevational changes. Permission is sought for the change of use of store area (63.54m2) to a function room at lower ground floor level. Under this arrangement the lower ground floor and the uppermost levels within this building will remain in use for public house and residential purposes, respectively. Permission is sought to remove three unauthorised features which occupy the site comprising a perimeter fence, a log cabin and existing signage. Permission is also sought for a new proprietary effluent treatment system and polishing filter to replace the existing septic tank (to be decommissioned) and the closure of an existing entrance and upgrade works to an existing access, together with all associated site works. Significant further information/revised plan submitted on this application.	14/09/2020	c.2.80km west
An Bord Pleanála	ABP-307458-20	Shanks Mare Public House,, Collegeland & Arodstown,, Summerhill, Co. Meath.	Retention of the partly-complete works for the conversion of the upper ground level of "Shanks Mare" Public house from a public house to four apartments for tourist accommodation (rental) purposes.	28/08/2020	c.2.80km west
An Bord Pleanála	PL17.307021	Roestown, Readsland & Knocks, Dunshaughlin, Co. Meath	Amendments to a permitted residential scheme (Reg. Ref. DA120987, An Bord Pleanala Reg. Ref. PL17.241988}, overall comprising of a 142 residential scheme, a creche and associated site services.	27/07/2020	c.5km east
Meath CC	RA200003	Arodstown , Summerhill, Co. Meath	A two-storey dwelling house, domestic garage, creation of new entrance, private well, domestic wastewater treatment plant and all ancillary site works.	03/04/2020	c.1.7km northwest
An Bord Pleanála	PL17.305208	Larchill Stud, Newtownrathganley & Phepotstown, Kilcock, Co. Meath	New entrance and access road from the L6215 and associated upgrade works of the L6215 from the proposed new entrance to the junction with the R125.an activity requiring an Industrial Pollution Prevention and Control Licence (Now replaced by an Industrial Emissions Licence).	20/12/2019	c.5km south
Meath CC	RA180853	Curraghdoo, Summerhill , Enfield, Co. Meath	A two-storey dwelling with detached domestic garage, a domestic effluent treatment system, a well, new site entrance and all associated site works.	17/04/2019	c.4.0km west
Meath CC	RA181075	Bogganstown , Drumree , Co. Meath	Single storey replacement dwelling with detached domestic garage, a domestic effluent treatment system, new site entrance and all associated site works. The existing single storey dwelling is to be used as a farm office.	07/02/2019	c.3.0km southeast

Planning Authority	Reference	Address	Proposed Development	Grant / Due Date	Distance from Subject Site
Meath CC	RA180994	Glen Road,, Moynalvy , Kilcock, Co. Meath	A two-storey dwelling, detached domestic garage, wastewater disposal system, domestic site entrance and all associated site works.	05/12/2018	c.2.0km southwest
Meath CC	RA180692	Merrywell, Drumree, Co. Meath	Construction of a two-storey dwelling with domestic garage, proprietary wastewater treatment system, percolation area, new entrance off public road and all associated site works.	15/11/2018	c.4.0km southeast
Meath CC	TA180245	Martinstown, Kiltale, Co. Meath	Single storey dwelling incorporating domestic garage to rear, upgrade of existing entrance to form new shared dual entrance, driveway, connection to main water and sewerage together with all associated site works.	01/11/2018	c.4.0km northwest
Meath CC	RA170766	Knockstown & Clarkstown, Summerhill, Co. Meath	The development will consist of the following: Photovoltaic solar farm on a site of 23.6 hectares (58 acres) with an export capacity of approximately 8MW, comprising photovoltaic panels on ground mounted frames; 4 no. inverter stations; 1 no. interface substation; ducting and underground electrical cabling; perimeter fencing; pole mounted CCTV cameras; screen planting/landscaping; closing up of existing vehicular entrance and creation of a new vehicular entrance on the local road (L6215); new internal access track from the new vehicular entrance to connect with existing internal farm tracks, and all ancillary works necessary to facilitate the development. Significant further information/revised plans submitted on this application.	01/06/2018	c. 4.70km southwest

Appendix F Construction Dust Assessment Methodology

This appendix describes the technical method by which the air quality impact of the Proposed Development from construction phase particulate emissions has been considered.

STEP 1: Screen the Requirement for a Detailed Assessment

Sensitive receptors were identified and the distance to the site and construction routes were determined according to the examples of sensitivity shown in **Table E1**. According to the IAQM, an assessment will normally be required where there are sensitive receptors within 350m of the boundary of a site and/or within 50m of route(s) used by construction vehicles on the public highway, up to 500m from the Site entrance.

A human receptor, as considered within the IAQM guidance, is any location where a person or property may experience:

- The annoyance effects of airborne dust or dust soiling e.g. dwellings, industrial or commercial premises such as a vehicle showroom, food manufacturers, electronics manufacturers, amenity areas and horticultural operations. or
- Exposure to PM_{10} over a period relevant to the air quality objectives.

Ecological receptors within 50m of the boundary of the site or routes used by construction vehicles on the public highway, up to 500m from the site entrance, also need to be identified.

There are no ecological receptors which need to be considered as part of this assessment.

Table E1 Examples of Dust Sensitive Receptors

Sensitivity	Dust Soiling	Human Health	Ecological
High	• Dwellings • Museum and other culturally important collections, • Medium- and long-term car parks • Car showrooms	• Residential properties. • Hospitals, • Schools • Residential care homes	• Locations with an international or national designation (e.g. SAC) and the designated features may be affected by dust soiling
Medium	• Parks • Places of work	• Office and shop workers but will generally not include workers occupationally exposed to PM10, as protection is covered by Health and Safety at Work legislation.	• Locations with a national designation (e.g. NHA) where the features may be affected by dust deposition
Low	• Playing fields • Farmland (unless commercially-sensitive horticultural) • Footpaths • Short term car parks • Roads	• Public footpaths • Playing fields • Parks • Shopping streets	• Locations with a local designation where the features may be affected by dust deposition local Nature Reserve with dust sensitive features. •

STEP 2: Assess the Risk of Dust Impacts

The risk of dust arising in sufficient quantities to cause annoyance and/or health effects was determined for each activity (demolition, earthworks, construction works and track out), taking account of:

- The scale and nature of the works, which determines the potential dust emission magnitude (small, medium or large) (Step 2A).
- The sensitivity of the area (low, medium or high) (Step 2B).

These factors were then combined to give the risk of dust effects with no mitigation applied, as Negligible, Low, Medium or High.

It should be noted that where detailed information was not available to inform the risk category, professional judgement and experience was used and a cautious approach adopted, in accordance with the guidance.

STEP 2A – Define the Potential Dust Emission Magnitude

Demolition

Table E2 presents the demolition works dust emission classification. Demolition works will be minimal given the current state of the site.

Table E2 Potential Demolition Works Dust Emission Classification

Planning Application	Date Submitted
Large	Large: Total building volume >50,000 m^3 Potentially dusty construction material (e.g. concrete) Onsite crushing and screening Demolition activities >20m above ground level
Medium	Total building volume 20,000 m^3 – 50,000 m^3 Potentially dusty construction material Demolition activities 10-20m above ground level
Small	Total building volume <20,000 m^3 Construction material with low potential for dust release (e.g. metal cladding or timber) Demolition activities <10m above ground Demolition during wetter months

Earthworks

Earthworks will primarily involve excavating material, haulage, tipping and stockpiling. The classifications in Table E3 are based on examples of suitable criteria. Factors such as existing land use, topography, seasonality, duration and scale were also taken into consideration, where possible.

Table E3 Potential Earthworks Dust Emission Classification

Planning Application	Date Submitted
Large	Total site area: >10,000 m^2 Potentially dusty soil type (e.g. clay) >10 heavy earth moving vehicle active at any one time Formation of bunds >8m in height Total material moved >100,000 tonnes
Medium	Total site area: 2,500 - 10,000 m^2 Moderately dusty soil type (e.g. silt) 5 -10 heavy earth moving vehicle active at any one time Formation of bunds 4 - 8m in height Total material moved 20,000 – 100,000 tonnes
Small	Total site area: <2,500 m^2 Soil type with large grain size (e.g. sand) < 5 heavy earth moving vehicle active at any one time Formation of bunds < 4m in height Total material moved <20,000 tonnes Earthworks during wetter months

Construction

The key issues when determining the potential dust emission magnitude during the construction phase include the size of the building(s)/infrastructure, method of construction, construction materials and duration of build. The classifications in Table E4 are based on examples of suitable criteria. Factors such as seasonality, building type, duration and scale were also taken into consideration, where possible.

Table E4 Potential Construction Works Dust Emission Classification

Planning Application	Date Submitted
Large	Total building volume >100,000 m^3
Medium	Piling, on site concrete batching, sandblasting
Small	Total building volume 25,000 – 100,000 m^3

Track-out

Track-out is the transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the local road network. The classifications in Table E5 are based on examples of suitable criteria. Factors such as vehicle size, speed, numbers, geology and duration were also taken into consideration, where possible.

Table E5 Potential Track-out Dust Emission Classification

Planning Application	Date Submitted
Large	50 HGV (>3.5t) outward movements in any one day Potentially dusty surface material Unpaved road length > 100 m
Medium	25 – 100 HGV (>3.5t) outward movements in any one day Moderately dusty surface material Unpaved road length 50 – 100 m
Small	< 25 HGV (>3.5t) outward movements in any one day Surface material with low potential for dust release Unpaved road length < 50 m

STEP 2B – Define the Sensitivity of the Area

The sensitivity of the area takes account of the following factors:

- The specific sensitivities of receptors in the area.
- The proximity and number of those receptors.
- In the case of PM_{10}, the local background concentrations.
- Site specific factors, such as whether there are natural shelters, such as trees to reduce the risk of wind-blown dust.

The sensitivity of the area is determined separately for dust soiling impacts on people and properties (Table E6, human health impacts (Table E7).

Table E6 Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		< 20 m	< 50 m	< 100 m	< 350 m
High	>100	High	High	Medium	Low
Medium	10 – 100	High	Medium	Low	Low
Low	1 -10	Medium	Low	Low	Low

Table E7 Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual	Number of Receptors	Distance from the Source (m)			
			< 20 m	< 50 m	< 100 m	< 350 m
High	> 32 µg/m3	>100	High	High	High	Medium
		10 – 100	High	High	Medium	Low
		1 -10	High	Medium	Low	Low
	28 - 32 µg/m3	>100	High	High	Medium	Low
		10 – 100	High	Medium	Low	Low
		1 -10	High	Medium	Low	Low

Receptor Sensitivity	Annual	Number of Receptors	Distance from the Source (m)			
			< 20 m	< 50 m	< 100 m	< 350 m
	24 - 28 µg/m3	>100	High	Medium	Low	Low
		10 – 100	High	Medium	Low	Low
		1 -10	Medium	Low	Low	Low
	< 24 µg/m3	>100	Medium	Low	Low	Low
		10 – 100	Low	Low	Low	Low
		1 -10	Low	Low	Low	Low
Medium	-	>10	High	Medium	Low	Low
	-	1 -10	Medium	Low	Low	Low
Low	-	1 -10	Low	Low	Low	Low

STEP 2C - Define the Risk of Impacts

The dust emission magnitude determined at Step 2A should be combined with the sensitivity of the area determined at Step 2B to determine the risk of effects with no mitigation applied (Table E8). This Step is undertaken for each activity undertaken on site.

Table E8 Nearby Planning Applications

Activity	Sensitivity of Area	Dust Emission Classification		
		Large	Medium	Small
Earthworks	High	High	Medium	Low
	Medium	Medium	Medium	Low
	Low	Low	Low	Negligible
Construction	High	High	Medium	Low
	Medium	Medium	Medium	Low
	Low	Low	Low	Negligible
Track-out	High	High	Medium	Medium
	Medium	Medium	Low	Negligible
	Low	Low	Low	Negligible

STEP 3: Identify the need for Site-Specific Mitigation

Based on the risk of effects determined in Step 2C for each activity, appropriate site-specific mitigation measures were recommended. Appropriate mitigation measures are set out in the IAQM Guidance.

STEP 4: Define Impacts and Their Significance

Finally, the significance of the potential residual dust impacts, i.e., after mitigation, was determined. According to the IAQM Guidance the residual impacts assumes that all mitigation measures (recommended in Step 3) to avoid or reduce impacts are adhered to, and therefore the residual impacts should be ‘not significant’.

Appendix G Cultural Heritage – Recorded Assets

Table H1: Gazetter of Heritage Assets

RMP UID	Class	Townland	Date	Description	Irish Grid Reference	Distance to Site
ME043-010----	Church	DERRYPATRICK	Medieval	Situated on a slight E-W ridge in a low-lying landscape. A church at Kiltale and Derrypatrick is listed in the ecclesiastical taxation (1302-04) of Pope Nicholas IV, (Cal. doc. Ire., 5, 255). The church was amongst the possessions of St Thomas' Augustinian abbey (DU018-020051-) in 1540 (White 1943, 31). Ussher (1622) describes the church at Dirpatricke as reasonably repaired but the chancel as a ruin (Erlington 1847-64, 1, lxxx). According to the Dopping (1682-5) and Royal (1693) visitations the walls of the church and chancel of St Patrick's were still standing but it had been unroofed since 1641 (Ellison 1972, 5). The parish church is within a D-shaped graveyard (dims approximately 28m NE-SW. approximately 28m NW-SE) with straight sides at SE where there is a NE-SW public road, and SW. It is defined by masonry walls on every side except the SW where there is an earthen bank or scarp, which suggests that it may have been truncated on this side. The few headstones are of 18th and 19th century date. The grass covered foundations of a divided nave (int. dims 14.75m E-W. 5.95m N-S) and chancel (int. dims 6.25m E-W. W 5.3m N-S) church survive as wall-footings, a scarp, or a low grass-covered bank (Wth 2m. H 0.4-0.7m). A bullaun stone (dims 0.55m x 0.55m. H 0.26m plus) with a single basin (diam. 0.31m. D 0.22m) is set in the ground in the chancel. There is a spandrel from an ogee-headed window in the graveyard and two similar pieces are set in the graveyard wall at the roadside beside the gate.	688275, 751284	2km NW
ME043-010002-	Bullaun Stone	DERRYPATRICK	Medieval	Within the chancel of the parish church of Derrypatrick (ME043-010----) is a bullaun stone (dims 0.55m x 0.55m. H 0.26m plus) set in the ground, with a single basin (diam. 0.31m. D 0.22m).	688285, 751284	2km NW
ME043-010001-	Graveyard	DERRYPATRICK	Medieval - Post-medieval	Situated on a slight E-W ridge in a low-lying landscape. The parish church of Derrypatrick (ME043-010----) is within a D-shaped graveyard (dims approximately 28m NE-SW. approximately 28m NW-SE) which has straight sides at SE where there is a NE-SW public road, and at SW. It is defined by masonry walls on every side except the SW where there is an earthen bank or scarp, which suggests that it may have been truncated on this side. The bullaun stone (ME043-010002-) and some pieces from ogee-headed windows are in the graveyard, while the few headstones are of 18th and 19th century date.	688275, 751275	2km NW
ME043-011----	House - 16th - 17th Century	DERRYPATRICK	Medieval - Post-medieval	A roofless gabled structure is depicted adjacent to the church at Dirpatrick (26) on the Down Survey (1656-8) barony map of Deece (http://downsurvey.tcd.ie/). According to the Civil Survey (1654-6) Walter Plunkett of Dirpatrick owned 175 acres there in 1640 including 'an old stone house, a park of trees and some thatched houses' (Simington 1940, 142). The house is depicted as an oblong structure (dims approximately 15m NW-SE. approximately 5m NE-SW) with a rectangular enclosure (dims approximately 25m NE-SW. approximately 25m NW-SE) attached to the NE on the 1836 ed. of the OS 6-inch map, and it is located on a low E-W ridge. A raised rectangular and grass-covered area (dims 8.5m E-W. 6.5m N-S. max. H	688298, 751208	1.9km NW

RMP UID	Class	Townland	Date	Description	Irish Grid Reference	Distance to Site
				approximately 2m) marks the site of the house. It is situated at the NW angle of a large enclosure or bawn (dims approximately 50m N-S. approximately 30m E-W) defined on all sides except the N by earthen banks (at W: Wth 8m. H 0.8-1m) and external fosses or hollow ways (at S: Wth of top 5.5m. D 0.5m). The field system (ME043-012----) extended around the house E-S-W but all the remains were removed approximately 2013 (Bing). The parish church of Derrypatrick (ME043-010----) is approximately 60m to the N. 16th - 17th century building		
ME043-011001-	Enclosure/Bawn	DERRYPATRICK	Medieval	Located on a low E-W ridge. The house (ME043-011----) is situated at the NW angle of a large grass-covered enclosure or bawn (dims approximately 50m N-S. approximately 30m E-W) defined on all sides except the N by earthen banks (at W: Wth 8m. H 0.8-1m) and external fosses or hollow ways (at S: Wth of top 5.5m. D 0.5m). The field system (ME043-012----) extended around the house E-S-W but all the remains were removed approximately 2013 (Bing).	688311, 751192	1.9km NW
ME043-012----	Field System	DERRYPATRICK	Medieval - Post-medieval	Located on the S-facing slope of a low E-W ridge. The house (ME053-011----) and possible bawn (ME043-011001-) were at the N edge of a field system that covered about 30 acres (c. 7.5 ha). The fields were rectangular (dims approximately 60-100m x approximately 40m) defined by earthen banks and silted drains, with some hollow ways (Wth approximately 4-5m. D 0.5m) between the field banks. All the earthwork remains were removed approximately 2013 (Bing).	688276, 751128	1.9km NW
ME043-013----	Burial Mound	ARODSTOWN	Post-medieval	Located just off the summit of a small hillock. It is not depicted on any map but was described in 1969 (SMR file) as a subcircular platform (dims of base 20m NW-SE. 11m NE-SW) defined by a scarp (at SW: Wth 1.4m. H 0.55m). It is known locally and was thought to be a burial ground from 1798. Its visible profile seems to have been removed by 1995 (OSAP).	687968, 750568	1.9km W
ME043-016----	Castle - unclassified	ARODSTOWN	Medieval	Situated on a slight SW-facing slope with Arodstown church (ME043-015----) approximately 150m to the W. According to the Civil Survey (1654-6) Peter Barnwall of Arrottstown in Kilmore parish owned 305 acres there in 1640, and on the premises were 'a castle and some cottages' (Simington 1940, 149). This was a rectangular structure (ext. dims 10.6m plus NW-SE. 8.7m NE-SW) with a projecting square tower (ext. dims approximately 3.5m NE-SW. 2.75m NW-SE) at the S angle. There was a modern doorway in the SE wall and two double-splay lights on the NE wall at the ground floor. The ceiling was supported on corbels in the long walls. A lintelled doorway (Wth 0.7m) leads from the main chamber to the S tower (int. dims 2.6m NW-SE. 2m NE-SW) that had a low barrel-vault with a single double-splay light in the SE wall. The first floor under the NW-SE barrel-vault may have been a loft as it has no features except a round-headed doorway leading to the S tower, which also has a barrel-vault. The S tower has a double-splay light in the SE wall and a large opening in the NE wall that could have provided the main entrance to the structure. There was no trace of any upper floors and it appears to have been removed since 1969 (Bing approximately 2013).	688122, 750016	1.8km W

RMP UID	Class	Townland	Date	Description	Irish Grid Reference	Distance to Site
ME043-015----	Church	ARODSTOWN	Medieval - Post-medieval	Situated on a prominent rise in an undulating landscape. The earliest reference is from Ussher (1622), who describes the church and chancel at Arratstowne as ruinous (Erlington 1847-64, 1, lxxx). Dopping (1682-5) lists Arodstown as a chapel-of-ease to Kilmore (ME043-042----) (Ellison 1972, 4). Cogan (1862-70, 2, 371) records the church as measuring '41 feet by 15 (c. 12.5m x approximately 4.6m)', and Moore (1975, 45) says it was dedicated to the Blessed Virgin Mary. Only two lengths of the overgrown S wall (total L 12.55m. max. H 1.5-2m. T 0.8m) survive with a gap (Wth 1.8m) towards the W end that might be the location of a doorway. It is within a sub rectangular graveyard (dims approximately 37m E-W. approximately 30m N-S) retained by masonry walls, and its few headstones dating from 1740 to 1953 have been recorded (ibid. 45-9). The head of a latin cross (H 0.58m. span 0.66m. T 0.14m) with slightly flaring terminals had been buried just outside the S doorway, but it was moved from the graveyard approximately 1960 and is now outside the Roman Catholic church of St Mary's at Moynalvy (ME043-028----), approximately 1.6km to the S (ibid. 46-7). It has a Madonna in relief on one face with 'IHS' and MAR' carved in false relief on panels at the ends of the arms and a Crucifixion on the other face, with 'INRI' in false relief above and the letters 'P' and 'M' incised at either end of the arms. It probably dates to the late 16th century (King 1984 104-05)	687993, 749924	1.95km W
ME043-015002-	Cross - Churchyard cross	ARODSTOWN	Post-medieval	The head of a latin cross (H 0.58m. span 0.66m. T 0.14m) with slightly flaring terminals had been buried just outside the S doorway of Arodstown church (ME043-015----), but it was moved from the graveyard approximately 1960 and is now outside the Roman Catholic church of St Mary's at Moynalvy (ME043-028----), approximately 1.6km to the S (Moore 1975, 46-7). It can be dated to the later 19th century (King 1984, 104-05).	687993, 749920	1.95km W
ME043-015001-	Graveyard	ARODSTOWN	Medieval - Post-medieval	Situated on a prominent rise in an undulating landscape. The church (ME043-015----) is within a sub rectangular graveyard (dims approximately 37m E-W. approximately 30m N-S) retained by masonry walls, and its few headstones dating from 1740 to 1953 have been recorded (Moore 1975, 45-9). The head of a latin cross (ME043-015002-) from the graveyard is now outside the Roman Catholic church of St Mary's at Moynalvy (ME043-028----), approximately 1.6km to the S (ibid. 46-7).	687988, 749915	1.95km W
ME043-029----	Ringfort - Rath	WEATHERSTOWN	Early medieval	Located on a fairly level landscape. A circular embanked enclosure (ext. diam. approximately 35m) is depicted on the 1836 edition of the OS 6-inch map where it is described as a 'Fort', and it is depicted as a D-shape hachured feature backing onto a NE-SW field bank and townland boundary with Arodstown at NW. It is a grass-covered quarry but a scarp and outer U-shaped fosse (Wth of top 6m. int. H 2.2m. ext. H 0.8m) survived S-SW in 1969 (SMR file) suggesting it was a platform rath.	688213, 749166	1.9km SW
ME043-056----	Barrow - unclassified	WOODTOWN	Bronze Age/Iron Age	No information currently available.	690548, 749044	1km SE
ME043-030----	Ringfort - Rath	WOODTOWN	Early medieval	Situated on the W-facing slope of a broad hill. It is described as 'Delany's Fort' on the 1836 and 1912 editions of the OS 6-inch map. This is a circular grass-covered area (diam. 67.5m NNW-SSE. 61.5m ENE-WSW) defined by an earthen bank (Wth of base approximately 5-8m. int. H approximately 0.5m. ext. H approximately 2.5m) with some bushes that has an outer stone facing NW-E-SSE. There is an outer rounded fosse (Wth	691114, 748593	1.8km SE

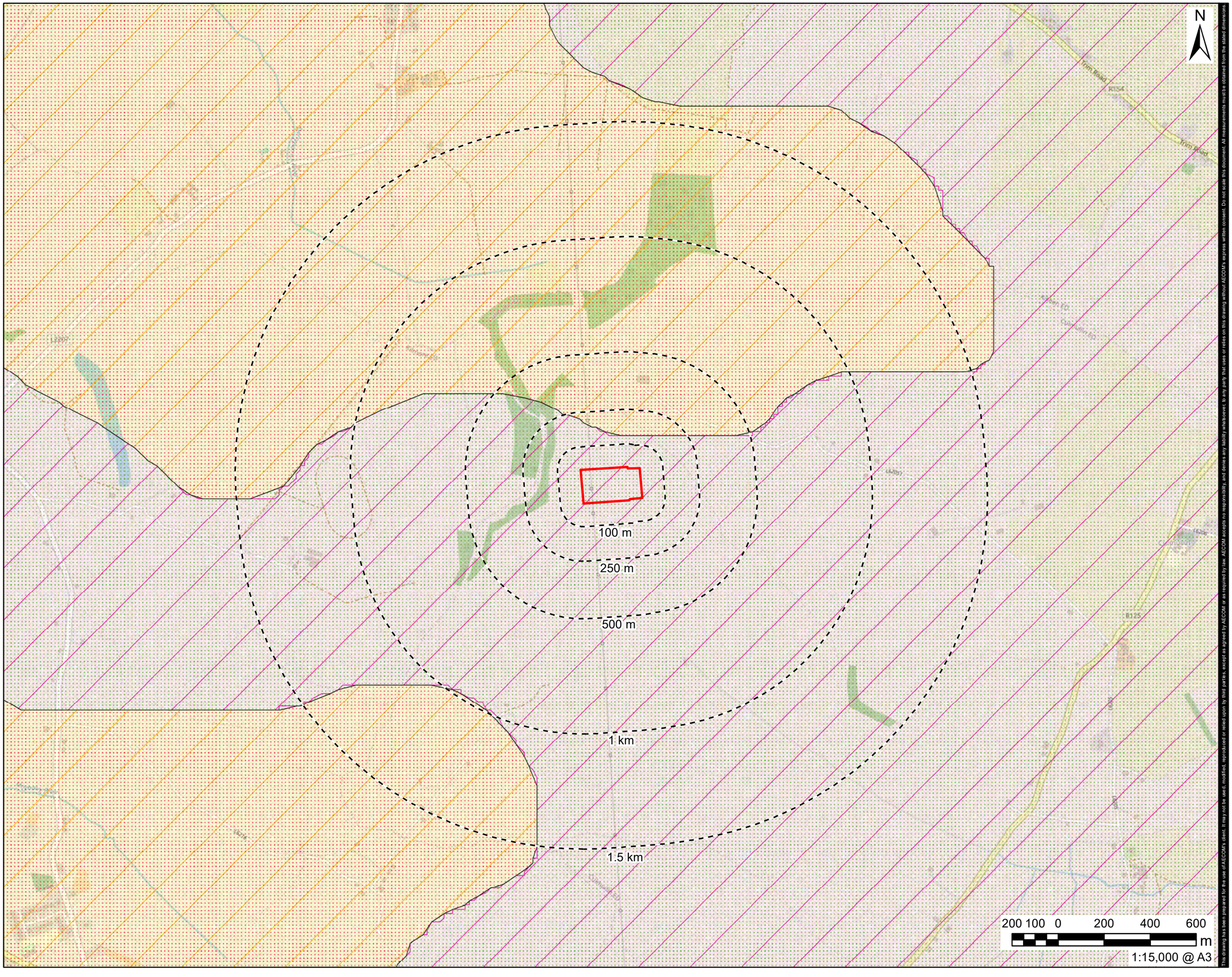
RMP UID	Class	Townland	Date	Description	Irish Grid Reference	Distance to Site
				of top approximately 10m. ext. D approximately 1.5m) that is incorporated into the drain of a field bank S-NW. The entrance (Wth of base 3.8m) at ESE. The bank has become more overgrown since 1969 (OSAP).		
ME043-018001-	Redundant Record - Font (former location)	CULMULLIN	Medieval	The font from the medieval parish church of Culmullin (ME043-017----) that was on the lawn of Culmullin House for a time is now in the Roman Catholic church of St Martin at Culmullin (ME043-057----).	691451, 749851	1.35km E
ME043-018----	Castle - Mott	CULMULLIN	Medieval	Situated on top of a hill. This is a flat-topped earthen mound (diam. of top approximately 20-25m. H approximately 4-6m) overgrown in mixed woodland. It has no visible fosse and the building (ME043-018002-) is built into the perimeter at SW. Culmullin parish church (ME043-017----) is approximately 265m to the NNW.	691424, 749886	1.35km E
ME043-018002-	Building	CULMULLIN	Medieval - Post-medieval	Located on the summit of Culmullin hill and built into the SW side of the motte (ME043-018----). A large two storey house, probably with a return, is represented on the Down Survey (1658) barony map of Deece at Culmullin close to the church. According to the Civil Survey (1654) 332 acres at Culmullin were owned by the Lord of Slane and there was on the land a stone house and a church, both ruined (Simington 1940, 146). This is a rectangular masonry structure (dims approximately 14m NW-SE. approximately 6m NE-SW) reduced to one storey with a vault that is now divided in two by an inserted wall. Each chamber has a lintelled doorway and splayed rectangular window in the SW wall and there is a narrow light in an embrasure in the NW wall. There is a small vaulted alcove off the NE wall of the SE chamber, which is built into the mound of the motte.	691409, 749865	1.35km E
ME043-018003-	Stoup (present location)	CULMULLIN	Post-medieval	Located in the farmyard of Culmullin House is a rectangular stone stoup (ext. dims 0.35m x 0.35m. H approximately 0.25m) with the date 1616 crudely incised into one side. Its original find spot is not known.	691409, 749857	1.35km E
ME043-017001-	Graveyard	CULMULLIN	Medieval - Post-medieval	Situated on a gentle NW-facing slope. The parish church of Culmullen (ME043-017----) is within a five-sided graveyard (max. dims approximately 70m WNW-ESE. approximately 37-60m NNE-SSW) defined by masonry walls, with the apex at N and a WNW-ESE lane outside the perimeter at S. The headstones date from 1707 to 1966, and one in Gaelic is known (McClenaghan (1921-25). The font (ME043- 017002-) from the graveyard is now in grounds of Culmullin House (ME043-018001-), approximately 250m to the SSE.	691355, 750085	1.3km E
ME043-017----	Church	CULMULLIN	Medieval	Situated on a gentle NW-facing slope. A church at Kulmolyn is listed in the ecclesiastical taxation (1302-06) of Pope Nicholas IV (Cal. doc. Ire., 5, 255). Ussher (1622) describes the church and chancel as ruinous (Erlington 1847-64, 1, lxxvi). According to the Dopping (1682-5) and Royal (1693) visitations the walls of the church and chancel of St Martin's were standing but it was roofless since 1641 and the graveyard was not enclosed (Ellison 1972, 4). The parish church of Culmullin is within a five-sided graveyard (max. dims approximately 70m WNW-ESE. approximately 37-60m NNE-SSW) defined by masonry walls, with the apex at N and a WNW-ESE lane outside the perimeter at S. The headstones date from 1739 to 1966, and one with a prayer in Gaelic dating from 1739 is known (McClenaghan (1921-25). The dimensions of the	691356, 750095	1.3km E

RMP UID	Class	Townland	Date	Description	Irish Grid Reference	Distance to Site
				church are unclear but Cogan (1862-70, 2, 351) records the nave as '84 feet by 18 feet (c. 25.6m x approximately 5.5m)' separated by a chancel arch from a chancel '15 feet long (c. 5.6m)'. The foundations of an E-W building (dims approximately 26m E-W. 5.5m N-S) survive as grass-covered walls (max. H 0.6m) and banks, with opposing doorways towards the W end, but all evidence of a chancel arch is now gone. A rectangular mortuary enclosure (ext. dims 5m E-W. 5m N-S) defined by masonry walls and railings obscures the E end, which could extend 4m further E (total L approximately 30m E-W). The foundations of a sacristy are evident as a grass-covered platform (dims 4.7m E-W. 4m N-S) defined by scarps (H 0.2m at E and W to 1m at N) attached to the N side of the mortuary enclosure. The font (ME043-017002-) (ibid. 351. Roe 1968, 112) is now in the grounds of Culmullin House (ME043-018001-), approximately 250m to the SSE.		
ME043-017002-	Font (former location)	CULMULLIN	Medieval	Originally located within Culmullin church (ME043-017----) (Cogan 1862-70, 2, 351), it was moved to a place by the path through the graveyard (Roe 1968, 112-3), and has now been moved to the lawn of Culmullin House (ME043-018001-), approximately 265m to the SSE. It is a plain octagonal font (dims approximately 0.6m x. approximately 0.5m. H 0.56m) but the sides are of uneven length (L 0.18-0.29m) and create an oval basin (int. dims 0.44m x 0.35m. max. D 0.2m) with a wave-like rim. The lower panels (H 0.32m) are set slightly back from the upper but they are vertical, and there is a central drain-hole.	691360, 750090	1.3km E

Appendix H Landscape

H.1 Landscape Designation Map

Filename: C:\Users\daniel.graveling\Documents\ArcGIS\Packages\Figure 1 - Landscape Designations_7B272833-DC5F-450B-B311-E1C88F787D27\v108\Figure 1 - 06_09_2021 Revision: Rev No.1 Drawn: DD Checked: DG Approved: KB Date: 15/09/2021



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LEGEND

- Site Location
- Study Area

Landscape Character Types

- Hills and Upland Area
- Lowland Landscape

Landscape Character Areas

- Exceptional Value
- High Value

Landscape Sensitivity Areas

- High Sensitivity
- Moderate Sensitivity

NOTES

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ISSUE PURPOSE

DRAFT

PROJECT NUMBER

60657534

SHEET TITLE

Landscape Designations

SHEET NUMBER

Appendix 7.1

H.2 Photomontages

Proposed Culmullin Substation

Photomontage Booklet

May 2023


Viewpoint Location Map
N
8
9
Cumulative
7
6
1
2
5
3
4

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	87.2m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	3380m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southeast		
Date / Time:	16/03/2022 13:34	Location:	E686872, N751282		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

Cumulative view

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	87.2m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	3380m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southeast		
Date / Time:	16/03/2022 13:34	Location:	E686872, N751282		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

Cumulative view

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	87.2m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	3380m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southeast		
Date / Time:	16/03/2022 13:34	Location:	E686872, N751282		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

Cumulative view

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	87.2m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	3380m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southeast		
Date / Time:	16/03/2022 13:34	Location:	E686872, N751282		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

Cumulative view

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	87.2m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	3380m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southeast		
Date / Time:	16/03/2022 13:34	Location:	E686872, N751282		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

Cumulative view

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	111.8m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	560m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	North		
Date / Time:	16/03/2022 14:27	Location:	E689925, N749414		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP01

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	111.8m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	560m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	North		
Date / Time:	16/03/2022 14:27	Location:	E689925, N749414		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP01

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

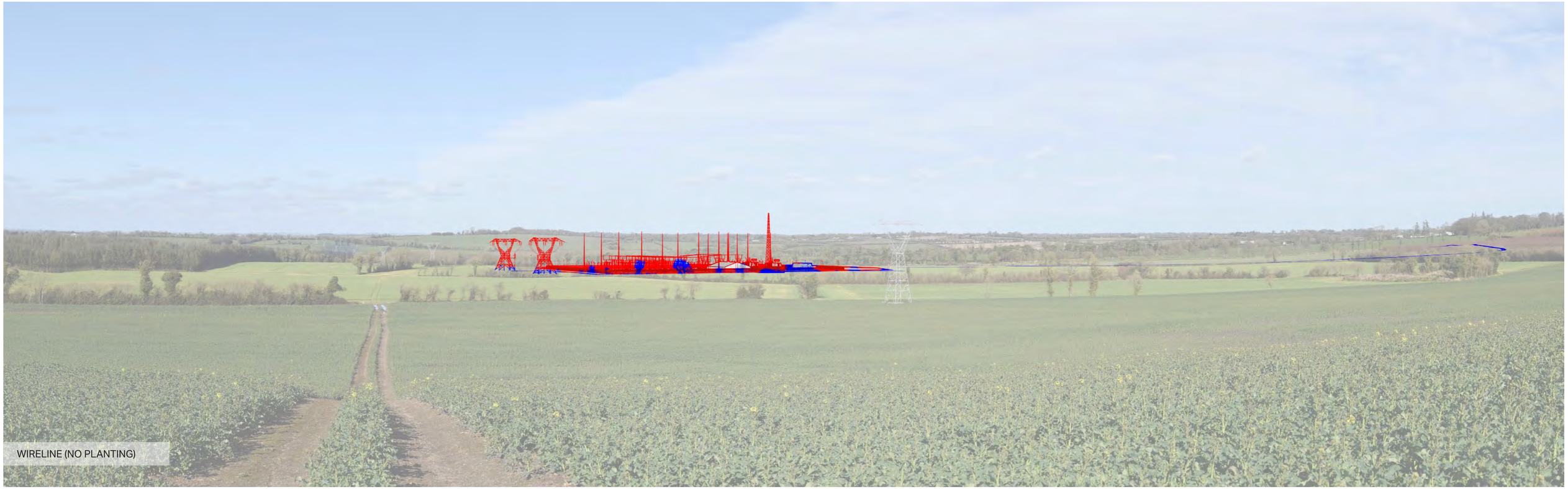
AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	111.8m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	560m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	North		
Date / Time:	16/03/2022 14:27	Location:	E689925, N749414		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP01



45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

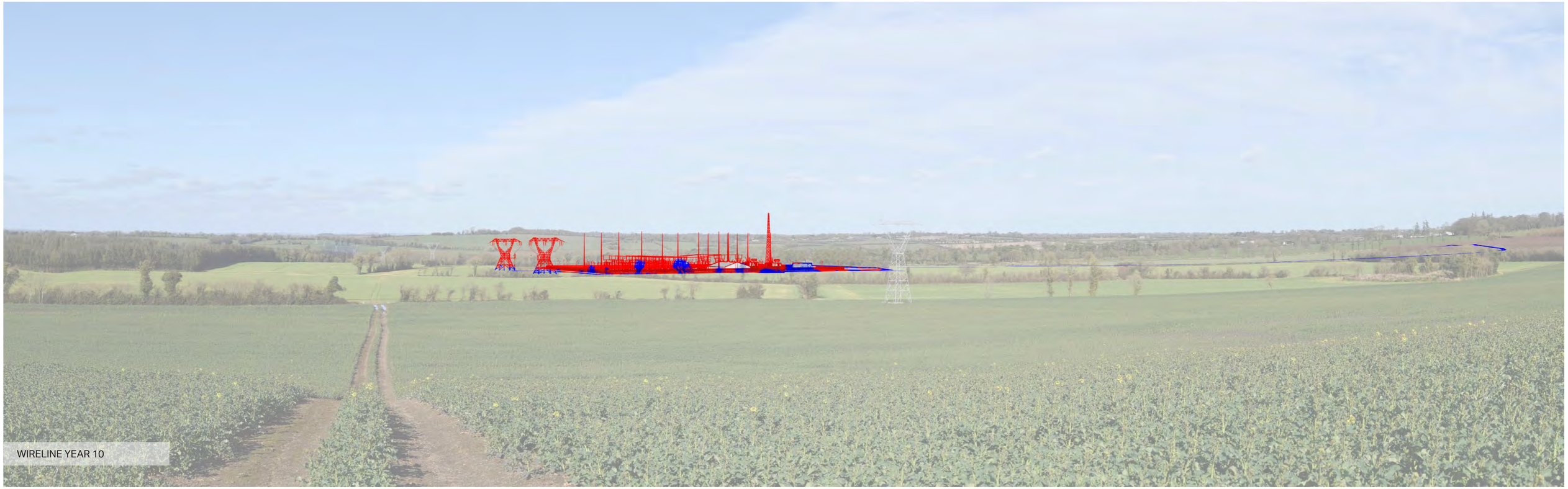
AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	111.8m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	560m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	North		
Date / Time:	16/03/2022 14:27	Location:	E689925, N749414		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP01



45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	111.8m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	560m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	North		
Date / Time:	16/03/2022 14:27	Location:	E689925, N749414		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP01

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	118.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1060m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	North		
Date / Time:	16/03/2022 12:37	Location:	E689552, N749028		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP02

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	118.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1060m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	North		
Date / Time:	16/03/2022 12:37	Location:	E689552, N749028		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP02

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	118.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1060m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	North		
Date / Time:	16/03/2022 12:37	Location:	E689552, N749028		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP02

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	118.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1060m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	North		
Date / Time:	16/03/2022 12:37	Location:	E689552, N749028		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP02

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	118.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1060m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	North		
Date / Time:	16/03/2022 12:37	Location:	E689552, N749028		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP02

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	99.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1690m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Northeast		
Date / Time:	16/03/2022 13:04	Location:	E689181 N748575		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP03

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	99.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1690m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Northeast		
Date / Time:	16/03/2022 13:04	Location:	E689181 N748575		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP03

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	99.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1690m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Northeast		
Date / Time:	16/03/2022 13:04	Location:	E689181 N748575		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP03

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	99.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1690m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Northeast		
Date / Time:	16/03/2022 13:04	Location:	E689181 N748575		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP03

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	99.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1690m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Northeast		
Date / Time:	16/03/2022 13:04	Location:	E689181 N748575		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP03

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	104.7m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2300m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Northeast		
Date / Time:	16/03/2022 12:53	Location:	E689231, N747826		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP04

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	104.7m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2300m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Northeast		
Date / Time:	16/03/2022 12:53	Location:	E689231, N747826		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP04

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	104.7m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2300m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Northeast		
Date / Time:	16/03/2022 12:53	Location:	E689231, N747826		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP04

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	104.7m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2300m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Northeast		
Date / Time:	16/03/2022 12:53	Location:	E689231, N747826		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP04

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	104.7m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2300m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Northeast		
Date / Time:	16/03/2022 12:53	Location:	E689231, N747826		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP04

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	119.7m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2030m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	West		
Date / Time:	16/03/2022 11:58	Location:	E692062, N749199		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP05

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	119.7m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2030m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	West		
Date / Time:	16/03/2022 11:58	Location:	E692062, N749199		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP05

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	119.7m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2030m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	West		
Date / Time:	16/03/2022 11:58	Location:	E692062, N749199		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP05

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	119.7m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2030m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	West		
Date / Time:	16/03/2022 11:58	Location:	E692062, N749199		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP05

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	119.7m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2030m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	West		
Date / Time:	16/03/2022 11:58	Location:	E692062, N749199		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP05

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	102.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	740m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southwest		
Date / Time:	16/03/2022 11:38	Location:	E690925, N750217		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP06

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	102.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	740m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southwest		
Date / Time:	16/03/2022 11:38	Location:	E690925, N750217		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP06

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	102.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	740m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southwest		
Date / Time:	16/03/2022 11:38	Location:	E690925, N750217		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP06

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	102.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	740m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southwest		
Date / Time:	16/03/2022 11:38	Location:	E690925, N750217		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP06

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	102.5m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	740m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southwest		
Date / Time:	16/03/2022 11:38	Location:	E690925, N750217		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP06

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	112.6m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	3020m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southwest		
Date / Time:	16/03/2022 11:17	Location:	E692976, N751237		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP07

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	112.6m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	3020m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southwest		
Date / Time:	16/03/2022 11:17	Location:	E692976, N751237		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP07

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	112.6m AOD	**Note**:	
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m	Images to be viewed at a comfortable arm's length.	
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	3020m		
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southwest				
Date / Time:	16/03/2022 11:17	Location:	E692976, N751237				

Proposed Culmullin Substation

VP07

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	112.6m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	3020m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southwest		
Date / Time:	16/03/2022 11:17	Location:	E692976, N751237		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP07

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	112.6m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	3020m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southwest		
Date / Time:	16/03/2022 11:17	Location:	E692976, N751237		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP07

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

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Visualisation Type:	3	Camera:	Nikon D750	Eye level:	104.2m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2430m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	South		
Date / Time:	16/03/2022 11:03	Location:	E691117, N752287		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP08

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

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Visualisation Type:	3	Camera:	Nikon D750	Eye level:	104.2m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2430m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	South		
Date / Time:	16/03/2022 11:03	Location:	E691117, N752287		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP08

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	104.2m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2430m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	South		
Date / Time:	16/03/2022 11:03	Location:	E691117, N752287		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP08

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	104.2m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2430m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	South		
Date / Time:	16/03/2022 11:03	Location:	E691117, N752287		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP08

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	104.2m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	2430m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	South		
Date / Time:	16/03/2022 11:03	Location:	E691117, N752287		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP08

BASELINE

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	85.1m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1775m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southeast		
Date / Time:	16/03/2022 13:48	Location:	E688993, N751514		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP09

PROPOSED (NO PLANTING)

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	85.1m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1775m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southeast		
Date / Time:	16/03/2022 13:48	Location:	E688993, N751514		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP09

PROPOSED YEAR 10

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	85.1m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1775m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southeast		
Date / Time:	16/03/2022 13:48	Location:	E688993, N751514		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP09

WIRELINE (NO PLANTING)

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	85.1m AOD
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1775m
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southeast		
Date / Time:	16/03/2022 13:48	Location:	E688993, N751514		

Note:
Images to be viewed at a comfortable arm's length.

Proposed Culmullin Substation

VP09

WIRELINE YEAR 10

45° 40° 35° 30° 25° 20° 15° 10° 5° 0° 5° 10° 15° 20° 25° 30° 35° 40° 45°

AECOM Delivering a better world

Visualisation Type:	3	Camera:	Nikon D750	Eye level:	85.1m AOD	**Note:** Images to be viewed at a comfortable arm's length.	Proposed Culmullin Substation
Projection:	Cylindrical	Lens:	Nikon fixed 50mm f/1.4G	Height of Camera:	1.6m		VP09
Enlargement Factor:	96%	Horizontal Field of View:	90°	Distance to Main Development Area:	1775m		
Paper Size:	A1(resized to A3 for EIAR)	Direction of View:	Southeast				
Date / Time:	16/03/2022 13:48	Location:	E688993, N751514				

H.3 Residential Visual Amenity Assessment

Culmullin 220kV Substation

Residential Visual Amenity Assessment

Energia Solar Holdings

Project number: 60657537
Document reference: 60657534_ACM_RP_EN_CM_004_3

21 June 2023

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Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	31 August 2022	Draft	Y	Shauna Woods	Associate Director
1	26 May 2023	Draft	Y	Bernice Cahill	Associate Director
2	16 June 2023	Final Draft	Y	Bernice Cahill	Associate Director
3	21 June 2023	Final	Y	Bernice Cahill	Associate Director

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Table of Contents

Figures

Tables

1. Residential Visual Amenity Assessment

1.1 Background

AECOM Ireland Limited have been appointed by Energia Solar Holdings (hereafter referred to as the 'Applicant') to carry out a Residential Visual Amenity Assessment (RVAA) as part of the Culmullin 220 kilo Volt (kV) Air Insulated Switchgear (AIS) substation project (hereafter referred to as the 'Proposed Development').

This RVAA considers the potential visual effects of the Proposed Development on lands at Woodstown, Co. Meath (the "Application Site") on individual and groups of residential receptors identified in the Landscape and Visual Appraisal (LVIA).

This report sets out the following:

- An overview of the Proposed Development.
- A description of the Residential Visual Impact Analysis Report.
- The Proposed Developments potential to interact with the environment following the criteria as outlined.
- A summary of findings.

This report also provides recommendations on further assessments and Mitigation that may be required. The purpose of this report is therefore to support a determination of Residential Visual Amenity in the area.

1.2 Introduction

The following report, tables and figures provide an addendum to Chapter 14 – LVIA, which assesses the potential impact experienced from locations accessible by the general public. The residential visual impact analysis provides a methodology how the potential for visual impacts on individual properties located within an approximately 1.5km radius study area of the proposed substation has been identified and assessed. A description of the Proposed Development is set out in Chapter 2 of the Environmental Considerations Report (ECR). That chapter describes the full nature and extent of the Culmullin Substation Development. A description of the existing landscape environment is contained in the Chapter 14 of the ECR. This chapter describes the landscape context and character and the landscape value.

It should be noted that this study area relates to the main elements of the development that are likely to have landscape and visual effects, most notably the proposed substation development. Other works, although not specifically referenced (including the access road and proposed passing bays on the L62051), are also included in this assessment.

The assessment area for the Proposed Development includes a small number of private residential properties within the 1km study area and some beyond. These properties are concentrated mainly along the two Cul de Sac public roads to the north and south of the Proposed Development Site. A number of properties are set back from public roads, with private access.

Site surveys have identified no residential properties within approximately 850m of the Proposed Development. Properties approximately 1km from the Proposed Development are most likely to experience some visual impacts, and that visual impact decreases with distance. Based on this, the study area for this assessment includes all relevant properties located within approximately 1km radius of the proposed substation development. These properties have been assessed in terms of potential visual impacts arising from both the construction stage and operational stage of the proposed development.

1.3 Methodology

This section describes the survey methods and assessment tools used at each stage of the chosen approach which included the following:

- Dividing the study into four main stages:
  - Initial Site Survey
  - Desktop Survey
  - Onsite Verification of Desktop Survey
  - Final Assessment.

Using aerial photography to identify Properties withing 1km of the substation boundary as well as properties lying within approximately 500m beyond the 1km study area.

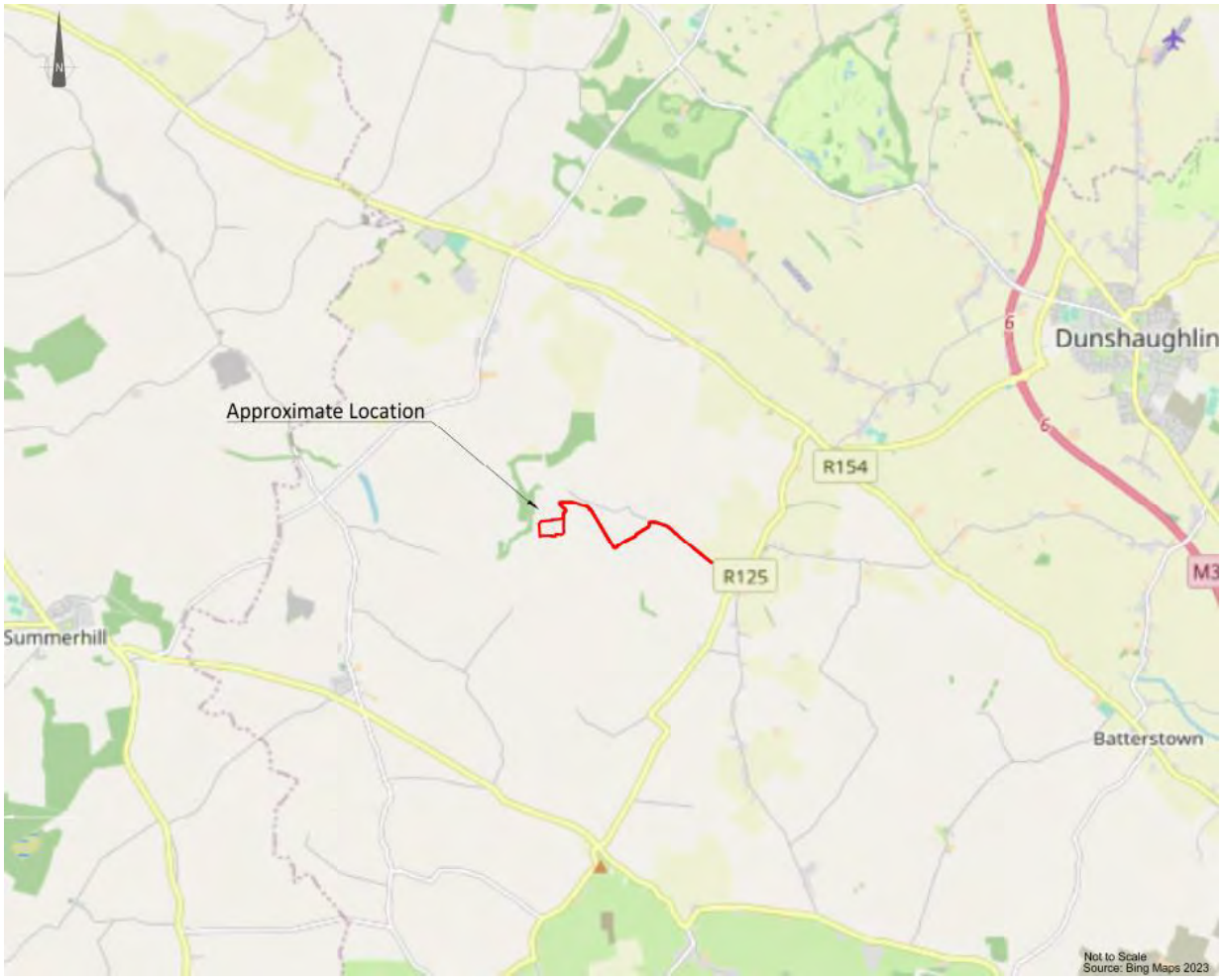
Gathering relevant documentation for assessment including:

- Google aerial mapping, notes and site photography from initial site survey, Ordnance Survey Ireland (OSI) mapping at 1:50,000.
- Preparation of survey record sheets.
- Property assessment (both desktop and onsite).
- Preparation of assessment summary and conclusions.

1.3.1 Property Categorisation

The Proposed Development will comprise a new 220 AIS substation (Culmullin 220kV Substation) looped into the existing Maynooth – Gorman 220kV OHL. The Proposed Development is located at Woodtown, Co. Meath (Figure 1-1). The redline boundary of the Proposed Development covers an approximate area of 7.3 hectares (ha), with the substation boundary covering approximately 2.24ha.

Figure 1-1: Site Location[1]



It is intended that three solar energy projects will connect to the proposed substation via underground cables with a maximum voltage of 33kV which are considered to be exempted development under Class 26 of the Planning and Development Regulations 2001, as amended. The substation is required to support, secure and transport the supply of electricity from these renewable energy developments, as part of its place on the wider solar scheme.

The Substation and grid connection will be constructed by the applicant to EirGrid specifications and ownership will be transferred to Electricity Supply Board (ESB)/EirGrid following construction. All works will be contained within the boundary of the Site (Figure 1-2).

[1] Source: Bing Maps (2023).

The Proposed Development comprises:

- A new 220kV substation compound (approximately 2.24ha) consisting of:
  - Outdoor AIS equipment rated for the system voltage of 220kV equipped with 4 number 220kV cable bays.
  - Two number single storey buildings including an EirGrid standard control building with ancillary services, and a customer Medium Voltage (MV) module.
  - Two 180 megavolt amperes (MVA) oil-filled step-down power transformers within bunded enclosures.
  - 14 lightning protection masts (25m in height).
  - A 2.6m tall palisade fence.
- Two new Line Cable Interface Mast (LCIMs), under existing OHL to facilitate the removal of a short section (approximately 60m) of the existing 220kV lines.
- Approximately 120m of new underground cables to connect the substation to the grid.
- Adjacent telecoms mast area (225m²) for substation communications between Maynooth and Gorman 220kV substations at either end of the existing 220kV OHL.
- Five passing bays on the L62051.

In addition to the above the Proposed Development will include the following:

- New site access off the L62051 and internal site access road.
- Car parking.
- Drainage infrastructure.
- All associated and ancillary site development works.

The total Proposed Development area is approximately 7.3ha, including the telecoms mast area.

Figure 1-2: Indicative Site Location and Surrounding Environment[2]

[2] Source: Google Earth (2023)

1.3.2 Residential Visual Effects Analysis Criteria

The 'Guidelines for Landscape and Visual Impact Assessment (GLVIA), 3rd Edition, 2013, Landscape Institute (UK) & IEMA' set out best practice guidance for the identification and description of visual effects which then feed into the determination of their significance. For the purposes of this Residential Visual Impact Analysis, only visual impacts are being considered. The definitions of the visual criteria used for the impact analysis are the same as for the main landscape and visual impact assessment contained in Chapter 14. The relevant criteria defining visual impacts are stated below. The significance of an effect or impact is determined by two distinct considerations:

- The nature of the RECEPTOR likely to be affected, namely:
- The susceptibility of the receptor to the type of change arising from the proposed development.
- The susceptibility to change is related to the value attached to the receptor.

The nature or magnitude of the EFFECT (or IMPACT) likely to occur, namely:

- The size and scale of the visual effect (for example, whether there is a complete or minor change to a view)
- The extent of the areas that will be affected. e.g. ground floor, upper floor, garden as well as considerations in relation to angle of view.
- The duration of the effect and its reversibility – which can be related to the nature of intervening screening.

1.3.3 Visual Susceptibility

The GLVIA guidelines identify that the susceptibility of visual receptors to changes in views and visual amenity is a function of:

- The occupation or activity of people experiencing the view at a particular location.
- The extent to which their attention or interest may therefore be focused on the views and visual amenity they experience at particular locations.

For example, residents in their home, walkers whose interest is likely to be focused on the landscape or a particular view, or visitors at an attraction where views are an important part of the experience often indicate a higher level of susceptibility. Whereas receptors occupied in outdoor sport where views are not important or at their place of work are often considered less susceptible to change. Visual susceptibility is determined with reference to the three-point scale outlined in Table 1.1.

Table 1.1 Visual Susceptibility

Susceptibility	Classification Criteria
High	Receptors for which the view is of primary importance and are likely to notice even minor change
Medium	Receptors for which the view is important but not the primary focus and are tolerant of some change
Low	Receptors for which the view is incidental or unimportant and is tolerant of a high degree of change

1.3.4 Visual Sensitivity

Sensitivity to change considers the nature of the receptor, for example a person occupying a residential dwelling is generally more sensitive to change than someone working in a factory unit. The importance of the view experienced by the receptor also contributes to an understanding of the susceptibility of the visual receptor to change as well as the value attached to the view.

A judgement is also made on the value attached to the views experienced. This takes account of:

- Recognition of the value attached to particular views, for example in relation to heritage assets, or through planning designations.
- Indicators of the value attached to views by visitors, for example through appearance in guidebooks or on tourist maps, provision of facilities for their enjoyment (sign boards, interpretive material) and references to them in literature or art.
- It is important to note that the absence of view recognition does not preclude local value, as a view may be important as a resource in the local or immediate environment due to its relative rarity or local importance.

The visual sensitivity to change is based on interpretation of a combination of all or some of the criteria outlined in Table 1.2.

Table 1.2 Visual Sensitivity of Change Criteria

Visual Sensitivity	Classification Criteria
High	Users of outdoor recreational facilities, on recognised national cycling or walking routes or in nationally designated landscapes. Residential buildings.
Medium - High	Users of outdoor recreational facilities, in highly valued landscapes or locally designated landscapes or on local recreational routes that are well publicised in guidebooks. Road and rail users in nationally designated landscapes or on recognised scenic routes, likely to be travelling to enjoy the view.
Medium	Users of outdoor recreational facilities including public open space in moderately valued Landscapes. Users of primary transport road network, orientated towards the Proposed Development, likely to be travelling for other purposes than just the view.
Medium - Low	People engaged in active outdoor sports or recreation and less likely to focus on the view. Primary transport road network and rail users likely to be travelling to work with oblique views of the project or users of minor road network.
Low	People engaged in work activities indoors, with limited opportunity for views of the Proposed Development.

Considering the nature of the proposed development to private residences, the proposed substation (within up to 1.5km distance of the site boundary), the susceptibility and sensitivity of residential receptors is considered high.

1.3.5 Magnitude of Visual Change

Visual effects are direct effects as the magnitude of change within an existing view will be determined by the extent of visibility of the proposed development. The magnitude of the visual effect resulting from the development at any particular viewpoint or receptor is based on the size or scale of change in the view, the geographical extent of the area influenced and its duration and reversibility. The variables involved include:

- The scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the development.
- The degree of contrast or integration of any new features or changes in the landscape form, scale, mass, line, height, skylining, back-grounding, visual clues, focal points, colour and texture.
- The nature of the view of the development, in relation to the amount of time over which it will be experienced and whether views will be full, partial or glimpses.
- The angle of view in relation to the main activity of the receptor, distance of the viewpoint from the development and the extent of the area over which the changes will be visible.
- The duration of the effects (short term, medium term or long term) and the reversibility of the effect (whether it is permanent, temporary or partially reversible).

The magnitude of visual effects resulting from the proposed road development at any particular viewpoint or receptor is based on the interpretation of the above range of factors and is set out in Table 1.3.

Table 1.3 Magnitude of Visual Change Criteria

Magnitude	Criteria
None	No change in the existing view
Negligible	The development will cause a barely discernible change in the existing view
Low	The development will cause very minor changes to the view over a wide area or minor changes over a limited area
Moderate	The development will cause modest changes to the existing view over a wide area or noticeable change over a limited area
High	The development will cause a considerable change in the existing view over a wide area or a significant change over a limited area
Very High	The development will cause significant changes in the existing view over a wide area or a change which will dominate over a limited area

After considering both the nature of the receptor and the nature of the effect, the significance of the effect is stated according to the following definitions set out in the table below. These effects may be adverse (negative), neutral or positive as outlined in Table 1.4.

Table 1.4 Categories of Significance of Visual Effects

Significance Category	Description of Effect
Major Beneficial Effect	The project would: • Cause a very noticeable improvement in the existing view. • Open up a new view of local landscape dominate the future view. • Greatly enhance the character (including quality and value) of the landscape in this view. • Enable the restoration of characteristic features and elements lost as a result of changes from inappropriate management or development. • Enable a sense of place to be created or greatly enhanced.
Moderate Beneficial Effect	The project would: • Cause a noticeable improvement in the existing view. • Enhance the character (including quality and value) of the landscape. • Enable the restoration of characteristic features and elements partially lost or diminished as a result of changes from inappropriate management or development. • Enable a sense of place to be restored.
Minor Beneficial Effect	The project would: • Cause a barely perceptible improvement in the existing view. This will typically occur where the viewer is at some distance from the development and the development newly appears in the view, but not as a point of principal focus. It will also occur where the development is closely located to the viewpoint but is seen at an acute angle and at the extremity of the overall view. • Complement the character (including quality and value) of the landscape in this view. • Maintain or enhance characteristic features and elements. • Enable some sense of place to be restored.
None	• No change resulting from the development
Negligible Effect (applies to both, adverse and beneficial)	The project would: • Not result in a discernible deterioration in the existing view. • Maintain the character (including quality and value) of the landscape. • Blend in with characteristic features and elements. • Enable a sense of place to be retained.
Minor Adverse Effect	The project would: • Cause a barely perceptible deterioration in the existing view. This will typically occur where the viewer is at some distance from the development and the development newly appears in the view, but not as a point of principal focus. • It will also occur where the development is closely located to the viewpoint but is seen at an acute angle and at the extremity of the overall view. • Not quite fit the character (including quality and value) of the landscape in this view. • Be at variance with characteristic features and elements. • Detract from a sense of place.
Moderate Adverse Effect	The project would: • Cause a noticeable deterioration in the existing view. • Conflict with the character (including quality and value) of the landscape in this view. • Have an adverse impact on characteristic features or elements. • Diminish a sense of place.
Major Adverse Effect	The project would: • Cause a very noticeable deterioration in the existing view. • Obstruct an existing view of local landscape and the development will dominate the future view. • Be at complete variance with the character (including quality and value) of the landscape in this view. • Degrade or diminish the integrity of a range of characteristic features and elements. • Damage a sense of place or cause a sense of place to be lost. • Cause the integrity of characteristic features and elements to be lost

2. Desktop Survey

This phase of the study primarily involved the use of Google Earth and aerial photography with the proposed substation site and properties located within approximately 1.5km of the development. OSI contour mapping at

1:50,000 were also used in the identification of visual impacts of the proposed development from individual properties within the study area. Desktop sources included:

- Google Earth Aerial Photography Season
- Google Earth Street View Photography
- Intervening Property Boundary: Wall, Hedgerow, Trees, Fence
- Nature of View: Direct (D), Filtered (F), Oblique (O), Screened (S)
- Magnitude of change at operation phase
- Impact at operation phase.

The assessment of each property commenced with an examination of Google Earth aerial photography, OSI Discover Mapping (Scale 1:50,000) covering the vicinity around the properties and wider landscape between the property and proposed development. Vegetation, topography and ancillary buildings were focused on, as these elements were found to provide considerable screening at the initial benchmark survey stage. Once the proposed substation site was identified in relation to each property, notes taken during the site survey were used to assess the local environment around the property along with the assessment of views in the direction of the development from the property. Assumptions made from the examination of Google Earth aerial photography in terms of vegetation, topography and neighbouring buildings were investigated and worst-case scenario assumptions were made in relation to building type, and heights of intervening topography, vegetation and other existing buildings (i.e., no screening, upper views from properties).

A combined total of ten individual properties were assessed, which lie within up to approximately 1.5km radius of the site. The assessment of individual private properties is based on houses identified on aerial photography and during site surveys. Where it has not been possible to access physically or visually a particular property or properties, a worst-case assessment is assumed (e.g. ground floor windows in the direction of the line, no screening vegetation). These ten properties were considered as six property clusters (refer to Table 2.1) and were highlighted for review and verification assessment onsite.

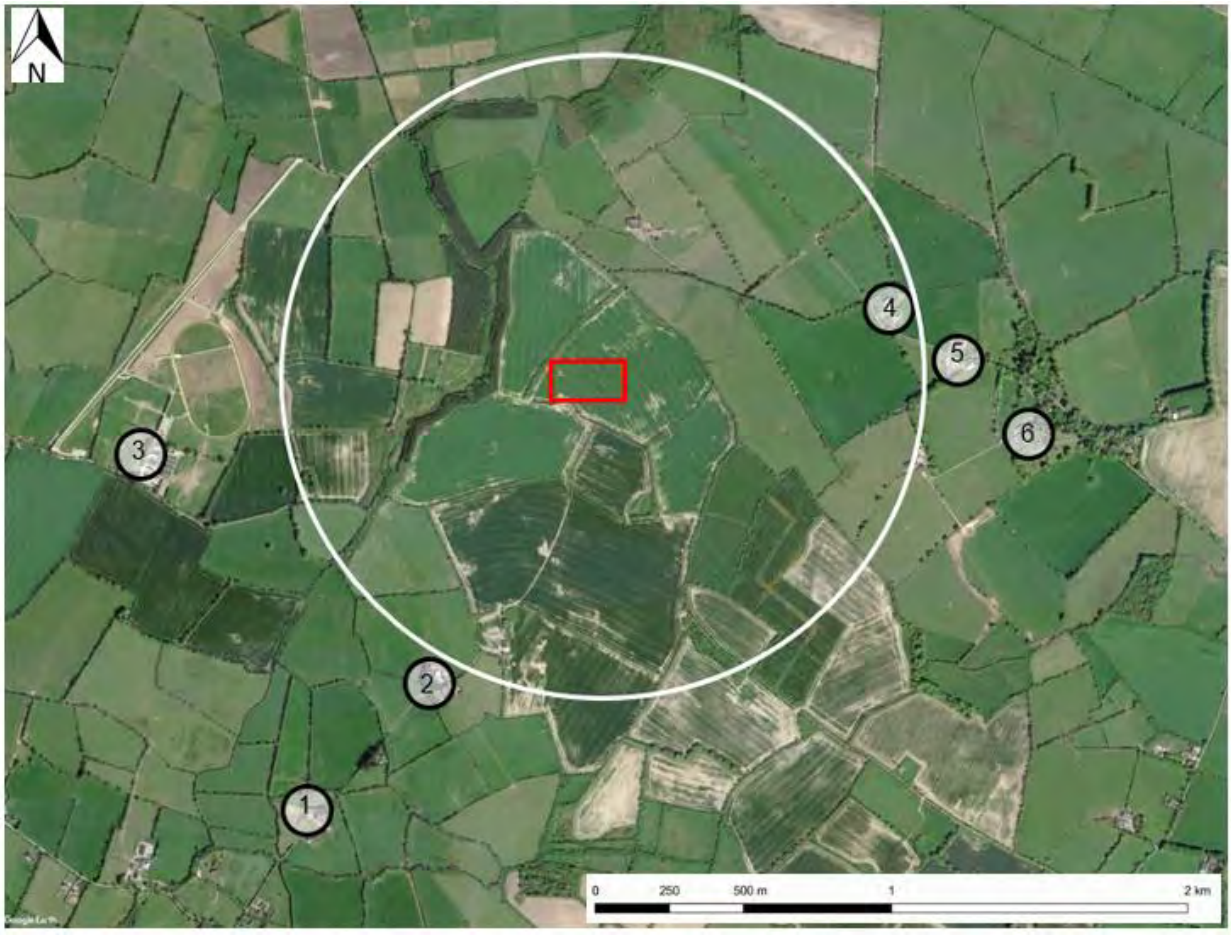


Figure 2.1 Indicative Site Location with Highlighted Surrounding Properties

Table 2.1 Properties Clusters Considered within Study Area

Map No	Summary of Properties	Approx. Distance from Site	Impact	Reason
1.	Cluster of 3 properties located along Cul de Sac to the south	Approximately 1.4km	No Impact	Fully screen due to topography
2.	Cluster of 2 properties located along Cul de Sac to the south	Approximately 1km	No Impact	Fully screen due to topography
3.	Single dwelling west	Approximately 1.2km	No Impact	Due to distance, topography and intervening vegetation
4.	Single dwelling northeast	Approximately 900m	Minor	Taller elements may be visible above intervening vegetation
5.	Cluster of 2 properties located along Cul de Sac to the northeast	Approximately 1km	Negligible	Due to distance, topography and intervening vegetation
6.	Single dwelling east	Approximately 1.2km	No Impact	Due to distance, topography and intervening vegetation

2.1 Final Assessment

The preliminary conclusions of the desktop assessment and identified properties recorded during the onsite review and verification were brought together. Considering the high susceptibility and sensitivity of the receptors, the residual visual impact ratings of 'magnitude of change' and 'significance of visual impacts (or effects)' have been concluded. Impacts at the operational phase have been assigned to properties based on a combination of the following:

- Existing intervening vegetation between the property and the Proposed Development.
- Proximity and orientation of property windows in relation to the Proposed Development.
- Predicted visibility from the property of the Proposed Development.

3. Visual Impact Summary

A total of 10 properties were assessed within the study area of the Proposed Development.

Table 3.1 Visual Impact Summary

Impact Rating	Number of properties
Negligible/Low	0
None	7
Negligible Effect	2
Minor Adverse Effect	1
Moderate Adverse Effect	0
Major Adverse Effect	0
Total	10

Table 3.2 Summary of Impact

Impact Significance	Number of properties
Significant	0
Not Significant	10
Total	10

In conclusion, the assessment has been undertaken based on views from the public road near these residential receptors and looking out from within the Application Site. Thus, further variations may occur as experienced within the grounds or property of each receptor.

Of the ten receptors assessed only one individual receptor within1.5km of the site (1km study area and properties lying within approximately 500m beyond the study area) will have a potential limited view of the Proposed Development, therefore a total of one out of ten properties or 10% will experience a minor adverse visual impact that is, according to the definitions used in this report. This will typically occur where the development obstructs an existing view of local landscape, that is, the development will not be prominent or dominate the future view due to its distance to the receptor (0.9km) and the nature of views experienced by the receptor.

The majority of properties will experience no visual impact or negligible visual impact, that is. where a development causes no or a barely perceptible deterioration in existing views or will not be a point of principal focus.

The changes resulting from the Proposed Development while noticeable, will not alter the character of the existing view.

Appendix I Traffic and Transport Statement

Culmullin 220kV Substation

Traffic and Transport Assessment

Energia Solar Holdings

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Quality information

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Table of Contents

Figures

Tables

1. Introduction

1.1 Background

This Transport Statement (TS) has been prepared by AECOM Ireland Limited (AECOM) on behalf of Energia Solar Holdings Limited (herein referred to as the 'Applicant').

The Applicant is a subsidiary of Energia Group, who are a major all-Ireland energy provider and infrastructure investor across renewable technologies.

This document presents the likely traffic and transport impacts associated with the 220 kilo Volt (kV) Air Insulated Switchgear (AIS) substation project, named Culmullin 220kV Substation (hereafter referred to as the 'Proposed Development').

Additional information on the Proposed Development is outlined in the following sections.

1.2 Site Location

The Site of the Proposed Development is located at Woodtown, Co. Meath (Coordinates: 53°29'33.15"N 6°38'37.32"W). The R154 (regional road) (Trim Road) is approximately 2.9 kilometers (km) north, R125 is approximately 2.5km east, R156 is approximately 3.3km south and the L2207 local road is approximately 2.7km to the west. Refer to Figure 1.1

The nearest residential settlements (towns and villages) to the Site are Summerhill, approximately 6km to the southwest, Trim approximately 12km to the northwest, Dunshaughlin, approximately 7km to the northeast, Dunboyne approximately 13.5km southeast.

The redline boundary of the Proposed Development covers an approximate area of 7.3 hectares (ha), with the substation boundary covering approximately 2.24ha, and the telecoms mast compound which is separate to the substation is 225m^2.

Figure 1.1 Site Location

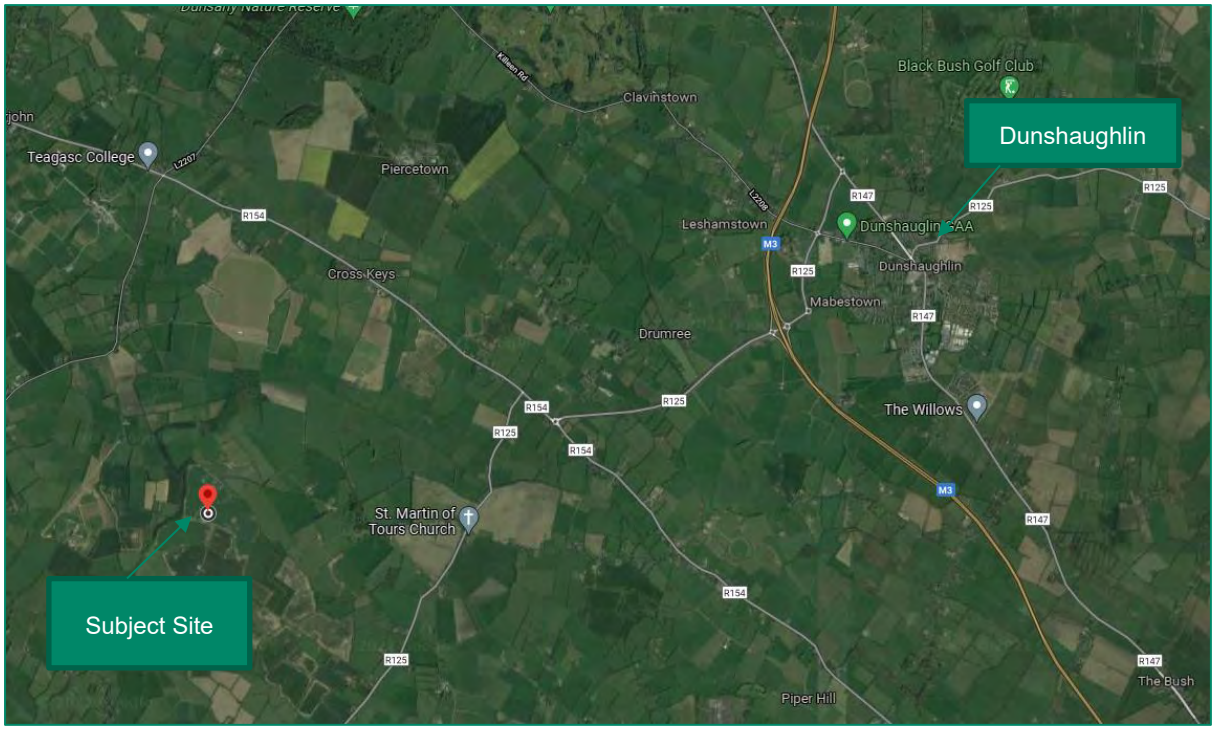

Figure 1.2 Indicative Site Location and Surrounding Areas

The Proposed Development will comprise a new 220kV AIS substation, named Culmullin 220kV Substation, looped into the existing Maynooth – Gorman 220kV overhead line (OHL) directly to the west. The Proposed Development is located at Woodtown, Co. Meath.

It is intended that three solar energy projects will connect to the proposed substation via underground cables with a maximum voltage of 33kV which are considered to be exempted development under Class 26 of the Planning and Development Regulations 2001, as amended. The substation is required to support, secure and transport the supply of electricity from these renewable energy developments, as part of its place on the wider solar scheme. Batterstown Clay Pigeon Club (CBC) shooting range is located approximately 750m to the north of the Site. The Maynooth-Gorman 220kV OHL transacts the Site to the east in a north to south direction.

The Substation and grid connection will be constructed by the applicant to EirGrid specifications and ownership will be transferred to Electricity Supply Board (ESB)/EirGrid following construction. All works will be contained within the boundary of the Site.

The Proposed Development comprises:

- A new 220kV substation compound (approximately 2.24ha) consisting of:
  - Outdoor AIS equipment rated for the system voltage of 220kV equipped with 4 number 220kV cable bays.
  - Two number single storey buildings including an EirGrid standard control building with ancillary services, and a customer Medium Voltage (MV) module.
  - Two 180 megavolt amperes (MVA) oil-filled step-down power transformers within bunded enclosures.
  - 14 lightning protection masts (25m in height).
  - A 2.6m tall palisade fence.
- Two new Line Cable Interface Mast (LCIMs), under existing OHL to facilitate the removal of a short section (approximately 60m) of the existing 220kV lines.
- Approximately 120m of new underground cables to connect the substation to the grid.
- Adjacent telecoms mast area (225m²) for substation communications between Maynooth and Gorman 220kV substations at either end of the existing 220kV OHL.

- Five passing bays on the L62051.

In addition to the above the Proposed Development will include the following:

- New site access off the L62051 and internal site access road.
- Car parking.
- Drainage infrastructure.
- All associated and ancillary site development works.

The land is predominately flat with hedgerows delineating field boundaries. One-off housing and agricultural buildings are present in the wider vicinity.

The Site is currently not zoned for development within the Meath County Development Plan (CDP) 2021-2027. The Site is zoned 'Rural Area' (RA), with the zoning objective – '*to protect and promote in a balanced way, the development of agriculture, forestry and rural-related enterprise, biodiversity, the rural landscape, and the built and cultural heritage'*.

The Site is not within or in the vicinity of a European Designated site. The nearest European sites are the River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA, c. 9.5km to the north-west of the Site.

1.3 Programme and Construction Activities

The exact programme of works is yet to be finalised, but it is expected that:

- Application is made for Planning Permission in Q3 of 2023.
- Commence site enabling and construction works in Q4 of 2024 (subject to planning permission).
- Completion of construction and commissioning in Q4 of 2026.

Construction activities will include the following elements as shown in Table 1.1.

Table 1.1: Main Construction Elements and Associated Activities

Element	Description of activities
Site Preparation and Enabling Works	Site establishment. Site clearance works. Construction of temporary site drainage. Bulk earthworks including excavation and removal of topsoil/soil and berm construction. Minor earthworks at passing bay locations. Infilling of material for internal access road, site compound and laydown area. Landscaping/reinstatement.
Underground Cables	Trenching and installation of underground cables, cable joint bays and pulling pits. Installation of the associated above ground infrastructure (cable marker posts, communication boxes and access points).
LCIM Construction Loop-in	The site preparation required for the loop-in OHL will be limited with minimal site clearance required. Excavation and berm construction. Pouring of concrete foundations for mast structures. Backfill and tower body installation.
Substation Construction	Pouring of concrete foundations (potentially piling works if required). Erection of steel frame and cladding walls and roofs for any required buildings. Permanent foul and surface water drainage works. Installation of above ground and underground cabling. Electrical installation, commissioning and operation. Other miscellaneous civil works including erection of fencing, provision of site entrance, paving etc.

Construction activities will gradually phase out from pre-construction followed by commissioning and testing of the Substation and equipment. It is expected that the number of construction workers required throughout the duration of the construction phase will peak at approximately 50 persons (peak during construction). It is anticipated that the construction of the Proposed Development will be completed during normal construction hours i.e., 07.00 to 19.00, Monday to Friday and 08.00 to 13.00 on Saturday.

The proposed programme for the Culmullin works will be approximately 24 months from initial enablement works through to commissioning. It is expected that the civil works will take approximately 2-3 months, with a further

four weeks estimated for cable installation, jointing and testing and reinstatement. Construction works associated with the Substation will be 20 to 24 months.

An Outline Construction Environmental Management Plan (CEMP) is included as part of this planning application. All environmental protection measures contained within the ECR will be incorporated into a detailed Construction Environmental Management Plan (CEMP) by the appointed Contractor. Prior to commencement of construction works the contractor will draw up detailed Method Statements which will be informed by this Outline Construction Methodology, environmental protection measures included within the planning application, measures proposed within the CEMP, and the guidance documents and best practice measures to be implemented in full during the construction phase.

1.4 Materials Transportation

Access to the substation site is currently provided via an existing informal farm track. New access from the public road (R125), though the local L62051, will be provided, connecting to the new internal site road

Construction materials will be brought to site by road along the R125 and via the access road through the current farm access(off the L62051). Temporary access tracks will be constructed by stripping surface soils, placing geotextile reinforcement at subgrade level followed by a layer of granular material in accordance with the specification to form a working surface for vehicle. Roadside drains within the temporary works area will be culverted and check dams made from stone or sandbags covered with terram will be inserted upstream and downstream of these culverts to intercept any solids generated during the works.

Construction materials will be transported in clean vehicles and lorries/trucks will be properly enclosed or covered during transportation of friable construction materials and spoil to prevent escape of material along the public roadway.

1.5 Legislation Policy and Guidance

The following is a list of sources of information consulted for use in this chapter.

- Meath County Development Plan (CDP) 2021-2027.
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022).
- Guidelines on the Information to be Contained in Environmental Impact Statements, 2002.
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements, 2003.
- Traffic Signs Manual, (Department of Transport, Tourism and Sport, August 2019).
- PE-PDV-02045, Transport Assessment Guidelines, (TII, May 2014).
- PE-PAG-02016, Project Appraisal Guidelines for National Roads Unit 5.2 – Data Collection (Transport Infrastructure Ireland, October 2016).
- PE-PAG-02017, Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (Transport Infrastructure Ireland, May 2019).
- PE-PAG-02039, Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts (Transport Infrastructure Ireland, October 2016).
- DN-GEO-03031, Rural Road Link Design (Transport Infrastructure Ireland, June 2017).
- DN-GEO-03060, Geometric Design of Junctions (Priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions (Transport Infrastructure Ireland, June 2017).
- The Design Manual for Urban Roads and Streets, (Department of Transport, Tourism and Sport, May 2019).
- National Development Plan (Department of Public Expenditure and Reform, February 2018).

2. Traffic Impacts of Proposed Development

2.1 Existing Road Network

The subject Site is located in between the road networks of the M3 and M4 motorways. These motorways can be accessed through the R125 and the R156. Further details of these roads are listed below.

2.1.1 R125

The R125 is a single lane regional road. The R125 connects the R154 to the R156 within the study area the carriage way width is approximately 5.5m with no existing footpaths, cycle lanes or lighting column. The R125 is not a bus route. The R125 facilities access to a number of residential properties and farms. The speed limit along the R125 is 80km/hr.

2.1.2 R156

The R156 is a single lane regional road that connects the R158 to the L2215. Within the study area the carriageway width is approximately 6m with no existing footpaths, cycle lanes or lighting column. The R156 is not a bus route. The R156 facilities access to a number of residential properties and farms. The speed limit along the R156 is 80km/hr.

2.1.3 M3

The M3 is situated north of the proposed development and is approximately 26 metres in width. The M3 connects the M50 in Dublin to Kells Co. Meath the M3 is a dual lane motorway with a speed limit of 120km/hr. The M3 runs in a northwest direction from Dublin. There are no designated cycle lanes within the environs of the M3 and all junction to and from the M3 are non-signalised slip road junction points. There is no motorway lighting located along the M3, instead motorists depend on ‘cat’s eyes’ at evening and night travel time.

2.1.4 M4

The M4 is situated south of the proposed development and is approximately 26m in width. The M4 connects the M50 in Dublin to Kinegead county Westmeath the M4 is a dual lane motorway with a speed limit of 120km/hr. The M4 runs in a west direction from Dublin. There are no designated cycle lanes within the environs of the M4 and all junction to and from the M4 are non-signalised slip road junction points. There is no motorway lighting located along the M4, instead motorists depend on ‘cat’s eyes’ at evening and night travel time.

2.2 Traffic Generation Numbers and Expected Traffic Volumes at the Site

Construction of the site is anticipated to take 24 months additional traffic movements are expected to peak at 80 vehicles per day, with 30 of those movements being Heavy Goods Vehicle (HGV). All construction related traffic will be managed in accordance with the Construction Traffic Management Plan.

2.3 Summary

Overall, it is considered that the traffic generations will be low due to the nature of the proposed site. Furthermore, the peak traffic generated by the development will be during the construction period and negligible traffic when the site is in operation will be created, as this would be for occasional maintenance traffic

3. Measures to Influence Travel to the Site

3.1 Walking Infrastructure

There are no footways in the vicinity of the Proposed Development site access or along the R125. Within the extents of the study area no footpaths are located in the rural environs situated near the Site. Due to the nature of the development, there are unlikely to be any trips to the site by foot.

3.2 Cycling Infrastructure

There are no designated cycling facilities provided within the extent of the study area. Due to the nature of the Proposed Development, there are unlikely to be any trips to the site by bicycle.

3.3 Mitigation Measures

As part of embedded mitigation, the Proposed Development includes improvement works on the L62051. These works will involve the construction of five passing bays on the L62051. The locations of these improvements will be spaced at appropriate intervals so as to reduce the distances between two-way sections and passing bays, and in order to allow opposing drivers to see each other in sufficient time to give way at one-way.

A Construction Traffic Management Plan (CTMP) will be developed in consultation with Meath County Council (MCC), the Applicant and other stakeholders should consent be granted. Likely headings to be included in a CTMP would include but is not limited to the following.

Mitigation Measures for the site include but are not restricted to the below.

- An agreed route for construction traffic.
- An Abnormal Load Assessment (ALA) for any abnormal loads including horizontal swept path analysis and mitigation measures, if required, for any identified pinch points on the delivery route. The assessment will also consider escort arrangements and relevant signage.
- The necessary agreements and timing restrictions for construction traffic, for example Monday to Friday working only, prohibition during school drop off and pick up times and prohibition during loading times at commercial premises.
- Details of a proposed condition survey on access routes.
- Proposals for maintenance of the agreed routes for the duration of the construction phase.
- Proposals for monitoring and agreeing maintenance costs.
- Route signage.
- Maintaining access to commercial/business premises. For example, temporary accommodation works and additional information signage.
- Details of the advanced notification to the general public warning of any construction transport movements, specifically abnormal loads.
- Preparation of a travel plan for staff.
- Details of information road signage warning road users of construction traffic movements.
- Arrangements for regular road maintenance and cleaning, e.g. road sweeping in the vicinity of the site access point as necessary, wheel cleaning/dirt control arrangements.
- Contractor speed limits.
- Community and emergency services liaison details.

Further mitigation measures to reduce the traffic impact of the development construction would also be considered subject to further investigation and landowner agreements. These include:

- The use of Park and Share facilities for construction staff.
- The promotion of electric vehicles for general car/van access.

4. Summary and Conclusions

The Proposed Development will utilise the existing regional road network, comprising the R125 and R156 for the proposed development construction activities. Traffic volumes associated with the proposed development are low in number and relate primarily to the delivery of construction equipment and materials and cable installation operations. The implementation of an approved traffic management plan will minimise the potential for traffic and transport impacts during construction activities and the residual impact will be negligible.

The Proposed Development will be maintained throughout its design life and periodic upgrading undertaken over a long lifetime to meet future demand and upgrade in technology. If the Proposed Development is no longer required over the long term, then full decommissioning in accordance with prevailing best practice will be undertaken.

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