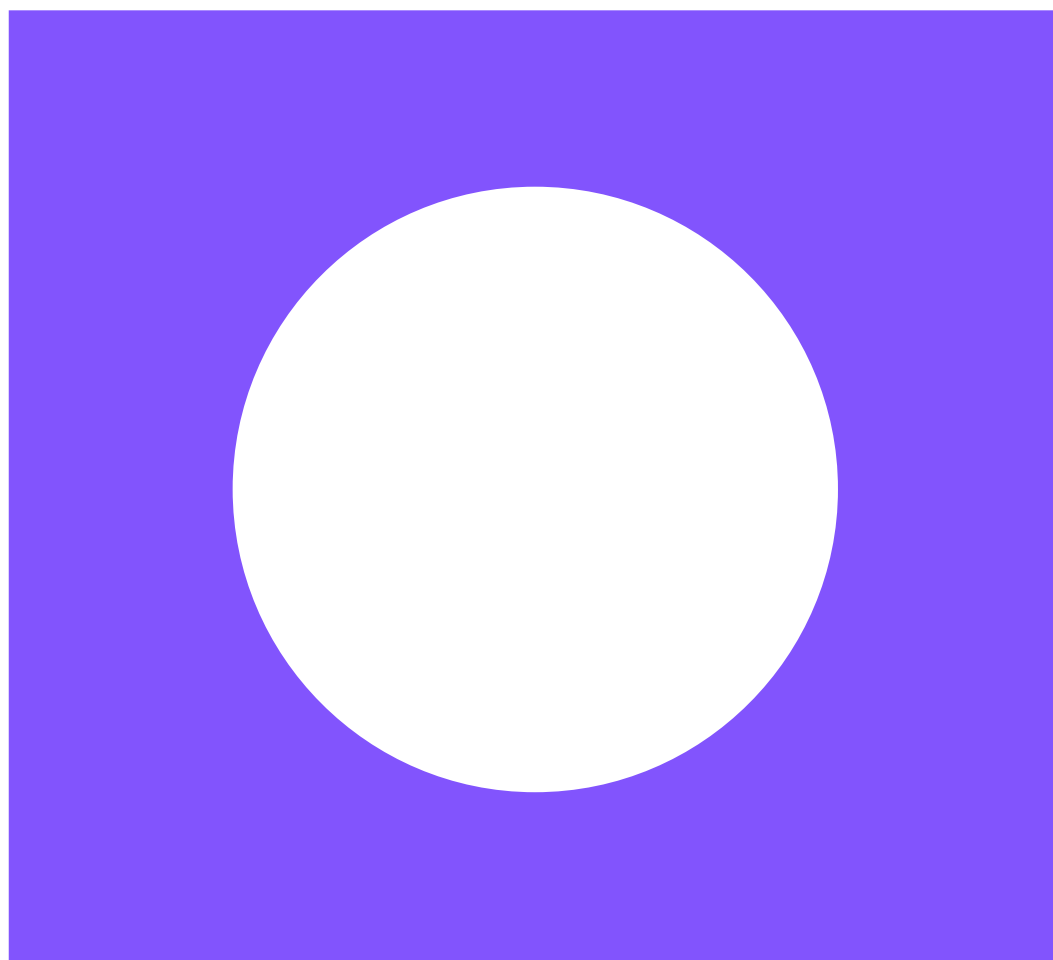




Walterstown 110 kV Substation

Planning and Environmental Considerations
Report

January 2026

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Walterstown 110 kV Substation

Planning and Environmental Considerations Report

January 2026

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Glossary of Terms

Term	Definition
AA Screening Report	This is a report prepared to inform an Appropriate Assessment of Natura 2000 sites as required under the EU Habitats Directive which presents information on the assessment and the process of collating data on a project and its potential significant impacts on European site(s).
Construction Compound	A temporary facility to be used during the Construction Phase for the storage and marshalling of bulk materials and equipment as well as welfare facilities for construction personnel.
Construction Phase	This Phase includes the physical building of the Proposed Development including site preparation and access works, establishment of construction compounds as well as installing infrastructure for the Proposed Development. Some commissioning activities may be undertaken during this Phase including testing and certification.
Electricity Supply Board	The ESB owns and operates assets across the electricity market, from generation, through transmission and distribution to supply
Planning and Environmental Considerations Report	This is a non-statutory report providing a description of the planning and environmental context and considerations, including sufficient information to allow the competent authorities to predict potential environmental effects as a consequence of the Proposed Development and undertake a balanced assessment on the appropriateness of the application, in accordance with the proper planning and sustainable development of the area.
The Proposed Development	Walterstown 110 kV Substation

Glossary of Abbreviations

Abbreviations	Definition
AA	Appropriate Assessment
ACP	An Coimisiún Pleanála (formerly An Bord Pleanála)
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
DSO	Distribution System Operator
EIA	Environmental Impact Assessment
EnCoW	Environmental Clerk of Works
EPA	Environmental Protection Agency
ESB	Electricity Supply Board
ESBN	Electricity Supply Board Networks
GIS	Gas Insulated Switchgear
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicles
ISEP	Institute of Sustainability and Environmental Professionals
LDV	Light Duty Vehicles
MCC	Meath County Council
NDP	National Development Plan
NPF	National Planning Framework
NPO	National Policy Objectives
NSO	National Strategic Outcomes
P&D	Planning & Development
PECR	Planning and Environmental Considerations Report
PSCP	Project Supervisor Construction Stage
PSDP	Project Supervisor Design Process
RPC	Regional Policy Context
RSES	Regional Spatial and Economic Strategy
RWMP	Resource and Waste Management Plan
TAO	Transmission Asset Owner
TE	Tailte Éireann
TII	Transport Infrastructure Ireland
TMP	Traffic Management Plan
TSO	Transmission System Operator
UE	Uisce Éireann

1 Introduction

1.1 Project Overview

Mott MacDonald Ireland Limited (Mott MacDonald) has been appointed by the Electricity Supply Board to prepare this Planning and Environmental Considerations Report (PECR) to accompany a planning application for a new 110 kV/38 kV/MV Gas Insulated Switchgear (GIS) substation located in the townland of Walterstown, Dunboyne, County Meath.

The Electricity Supply Board, hereafter referred to as ESB or '*the Applicant*', is required to submit a strategic infrastructure development application to An Coimisiún Pleanála (formerly An Bord Pleanála) under Section 182A of the Planning and Development Act 2000 (as amended) for the project.

1.2 About the ESB

ESB was established in 1927 as a statutory corporation in the Republic of Ireland under the Electricity (Supply) Act 1927. With a holding of 97%, ESB is majority owned by the Irish Government with the remaining 3% held by the trustees of an Employee Share Ownership Plan.

The ESB owns and operates assets across the electricity market, from generation, through transmission and distribution to supply. In addition, ESB provides associated services such as supplying gas, using its networks to carry fibre for telecommunications and developing electric vehicle public charging infrastructure.

ESB provides approximately 28% of electricity generation capacity in the Irish all-island market and supplies electricity to approximately 1.3 million customers. The ESB Group employs approximately 10,000 people.

ESB's mission is to bring sustainable and competitively priced energy solutions to its customers, and its vision is to be Ireland's foremost energy company competing successfully in the all-island market.

ESB Networks are the business unit operating in the regulated market. ESB Networks for Net Zero strategy explains how ESB Networks will help achieve the Government's Climate Action Plan and support the decarbonisation of the electricity system by 2040.

1.3 Overview of the Proposed Development

The Proposed Development is located off Jarretstown Lane, in the townland of Walterstown, Dunboyne, County Meath.

The Proposed Development will consist of the construction of a 110 kV/ 38 kV/ Medium Voltage (MV) electrical substation and will include the following:

- Construction of 1 no substation compound (c. 5650sqm) securely enclosed' with 2.6m high palisade fencing and gates, containing:
 - 1 no. 110 kV Gas Insulated Switchgear (GIS) building (c. 707sqm footprint; c. 12m in height);
 - 1 no. 38 kV Gas Insulated Switchgear (GIS) building (c. 232sqm footprint; c. 7m in height);

- 2 no. Bundled 110 / 38 kV Transformers (c. 5m in height) with associated electrical equipment, 2 no. Bundled 38 kV/ MV Transformers (c. 5m in height) with associated electrical equipment;
- 2 no. fire walls (c. 5.5m height by c. 5m length) separating the 110 / 38 kV Transformers and 38 kV/ MV Transformers;
- 3 no. bundled Arc Suppression Coils (c. 4m high) with associated electrical equipment;
- Neutral earth resistor (c. 2m height) and neutral earth switch (c. 3.9m high);
- 2 no. 110 kV double circuit Line Cable Interface Masts (LCIM) (c. 17m high);
- Concrete post and rail fence (1.4m high);
- Underground cabling between the 110 kV GIS building and the new Line Cable Interface Masts (LCIM);
- Dismantling of 1 no. existing 110 kV Overhead Line timber poleset (c. 20m height);
- Diversion of the existing 110 kV Dunfirth-Kinnegad-Rinawade overhead line to connect to the new Line Cable Interface Masts (LCIM) and,
- All associated site development works including provision of new site entrance, internal access, lighting poles (c. 4m height), 3 no. lightning monopoles measuring c.15m high, 1 no. Emergency, stand-by Diesel Generator, telecommunications, landscaping, site services including drainage and all other ancillary works.

The existing Dunfirth-Kinnegad-Rinawade 110 kV transmission circuit, to the south of the site, will loop into the new Walterstown 110 kV substation.

A full description of the Proposed Development is set out in Chapter 3 of this report.

1.3.1 Need for the Proposed Development

The expansion and improvement of Ireland's electricity network is crucial to delivery Ireland's Climate Action Plan and net zero by 2050 initiative. As part of ESB's parallel ambition of Net Zero by 2040, several new substations are being developed.

The ESB, as the Distribution System Operator (DSO), has identified emerging needs for additional capacity at transmission interface stations at a number of areas within the country. This capacity is needed to accommodate forecast growth of electricity demand in the distribution network. This projected demand growth is driven by several factors including residential, electrification of heat and transport and growth in commercial sectors. The significant electricity demand growth in the distribution system also leads to a significant pressure on the transmission system, particularly at existing transmission substations and the associated transmission circuits. The existing transmission substations and the associated transmission circuits are at risk of reaching their capacity limits and as a result the existing infrastructure will not be capable to supply.

The driver for the subject specific project is to add capacity to the network and improve distribution security of supply for the surrounding areas. This includes in relation to the proposed expansion of the Irish Rail Dart+ West electrification programme, which aims to modernise and improve existing rail services in the Greater Dublin Area. The proposed 110/38 kV station at Walterstown, which is to be located directly beneath an existing overhead line and within an existing circuit, will also feed 8 no. 38 kV DART stations which will support the modernisation and improvement of rail services in the wider area. Additionally, the existing Coolmine 38 kV station and the existing Leixlip 38 kV station will be transferred to the proposed new Walterstown station from the Finglas rural loop and the Griffinrath BSP respectively, reducing the load feed on both networks. Provision for a new MV busbar will facilitate connections at MV in the area and possible offloads from Macetown and from Moneycooley (which are both 20 kV).

The need for this project thus arises from a lack of capacity at existing transmission substations and transmission circuits to supply the increased demand that the DSO (ESB Networks) has forecasted across the country.

The benefits of the Project include:

Security and reliability of supply – Building a more resilient and reliable electricity grid helps ensure that everyone has power when and where they need it. The Proposed Development will add capacity and improve distribution security of supply for the surrounding area as increased electricity users are connected to the grid. This will ensure that the transition away from fossil fuels will not be affected by insufficient infrastructure.

Sustainability – The Proposed Development will provide required capacity to the transmission and distribution system in the area, ensuring the network can sustain the transition to increased focus on electricity usage that will come as the transition to increased reliance on renewables continues. This is a vital step towards transitioning Ireland to a low carbon electricity future.

Meet future needs – This infrastructure and improvements will help to meet the growing and changing electricity needs of the surrounding and wider area. This includes the electrification of transport systems, vehicles and heating, the requirements of large energy users and the development of housing and offices.

Economic – These critical upgrades will help strengthen our economy, encouraging and supporting future investment.

1.4 Legislative Context

The following section provides an overview of the legislative context relevant to the Proposed Development.

1.4.1 Planning and Development Act 2000, as amended and Pre- application Consultation with An Coimisiún Pleanála

Section 182A of the Planning and Development Act 2000 (as amended), (hereafter referred to as 'The Act', states that "(1) Subject to subsection (1B) and section 182AA, where a person (hereafter referred to in this section as the "undertaker") intends to carry out development comprising or for the purposes of electricity transmission, (hereafter referred to in this section and section 182B as "proposed development"), the undertaker shall prepare, or cause to be prepared, an application for approval of the development under section 182B and shall apply to the Board for such approval accordingly."

In accordance with Section 182E of the Act, ESB therefore formally wrote to An Coimisiún Pleanála (ACP – formerly An Bord Pleanála) on 7th August 2024 and requested a written determination from the Board (ACP Ref. ABP-320535-24), as to whether or not the proposed development was considered Strategic Infrastructure Development under Section 182A of the Planning and Development Act 2000, as amended.

By letter dated 31 October 2024, ACP subsequently advised the ESB that following consultations, the Board "is of the opinion that the proposed development falls within the scope of Section 182A of the Planning and Development Act 2000, as amended. Accordingly, the Board has decided that the proposed development would be strategic infrastructure within the meaning section 182A of the Planning and Development Act 2000, as amended. Any application for approval for the proposed development must therefore be made directly to An Bord Pleanála under section 182A (1) of the Act." A copy of this determination is included with the planning application documentation as Appendix 1.2 of this PECR.

This determination also states that this correspondence suffices as the pre-application consultation with An Coimisiún Pleanála. In this regard, the pre-application consultation process was considered closed on the 31 October 2024.

1.4.2 Opinion on Requirement for Environmental Impact Assessment

The requirement for Environmental Impact Assessment (EIA) has its origins in Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment. This Directive has been amended three times and was codified by Directive 2011/92/EU in 2011. Directive 2011/92/EU was then subsequently amended by Directive 2014/52/EU in 2014. The primary objective of the EIA Directive is to ensure a high level of protection of the environment and human health, through the establishment of minimum requirements for environmental impact assessment (EIA), prior to development consent being awarded, of public and private developments that are likely to have significant effects on the environment.

In determining the requirement for EIA, the Directive differentiates between the projects that always require EIA and those for which an EIA may be required. These projects are listed in Schedule 5 Part 1 and Part 2 of the Planning and Development Regulations (2001), as amended.

Part 1 Projects: These are projects which are considered as having significant effects on the environment and require a mandatory EIA.

Paragraph 20 of Part 1:

“Construction of overhead electrical power lines with a voltage of 220 kilovolts or more and a length of more than 15 kilometres.”

The Proposed Development includes installation of a new 110 kV substation and new underground cables. The Proposed Development also includes the realignment of the existing Dunfirth-Kinnegad-Rinawade 110 kV OHL to the new Line Cable Interface Masts within the substation compound. The Proposed Development does not include installation of 220 kV overhead lines. Therefore, the Proposed Development does not fall within paragraph 20 of Part 1 of Schedule 5 of the Planning and Development Regulations (2001), as amended, and an EIA is not automatically required.

Part 2 Projects: These are projects where competent authorities have to decide whether an EIA is needed. This is done by the “*screening procedure*” which determines the effects of projects on the basis of either thresholds/criteria or case by case examination. In general, the projects listed in Part 2 are those not included in Part 1 and which may be considered to have a lesser environmental impact. Notwithstanding, the most relevant classes of development in Schedule 5, Part 2 are discussed below.

Paragraph (1)(a) Agriculture, Silviculture and Aquaculture:

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

The Proposed Development works will require less than 4km of field boundary to be removed. Additionally, the overall Proposed Development site at Walterstown substation is approximately 3.6 hectares. As such, an EIA is not required under Part 2 paragraph (1)(a).

Paragraph 3(b) Energy Industry:

“Industrial installations for carrying gas, steam and hot water with a potential heat output of 300 megawatts or more, or transmission of electrical energy by overhead cables not included in Part 1 of this Schedule, where the voltage would be 200 kilovolts or more.”

The Proposed Development includes construction of a new 110 kV GIS substation and installation of new underground cables. It also includes construction of two new LCIMs and the realignment of a relatively short section of existing 110 kV OHL to the new LCIMs. The Proposed Development is not an industrial installation. Whilst it is an installation for the purposes of transmission of electrical energy by overhead cables, the proposed voltage of the development relates to 110 kV, which is below the threshold of 200 kilovolts specified in paragraph 3(b). As such, an EIA is not required under Part 2 paragraph 3(b).

1.4.3 Appropriate Assessment Screening Opinion

A Report for the Screening of Appropriate Assessment (Document Reference 229101684-MMD-01-XX-RP-C-002) accompanies this planning application submission. The assessment investigates the potential for significant effects arising from the proposed works on the Special Conservation Interests (SCIs) and Qualifying Interests (QIs) of European sites within the Natura 2000 network.

The assessment considers whether the proposed works, either alone or in combination with other projects or plans, will have a significant effect on these European sites.

The AA Screening concluded that there is no potential for significant effects on European sites in the absence of mitigation from the proposed works.

1.5 Consultation and Engagement

1.5.1 Pre-application Consultation with Meath County Council

A pre-application meeting was held with Meath County Council (MCC) on 11 November 2025 (reference PP2025/380C). This meeting was attended by Meath County Council, ESB and Mott MacDonald and an overview of the proposed development, need for the proposed development and status of the current application was discussed.

MCC acknowledged the proposed development complies with the land use zoning on site. Matters discussed related EIA screening, and the achievement of the required sightlines for the proposed new access onto the local road, landscape and visual assessment, and ecological surveys and inputs within and around the site.

An overview on the EIA screening for the proposed development is set out in Section 1.4.1. A sightline drawing is submitted as part of this planning application (planning drawing 229101684-MMD-00-XX-DR-C-0150), which illustrates that the required sightlines at the proposed new entrance onto the local road, can be achieved. Chapter 8 of this PECR discusses the ecology surveys undertaken and well as providing a biodiversity assessment, and Chapter 12 provides an assessment of landscape and visual impacts. An AA Screening report is also submitted as part of this planning application.

1.6 Structure of the PECR

The structure of this PECR is as set out in Table 1.2.

Table 1.1: Structure of this PECR

Chapter No.	Chapter Title
1	Introduction
2	Planning Policy and Land Use Context
3	Description of the Proposed Development
4	Population and Human Health
5	Air Quality
6	Climate
7	Noise and Vibration
8	Biodiversity
9	Surface water Resources and Flooding
10	Land, Soil, Geology and Hydrogeology
11	Architecture, Archaeology and Cultural Heritage
12	The Landscape
13	Traffic and Transport
14	Material Assets and Waste Management
15	Summary Conclusion
16	References

The list of appendices to the PECR is provided below.

- Appendix 1.1 Team Credentials
- Appendix 1.2 SID Determination
- Appendix 2.1 Planning History in Respect of Relevant Development
- Appendix 3.1 Surface Water Management Plan
- Appendix 3.2 Uisce Éireann Confirmation of Feasibility for Water Connection
- Appendix 5.1 Construction Dust Assessment Methodology
- Appendix 12.1 Photomontages
- Appendix 12.2 Landscape and Ecological Mitigation Plan

This planning application is supported by the following documentation:

- Report to Inform Screening for Appropriate Assessment
- Construction Environmental Management Plan (CEMP)
 - Construction Resource and Waste Management Plan (Appendix A to the CEMP)
 - Construction Traffic Management Plan (Appendix B to the CEMP)

2 Planning Policy and Land Use Context

2.1 Introduction

The need for the Proposed Development is supported by policies and objectives outlined at all levels of the planning hierarchy, including at European, national, regional and local level. This section provides an overview of these and outlines how they align with the Proposed Development. Additionally, this section outlines the land use and zoning context of the proposed site, relative to the Meath Development Plan 2021-2027. It also details the planning history of the proposed site and surrounding area.

2.2 International and European Policy Context

Ireland is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) (January 1992). This framework is the international legal framework for addressing change at a global level. The ultimate objective of the Convention is to stabilise global greenhouse gas (GHG) concentrations. Ireland's target is part of the EU pledged target of a reduction in domestic GHG emissions of at least 40%, by 2030, compared to 1990 levels.

The following section provides a high-level outline of specific EU policies/ initiatives aimed at supporting the continued drive towards adaptation to climate change, energy efficiency and renewable energy, with a view towards achieving a downward trend in emissions and an improvement in climate change resilience.

2.2.1 Energy Roadmap 2050

The Energy Roadmap 2050 was published in 2012 by the European Commission. The Roadmap explores how the energy system can transition to a lower carbon system, in line with the targets for reducing greenhouse gases – as outlined in the Renewable Energy Directive. In addition, the Roadmap also explores opportunities for increasing competitiveness and supply. Four main routes were identified in this roadmap for achieving a more sustainable, secure, and complete energy system by 2050:

- Energy Efficiency
- Renewable Energy
- Nuclear Energy
- Carbon Capture and Storage

The Energy Roadmap highlights that while the energy system in Europe needs to adapt to respond to the climate emergency and the wider global economy, security of supply in the transitional period, including the need for additional infrastructure, will be vital to ensure energy targets for 2050 can be achieved.

Project Response

The Proposed Development represents the type of additional infrastructure outlined in the Roadmap as being required to support security of supply. The Proposed Development will provide required capacity to the transmission and distribution system in the area, ensuring the network can sustain the transition to increased focus on electricity usage that will come as the transition to increased reliance on renewables continues.

2.2.2 EU Clean Energy Package

The Clean Energy Package (CEP) Regulation was adopted by the EU in 2019 and proposes an adaptation of the European energy policy framework to facilitate the transition away from fossil fuels toward cleaner energy. This regulation is centred around five key pillars; energy security, energy markets, energy efficiency, decarbonisation of the economy and innovation and research.

This CEP states that stronger infrastructure networks will result in *“better and safer energy markets”*, noting that whilst the EU has the most secure electricity grid in the world, action is still required to ensure the grid is fit to support the transition to a clean energy market. It is further noted that *“electricity projects will become increasingly important for the integration of renewable energy across borders”*, particularly as the move towards a high renewable scenario continues.

Project Response

The Proposed Development aligns with the aims of the Clean Energy Package as it will provide for substation infrastructure which is required to strengthen the grid as the transition to renewables continues. The Proposed Development will add capacity and improve distribution security of supply for the surrounding area as increased electricity users are connected to the grid. This will ensure that the transition away from fossil fuels will not be affected by insufficient infrastructure.

2.2.3 The European Green Deal & Fit for 55

The European Green Deal, published by the European Commission in 2019, sets out a plan of action to make the EU's economy sustainable by turning climate and environmental challenges into opportunities across all areas of policy, in a way that is fair and inclusive. The European Green Deal is the new growth strategy for an EU economy that is sustainable, cleaner, safer, and healthier.

In respect of the Proposed Development, it is noted that in order to transition to a low carbon energy market, large-scale infrastructure and public and private investment will be required to ensure the European electricity network can withstand the ongoing effects of climate change.

In July 2021, the Commission put forward the Fit for 55 package, a wide-ranging set of proposals to revise and update EU climate and energy legislation to ensure that EU policies are in line with the new EU objective established by the Climate Law. Additional Fit for 55 proposals were published in December 2021. The package notes that many sectors will be continuing electrification measures which are crucial to achieving emission reductions, requiring continued investment in electricity infrastructure.

Project Response

The Proposed Development will provide for electricity grid infrastructure which will support the network as increased energy users are connected. This is aligned with the European Green Deal as it will strengthen the network, ensuring it can withstand the increased climate pressures and continue to support the transition away from carbon intensive generation and toward increased electrification.

2.2.4 RePower EU

In March 2022, in response to the invasion of Ukraine, the EU published a communication (COM/2022/108) which called on member states to treat the planning, construction and operation of renewable energy projects, their connection to the grid and the related grid itself to

be “*in the overriding public interest and in the interest of public safety*” and to qualify for the most favourable procedure available in the planning system.

In this respect, it is noted that the electricity grid will need to be ready to support the increase in renewable energy connections.

Project Response

The Proposed Development will support the ambitions of RePower EU as it will provide for a new 110 kV Substation, which will ensure sufficient capacity on the electricity grid as electricity demand increases. This demand will increase as other sectors, particularly transport, increase the roll out of electrification. As such, the Proposed Development will be vital in ensuring the aims of RePower EU can be met.

2.2.5 Revised Renewable Energy Directive (EU)2023/2413

Directive (EU) 2023/2413 amends Directive (EU) 2018/2001 (commonly referred to as REDII), Regulation (EU) 2018/1999 and Directive 98/70/EC, as regards the promotion of energy from renewable sources, and repeals Council Directive (EU) 2015/652. The Revised Directive was adopted on 09 October 2023 and entered into force on 20 November 2023. The revision of REDII forms part of the EU ‘Fit for 55’ package and provides legislative alignment with the EU’s updated commitments to reducing greenhouse gases and increasing the amount of renewable energy in the EU’s energy mix.

On the 7th August 2025, the provisions of the REDIII Directive (2023/2413) were transposed into Irish law. RED III introduces a new binding renewable energy target of at least 42.5% of gross final consumption of energy by 2030 for the EU, while also aiming for a target of 45% of the share of energy from renewable sources by 2030. The Directive also includes sector specific targets for renewables in heating and cooling, transport, industry, buildings and district heating/cooling, along with a framework promoting electric vehicles and smart recharging.

REDIII focuses on the statutory timelines for the granting of renewable energy projects.

Project Response

The Proposed Development aligns with the aims of RED as it will provide for added capacity and improved Distribution Security of Supply to the electricity network. The Proposed Development will thus ensure the grid is in a position to accommodate increased energy users that will come as a result of RED being implemented. As more sectors transition to using electricity generated from renewable sources, the Proposed Development will ensure the electricity network can accommodate the increased demand.

2.3 National Policy Context

2.3.1 Project Ireland 2040 – First Revision of National Planning Framework

The First Revision of the National Planning Framework was approved by both houses of the Oireachtas on 08 April 2025 and represents the first revision of the document since its original publication. This version incorporates amendments arising from both public consultation and environmental assessments.

The revised NPF notes that the population of Ireland is expected to increase by up to 1 million during the period between 2022 and 2024, and if this growth is not managed sufficiently then this will place additional demands on the built and natural environment. The revised NPF retains the National Strategic Outcomes provided in the extant NPF, with NSO 8 Transition to a Low Carbon and Climate Resilient Society noting that future national investment will be shaped by

the national commitment to “reduce greenhouse gas emissions by 51% and increase the share of electricity generated from renewable sources to 80% over the decade (2021 – 2030)”. It also notes that “New energy systems and transmission grids will be necessary for a more distributed, renewables-focused energy generation system, harnessing both the considerable on-shore and off-shore potential from energy sources such as wind, wave and solar and connecting the richest sources of that energy to the major sources of demand.”

In addition to the above mentioned NSO, the revised NPF again provides a number of National Policy Objectives to guide development and investment. In relation to electricity development, the following are noted:

National Policy Objective 66 The planning system will be responsive to our national environmental challenges and ensure that development occurs within environmental limits, having regard to the medium and longer-term requirements of all relevant environmental and climate legislation and the sustainable management of our natural capital.

National Policy Objective 69 Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions as expressed in the most recently adopted carbon budgets.

National Policy Objective 70 Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a zero-carbon economy by 2050.

National Policy Objective 71 Support the development and upgrading of the national electricity grid infrastructure, including to support the delivery of renewable electricity generating development.

Project Response

The Proposed Development will provide for a new 110 kV substation that will ensure that there is sufficient grid infrastructure in place to accommodate the projected population growth and the increased demand this will place on the energy network. In addition to accommodating the increased demand, the Proposed Development will ensure there is sufficient capacity in the network to accommodate increased renewable energy flows that will connect to the network in the coming years, which will support NPOs 70 and 71.

In respect of NPO 66 and 69, this PECR provides a comprehensive overview of how the Proposed Development has been designed within environmental limits and how it will interact with its surrounding environment.

2.3.2 National Development Plan 2021-2030 (including 2025 Review)

The National Development Plan (NDP) accompanies the National Planning Framework and sets out investment priorities that will underpin the overall implementation of the NPF. The NDP highlights that “*Extensive efforts have been made to ensure that the NDP will support the Government’s climate ambitions*”, and that in the context of the energy sector “*The long-term objective is to transition to a net-zero carbon, reliable, secure, flexible and resource-efficient energy services at the least possible cost for society by mid-century*”.

The NDP further highlights that NSO 8 ‘Transition to a Low Carbon and Climate Resilient Society’, is central to all areas of development and reiterates the sustainable energy targets that will see the share of renewable energy increase to 80% nationally, in tandem with a reduction in the use of fossil fuels.

The NDP acknowledges that State Owned Enterprises are expected to invest over €16 billion into the transmission and distribution grid, to facilitate a higher percentage of renewable energy to the grid. The following is noted under Strategic Investment Priorities – SOE Investment:

“Significant expansion and strengthening of the electricity transmission and distribution grid onshore and offshore, including transmission cables and substations, to link renewable electricity generation to electricity consumers and to accommodate higher levels of renewables on the electricity system and reinforcement of the natural gas network by our system operators EirGrid, ESB Networks and Gas Networks Ireland.”

The NDP also notes that electricity demand is rapidly increasing due to the electrification of other sectors and the increase in large energy users, and coordinated investment into “an expanded and strengthened electricity transmission and distribution network” will be required.

National Development Plan Review 2025

The National Development Plan 2025 was published in July 2025 and sets out departmental capital ceilings to 2030 and overall capital investment out to 2035. The NDP Review notes that population growth is a significant driver for capital investment, and a total of €3.5 billion in equity has been earmarked for energy projects that will facilitate the realisation of Ireland’s housing targets. It further notes that electricity grid infrastructure is an investment priority.

Project Response

The Proposed Development is aligned with the aims of the National Development Plan (and subsequent review) as it will add capacity and improve distribution security of supply for the surrounding area. This will ensure that the electricity grid in the area can accommodate large energy users (particularly the Irish Rail Dart + West project that was approved by An Coimisiún Pleanála in July 2024), and compensate for the transfers of the existing Coolmine 38 kV station and the existing Leixlip 38 kV station to a different loop. In this regard, the Proposed Development will ensure that the electricity grid is in a position to support the population, public transport infrastructure requirements and housing growth in the area, ensuring the aims of the National Development Plan can be met.

2.3.3 Integrated National Energy and Climate Plan (NECP) 2021-2030

In accordance with the Governance of the Energy Union and Climate Action Regulation, Ireland’s draft updated National Energy and Climate Plan (NECP) 2021-2030 was submitted to the European Commission in July 2024. It outlines the country’s energy and climate policies in detail for the period from 2021 to 2030 and looks onwards to 2050. This NECP incorporates the Commission’s feedback on the 2023 draft as well as feedback from two consultations. The NECP collates the policies, measures and actions related to energy and climate outlined in a range of government plans: such as the Climate Action Plan, the National Development Plan, and Project Ireland 2040, into one cohesive document. It also presents modelling that illustrates Ireland’s current trajectories toward its three main European targets.

The NECP covers five energy dimensions:

- Decarbonisation
- Energy efficiency
- Energy security
- Internal energy markets
- Research, innovation and competitiveness

The INECP notes that one objective of the plan is to *“Ensure that the network operators (Electricity Supply Board (ESB) Networks and EirGrid) plan network and deliver on connecting renewable energy sources to meet the 2030 80% RES-E target”*, stating that key elements of the electricity infrastructure are required to ensure an energy resilient landscape. It also states that upgrades to the grid are urgently required to meet the renewable targets, and that *“Renewable hubs involve the anticipatory building of substations”*.

Project Response

The Proposed Development will support the INECP in that it will provide for a new substation, which is specifically called out as being required to support the transmission grid in the transition to increased reliance on renewable energy. The Proposed Development will ensure there is sufficient capacity on the grid to accommodate additional new demand loads in the area, ensuring that the transmission grid secure as additional electricity users are connected to the grid.

2.3.4 Climate Action Plan

The initial Climate Action Plan was published in 2019, building on the policy framework of National Mitigation Plan and Project Ireland 2040. The Climate Action Plan is integral to the National Development Plan and illustrates how climate solutions are central to the country's social and economic development. Following the enactment of the Climate Action and Low Carbon Development (Amendment) Act 2021 (Climate Act 2021) each CAP sets out a roadmap of actions on how it will achieve the commitment to 2030 emission reduction targets, increasing the proportion of electricity from renewable sources to 80% and reaching net zero by 2050.

Updates to the initial CAP have been prepared in 2021, 2023, 2024 and 2025 (CAP25 was approved by Government in April 2025). To support the above ambitions, the plan outlines a number of actions that are relevant to the Proposed Development as set out in each CAP, post the enactment of the Climate Act 2021, these are discussed below.

CAP21

It is acknowledged in CAP21 that *“additional electricity generation and transmission infrastructure will be a critical enabler to achieve our renewable energy and emissions targets”* and is subsequently listed as a target for the electricity sector *“Expand and reinforce the grid – through the addition of lines, substations, and new technologies”* (p. 96).

The following is listed under Supporting measures for the electricity sector: *“The electricity system will be strengthened through advanced building/upgrading of the grid and supporting infrastructure at key strategic locations, addressing regions that are likely to see an increased requirement based on projected increases in renewable generation connecting to the system. The building of new substations, associated infrastructure and new technologies will also be incorporated, along with strategic upgrading of existing substations, to ensure efficient long-term and timely development of the system”* (p.99).

CAP23

CAP23 was launched on 21 December 2022, with the supplementary Annex of Actions published in March 2023. The plan implements carbon budget and sectoral emissions ceilings that were introduced in 2022.

Under the measure - Accelerate Renewable Electricity Generation, the following is stated as a measure to meet the challenge of meeting sectoral emissions in the electricity sector, *“strengthen the electricity system by upgrading the network and building supporting infrastructure at key strategic locations”* (p.137)

CAP24

CAP24 acknowledges that *“the deployment rates of renewable energy and grid infrastructure required to meet the carbon budget programme for electricity is unprecedented and requires urgent action across all actors to align with the national targets”* (p.154) and that the delivery of additional grid infrastructure will be needed in order to achieve the emission targets between now and 2030. In a similar nature to CAP23, the following measure under Accelerate Renewable Electricity Generation is stated:

“Most fundamentally, significant investment is needed in the transmission and distribution systems to maximise the usage of renewable electricity and to reduce constraints and congestion on the system. System Operators and the CRU must ensure the timely investment in, and delivery of, the required electricity network infrastructure, including key priorities such as the North South Interconnector, to meet the targets set out in this, and subsequent, Climate Action Plans” (p.166).

CAP 25

CAP25 is the final CAP of the first five year Carbon Budget and acknowledges that *“a renewables-led system is at the core of Ireland’s plan to radically reduce emissions in the electricity sector”*, and this will require rapid deployment of renewable energy and related infrastructure, including the development and upgrading of electricity grid infrastructure. In this regard, CAP25 notes that works to reinforce the electricity grid will be required to ensure it has the capacity to accommodate the increased power flows that will come as a result of the CAP 25.

Whilst the accompanying annex of actions only provides high level strategic actions, it does note that increased renewable capacity is among the KPIs under the theme electricity.

Project Response

The Proposed Development is aligned with the provision of CAP as it comprises of a new substation that is required to facilitate increased capacity and distribution security or supply for the surrounding area. This is required to ensure the system can accommodate the Irish Rail Dart + project, and other projects with high electricity demand that will come onto the grid in the coming years. As such, the Proposed Development will ensure the transition to a renewable led system will not be constrained by insufficient infrastructure and inadequate capacity.

2.3.5 Policy Statement on Security of Energy Supply

The Department of the Environment, Climate and Communications (DECC) published the Policy Statement on Security of Electricity Supply in November 2021. This statement set out a number of updates to national policy to further align them with the commitments made in the Programme for Government relating to the electricity sector, planning authorities and developers. The policy statement also sets out the background to the risks to maintaining the security of supply, which includes significant projected growth in electricity demand from large energy users.

The policy statement acknowledges that the development of new electricity generation is a national priority and should be supported to ensure electricity supply is supported and the national targets of achieving 80% renewable electricity generation by 2030 is facilitated. In this regard, the Policy Statement outlines that the Government has approved that *“it is appropriate for additional electricity transmission and distribution grid infrastructure, electricity interconnection and electricity storage to be permitted and developed in order to support the growth of renewable energy and to support security of electricity supply”*.

Project Response

The Proposed Development will provide for a new 110 kV substation, which is required to cater for new loads in the area and increased electrification. The Proposed Development will also ensure sufficient capacity is embedded into the transmission system to ensure the increased renewable generation connections can be supported. In this regard, the Proposed Development represents a direct response to the Policy Statement, as grid development such as the proposed is identified as being required to support the growth of renewable energy.

2.3.6 Government White Paper - Ireland's Transition to a Low Carbon Energy Future 2015-2030

The Government White Paper entitled Ireland's Transition to a Low Carbon Energy Future 2015-2030 sets out a framework to guide Ireland's energy policy development and actions that the Irish Government intends to take in the energy sector up to 2030 and 2050. The framework responds to national and European climate change objectives. The framework outlines that a *'radical transformation of Ireland's energy system is required to meet our climate change objectives'* to result in a low carbon energy system by 2050. The framework further outlines that this low carbon future will involve:

- Generating our electricity from renewable sources of which we have plentiful indigenous supplies
- Increasing the use of electricity and bioenergy to heat our homes and fuel our transport
- Increasing the Biofuels Obligation and improving take-up of zero and low carbon vehicles such as electric and natural gas vehicles
- Adopting new technologies as they emerge

It is hoped that this *'radical transformation'* will result in an 80%-90% reduction in greenhouse gas emissions from 1990 levels, in combination with a diversification of energy supply during the transition to greater reliance on energy from renewable sources.

In this regard, the White Paper outlines that maintaining electricity networks is essential to ensure that the grid remains safe and secure and is capable of meeting the increased demand.

Project Response

The Proposed Development directly aligns with the White Paper in that it will provide for a new substation which will increase capacity on the grid, allowing it to support the increase of electricity connections that will come as the ambitions of the White Paper are realised. The Proposed Development will ensure that the transmission and distribution system can safely maintain capacity when economic and population growth place increased demand on the system.

2.3.7 National Adaptation Plan

Ireland's first statutory National Adaptation Framework (NAF) was published in January 2018 and sets out the national strategy to reduce the vulnerability of the country to the negative effects of climate change and to avail of positive impacts. The NAF identifies 12 key sectors sectoral adaptation plans are to be prepared, including the Electricity and Gas Networks Sector which is discussed herein.

Electricity & Gas Networks Sector Climate Change Adaption plan

The first Adaptation Plan (AP) for the energy networks (electricity and gas) sector, has been prepared under the National Adaptation Framework and was approved on 22 October 2019.

The AP recognises “*that the energy sector is essential to the functioning of a modern economy and is a key enabler to all other economic activities*”, and that significant negative impacts on the economy and citizens can come as a result of disruptions or reductions in the supply of energy. It is acknowledged that while the energy sector is a large contributor to climate change, it is also at risk with potential consequences for both energy resources and the sustainability of the infrastructure.

It is also stated that flooding is the main risk to the transmission system, noting that fallen trees, high winds and increased temperatures also pose a risk to all infrastructure.

Project Response

Chapter 9 of this PECR provides an overview of the surface water and flooding assessments undertaken in respect of the Proposed Development. This chapter concludes that no flood risk mitigation measures are required due to the proposed drainage design and surface water management system.

2.3.8 Energy Security Package 2023

Published by the Government in November 2023, Energy Security in Ireland to 2030, outlines a new strategy to ensure energy security in Ireland for this decade, while ensuring a sustainable transition to a carbon neutral energy system by 2050. This report forms part of a wider Energy Security Package which aims to ensure energy is affordable, sustainable, and secure while also considering the risks to oil, natural gas, and electricity availability.

The report outlines that “*Ireland’s current energy system presents several risks in ensuring uninterrupted availability of energy sources*”, and that these risks will evolve as the energy system transitions to a renewables-based system. These include risks to supply, sudden increase in demand, under delivery of targets, attack and cyber security risks, climate change and investment.

To support Ireland’s energy system against the above outlined risks, the Security Package outlines a number of actions. The following action is considered relevant to the Proposed Development:

Action 11: To ensure a fit-for-purpose electricity grid that supports Ireland’s energy and climate ambition

Action 11 acknowledges that the electricity grid and network is the most important component of the energy system, and that it is essential for ensuring that all new electricity generation, both renewable and conventional, is able to connect to the electricity grid as soon as the generation is available. It notes that expanding the network will be essential to achieving decarbonisation targets, particularly as the shift toward electrification continues to accelerate.

Project Response

The Proposed Development will provide a new substation that is required to ensure sufficient capacity on the grid to accommodate increased power flows and renewable connections. This will ensure that the network is secure and reliable, especially during the transition to a low carbon system. In support of Action 11, the Proposed Development represents a crucial component of the electricity network that is required to accommodate the continued growth of the region, assisting in maintaining undisturbed supply as new high energy users (such as Irish Rail Dart + project) and renewable connections are connected to the grid.

2.3.9 National Energy Security Framework (2022)

The Government published the National Energy Security Framework in April 2022, responding to the State's energy security needs in the context of the war in Ukraine, which highlighted vulnerabilities in Ireland's energy security of supply policy. The Framework outlines the structures which are in place within Government to monitor and manage national energy supplies, as well as the plans which are in place to deal with energy security emergencies, should they arise.

The Government's response to the impacts on the security of supply as a result of the war in Ukraine are based upon those of the European Union - phasing out fossil fuels sourced from Russia, whilst seeking to ensure security of energy supply. The national response is set out under three themes:

- Managing the impact on consumers and businesses
- Ensuring security of energy supply in the near term
- Reducing our dependency on imported fossil fuel in the context of phasing out Russian energy imports across the EU

This document provides a number of responses, and whilst focused on government and fiscal actions, the requirement to ensure a responsive and secure energy system is noted as being a recurring theme.

Project Response

The Proposed Development will directly support the ambitions of the framework as it will assist in facilitating Ireland's security of electricity supply. The Proposed Development will provide for a new 110 kV substation which is required to capacity and improve Distribution Security of Supply for the surrounding area. This will assist in ensuring that the distribution of electricity to homes and business will not be affected by increased strain on the system caused by the growth of the region and the increased renewable electrification.

2.4 Sectoral Policy Context

2.4.1 Shaping our Electricity Future Roadmap Version 1.1

In response to the Climate Action Plan 2019, Shaping our Electricity Future was initiated by EirGrid to establish a roadmap for achieving the national targets for renewable energy and was published in November 2021 after a period of stakeholder engagement.

The roadmap outlines activities required across networks, operations, markets, and stakeholders to meet national targets, and these commit to maximising the existing grid and replacing existing assets. The roadmap further outlines that the transmission system will have to be able to respond to the increase in demand over the period to 2030, and that this will require additional grid infrastructure such as substations, pylons and cables.

In 2023, EirGrid released an updated version of Shaping our Electricity Future Roadmap - Version 1.1. The main objective of this updated version is to ensure the grid is in a position to accommodate increased amounts of renewable energy in line with the national climate change targets (under Climate Action Plan 2023) and carbon emission limits that have been published since the original Roadmap in 2021. In order to respond to the changes required to meet these targets, the Roadmap outlines that the grid will need to be "*stronger and more flexible*" in order to carry energy from renewable sources, and that, the existing grid will be used where possible – although it is acknowledged that new infrastructure will be required.

Project Response

The Proposed Development will support the Roadmap in that it will provide for a 110 kV substation that will maximise capacity on the existing network. It is noted within the Roadmap that substations are among the grid infrastructure required to address the demand up to 2030. In this regard the Proposed Development will support the grid as electrification programmes are rolled out, and as renewable generation is connected, by providing distribution security and required capacity.

2.4.2 ESB Strategy 2024 – Driven to Make a Difference: Net Zero by 2040

Strategy 2040 builds upon ESB's 2017 Brighter Future Strategy and provides a strategy toward achieving net zero by 2040. The strategy was developed in line with ESB's Strategy Framework to ensure consistency across the organisation and sets a target of net zero emissions by 2040. The strategy outlines three strategic objectives, which are core to achieving this net zero target:

- Decarbonised Electricity: Develop and connect renewables to decarbonise the electricity system by 2040
- Resilient Infrastructure: Provide resilient infrastructure for a reliable low carbon electricity system
- Empowered Customers: Empower, enable and support customers and communities to achieve net zero

The Strategy notes that one of the targets is to increase the amount of renewable energy connected to the network by more than 22GW by 2030. In this regard, it is noted that *"electricity networks are playing an increasingly important role in enabling the mass adoption of low carbon technologies including heat pumps, electric vehicles and microgeneration, and the connection of large volumes of renewable generation"*. Furthermore, it is noted that ensuring the electricity network is robust and stable will be vital in ensuring security of supply and to underpin widespread electrification of transport and heating.

Project Response

The Proposed Development represents the type of infrastructure required to strengthen the electricity network as noted within the Strategy. The Proposed Development will provide for a 110 kV substation which will add additional capacity to the grid, particularly to support the proposed expansion of the Irish Rail Dart+ West electrification programme. As such, the Proposed Development will reinforce the grid in this area, ensuring it is not negatively impacted by the increase in load demand connections.

2.4.3 EirGrid Ten-Year Generation Capacity Statement 2023-2032

The Generation Capacity Statement (GCS) is an annual report from EirGrid. Following a methodology set out by the energy regulator the Commission for the Regulation of Utilities (CRU) in Ireland, the GCS examines the balance between electricity demand and supply in Ireland for a period of 10 years.

The GCS predicts a capacity deficit over the coming 10 years, partly due to increase in electricity demand noting that by 2030 there will be significant new additional load from the heat and transport sectors as they are electrified, in line with government targets set out in the Climate Action Plan 2023.

As this increased electricity demand is expected to continue in line with government priorities, it is noted that there is a need to plan for additional grid infrastructure such as substations.

Project Response

The Proposed Development will provide for a 110 kV substation, which is explicitly called out within the GCS as being a type of infrastructure required to strengthen the system to support the ongoing electrification of other sectors. The Proposed Development is required to support the proposed expansion of the Irish Rail Dart+ West electrification programme and address the capacity issues that will come as the existing Coolmine and Lexlip substations are transferred to a different loop.

2.4.4 All- Island Resource Adequacy Assessment 2025-2034

The All-Island Resource Adequacy Assessment (AIRAA) is an evolution of the Generation Statement Capacity (GCS) annual publication and looks at the balance between electricity demand and supply on the island of Ireland for the next 10 years. The AIRAA notes that the demand for electricity is forecast to increase with the electrification of heat and transport sectors, in line with government targets set out in the Climate Action Plan 2024.

Whilst the AIRAA focuses on generation capacity, it does note that in respect of this forecasted increase in electricity demand, much of this will be concentrated in the Greater Dublin Region.

Project Response

The Proposed Development will provide for a new 110 kV substation which will provide for added capacity and improve Distribution Security of Supply within Meath and the surrounding area. This area, within the Greater Dublin Area, is forecasted to see increased electricity demand in the coming years. In this regard, the Proposed Development is aligned with the AIRAA in that it will ensure the electricity network can accommodate the increase in electricity demand, particularly as the transport sector transitions to increased reliance on electricity,

2.5 Regional Policy Context

2.5.1 Eastern and Midlands Regional Assembly – Regional Spatial and Economic Strategy 2019-2031

The Regional Spatial and Economic Strategy for the Eastern and Midlands Region (RSES) is a strategic planning and investment framework, aimed to guide future growth and manage local planning and development within the region. The RSES identifies areas of both opportunity and pressure within the region and outlines a number of Regional Policy Objectives (RPOs) to manage overall spatial planning.

The RSES acknowledges that the transition to a low carbon society will be a key challenge facing the region, and that pursuing the potential for a more renewable focused energy system will be supported. In addition, the RSES outlines that there is likely to be an increase in electricity demand as a result of both populations increase, and the move away from fossil fuels towards a lower carbon economy. The RSES outlines that *“developing the grid in the Region will enable the transmission system to safely accommodate more diverse power flows from renewable generation and also to facilitate future growth in electricity demand”*. It further acknowledges that increasing the generation of energy from renewable sources will require *“expansion and upgrading of the grid”* in order to ensure the system can accommodate increased power loads.

In this regard, the RSES outlines the following Regional Policy Objectives:

RPO 10.20: Support and facilitate the development of enhanced electricity and gas supplies, and associated networks, to serve the existing and future needs of the Region and facilitate new transmission infrastructure projects that might be brought forward in the lifetime of this Strategy.

This Includes the delivery of the necessary integration of transmission network requirements to facilitate linkages of renewable energy proposals to the electricity and gas transmission grid in a sustainable and timely manner subject to appropriate environmental assessment and the planning process.

RPO 10.22: Support the reinforcement and strengthening of the electricity transmission and distribution network to facilitate planned growth and transmission/ distribution of a renewable energy focused generation across the major demand centres to support an island population of 8 million people, including:

- Facilitate the delivery of the necessary integration of transmission network requirements to allow linkages of renewable energy proposals to the electricity transmission grid in a sustainable and timely manner.

Project Response

The Proposed Development will provide for a new 110 kV substation in County Meath, which will address current constraints on the network in this area and address future capacity issues as the existing Coolmine 38 kV and Leixlip 38 kV stations are transferred to an alternative loop. The development of grid infrastructure is recognised within the RSES as being essential in ensuring future electricity demand will be met, and the Proposed Development will directly support this by providing additional capacity to the network.

The Proposed Development will support RPO 10.20 and 10.21 in this respect, as it will enhance and strengthen the electricity network by adding capacity and improving distribution security of supply. By doing this, the Proposed Development will assist in serving the future needs of the region as economic development continues, and as additional renewable energy connections develop.

2.6 Local Policy Context

2.6.1 Meath County Development Plan 2021-2027

The Meath County Development Plan 2021-2027 (hereinafter referred to as MCDP) provides a planning and development strategy for County Meath.

The MCDP notes that due to the counties' strategic location within the Greater Dublin Area, *"ensuring that the existing networks can be upgraded and can provide enhanced capacity"* is vital to facilitate future development within the county in line with wider strategic plans. It further notes that the strengthening the national grid is required to improve *"security of supply for the domestic, residential and enterprise market as well as attracting high-end enterprise which often require significant energy capacity and reliability."*

In respect of the above, the MCDP provides the following Policies and Objectives that apply to all development within the county.

Table 2.1: Meath County Development Plan Relevant Policies and Objectives

Policy/Objective	Project Response
Chapter 4 – Economy and Employment Strategy	
ED OBJ 5 To work with Irish Water and other infrastructure providers, to support the provision of services and facilities to accommodate the future economic growth of the County and to seek to reserve infrastructure capacity for employment generating uses.	The Proposed Development will provide for additional capacity and improve distribution security of supply for surrounding area. This will ensure the electricity network can accommodate the increased demand that will come as a result of continued economic growth. Furthermore, the Proposed Development is being proposed by ESB (the DSO), who are, together with EirGrid, are the national electricity (utility) provider, and as such it is the responsibility of the ESB to ensure adequate electricity infrastructure is provided.
Chapter 6 – Infrastructure Strategy	
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 “ <i>Planning System and Flood Risk Management –Guidelines for Planning Authorities</i> ” (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	The Proposed Development Site is located in Flood Zone C. A Flood Risk Assessment is provided in Chapter 9 Surface Water Resources and Flooding. The Assessment concludes that following, the implementation of mitigation measures as detailed in Section 9.8, effects on surface waters and flooding will be negligible. The mitigation measures detailed will prevent any major effects on surface waters and no flood risk mitigation measures are required.
INF OBJ 25 To require the use of Sustainable Urban Drainage Systems (SuDS) to minimise and limit the extent of hard surfacing and paving and require the use of sustainable drainage techniques where appropriate, for new development or for extensions to existing developments, in order to reduce the potential impact of existing and predicted flooding risks.	To comply with established best practice, a surface water drainage system incorporating Sustainable Drainage System (SuDS) features will be constructed to manage the quantity and quality of runoff during rainfall events. The proposed drainage strategy complies with the recommendations as outlined in Volume 2 - New Development of the Greater Dublin Strategic Drainage Study (GSDSDS).
INF OBJ 45 To ensure that all plans and projects associated with the generation or supply of energy or telecommunication networks are subject to an Appropriate Assessment Screening and those plans and projects which could, either individually or in-combination with other plans and projects, have a significant effect on a Natura 2000 site (or sites) undergo a full Appropriate Assessment.	Screening for Appropriate Assessment has been carried out in respect of the Proposed Development. This screening has concluded that there is no potential for significant effects on any European Sites from the project, alone or in-combination, with other plans or projects. A copy of the Screening for Appropriate Assessment is included within the application documentation.
INF POL 46 To support and facilitate the development of enhanced electricity and gas supplies, and associated networks, to serve the existing and future needs of the County and to facilitate new transmission infrastructure projects that may be brought forward during the lifetime of the plan including the delivery and integration, including linkages of renewable energy proposals to the electricity transmission grid in a sustainable and timely manner	The Proposed Development will provide for additional capacity and improve distribution security of supply for surrounding area. This will ensure the electricity network can accommodate the increased demand that will come as a result of continued economic growth. This additional capacity will ensure that as large energy users are connected to the grid, distribution remains uninterrupted to surrounding users – both residential and business. Furthermore, the Proposed Development is being proposed by ESB (the DSO),

Policy/Objective	Project Response
INF POL 47 To co-operate and liaise with statutory and other energy providers in relation to power generation in order to ensure adequate power capacity for the existing and future business and enterprise needs of the County.	who are, together with EirGrid, are the national electricity (utility) provider, and as such it is the responsibility of the ESB to ensure adequate electricity infrastructure is provided.
INF POL 48 To ensure that energy transmission infrastructure follows best practice with regard to siting, design and least environmental impact in the interest of landscape protection.	The Proposed Development has been designed to comply with industry standards and result in minimal impact on the surrounding environment. Chapter 12 of this PECR outlines how the Proposed Development interacts with the surrounding landscape, and had been designed to minimise impact.
INF POL 50 To require that the location of local energy services such as electricity, be undergrounded, where appropriate.	The Proposed Development will include for undergrounded cables to connect to the proposed substation via the LCIMs.
INF OBJ 50 To seek the delivery of the necessary integration of transmission network requirements to facilitate linkages of renewable energy proposals to the electricity transmission grid in a sustainable and timely manner.	The Proposed Development will add additional capacity to the existing transmission grid to ensure that the network can accommodate increased power flows from renewable connections.
INF POL 51 To seek to generally avoid the location of overhead lines in Natura 2000 sites unless it can be proven that they will not affect the integrity of the site in view of its conservation objectives, i.e. by carrying out an appropriate assessment in accordance with Article 6(3) of the E.U. Habitats Directive.	The Proposed Development is not located within or adjacent to any designated site, and as such no works will be undertaken within a Natura 2000 site. The Appropriate Assessment Screening included within this planning application provides further detail, and concludes that there is no potential for significant effects on any European Sites from the project, alone or in-combination, with other plans or projects.
INF OBJ 67 To require developers to prepare construction and demolition waste management plans for new construction projects over certain thresholds which shall meet the relevant recycling/recovery targets for such waste in accordance with the national legislation and national and regional waste management policy	A Construction Resource and Waste Management Plan has been prepared in respect of the Proposed Development and is included within the application documentation.
Chapter 8 – Cultural and Natural Heritage Strategy	
HER POL 27 To protect, conserve and enhance the County's biodiversity where appropriate.	Chapter 8 of this PECR assesses the likely significant effects from the Proposed Development on biodiversity. This chapter outlines the mitigation and enhancement measures that will be included as part of the Proposed Development. These measures will include the appointment of an Environmental Clerk of Works, pre-construction confirmatory surveys and extensive replanting of native woodland (as detailed in Chapter 12).
HER POL 31 To ensure that the ecological impact of all development proposals on habitats and species are appropriately assessed by suitably qualified professional(s) in accordance with best practice guidelines – e.g. the preparation of an Ecological Impact Assessment (EclA),	Screening for Appropriate Assessment has been carried out in respect of the Proposed Development. This screening has concluded that there is no potential for significant effects on European sites in the absence of mitigation from the proposed works. A copy of the Screening for Appropriate Assessment is included within the application documentation.

Policy/Objective	Project Response
Screening Statement for Appropriate Assessment, Environmental Impact Assessment, Natura Impact Statement (NIS), species surveys etc. (as appropriate).	
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	
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 unavoidable, mitigation by provision of the same type of boundary will be required.	As detailed in Chapter 8, a 27m section of hedgerow will be required to be removed to facilitate sufficient sightlines and width requirements for the new entrance. To mitigate this, an area of approximately 5000m ² (0.5Ha) will be planted with a native woodland mix of tree species. This replanting greatly exceeds woodland (hedgerow) loss (approximately 54m ²) due to impacts from the Proposed Development.
HER POL 44 To require all development proposals to address the presence or absence of invasive alien species on proposed development sites and (if necessary) require applicants to prepare and submit an Invasive Species Management Plan where such a species exists to comply with the provisions of the European Communities (Birds and Natural Habitats) Regulations 2011-2015.	As outlined within Chapter 8 of this PECR, No First Schedule listed invasive plant species (S.I. No. 374 of 2024) were recorded. It is recognised that such species could establish before the commencement of construction, and therefore a full confirmatory invasive species survey will be carried out by the appointed EnCoW prior to any works. This survey will be carried out within and adjacent work areas and access tracks. An Invasive Species Management Plan will also be prepared and will set out site-specific and species-specific measures to manage invasive species.
HER POL 52 To protect and enhance the quality, character, and distinctiveness of the landscapes of the County in accordance with national policy and guidelines and the recommendations of the Meath Landscape Character Assessment (2007) in Appendix 5, to ensure that new development meets high standards of siting and design.	Chapter 12 of this PECR provides an overview of the landscape assessments undertaken in respect of the Proposed Development. This chapter concluded that standalone landscape and visual effects for the project are very localised and readily mitigated and that beyond approximately 500m from the site boundary any effects are generally imperceptible. This chapter also notes that there is very little potential for cumulative effects to occur through intervisibility and such effects are wholly related to a combined sense energy and utility development within this rural hinterland setting
HER OBJ 50 To require landscape and visual impact assessments prepared by suitably qualified professionals be submitted with planning applications for development which may have significant impact on landscape character areas of medium or high sensitivity.	
Chapter 9 – Rural Development Strategy	
RD POL 37 To ensure that future development affecting national primary or secondary roads, shall be assessed in accordance with the guidance given in the document 'Spatial Planning and National Roads - Guidelines for Planning Authorities'.	Chapter 13 of this PECR provides an overview of the Traffic and Transport assessments undertaken in respect of the Proposed Development. The Proposed Development has been designed with regard to all relevant guidelines, as detailed in Section 13.2.2. It has been assessed that any traffic generated during the construction phase will not have significant effects on the local road network. In respect of the Operation and Maintenance Phase, it is estimated that two vetivene movements will be generated weekly and therefore will have no impact on the road network.
RD POL 38 To ensure that all development accessing off the county's road network is at a location and carried out in a manner which would not endanger public safety by way of a traffic hazard.	
RD POL 43	

Policy/Objective	Project Response
To ensure that the required standards for sight distances and stopping sight distances are in compliance with current road geometry standards as outlined in the NRA document Design Manual for Roads and Bridges (DMRB) specifically Section TD 41-42/09 when assessing individual planning applications for individual houses in the countryside	
RD POL 44 To ensure that new development meets the highest standards in terms of environmental protection	This PECR provides a comprehensive overview of the Proposed Development and how it will interact with the surrounding environment. Where applicable, this PECR and accompanying documents, provide mitigation and avoidance measures to ensure minimal impact, if any, on the surrounding environment.
Chapter 11 – Development Management Standards	
DM OBJ 11: Existing trees and hedgerows of biodiversity and/or amenity value shall be retained, where possible.	
DM POL 8: To require the provision of high quality, durable, appropriately designed and secure boundary treatments in all developments.	As detailed in Chapter 8, a 27m section of hedgerow will be required to be removed to facilitate sufficient sightlines and width requirements for the new entrance. To mitigate this, an area of approximately 5,000m ² (0.5Ha) will be planted with a native woodland mix of tree species. This replanting greatly exceeds woodland (hedgerow) loss (approximately 54m ²) due to impacts from the Proposed Development.
DM POL 9: To support the retention of field boundaries for their ecological/habitat significance, as demonstrated by a suitably qualified professional. Where removal of a hedgerow, stone wall or other distinctive boundary treatment is unavoidable, mitigation by provision of the same boundary type will be required.	
DM OBJ 76: In the assessment of individual energy development proposals, the Council will take the following criteria into account: • The proper planning and sustainable development of the area; • The environmental and social impacts of the Proposed Development; • Traffic impacts including details of haul routes; • Impact of the development on the landscape, (please refer to Appendix 5 Landscape Character Assessment); • Impact on protected Views and Prospects, (please refer to Appendix 10 Protected Views and Prospects); • Impact on public rights of way and walking routes, (please refer to Appendix 12 Public Rights of Way); • Connection to the National Grid (where applicable); • Mitigation features, where impacts are inevitable; • Protection of designated areas - NHAs, SPAs and SACs, areas of archaeological potential and scenic importance; • proximity to structures that are listed for protection, national monuments, etc. (Please refer to Chapter 8 Cultural Heritage, Natural Heritage, Landscape and Green Infrastructure and Appendices 6-9 inclusive for further details);	The Proposed Development, as outlined within this PECR, is considered to be in line with the proper planning and sustainable development of the area, and has been designed to pose minimal impacts on the surrounding environment. Chapter 13 of this PECR addresses the impacts, if any, the Proposed Development will have on roads and traffic. Chapter 12 addresses how the Proposed Development will interact with the landscape. Chapters 8 and 11 outline the biodiversity and cultural heritage considerations, respectively. Each chapter contains mitigation measure and cumulative impacts where applicable.

Policy/Objective	Project Response
• Cumulative Impact of proposal.	

2.7 Land Use Zoning

The Meath County Development Plan 2021-2027 provides a range of land use zoning objectives to facilitate orderly development across the county, in order to eliminate potential conflicts between incompatible land uses. Such provision also provides a basis for investment into public infrastructure.

The Proposed Development is located on lands currently zoned as 'RA-Rural Areas' (Figure 2.1). The objective of this zoning is to *"To protect and promote in a balanced way, the development of agriculture, forestry and sustainable rural-related enterprise, community facilities, biodiversity, the rural landscape, and the built and cultural heritage."*

Permitted uses in this zoning include 'Sustainable Energy Installations' and 'Utility Structures'. Whilst there is no definition for these within the development plan, the utility infrastructure examples listed and provided within the 'TU Transport and Utility Infrastructure' zoning classification (which includes rail stations, park and ride facilities, water and waste water infrastructure, electricity, gas and telecommunications infrastructure), does provide some indication of the types of infrastructure and associated uses that are considered to comprise 'utility', in accordance with the Meath County Development Plan. It can thus be concluded that electricity infrastructure (such as the Proposed Development) is in accordance with the provisions of the RA Rural Areas zoning objective.

Figure 2.1: Land Use Zoning



Source: Meath County Development Plan 2021-2027

Project Response

The Proposed Development is considered to be a permitted use for Rural Zoning as it will provide for a 110 kV substation. The proposed substation comprises a 'Utility Structure' for the purposes of facilitating electricity infrastructure. In this regard, the Proposed Development is in compliance with the land use zoning provisions of the site.

2.8 Planning History

A planning history search in relation to the Proposed Development was initially undertaken in July 2025 and updated prior to lodgement. The planning history review seeks to identify consented development which may overlap, interact or result in potential cumulative effects with the Proposed Development, to inform an assessment of cumulative effects, particularly in relation to the risk of construction phases occurring simultaneously with the construction phases of other developments.

Due to the location of the Proposed Development, the planning history search resulted in a comprehensive table of potentially relevant developments. As such, this planning history is included within Appendix 2.1. This lists previously consented developments within a 15km approximate radius of the Proposed Development. This table covered a period of ten years to account for developments that may have received a ten-year period. This review included a search of all application types which may occur, such as private development (section 34 applications), local authority own development, road development and strategic infrastructure development.

Appendix 2.1 has not included small scale development, such as one-off housing, extensions to existing dwellings, new agricultural buildings, or applications for retention related to these development types. These types of development have been excluded due to their type, nature and scale as there is no potential for cumulative effects alongside the Proposed Development.

The potential for any significant cumulative effects is considered in this PECR. However, no significant cumulative effects are anticipated for any environmental chapter within this PECR.

In the absence of specific guidance on cumulative effect assessment study areas, consideration was given as to the distance over which impact pathways from other projects could potentially combine with the impact pathways of the Proposed Development to have likely significant effects on relevant receptors for each environmental topic. This is based on professional judgement to capture the area where other projects would most likely interact with the Proposed Development, and which could reasonably be exposed to cumulative effects in combination with other developments.

3 Description of the Proposed Development

3.1 Introduction

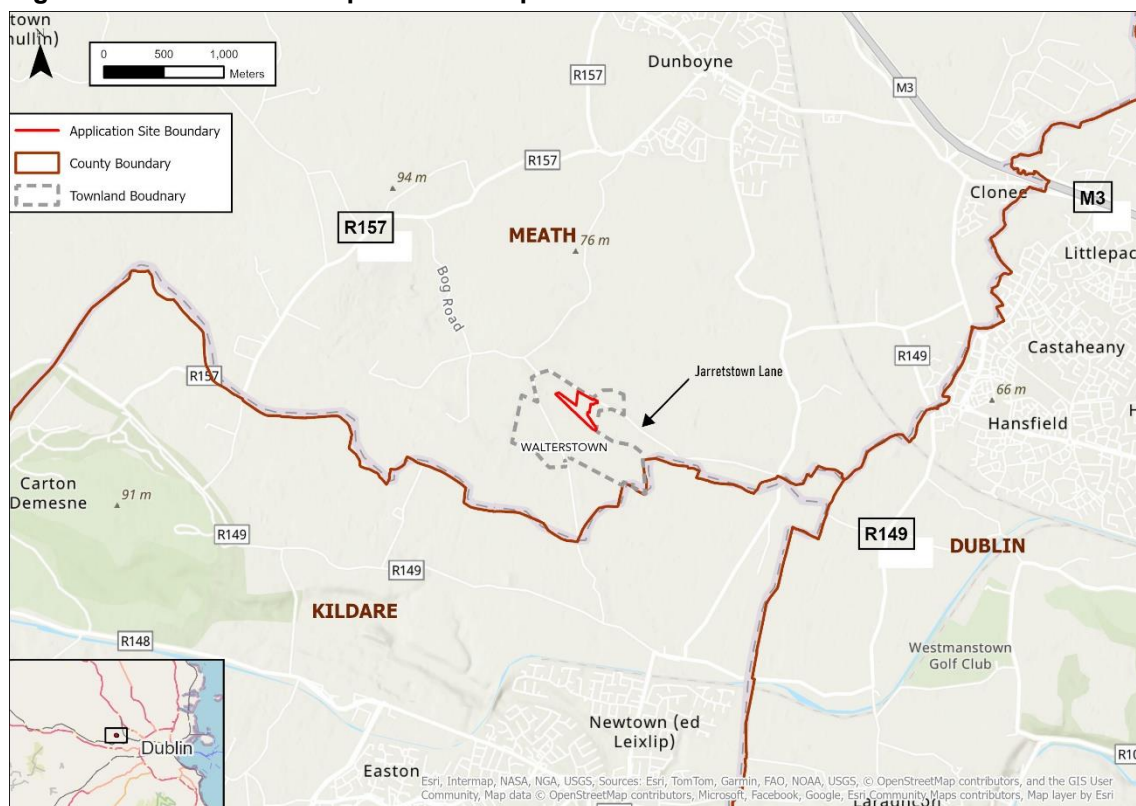
The Proposed Development comprises the installation of a new 110 kV/38 kV/MV substation at a greenfield site in the townland of Walterstown, County Meath.

This chapter provides an overview of the application site and a detailed description of the Proposed Development and the construction activities which are required to deliver it.

3.2 Site Location

The proposed site is located in the townland of Walterstown, approximately 2km south of Dunboyne Town Centre and approximately 1.9km north of Leixlip. The site is a greenfield site, currently in use for agriculture. Access to the site is from the local road, Jarretstown Lane, to the northern extent of the application site boundary. There are a number of residential dwellings and agricultural uses located in the surrounding area along the local road. Hansfield Rail Station is located approximately 3km to the east of the site and Leixlip (Confey) Rail Station is located approximately 2.5km to the south.

Figure 3.1: Location of Proposed Development



Source: Mott MacDonald

3.3 The Proposed Development

The Proposed Development is located off Jarretstown Lane, in the townland of Walterstown, Dunboyne, County Meath.

The Proposed Development will consist of the construction of a 110 kV/ 38 kV/ Medium Voltage (MV) electrical substation and will include the following:

- Construction of 1 no substation compound (c. 5650sqm) securely enclosed` with 2.6m high palisade fencing and gates, containing:
 - 1 no. 110 kV Gas Insulated Switchgear (GIS) building (c. 707sqm footprint; c. 12m in height);
 - 1 no. 38 kV Gas Insulated Switchgear (GIS) building (c. 232sqm footprint; c. 7m in height);
 - 2 no. Bunded 110 / 38 kV Transformers (c. 5m in height) with associated electrical equipment, 2 no. Bunded 38 kV/ MV Transformers (c. 5m in height) with associated electrical equipment;
 - 2 no. fire walls (c. 5.5m height by c. 5m length) separating the 110 / 38 kV Transformers and 38 kV/ MV Transformers;
 - 3 no. bunded Arc Suppression Coils (c. 4m high) with associated electrical equipment;
 - Neutral earth resistor (c. 2m height) and neutral earth switch (c. 3.9m high);
 - 2 no. 110 kV double circuit Line Cable Interface Masts (LCIM) (c. 17m high);
 - Concrete post and rail fence (1.4m high);
 - Underground cabling between the 110 kV GIS building and the new Line Cable Interface Masts (LCIM);
- Dismantling of 1 no. existing 110 kV Overhead Line timber poleset (c. 20m height);
- Diversion of the existing 110 kV Dunfirth-Kinnegad-Rinawade overhead line to connect to the new Line Cable Interface Masts (LCIM) and,
- All associated site development works including provision of new site entrance, internal access, lighting poles (c. 4m height), 3 no. lightning monopoles measuring c.15m high, 1 no. Emergency, stand-by Diesel Generator, telecommunications, landscaping, site services including drainage and all other ancillary works.

The new substation will loop into the existing transmission Dunfirth-Kinnegad-Rinawade 110 kV circuit.

The substation will be a combined Transmission and Distribution substation with the 110 kV circuits feeding the substation, the 110 kV GIS building and 110 / 38 kV transformers forming part of the 110 kV Transmission Network operated by EirGrid as the Transmission System Operator (TSO). The 38 kV & MV electrical equipment will be part of the Distribution Network operated by ESB Networks as the Distribution System Operator (DSO). The combined substation will be owned by ESB Networks as the Transmission Asset Owner (TAO) and the Distribution Asset Owner (DAO).

3.3.1 Substation Compound

The new substation compound is c. 5,650sq. m. in size. The proposed 110 kV/38 kV/MV substation compound consists of a 110 kV GIS building (approximately 12m in height, 14m in width and 50.5m in length) and 38 kV GIS building (approximately 7m in height, 8m in width and 29.175m in length).

The 110 kV GIS building is c. 700sq. m. in size and consist of eight 110 kV bays whereas the 38 / 20 kV GIS building is c. 235sq. m. in size and consist of fourteen 38 kV bays and eighteen MV (20 kV) bays.

The GIS buildings will house the GIS plant and contain auxiliary services equipment such as control and telecommunications equipment, an emergency standby diesel generator, batteries and welfare facilities (i.e. toilets, washing facilities etc).

The 110 kV GIS building will comprise an industrial form, with a portalised structural steel frame clad with lightweight insulated cladding to the walls and roof. Masonry internal partition walls will be adopted, except where specific load carrying requirements necessitate the use of reinforced concrete walls.

The buildings cladding will be factory finished in accordance with the requirements of the EirGrid specification. The monopitch roof will have a shallow inclination. The roof cladding will bear onto cold formed steel purlins that span between primary steel rafters. The building will have access gantries and walkways for access to equipment.

The colour under consideration for the building is an olive green. The ultimate choice of finish and colour of the metal cladding coating will be determined at the detailed design stage of development and agreed with local authority prior to the commencement of construction.

There are two 110 / 38 kV TSO transformers and two 38 kV DSO transformers located between the GIS buildings and are separated by fire walls.

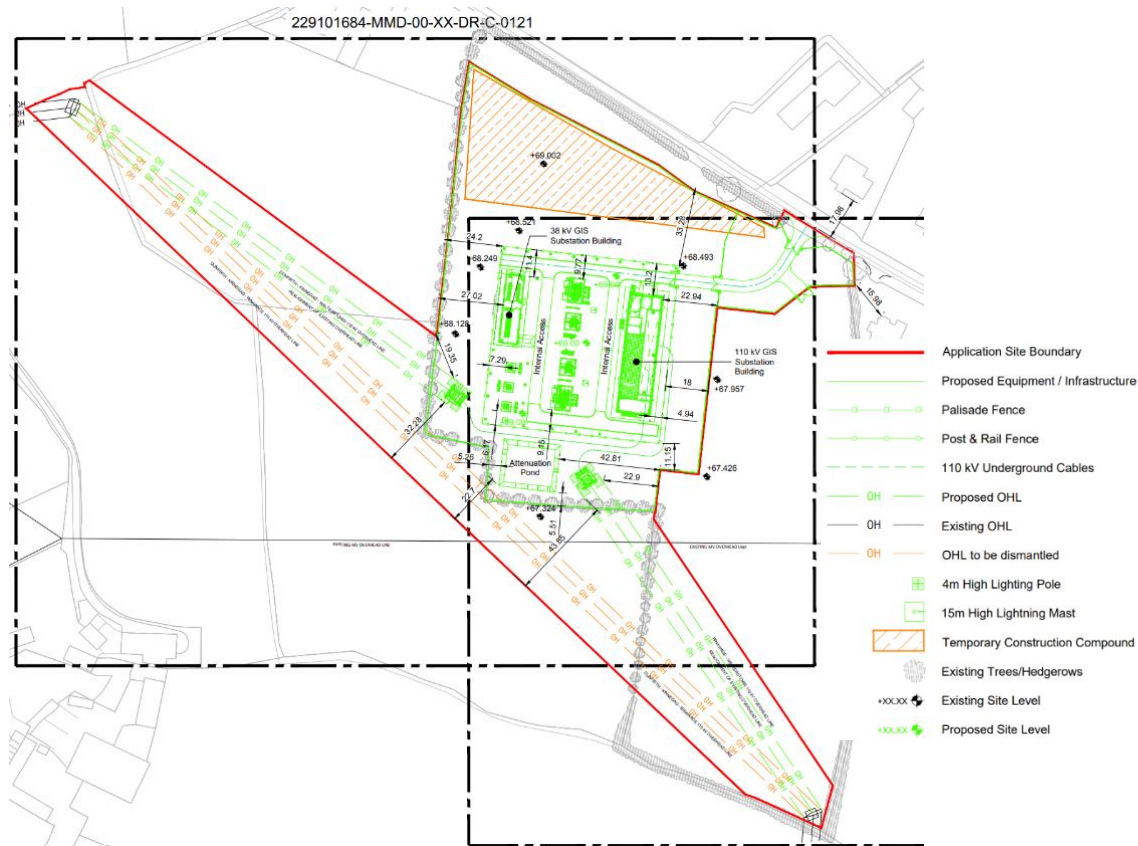
The substation compound will also include one standby diesel generator next to the 110 kV GIS building and three banded Arc Suspension Coils (ASC). The diesel generator and the three ASCs will be used during fault/emergency operations.

The underground cables will connect with the substation via the recessed ground floor, which will be designed to prevent any water ingress.

As shown on planning drawing 229101684-MMD-00-XX-DR-C-0121, 3 no. lightning monopoles (15m in height) are proposed within the substation site.

The proposed site layout is shown in Figure 3.2. For more details on the proposed location and layout of the proposed facility, refer to Planning Application Drawings 229101684-MMD-00-XX-DR-C-0110-P01, 229101684-MMD-00-XX-DR-C-0120 to 0122.

Figure 3.2: Proposed Development Site Layout



Source: Extract from planning drawing 229101684-MMD-00-XX-DR-C-0120

3.3.2 110 kV Circuits Transfer

The Proposed Development will comprise the dismantling and removal of existing 110 kV Overhead Line timber poleset (c. 20m in height) of the existing Dunfirth-Kinnegad-Rinawade 110 kV circuit.

It includes installation of two new 110 kV double circuit Line Cable Interface Masts (LCIM) (16m height) to the south of the site boundary. The existing Dunfirth-Kinnegad-Rinawade 110 kV circuit will be connected to the new substation by diverting the circuit through two new LCIMs, as shown in the planning drawing 229101684-MMD-00-XX-DR-C-0160.

New 110 kV underground cables will be installed to connect the 110 kV GIS building to the new LCIMs.

3.3.3 Access Road

The proposed site will be accessed via an existing entrance from the local public road (Jarretstown Lane) to the northern boundary of the site which will connect to regional road R149 (to the east) and the regional road R157 (to the northwest). Both regional roads link to the M3 Motorway.

Inward and outward movements of all vehicles including HGVs, cars and light maintenance vehicles will utilise local public road during the lifetime of the GIS substation as there are no present alternative entrances to the site.

A new internal access road will be constructed within the proposed GIS substation site (approximately 67m in length and 5m in width). A small stretch of road (approximately 12m in length and 5m wide) is proposed which connects the access road to the private property to the east of the site. The geometric design for the direct access is in accordance with the Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) (TII, 2023)¹.

For safety, visibility checks for the proposed access road approaching the local road were conducted in accordance with TII, 2023¹ (refer to planning drawing 229101684-MMD-00-XX-DR-C-0150). Visibility checks help verify that drivers have adequate sight distance to see and react to hazards, safely stop or overtake, navigate curves and intersection.

3.3.4 Services and Utilities

3.3.4.1 Water Supply

A new potable water supply is required for proposed welfare facilities (toilet and hand wash basin) within the GIS building. The potable water demand will be relatively low as the proposed substation will normally be unmanned and operated remotely.

Potable water supply for the GIS building is proposed to be sourced via a new connection from the existing public watermain located within Jarretstown Lane, subject to connection request application to Uisce Éireann. A Confirmation of Feasibility (CoF) was received from Uisce Éireann on 12 November 2025 (pre-connection enquiry reference CDS25007947), as provided in Appendix 3.2.

3.3.4.2 Wastewater Drainage and Collection

During construction, portable chemical toilets will be provided for the duration of the works and all waste material will be removed from site and disposed of to an appropriately licensed facility.

Once the substation is operational, domestic type wastewater will be produced by the onsite welfare facilities (toilet, wash hand basin and mess room sink). The wastewater will be collected in a proposed waste water storage tank. The waste water storage tank will be located outside the substation compound (refer to planning drawing 229101684-MMD-00-XX-DR-D-0100), near the entrance gate of the substation compound. This will ensure easy access for wastewater to be tankered off the site, as necessary, by a licenced haulier.

3.3.5 Surface Water Management

To comply with established best practice, a surface water drainage system incorporating Sustainable Drainage System (SuDS) features will be constructed to manage the quantity and quality of runoff during rainfall events.

The proposed drainage strategy complies with the recommendations as outlined in Volume 2 - New Development of the Greater Dublin Strategic Drainage Study (GDSDS).

Surface water runoff from the substation compound will be collected via a gravity drainage system (consisting of filter and carrier drains) and managed using an attenuation pond/retention basin with a flow control device on the outlet.

The proposed surface water management system will be designed to ensure that no flooding of the proposed site occurs for the critical storm with a 1 in 100-year return period, including a 30%

¹Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) (TII, 2023) Doc no. TII-DN-GEO-03060 <https://cdn.tii.ie/publications/DN-GEO-03060-03.pdf>

allowance for climate change. A line-end attenuation basin will be proposed to allow the discharging flow to be restricted to the pre-development greenfield runoff rate.

A proprietary flow control device (e.g. a 'Hydro-Brake' or similar) will be used to restrict discharge from the pond to pre-development 'greenfield' equivalent runoff rates. The allowable discharge rates will be calculated using the Institute of Hydrology Report 124 methodology and selected in accordance with the requirements of Volume 2 of the GDSDS. The flow will be discharged via a headwall outfall to the existing field ditch located along the southern boundary of the site. The discharge rate is in accordance with the guidance given in Section 6.3.3.1 of the GDSDS to maintain an appropriate orifice size and reduce the risk of frequent flooding of critical local infrastructure, as discussed in Appendix 3.1 Surface Water Management Plan.

Surface water runoff from the site access road will be locally dispersed to the ground. The dispersed surface water from the road will locally infiltrate into the ground and evaporate. Surface water runoff from roads within the site will be collected via infiltration drains located along the side of these roads.

The four transformers are proposed to be constructed within raised concrete bunds. The surface water within these bunds will be pumped and treated via oil/water separator pumps (e.g. Entexol Bund-Sep or similar) and discharged into the proposed surface water drains. Rainwater collected from building roofs will be collected via surface water drains. The filter drains will connect to the surface water drains which discharge into the proposed attenuation basin.

The proposed surface water management system will incorporate the following features to reduce the risk of pollution and improve the quality of surface water which will be discharged from the site, following the recommendations of GDSDS.

- Concrete bunds and oil separator dewatering pumps at the transformer areas;
- Runoff from the road surfaces will be intercepted by infiltration drains or local dispersion, to provide source control;
- Attenuation basin with impermeable geomembrane lining to reduce the risk of potentially contaminated surface water infiltration into the groundwater;
- Emergency shut-off valve chambers located upstream and downstream of the attenuation basin to prevent discharge from the drainage network in an emergency event and during periodic maintenance.

The proposed surface water drainage layout is shown on planning drawing 229101684-MMD-00-XX-DR-D-0100 and further drainage details are discussed in Appendix 3.1 Surface Water Management Plan.

3.3.6 Lighting

Lighting will not be a continuous feature of the operational substation and will be manually operated by an activation switch located within the GIS substation. Lighting will be sensor activated.

Site lighting is proposed around the perimeter of the site. A total of 20 no. lighting poles (4m in height) are proposed to be erected and are indicated on the planning drawing 229101684-MMD-00-XX-DR-C-0121.

All temporary lighting associated with the construction works will be placed strategically by the Contractor, following consultation with a suitably qualified ecologist such that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay. Only low-pressure sodium, high pressure sodium or LED luminaires will be used on site to ensure there is no impact on bats. Column height will be carefully considered to minimise light spill.

3.3.7 Fencing and Barriers

Due to the strategic nature of the proposed GIS substation, preventative security measures have been incorporated within the design to ensure that there will be no unauthorised access to the site, particularly to the GIS building.

Site security arrangements to prevent unauthorised access at the substation include the following:

- Access to the site will be via palisade double gates.
- A 2.6m high palisade fencing is proposed around the substation compound, with the exception of the site entrances.
- A 1.4m high concrete post-and-rail property fence is proposed along the north and east of the site boundary.
- A CCTV system will also monitor the entrance to the substation.

3.3.8 Biodiversity Enhancement Measures

There will be a net increase (c. 0.5Ha) in woody vegetation relative to minor hedgerow loss within the site and locality. In addition, c. 0.8Ha of grassland within the site will be managed for pollinator insects and to promote natural regeneration of native grassland.

These proposed biodiversity enhancement measures will increase the extent of woodland habitat in the local area and with grassland management will create a habitat of greater ecological value than the baseline which is intensively managed farmland. The proposed biodiversity enhancement measures will provide increase foraging habitat for bats and passerine birds, and greater nesting habitat for passerine birds.

The new attenuation pond will provide a potential additional food source for bats.

A Landscape and Ecological Mitigation Plan is provided in Appendix 12.2.

3.4 Construction Phase Activities

3.4.1 Construction Schedule

The construction works will include site preparation works, construction of the main building and structures, and site finishing works. It is envisaged that the civil works will take approximately 12 months to complete. Following this, electrical installation and commissioning will take place, for approximately 18 months. This is subject to availability of required outages of the existing 110 kV overhead line from the electrical transmission system operator, EirGrid and the time of year, weather conditions and the availability of specialised equipment.

Table 3.1: Outline Construction Schedule

Phase	Activity	Approximate Timeline	Total
Civil Construction	Site Preparation	8 weeks	52 weeks
	Civil Construction	44 weeks	
Electrical Installation	Electrical Installation	52 weeks	78 weeks
	Electrical Commissioning	26 weeks	

3.4.2 Construction Plant and Machinery

The typical plant to be utilised during construction of the substation is presented in Table 3.2.

Table 3.2: Construction Plant & Machinery

Phase	Plant	BS5228-1 Reference
Site Preparation	Track Excavator	C2.22
	Pneumatic Breaker	D2.11
	Dump Truck	C1.11
	Wheeled Loader Lorry	C2.26
	Dozer	C2.10
Foundations	Track Excavator	C2.22
	Pneumatic Breaker	D2.11
	Concrete Pump	C3.25
	Compressor	C3.19
	Poker Vibrator	C3.19
Steel Erection	Tower Crane	C4.48
	Articulated Lorry	C11.10
	Electric Impact Torque Wrench	
General Construction	Hand Tools	
	Pneumatic Circular Saw	D7.79
	Internal Fit Out	
Landscaping	Dozer	C2.10
	Dump Truck	C1.11
	Surfacing	D8.25

Source: ESB, 2025

3.4.3 Construction Methodology

3.4.3.1 Site Preparation and Enabling Works

All personnel involved in site preparation and groundwork will undertake a comprehensive site induction and be briefed on the existing site constraints and restrictions before any works commence.

The site preparation and groundworks are envisaged to be carried out in the following sequence:

- Demarcation of construction works area, including site levelling to prepare the works area.
- Topsoil will be stripped using excavators and stockpiled within the construction compound.
- Stone for compound surfacing and access road will be delivered in a tipper truck and graded into place using an excavator.
- Once the stone base is in place, temporary perimeter fencing and gates will be erected, all within the Proposed Development site boundary.
- Once compound fencing and gates are in place, mobilisation of the site offices and construction compound will commence.

3.4.3.2 GIS Building

The main civil works associated with the construction of the substation comprise the following:

- The foundation works will commence after the completion of the site grading. The foundation installation includes – excavation, form work, steel reinforcement and concrete placement.

Excavated materials will be reused on site or disposed off-site to an appropriately licensed facility.

- Following the installation of the foundation, construction activities for the erection of structural steelwork will commence.
- Cladding and building finishing work and the installation of building services, e.g., drainage, internal access road, will be undertaken once the structural frame and steel support structures are completed.
- Construction of permanent surface water drainage works.
- Miscellaneous civil works including paving, permanent fencing, landscaping and completion of works.

3.4.3.3 110 kV Circuit Transfer

The cable trenches will be planned in advance in order to ensure that the work is completed in the most efficient manner without disruption to existing services on site.

The existing Dunfirth-Kinnegad-Rinawade 110 kV circuit will be diverted from the two new 110 kV double circuit Line Cable Interface Masts (LCIM) and the 110 kV underground cable is proposed to be installed connecting the new masts and the transformer within the 110 kV substation.

Removal of the 110 kV Timber Poleset

The Proposed Development comprises dismantling and removal of existing 110 kV Overhead Line timber poleset of the exiting Dunfirth-Kinnegad-Rinawade 110 kV circuit. The poleset is located to the south of the proposed substation.

The methodology for the dismantling and removal of the OHL tower is as per the following:

- Set up of temporary working area with fencing installed around the tower location.
- The conductor will be disconnected from the poleset by releasing the line tension and winching of conductors onto drums.
- The poleset will then be cut down at ground level and removed from site, which together with other hardware and fittings will be removed from the construction area site for disposal by licensed waste Contractors in accordance with the Waste Management Act, as amended and associated regulation.

Installation of the new 110 kV Underground Cables

The Proposed Development will include installation of new 110 kV underground cables from the two proposed LCIMs to the proposed 110 kV substation. The new cables will be ducted, and the ducts laid mostly in trefoil formation.

The methodology for the installation of new 110 kV underground cables is as per the following:

- A trench will be excavated in accordance with the planning drawing PE424-D7001-001-003-011.
- Ducts for the cables will be laid in the trench and compacted in layers to backfill around them and will be encased in Hydraulically Bound Granular Material A (HBM) in accordance with the Transport Infrastructure Ireland (TII) specification CC-SPW-00800.² The compaction will be as per Clause 3.4.2.1 and Table 3.11 of these specifications (TII, 2023).

² Road Pavements – Unbound and Hydraulically Bound Mixtures CC-SPW-00800 (TII, 2023)

- To ensure the ducts remain in trefoil formation during backfilling, cable ties, non-metallic straps or ropes will be wrapped around them. Red marker strips will be placed above the ducts followed by the backfill of the rest of the trench.
- Yellow warning tape will be laid within this backfill.
- Once excavations are backfilled, the top layer (topsoil or road pavement) will be reinstated as timely as practicably possible.

Installation of new 110 kV Line Cable Interface Masts

The Proposed Development will include installation of two new 110 kV LCIMs to the south of the site boundary.

The methodology for the installation of LCIMs is as per the following:

- Site clearance and site preparation works will be carried out.
- Foundation excavations will be carried out specifically for the type of foundation required depending on ground conditions. When each leg is excavated, concrete is poured to provide a stable base on which the tower stubs will rest. Once concrete is cured, the tower stubs are lowered in position and subsequently concrete is repoured into the foundation. Once this pour is completed and the shear block is shaped, the tower foundations are backfilled, one leg at a time, with material already excavated.
- Once the foundation erection is completed, the tower body steelwork can be assembled. Tower sections are typically assembled on the ground and lifted in place, via a crane. A derrick pole may also be utilised, to lift small sections of steel into place using the derrick and a winch.
- Once excavations are backfilled, the lands around the LCIM foundations will be reinstated as timely as practicably possible.

3.4.3.4 Access Road

A new internal access road will be constructed within the proposed GIS substation site (approximately 67m in length and 5m in width). The corner radius of 9m is proposed where the access road ties-in to the local road. There A small stretch of road (approximately 12m in length and 5m wide) is proposed which connects the access road to the private property to the east of the site. The geometric design for the direct access is in accordance with the Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) (TII, 2023)³.

The proposed internal access road from the entrance to the substation site to the substation compound will be an asphalt road. Based on the available preliminary ground information details, a concrete pavement slab of 175mm thickness laid on a 225mm sub-base is proposed. Beneath these two layers, a granular capping layer will be proposed to enhance the ground stiffness. The alignment for the proposed access road is detailed in the planning drawing 229101684-MMD-00-XX-DR-C-0120 to 0122.

The internal road running east-west within the substation compound will be asphalt and the internal road running north-south within the substation compound will be concrete.

A suitable road design will be developed following pre-construction ground investigation works. The concrete road pavement details are shown in drawing 229101684-MMD-00-XX-DR-C-0162.

³Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) (TII, 2023) Doc no. TII-DN-GEO-03060 <https://cdn.tii.ie/publications/DN-GEO-03060-03.pdf>

3.4.3.5 Temporary Construction Compounds/Laydown Areas

A temporary construction compound/laydown area is proposed to the north of the substation. The location of the temporary compound/laydown area is indicated on planning drawing 229101684-MMD-00-XX-DR-C-0120.

The appointed Contractor(s) will be responsible for organising site compounds in consultation with the Environmental Manager. The Environmental Manager will be responsible for the management of the site compounds in accordance with the CEMP. The Contractor's compounds will be used for storage of construction materials, as well as construction equipment and machinery.

The Contractor will ensure that the proposed compound is secured, either with existing hedgerows/treelines, or new palisade fencing.

Re-fuelling of plant and machinery will take place within the compounds in areas no less than 50m from any watercourses or abstraction wells including public water supplies. Temporary welfare facilities will be provided.

3.4.3.6 Construction Traffic and Personnel

During construction phase, the anticipated material volumes are approximately 8,000m³ of stone fill and approximately 2,000m³ of excavation material. Subject to the suitability of the material, it will be used onsite for landscaping.

Based on these volumes, it is estimated that traffic movements will peak at 30 HGV vehicle (60 HGV movements) per day during the civil construction works. In total approximately 2800 HGV vehicle movements are anticipated, to import site equipment, plant, materials, including stone & concrete during civil works, the majority of which will be front loaded in the early stage of the construction works. The above vehicle assumptions are for the estimated volume of imported and exported materials.

The estimated number of construction personnel on site during peak construction is expected to be 45. Assuming vehicle occupancy of 1.25 persons per vehicle, up to 36 vehicles are expected per day during the civil construction works.

The delivery of the transformers to the site will constitute abnormal load.

3.4.3.7 Construction Access

Construction plant and vehicles will access the site via the existing rural road (Jarretstown Lane) to the northern boundary of the site.

3.4.3.8 Haul Routes

It is envisaged that the construction traffic to the site will use the regional road R149 (east of the Proposed Development site) or the regional road R157 (northwest of the Proposed Development site). Both regional roads are off the M3 Motorway.

3.4.3.9 Construction Working Hours

Construction activities will be undertaken during 07:00 – 19:00 Monday to Friday and 08:00 – 14:00 on Saturday, subject to agreement with local authority and conditions of planning.

No construction works will take place outside these hours, unless such work:

- is required under exceptional circumstances; or
- is carried out with the prior written approval of local authority.

3.4.4 Construction Environmental Management Plan (CEMP)

A CEMP has been prepared and submitted as part of this planning application. The CEMP will be implemented during the construction phase. The CEMP will remain a 'live' document which will be reviewed regularly and revised as necessary in consultation and agreement with the local authority to ensure that the measures implemented are effective.

The CEMP will be a key contract document, which will ensure that all mitigation measures, which are considered necessary to protect the environment are implemented. The primary objective of the CEMP is to safeguard the environment, site personnel and nearby sensitive receptors from site activity which may cause harm or nuisance. As such, the CEMP sets out a project framework to ensure that key mitigation measures and conditions set out as part of the planning consent process are translated into measurable actions and are appropriately implemented during the construction phase of the Proposed Development. As part of this framework, transparent and effective monitoring of the receiving environment during construction will be used to inform and manage on-going activities on site and to demonstrate effectiveness of the measures outlined therein.

In addition to the above, the CEMP includes an Emergency Incident Response Plan (Section 5 of the CEMP). In the unlikely event of an incident, the Emergency Incident Response Plan will ensure that any incident is dealt with effectively, and that the response is timely and appropriate. This plan will be further developed by the appointed Contractor, in line with the mitigation measures detailed in the CEMP, to describe the procedures, lines of authority and processes that will be followed to ensure that all incident response efforts are prompt, efficient and appropriate to the particular incident. Inland Fisheries Ireland and the EPA will be notified, if appropriate, in the event of an incident or accident.

3.4.4.1 Resource and Waste Management Plan (RWMP)

Prior to commencement of the development, the appointed Contractor will implement the construction phase Resource and Waste Management Plan (RWMP) (included as Appendix A to the CEMP) which will ensure that optimum levels of waste prevention, reduction, reuse, recycling, and recovery are achieved throughout the duration of the Proposed Development. As with the CEMP and construction TMP, the RWMP will remain a 'live' document and will be reviewed regularly and revised as necessary in consultation and agreement with local authority to ensure that the measures implemented are effective.

The plan has been prepared in accordance with waste management guidance and principles as outlined in *Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects* (EPA, 2021) and *Design Out Waste: A design team guide to waste reduction in construction and demolition projects* (EPA, 2015). All operations at the site will be managed and programmed in such a manner as to prevent/minimise waste production and maximise upper tier waste management (i.e. reuse, recycle, and recovery) in line with the Waste Hierarchy where technically and economically feasible.

The requirement to develop, maintain and operate the construction phase RWMP will form part of the contract documents for the Proposed Development and will be updated by the appointed Contractor in advance of the commencement of construction activities on site. Waste sent off site for recovery or disposal will only be conveyed by an authorised waste Contractor and transported from the Proposed Development site to an authorised site of recovery/disposal in a manner which will not adversely affect the environment. All employees will be required to comply with the obligations under this RWMP.

3.4.4.2 Traffic Management Plan (TMP)

The appointed Contractor will implement and develop the construction phase Traffic Management Plan (TMP) included as an Appendix B to the CEMP in ongoing consultation with local authority. The TMP will remain a 'live' document and will be reviewed regularly and revised as necessary in consultation and agreement with the local authority to ensure that the measures implemented are effective.

The implementation of the TMP will mitigate potential construction traffic impacts on the public road network. All construction activities, including construction traffic, will be managed through the CEMP.

3.4.5 Environmental Supervision and Monitoring

An Environmental Clerk of Works (EnCoW) will be employed to oversee implementation of mitigation measures. This will include monitoring and auditing the works and Contractor programmes and works method statements, to ensure mitigation is correctly implemented.

The EnCoW will be appropriately qualified and will have demonstrable experience in ecological supervision. The role of EnCoW can be fulfilled by one personnel or a team of several people at different stages, as appropriate.

The EnCoW will also ensure any disturbance licenses, if required are arranged based on relevant details and any significant findings of confirmatory pre-construction surveys outlined in the PECR. The EnCoW will advise on mitigation measures implementation including the scheduling of works and will be included in regular liaison meetings between project teams to ensure that plans are co-ordinated, and effects are minimised.

An EnCoW / ecologist from ESB will review and comment on the pre-construction survey reports, mitigation proposals, monitoring and compliance reports generated by the EnCoW. The EnCoW / ecologist will have the necessary experience and knowledge appropriate to the role.

An Environmental Manager will also be appointed who will be a suitably qualified, competent and experienced professional to perform the necessary tasks, review environmental procedures and consult with the members of the construction team and stakeholders as required. The Environmental Manager will be responsible for managing and responding to environmental incidents and ensuring that all incidents are recorded and reported in an appropriate manner.

All monitoring reports will be provided to the Employer's Representative team (ie the ESB), to and to local authority or other parties where required by condition.

For further detail on the role and responsibilities of the EnCoW and Environmental Manager, refer to the CEMP.

3.5 Operation and Maintenance

During operations, the Proposed Development will be operated 24-hours per day, seven days per week. The substation will be mostly unmanned. For operation and maintenance purposes, it is anticipated that a two person crew will be visiting the substation three days in a week, at a maximum.

3.6 Decommissioning Phase

Subject to the granting of statutory approval, the Proposed Development will form part of the national electrical grid infrastructure. It is anticipated that the substation will remain a permanent part of the national electricity transmission network with equipment being replaced as required

during the operation and maintenance stage. Therefore decommissioning is not considered further.

3.7 Health and Safety Considerations

3.7.1 Project Supervisor Design Process

ESB Engineering and Major Projects are appointed to the role of Project Supervisor Design Process (PSDP).

The PSDP ensures co-ordination of the work of designers throughout the Proposed Development. This is to ensure effectiveness in addressing and co-ordinating safety and health matters from the very early stages of the Proposed Development.

3.7.2 Project Supervisor Construction Stage

ESB will appoint a Project Supervisor Construction Stage (PSCS) of the Proposed Development when they appoint Contractors to carry out the works. The PSCS will be responsible for developing the construction stage Safety and Health Plan, co-ordinating the work of Contractors and providing PSDP with information required in the Safety File.

4 Population and Human Health

4.1 Introduction

This chapter considers the potential effects arising from the Proposed Development on Population and Human Health. The assessment is based on the development as described in Chapter 3.

Human health considers those effects associated with relevant environmental disciplines which have been comprehensively addressed elsewhere in this report including:

- Air Quality (Chapter 5)
- Climate (Chapter 6)
- Noise and Vibration (Chapter 7)
- Biodiversity (Chapter 8)
- Surface Water Resources and Flooding (Chapter 9)
- Land, Soils, Geology and Hydrogeology (Chapter 10)
- Architecture, Archaeology and Cultural Heritage (Chapter 11)
- The Landscape (Chapter 12)
- Traffic and Transport (Chapter 13)
- Material Assets and Waste Management (Chapter 14)

Mitigation and monitoring measures and residual effects are presented as appropriate.

4.2 Policy and Guidance

The Chapter 2 Planning Policy and Land Use Context chapter of this report describes the wider policy and legislative context applicable to the Proposed Development. Policies and guidance documents of potential relevance to the population and human health are set out in this section.

4.2.1 Policies

This chapter has been prepared having regard to the following policies.

- Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland Region 2019-2031 (Eastern and Midland Regional Assembly, 2019)
- Meath County Development Plan 2021-2027 (Meath County Council, 2022)

4.2.2 Guidelines

This chapter has been prepared having regard to the following guidelines.

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022)
- EIAR Guidelines for the Consideration of Tourism and Tourism Related Projects (Fáilte Ireland, 2018)
- EirGrid Evidence Based Environmental Study 9: Settlement and Land Use (EirGrid, 2016)
- EirGrid Evidence Based Environmental Study 1: EMF (EirGrid, 2014)

- The Institute of Public Health (IPH), Health Impact Assessment (HIA) Guidance Standalone HIA and health in environmental assessment (2021) (Pyper et al., 2021)⁴
- International Association for Impact Assessment (IAIA) and European Public Health Association (EUPHA), Human health: Ensuring a high level of protection. A reference paper on addressing Human Health in Environmental Impact Assessment (2020) (Cave et al., 2020). This is reference paper informed the IPH guidance.
- Effective Scoping of Human Health in Environmental Impact Assessment (ISEP, 2022) and
- Determining Significance for Human Health in Environmental Impact Assessment (ISEP, 2022).

4.3 Methodology

4.3.1 Approach to Data Collection

The following information and data sources have been considered during the preparation of this chapter.

Table 4.1: Data Sources used to inform the Population and Human Health chapter

Data source	Date Published	Data Contents
Central Statistics Office (CSO) www.cso.ie (accessed September 2025)	Census 2016, 2022 Labour Force Data (Monthly)	Demographics Settlements Labour Force Survey
EirGrid Evidence Based Environmental Study 9 Settlement and Land use (EirGrid)	2016	Settlements and Land use
Tailte Eireann mapping and aerial photography (www.osi.ie) (accessed September 2025)	2025	Settlements Land use
Meath County Council Planning Enquiry System (Meath.ie) (accessed September 2025)	2025	Settlements Land use
CORINE Land Cover (Copernicus Land Monitoring Service, 2018) (Accessed September 2025)	2018	Land use
Open Street Mapping (www.openstreetmap.org) (accessed September 2025)	2025	Land use
All-Island Research Observatory (AIRO) Primary and Post Primary Schools	2025	Land use
Google Street Mapping	2025	Land use
Health Services Executive (www.hse.ie) (accessed September 2025)	2025	Human Health
Fáilte Ireland (www.failteireland.ie) (accessed September 2025)	2025	Tourism and amenity

4.3.2 Approach to Assessment of Effects

The EPA Guidelines 2022 identifies “*sensitive receptors*” as neighbouring landowners, local communities and other parties which are likely to be directly affected by the Proposed Development. Homes, hospitals, hotels and holiday accommodation, schools and rehabilitation workshops and commercial premises are noted. Regard is also given to transient populations including drivers, tourists and walkers.

The IPH guidance includes an extensive list of health determinants that can be used to identify health risks and health issues in impact assessments. Some of these determinants are related

⁴ Hereafter the “*IPH Guidance 2021*”.

to only health impacts and some are related to both population and human health impacts. The Institute of Sustainability and Environmental Professionals (ISEP) (formerly IEMA) guidance *Effective Scoping of Human Health in Environmental Impact Assessment* also states wider determinants of health. Based on these guidance documents and broad categories identified in the EPA Guidelines 2022, a desktop review of following categories was conducted:

- Land Use
- Population (Demographics and Settlement Patterns)
- Housing
- Employment and Economic Activity
- Tourism and Recreation
- Community Facilities and Amenities
- Human Health

As informed by the IPH guidance, the determinants in Table 4.2 under each of the categories mentioned above have been identified as being relevant to the Proposed Development.

Table 4.2: Categories and Determinants for Population and Human Health Assessment

Category/ Determinant ⁵	Relevance to the Proposed Development
Land Use	
● Spatial planning, use classes, zoning and land allocations (including streets and routes, places, urban green space, parks, landscape)	Yes – Discussed in Section 4.4.1 and Chapter 2
Population (Demographics and Settlement Patterns)	
● Settlement patterns	Yes - Discussed in Section 4.4.2
Housing	
● Connectivity and access	Yes - Discussed in Chapter 13
● Community services (including childcare and social services) accessibility and quality	Yes - Discussed in Section 4.4.6
● Flood risk	Yes – Discussed in Chapter 9
Employment and Economic Activity	
● Employment (including quality and income)	Yes - Discussed in Section 4.4.4
Tourism and Recreation	
● Tourism facilities	Yes- Discussed in Section 4.4.5
Community Facilities and Amenities	
● Health and educational facilities	Yes - Discussed in Section 4.4.7
● Waste management (including sanitation systems and wastewater reuse)	Yes – Discussed in Chapter 14
● Transitional traffic arrangements (e.g. during construction)	Yes – Discussed in Chapter 13
● Visual landscape/townscape change	Yes – Discussed in Chapter 12
● Social networks and culture (including sites of cultural significance)	Yes – Discussed in Chapter 11
● Wider societal benefits to energy infrastructure	Yes – Discussed in Chapter 2
Human Health	
● Dust, particulates and aerosols (indoor and outdoor)	Yes – Discussed in Chapter 5
● Air quality conditions associated with plant, processes and vehicle emissions	Yes – Discussed in Chapter 5

⁵ Adapted from Table 08 of IPH Guidance 2021.

Category/ Determinant ⁵	Relevance to the Proposed Development
• Risk of new ground pollution (e.g., industrial agents or accidental spills)	Yes – Discussed in Chapter 10
• Noise conditions associated with plant, processes and vehicle disturbance	Yes – Discussed in Chapter 5
• Vibration	Yes – Discussed in Chapter 7
• Electro-magnetic fields (EMF), actual risk	Yes – Discussed in Section 4.6.7

4.3.3 Study Area

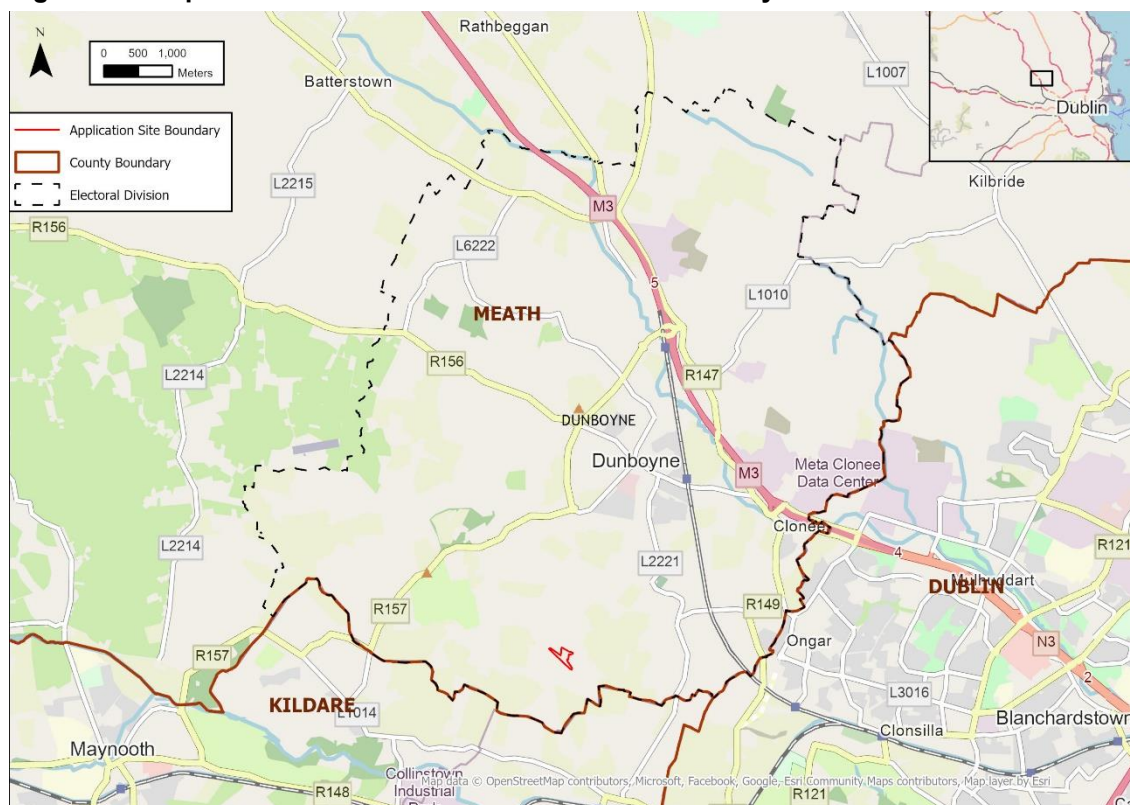
The study area for this population and human health assessment is defined by the Electoral Division (ED) in which the Proposed Development site is located. ED is the smallest legally defined administrative area in the State for which Small Area Population Statistics (SAPS) are published from the Census.

The Proposed Development is located within one ED, as listed in Table 4.3. A map of the study area is shown in Figure 4.1. Census data for County Meath was considered in the desk-based assessment.

Table 4.3: Electoral Divisions within the Population and Human Health Assessment Study Area

County	Electoral Divisions
Meath	Dunboyne

Figure 4.1: Population and Human Health Assessment Study Area



Source: Mott MacDonald

4.4 Receiving Environment

4.4.1 Land Use

The Proposed Development is a greenfield site within a 'Rural area under Strong Urban Influence' (as stated within the MCDP 2021-2027), surrounded by agricultural land.

The land use area within the site is identified as exclusively agricultural, comprising grazed pasture and non-irrigated arable land, with aerial imagery indicating active cereal crop production in the arable areas by Corine Land Use mapping (Copernicus Land Monitoring Service, 2018).

The Proposed Development is located on lands currently zoned as 'RA-Rural Areas'. The objective of this zoning is to *"To protect and promote in a balanced way, the development of agriculture, forestry and sustainable rural-related enterprise, community facilities, biodiversity, the rural landscape, and the built and cultural heritage."*

Refer to Chapter 10 Land, Soil, Geology and Hydrogeology for more details on land use baseline.

The Proposed Development comprises the development of a 110 kV/38 kV/MV Gas Insulated Switchgear (GIS) electrical substation which includes the dismantling of 1 no. existing 110 kV Overhead Line timber poleset and the construction of 1 no. substation compound containing GIS building, fire walls, transformers and associated electrical equipment, 1 no. Diesel Generator, Line Cable Interface Masts and concrete post and fence. Therefore, a small proportion of land within the development boundary will result in a land-use change because of the development.

4.4.2 Population (Demographics and Settlement Patterns)

The Proposed Development is wholly situated in the administrative boundary of Meath County Council (MCC).

According to Census 2022, the population of the country increased to 5,149,139 in 2022 resulting in a growth of 8.1% from 2016. The population of County Meath in 2022 was 220,826 having increased by 13% between 2016 and 2022. The growth was higher than the national average by 5%.

The population growth within the Dunboyne ED was lower than the national average with a 5.9% increase from 10,094 to 10,698 people from 2016 to 2022.

The settlement pattern in the immediate environment of the Proposed Development (located within the village of Walterstown) is relatively dispersed, predominantly linear housing along the local roads L2218 and Jarretstown Lane. Agricultural buildings are located directly opposite and adjacent to the Proposed Development site. A residential house is located adjacent to the eastern site boundary and a residential house is located to the north of the site, on the opposite side of Jarretstown Lane.

The Proposed Development is not within a settlement boundary however the Dunboyne/Clonee/Pace settlement boundary, also located within County Meath, is located approximately 1.6km northeast of the site.

4.4.3 Housing

The Proposed Development is located within the village of Walterstown in County Meath, approximately 2.1km south west of Dunboyne and approximately 2.3km north west of Leixlip. Dunboyne and Leixlip are the closest towns to the Proposed Development.

As discussed in Section 4.4.2, the Proposed Development is located approximately 1.6km from the Dunboyne/Clonee/Pace settlement boundary in County Meath.

According to Census 2022, there are 105 private households within the study area with 95% of these comprising houses and bungalows. This is significantly higher than the national average of approximately 87% private households comprising houses and bungalows. Table 4.4 shows the percentage of households by type within the study area.

Table 4.4: Type of Accommodations within Population and Human Health Assessment Study Area

Electoral Division	Houses/ Bungalows	Flats/ Apartments	Bed-sits	Caravan/ Mobile Homes
Dunboyne	95.2%	3.8%	0.0%	1.0%

Source: CSO 2022 (<https://www.cso.ie/en/census/census2022/census2022smallareapopulationstatistics/>) (accessed September 2025)

The application site boundary is surrounded by agricultural land with a small number of residences in close vicinity to the site. One residential dwelling is located immediate north of application site boundary across Jarretstown Lane. One house is located adjacent to the application site boundary to the east, as part of a row of houses. A field separates the application site boundary from a row of residential properties approximately 150m southwest of the Proposed Development.

There are no buildings within the Proposed Development site boundary.

A review of planning applications and publicly available mapping in the area show that there are currently no planned residential developments within 500m of the Proposed Development boundary.

4.4.4 Employment and Economic Activity

According to Census 2022, approximately 64.1% of the population aged 15 years and over within the study area are 'at work'. This is higher than the national average of 56%. Table 4.5 outlines the employment by industry within the study area.

Table 4.5: Employment by Industry within Population and Human Health Assessment Study Area

Electoral Division	Agriculture, Forestry and Fishing	Building and Construction	Manufacturing Industries	Commerce and Trade	Transport and Communications	Public Administration	Professional Services	Other
Dunboyne	1.7%	8.3%	7.4%	30.6%	17.4%	8.3%	24.0%	2.5%

Source: CSO 2022 (<https://www.cso.ie/en/census/census2022/census2022smallareapopulationstatistics/>) (accessed September 2025)

4.4.5 Tourism and Recreation

The village of Walterstown is small with few amenities and tourist attractions. There are no footpaths or Public Rights of Way within the Proposed Development site boundary. The closest town, Dunboyne, is located approximately 2.1km north east of the Proposed Development and is a commuter town for Dublin with two rail stations, main road connections (L2227 and L2228 Regional Roads) and is served by three bus routes (70, 70d and 270).

The Royal Canal Amenity Group is located approximately 2.4km south of the site boundary, associated with the Royal Canal Greenway which is approximately 2km south of the site.

In terms of heritage, there are no protected structures or features within or directly adjacent to the Proposed Development.

There are no other known recreational facilities within or directly adjacent to the Proposed Development boundary.

4.4.6 Community Facilities and Amenities

A search of publicly available mapping was carried out to identify educational, regional, health and community facilities within the study area. The Proposed Development does not coincide with any community facilities and amenities like schools, churches, community centres, health clinics or hospitals.

The nearest church to the Proposed Development, 'Dunboyne St Peter and Paul's Roman Catholic Church' is located approximately 2.8km north east of the study area in Dunboyne. The nearest schools to the Proposed Development are also located in Dunboyne. The closest primary school to the Proposed Development, 'St Peter's National School', is approximately 2.4km north east of the application site boundary, whilst the nearest secondary school 'St Peter's College' is located approximately 3km north east of the application site boundary. The nearest community centres to the Proposed Development 'Leixlip Youth and Community Centre' and 'Confey Community Centre' are located approximately 2.6km south east of the application site boundary. Sports clubs 'Dunboyne Athletic Club' and 'St Peter's GAA Dunboyne and Dunboyne Athletic Club' are located approximately 1.9km south and approximately 2km north of the site boundary respectively. Cemeteries 'Rooske Cemetery' and 'Confey Graveyard' are located approximately 1.6km northeast and approximately 1.7km south of the site boundary respectively.

There are no other community facilities in close proximity of the Proposed Development.

4.4.7 Human Health

The general health of population within the study area is at a good status. Most of the population reports having very good health, similar to the trend in the country. According to the data from CSO (2022), approximately 1.6% of the population within the study area are categorised as having 'Bad' and 'Very Bad' health which is 0.1% lower than the national average of 1.7%.

There are no health care centres or hospitals within 500m from the Proposed Development. The nearest primary care centre 'River Forest Medical Centre' to the Proposed Development is located approximately 2.6km south east in Newtown, Leixlip. The nearest hospital with an A&E department, 'Connolly Hospital Blanchardstown', is located approximately 8.5km east of the application site boundary.

4.5 Construction Phase Considerations

4.5.1 Land Use

The proposed site is zoned for 'RA – Rural Areas' as per the MCDP. As discussed in Section 2.7, the Proposed Development is considered to be a Utility Installation and therefore is permitted in principle within the Rural land use zoning. No effects are anticipated during construction phase.

4.5.2 Population (Demographics and Settlement Patterns)

There will be a temporary effect on population (demographic profile or settlement patterns) during the construction phase due to power outages associated with the diversion of the existing 110 kV overhead line. However, these outages will be scheduled, and construction works are temporary in nature.

Workers are expected to commute or locate within the surrounding environs (Wider Dublin area, Leixlip, Dunboyne) during the construction phase.

The Proposed Development will not result in any impacts on settlement patterns and demographics in the study area.

4.5.3 Housing

There will be a temporary impact on the housing along Jarretstown Lane in relation to increased vehicular movements along the road potentially causing congestion and impacting access to the residential area during construction hours. Minor impacts are likely during construction phase.

It is not envisaged that any road closures or diversion routes will be required, and parking will be provided within the proposed site.

4.5.4 Employment and Economic Activity

During the main construction works, the total number of construction staff on-site will vary but are expected to peak at approximately 45 persons.

Employment opportunities will slightly increase within the study area due to construction works. There will also be a temporary and small increase in economic spend in the local communities during the works because of construction workers spending in the area.

4.5.5 Tourism and Recreation

Walterstown and the immediate surrounding area are unlikely to have any impacts on tourism and recreation because of the Proposed Development. Minor impacts to traffic on local roads surrounding the Proposed Development are expected to be temporary and will be managed using traffic mitigation measures and / or restrictions specified in the construction Traffic Management Plan (TMP) which will be updated in advance of construction commencing.

4.5.6 Community Facilities and Amenities

There are no community facilities and amenities within or near the Proposed Development boundary. As discussed in Section 4.4.6, the nearest schools and other community facilities are located outside of Walterstown village in local towns.

As discussed in Chapter 13, construction traffic is likely to use the R157 (north of M3 Parkway and southwest of L2228 Summerhill Road) which facilitates access to these community facilities. The additional vehicle movements during construction are unlikely to have a potential effect on the local road network, however temporary disturbances to regional road users (i.e. commuters and tourists) in the wider area could be expected.

4.5.7 Human Health

The requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013, as amended, will be implemented and complied with in full during the construction phase of the development. As with any construction project, there is still potential for adverse impacts associated with the natural environment and nuisance (such as noise emissions and traffic).

The potential for these effects is discussed separately within the respective chapters of this PECR.

The effects of the Proposed Development on air quality are assessed within Chapter 5, which includes a dust assessment.

The noise and vibration effects due to construction works and construction traffic associated with the Proposed Development are assessed in Chapter 7.

The potential effects on water quality and flood risk are assessed in Chapter 9.

The potential effects on community receptors in relation to road users due to construction traffic are assessed in Chapter 13.

4.6 Operation and Maintenance Phase Considerations

4.6.1 Land Use

The proposed site is zoned for 'RA – Rural Areas' as per the MCDP. As discussed in Section 2.7, the Proposed Development is considered to be a Utility Infrastructure and therefore is permitted in principle within the Rural Areas zoning. Neutral / imperceptible impacts on land use are predicted.

4.6.2 Population (Demographics and Settlement Patterns)

During operations, the Proposed Development will be operated 24-hours per day, seven days per week. The substation will be mostly unmanned. For operation and maintenance purposes, it is anticipated that a two-person crew will visit the substation three days in a week, at a maximum. Welfare facilities will be provided within the substation.

Given the nature of the Proposed Development, the operational phase will not result in an impact on demographics or settlement patterns of the area.

4.6.3 Housing

Given the nature of the Proposed Development, the operational phase will not result in an impact on housing of the area.

4.6.4 Employment and Economic Activity

Given the scale of the proposals, significant adverse impacts on economic profile during the operational phase are not likely. The Proposed Development will support security of electricity supply, resulting in a positive effect for the population within the wider area.

4.6.5 Tourism and Recreation

Given the nature of the Proposed Development, the operational phase will not result in an impact on tourism or the existing recreational facilities in the area.

4.6.6 Community Facilities and Amenities

The Proposed Development will not result in an impact on community facilities and amenities in the area during the operational phase due to the nature of the operation of Proposed Development.

4.6.7 Human Health

No impacts are anticipated on human health and health facilities within the study area.

Findings from EirGrid's evidence-based Environmental Study on EMF (2016) established that; the maximum magnetic field strength measured at all overhead lines, underground cables and substation perimeters surveyed was well below the ICNIRP public exposure reference level, set to protect public health.

Based on the measured data, magnetic field strengths estimated for overhead power lines and underground cables using records of annual load are also well below the ICNIRP reference level to protect public health under typical (mean or median load) and high-power load (95th percentile) conditions.

Therefore, no EMF risk is associated with operation of the Proposed Development.

Effects associated with operational noise from Proposed Development are discussed in Chapter 7.

4.7 Mitigation and Monitoring Measures

Construction activities have the potential to create a nuisance and cause disruption. All work will be carried out in accordance with international and national legislation, and best practice guidance, as detailed in the topic specific chapters of this PECR.

A Construction Environmental Management Plan (CEMP) has been prepared and will be implemented during the construction phase. The CEMP will remain a 'live' document which will be reviewed regularly and revised as necessary in consultation and agreement with the local authority to ensure that the measures implemented are effective.

Mitigation and monitoring measures listed in the following chapters will be implemented:

- Chapter 5 Air Quality
- Chapter 6 Climate
- Chapter 7 Noise and Vibration
- Chapter 9 Surface Water Resources and Flooding
- Chapter 10 Land, Soils, Geology and Hydrogeology
- Chapter 13 Traffic and Transport

ESB will appoint a designated point of contact to deal with community queries and complaints during the construction period.

4.7.1 Monitoring Measures

At all times, these mitigation measures will be strictly monitored and assessed by the EnCoW. Site inspections will be carried out and an inspection log will be made available to the local authority when asked.

4.8 Residual Effects

No residual effects are anticipated because of the Proposed Development given the nature of the proposals.

5 Air Quality

5.1 Introduction

This chapter considers the potential effects on local air quality arising from the construction of a new 110 kV/38 kV/MV Gas Insulated Switchgear (GIS) substation located in the townland of Walterstown, Dunboyne, County Meath (hereafter referred to as 'the Proposed Development'). A detailed description of the Proposed Development is provided in Chapter 3 (Description of the Proposed Development).

As outlined in Chapter 13 (Traffic and Transport), traffic associated with the operation and maintenance of the Proposed Development is expected to be limited and infrequent, with an estimated three vehicles accessing and departing the site per week. On this basis, there are no significant combustion sources therefore associated with the operational phase of the Proposed Development and have therefore not been considered further as part of this assessment.

The air quality assessment includes:

- Identification of applicable legislation and emission limits;
- Assessment of existing air quality conditions in the study area;
- Assessment of construction dust and construction road traffic effects; and
- Identification of mitigation measures for the construction phase where necessary.

5.2 Policy and Guidance

The Chapter 2 Planning Policy and Land Use Context chapter of this report describes the wider policy and legislative context applicable to the Proposed Development. Legislation, policies and guidance documents of potential relevance to the air quality are set out in this section.

5.2.1 National Legislation

5.2.1.1 Ambient Air Quality

Directive 2008/50/EC⁶ on Ambient Air Quality and Cleaner Air for Europe was adopted in May 2008 and consolidates previous air quality directives (apart from the Fourth Daughter Directive). This Directive sets out a range of mandatory limit values (LVs) for different pollutants and times by which they are to be achieved for the purpose of protecting human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants. The Directive 2008/50/EC was transposed into Irish legislation by the Ambient Air Quality Standards Regulations 2022⁷. The Fourth Daughter Directive sets health-based limits on polycyclic aromatic hydrocarbons, cadmium, arsenic, nickel and mercury, for which there is a requirement to reduce exposure to as low as reasonably achievable.

The Air Quality Standards Regulations 2022 implement the Directive 2008/50/EC and define the air quality standards currently applicable in Ireland. These regulations set out upper and lower assessment thresholds for the pollutants of concern. The Air Quality Standards include thresholds to encourage a higher standard of air quality where possible.

⁶ European Union. (April 2008), 'Directive on Ambient Air Quality and cleaner Air for Europe', Directive 2008/50/EC Official Journal, vol. 152, pp. 0001-0044.

⁷ Ambient Air Quality Standards Regulations 2022 (S.I. No 739 of 2022)

The Directive 2024/2881⁸ on Ambient Air Quality and Cleaner Air for Europe was adopted in October 2024. This Directive recasts Directive 2008/50/EC, setting new and stricter limit values for the protection of human health which align more closely with World Health Organisation (WHO) guidance with an objective date of 2030. This Directive also requires Member States to transpose them into their national legislation by 11 December 2026. The Republic of Ireland are yet to transpose these new limit values into their Air Quality Standards Regulations as they still align with 2008/50/EC.

Table 5.1 presents the air quality standards and target values for the pollutants relevant to this assessment as prescribed by the EU and Irish legislation, hereafter referred to as air quality standards (AQS). Standards for the protection of vegetation and ecosystems are referred to as 'critical levels'.

Construction of the proposed development is scheduled for completion by 2029. As a precautionary measure, AQS from Directive 2024/288 have been included in Table 5.1 to ensure compliance in the event of delays to the program that extend into 2030.

Table 5.1: Relevant Air Quality Standards

Pollutant	Averaging Period	AQS / Critical Level (µg/m³)	Allowance	Limit Value Attainment Date
For the protection of human health				
Nitrogen dioxide (NO ₂)	1-hour	200	18 times pcy	1 Jan 2010
	Annual	40	–	1 Jan 2010
	Annual	20 *	–	1 Jan 2030
	1-hour	200 *	3 times pcy	1 Jan 2030
	24-hour	50 *	18 times pcy	1 Jan 2030
Particulates (PM ₁₀)	24-hour	50	35 times pcy	1 Jan 2005
	Annual	40	–	1 Jan 2005
	24-hour	45 *	18 times pcy	1 Jan 2030
	Annual	20 *	–	1 Jan 2030
Fine particulates (PM _{2.5})	Annual	25	–	1 Jan 2020
	Annual	10 *	–	1 Jan 2030
Critical level for the protection of vegetation and ecosystems				
Nitrogen oxides (NO _x)	Annual	30	-	

Source: The Air Quality Standards Regulations 2022 implement the Directive 2008/50/EC

* indicates more stringent AQS from Directive 2024/2881

The AQS presented in Construction of the proposed development is scheduled for completion by 2029. As a precautionary measure, AQS from Directive 2024/288 have been included in Table 5.1 to ensure compliance in the event of delays to the program that extend into 2030.

Table 5.1 are for the protection of human health and only apply at locations of relevant exposure. The Air Quality Standards Regulations sets out that the limit values (AQS) apply everywhere with the exception of:

- any locations situated within areas where members of the public do not have access and there is no fixed habitation;

⁸ European Union. (December 2024), 'Directive on Ambient Air Quality and cleaner Air for Europe', Directive 2024/2881.

- b) in accordance with Article 2(1)⁹, on factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply;
- c) on the carriageway of roads; and
- d) on the central reservations of roads except where there is normally pedestrian access to the central reservation.

The areas where the critical levels for the protection of vegetation apply are as follows:

- a) More than 20 kilometres (km) from an agglomeration (i.e. an area with a population of more than 250,000); and
- b) More than 5km away from other built-up areas, industrial installation or motorways or major roads with traffic counts of more than 50,000 vehicles per day.

5.2.2 National Policies

5.2.2.1 National Air Emission Targets

Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC (hereafter referred to as the National Emissions Reduction Directive) was published in December 2016.

The National Emissions Reduction Directive applied the limits set out in Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants (hereafter referred to as the National Emission Ceiling Directive) until 2020 and established new national emission reduction commitments which are applicable from 2020 and 2030 for SO₂, NO_x, non-methane volatile organic compounds (NMVOC), ammonia (NH₃), PM_{2.5} and methane (CH₄).

In relation to Ireland, the 2020 to 2029 emission targets are 25kt (kilotonnes) for SO₂ (65% on 2005 levels), 69kt for NO_x (49% reduction on 2005 levels), 57kt for NMVOCs (25% reduction on 2005 levels), 118kt for NH₃ (1% reduction on 2005 levels) and 15kt for PM_{2.5} (18% reduction on 2005 levels) as shown in Table 5.2. In relation to 2030, Ireland's emission targets are 85% below 2005 levels for SO₂, 69% reduction for NO_x, 32% reduction for VOCs, 5% reduction for NH₃ and 41% reduction for PM_{2.5}, also shown in Table 5.2.

The report Ireland's Air Pollutant Emissions 1990 – 2030¹⁰ discusses the outlook for future compliance with 2030 targets. It notes that SO₂, NO_x, NH₃ and PM_{2.5} targets are projected to be met in 2030 with existing policies and measures, however no measures have yet been set to ensure compliance with NMVOC emission ceiling for 2030.

Table 5.2: National Air Emission Target (Ireland Air Pollutant Emissions 2020 to 2030)

Pollutant	2020 to 2029 Reduction Commitments (kt) (and % Reduction Compared to 2005 Levels)	2030 Reduction Commitments (kt) (and % Reduction Compared to 2005 Levels)
SO ₂	25.5	11.0
	-65%	-85%
NO _x	69.0	42.0

⁹ These exceptions remain unchanged under Directive 2024/2881, with the exception that factory premises are now in accordance with Article 4(1).

¹⁰ Environmental Protection Agency (2022), Ireland's Air Pollutant Emissions – 1990-2030. Available at: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-Irelands-Air-Pollutant-Emissions-report_2021Final.pdf (accessed 23 February 2024)

Pollutant	2020 to 2029 Reduction Commitments (kt) (and % Reduction Compared to 2005 Levels)	2030 Reduction Commitments (kt) (and % Reduction Compared to 2005 Levels)
	-49%	-69%
NMVOC	57.0	51.6
	-25%	-32%
NH ₃	118.4	113.6
	-1%	-5%
PM _{2.5}	15.5	11.2
	-18%	-41%

Source: Ireland's Air Pollutant Emissions 1990-2030.

5.2.2.2 Clean Air Strategy

The Clean Air Strategy was published in April 2023¹¹ and provides the high-level strategic policy framework to identify and promote the integrated measures across government policy that are required to reduce air pollution and promote cleaner ambient air, while delivering on wider national objectives. The strategy commits Ireland to achieving the new World Health Organisation (WHO) guideline values for air quality by 2040, with progress to be measured against interim targets by 2026 and 2030. This Strategy sets out seven strategic frameworks includes:

- Targeted policy measures
- Ambition and strong governance
- Policy developments
- Legislation
- Enforcement
- Monitoring
- Communications

The aims of these key strategic frameworks are:

- To set the appropriate targets and limits to ensure continuous improvements in air quality across the country, to deliver health benefits for all.
- To ensure the integration of clean air considerations into policy development across Government.
- To increase the evidence base that will help us to continue to evolve our understanding of the sources of pollution and their impacts on health, in order to address them more effectively.
- To enhance regulation required to deliver improvements across all pollutants.
- To improve the effectiveness of our enforcement systems.
- To promote and increase awareness of the importance of clean air, and the links between cleaner air and better health.
- To develop the additional targeted/specific policy measures as required to deal with national or local air quality issues.

¹¹ Department of the Environment, Climate and Communications; Clean Air Strategy. Available at: <https://www.gov.ie/en/press-release/aa501-government-approves-irelands-first-ever-clean-air-strategy/#:~:text=The%20new%20Clean%20Air%20Strategy,polluting%20fossil%20fuels%2C%20for%20example.>

5.2.3 Local Policy

5.2.3.1 Meath County Development Plan 2021-2027

The consolidated Meath County Development Plan 2021-2027 (incl. V1, V2 & V3) outlines the framework for guiding future development in County Meath. Several documents are presented which outline the framework for development across the county between 2021 and 2027. The latest version (V3) was adopted in January 2025.

DM OBJ 76: *“in the assessment of individual energy development proposals, the council will take the following criteria into account:*

- *The proper planning and sustainable development of the area*
- *The environmental and social impacts of the Proposed Development”*
- Mitigation Strategy: Promote and facilitate energy efficient building design, operations, environmentally sustainable layout and locations

5.2.4 Guidelines

In addition to the specific statutory air quality standards, the assessment has referred to national guidelines, where available, in addition to international standards and guidelines relating to the assessment of ambient air quality impacts. These are summarised below:

- Air Quality Assessment of Proposed National Roads – Standards (Transport Infrastructure Ireland, 2022)
- Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document (Transport Infrastructure Ireland, 2022)
- Land-Use Planning and Development Control: Planning for Air Quality (Environmental Protection UK and Institute of Air Quality Management (IAQM), 2017)
- Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management, 2024)

5.3 Methodology

5.3.1 Approach to Data Collection

The following information and data sources have been considered during the production of this chapter and are presented within Table 5.3.

Table 5.3: Data Sources used to inform this Air Quality Chapter

Data source	Date Published	Data contents
Environmental Protection Agency (EPA)	2025	Ambient air quality monitoring

5.3.2 Approach to Assessment of Effects

5.3.2.1 Construction Phase

Construction Dust

Construction activities can result in temporary effects from dust. Dust is a generic term and usually refers to particulate matter in the size range of 1-75 microns in diameter. The most common effects from dust emissions are soiling and increased ambient PM₁₀ concentration. Dust can arise from numerous construction activities such as concrete batching, piling, rock

breaking, wind erosion on material stockpiles and earth moving. It can be mechanically transported either via wind or through the movements of vehicles onto public roads (transport of debris on vehicle wheels or uncovered loads).

The IAQM guidance¹² recommends splitting the construction activities into four separate source categories, as listed below, and determining the dust risk associated with each of these individually. Each assessment has determined the risk of each of the following categories:

- Demolition
- Earthworks
- Construction
- Trackout¹³.

The risk of each source for dust effects can be described as 'negligible', 'low risk', 'medium risk' and 'high risk' depending on the nature and scale of the construction activities and the proximity of sensitive receptors to the construction activities or application site boundary. Each assessment is used to identify the mitigation measures proportional to the level of risk to reduce the effects such that they are not significant.

The assessment considers three separate effects from dust:

- Annoyance due to dust soiling
- Harm to ecological receptors with account being taken of the sensitivity of the area that may experience these effects; and
- Risk of human effects due to increased exposure to PM₁₀.

As per the IAQM guidance, Step 1 of the assessment applies screening criteria to the Proposed Development which states that an assessment will be required where there is:

- A 'human receptor' within:
 - 250m of the boundary of the application site; and/or
 - 50m of the route(s) used by construction vehicles on the public highway up to 250m from the site entrance(s)
- An 'ecological receptor' within
 - 50m of the boundary of the application site; and/or
 - 50m of the route(s) used by construction vehicles on the public highway up to 250m from the site entrance(s).

No further assessment is required if there are no receptors within these defined boundaries.

To assess the likely dust risk, the need to quantify the overall dust emission magnitude ('small', 'medium' or 'large') from each of the dust sources identified (demolition, earthworks, construction and trackout) is first established in alignment with the criteria provided in Table 1 in Appendix 5.1.

The sensitivity of receptors is then defined (as 'high', 'medium' or 'low') for each dust effect (dust soiling, human health and ecosystem impacts) and the sensitivity of the surrounding area

¹² IAQM (2024). 'Guidance on the assessment of dust from demolition and construction – January 2024.
Available at: [Construction-Dust-Guidance-Jan-2024.pdf](#)

¹³ Trackout = "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 network. This arises when heavy duty vehicles (HDVs) leave the construction/ demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site" as defined by the IAQM guidance on the assessment of dust from demolition and construction.

determined for each activity. The sensitivity of the area is based on the distance of the source to the closest receptors, the receptors sensitivity and in the case of PM₁₀ effects, the local background concentration, as outlined in Table 2 to Table 5 in Appendix 5.1. The highest level of area sensitivity defined for dust effect has been used in each assessment.

The final step of the assessment combines the dust emission magnitude and the sensitivity of the area to determine the dust risk categories for each activity for dust soiling and health effects, as outlined in Table 6 to Table 9 in Appendix 5.1.

The dust risk category defined for each dust source and effect is then used to determine appropriate site-specific mitigation measures to be adopted. It should be noted that, in line with the recommendations of IAQM guidance, significance is only assigned to construction effects following mitigation. To determination of the significance effects, as recommended in the IAQM guidance, implementation of proportional and appropriate mitigation measures should result in construction dust having a negligible impact on air quality and the overall effect being not significant. There may be some cases, for example, there is inadequate access to water for dust suppression to be effective, and even with other mitigation measures in place there may be a significant effect. Results of the dust assessment are presented in Section 5.5.

Construction Site Plant and Machinery Emissions

Construction often requires the use of different equipment such as excavator, cranes and onsite generators. All construction plants have an energy demand with some resulting in direct emission to air from exhausts. The IAQM guidance notes that the exhaust emissions from onsite plant and site traffic are unlikely to make a significant impact on local air quality. Given construction is due to begin in 2027, the effects of plant emissions on local air quality are not considered significant as emissions are small and air quality monitoring, presented in Section 5.4, shows monitored NO₂, PM₁₀ and PM_{2.5} concentrations are well below the AQS. Construction plant emissions have therefore not been assessed further with respect to air quality. However, mitigation measures to reduce the effects on local air quality are presented in Section 5.6.

Construction Road Traffic Emissions

The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document*¹⁴ advises that where construction activities are programmed to last less than six months, they are unlikely to constitute a significant air quality effect and can be scoped out of assessment. Where construction activities are programmed to be longer than six months and would change traffic flows by more than the following, the assessment of traffic emissions should be undertaken when traffic flows exceed the following criteria:

- 1000 Annual average daily traffic (AADT)
- 200 heavy duty vehicles (HDV) ¹⁵ expressed as an AADT
- 10 kilometres per hour (kph) expressed as a daily average speed
- 20 kph expressed as a peak hour speed

If none of the above criteria are met, then the effects of construction traffic on air quality are considered to be not significant. As discussed in Section 3.4.1, the duration of the Proposed Development construction period will be two and half years. As a result, the TII screening criteria applies.

¹⁴ Transport Infrastructure Ireland (2022), 'Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document'

¹⁵ HDVs are vehicles greater than 3.5 tonnes and include buses and coaches

There is also more stringent screening criteria available from The Environmental Protection UK and Institute of Air Quality Management (EPUK / IAQM)¹⁶ guidance which indicates that an assessment of traffic emissions is likely to be required for construction sites that will generate an additional AADT flow of greater than 100 Heavy Duty Vehicles (HDVs)¹⁷ per day or greater than 500 Light Duty Vehicles (LDV)¹⁸ per day.

At its peak, the Proposed Development is estimated to generate an additional 30 HDV and 72 LDV daily. This equates to 60 HDV and 144 LDV movements. This would be lower, when averaged over the full duration of the proposed construction period. However, given the peak construction traffic movements are well below both the TII and the more stringent EPUK/IAQM criteria, no further consideration has been given to the effects of construction road traffic on ambient air quality for the Proposed Development.

5.3.3 Study Area

As mentioned in Section 5.3.2, this assessment of the Proposed Development will focus on construction dust only. In line with IAQM's 'Guidance on the assessment of dust from demolition and construction'¹², this assessment considers human health receptors and ecologically designated sites within 250m of the construction site boundary and within 50m of the routes used by construction vehicles on the public roadway, up to 250m from the site entrances.

5.4 Receiving Environment

5.4.1 Overview

Information on existing air quality in Ireland can be obtained from the Environmental Protection Agency (EPA) who undertake monitoring at a number of locations across the country. For the purpose of air quality, Ireland is split into four main regions¹⁹:

- Zone A: Dublin conurbation;
- Zone B: Cork conurbation;
- Zone C: 23 cities and large towns with population >15,000 (Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, Tralee, Kilkenny, Carlow, Naas, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise); and
- Zone D: Rural Ireland, i.e. the remainder of the state excluding zones A, B and C.

5.4.2 Background Air Quality Data

The Proposed Development is located within Zone D within a rural setting. As a result, any site classified as Zone D by the EPA can be considered representative, no matter the distance from the Proposed Development. The EPA undertook monitoring of NO₂ and/or PM₁₀ at 21 locations, representative of Zone D sites in 2024²⁰. Of these 21 locations, two have been highlighted as representative of the Proposed Development. 'Emo Court County Laois' is located approximately 56km southwest, monitoring NO₂ only and 'Kilkitt', located approximately 80km

¹⁶ Environmental Protection UK and Institute of Air Quality Management (2017), 'Land-Use Planning and Development Control: Planning for Air Quality'

¹⁷ HDV is refer to heavy good vehicles (HGVs) and buses greater than 3.5 tonnes.

¹⁸ LDVs is refer to cars and small vans less than 3.5 tonnes.

¹⁹ Environmental Protection Agency (2021), 'Air Quality Zones'. Available at; <https://airquality.ie/information/air-quality-zones>

²⁰ Environmental Protection Agency (2025), 'Summary Tables 2024' Available at: <https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.epa.ie%2Fpublications%2Fmonitoring--assessment%2Fair%2FSummary-Tables-2024.xlsx&wdOrigin=BROWSELINK>

north, monitoring both NO₂ and PM₁₀. As these sites did not monitor PM_{2.5}, a further site at Edenderry has been selected. Although, Edenderry is classified as a Zone D monitoring location, as it is situated within the main street of the small town of Edenderry. Considering this, concentrations would be expected to be slightly higher in Edenderry when compared to the Proposed Development.

Locations are shown in Figure 5.1 and pollutants monitored at all three monitoring sites presented in Table 5.4, together with the rationale for reporting each station.

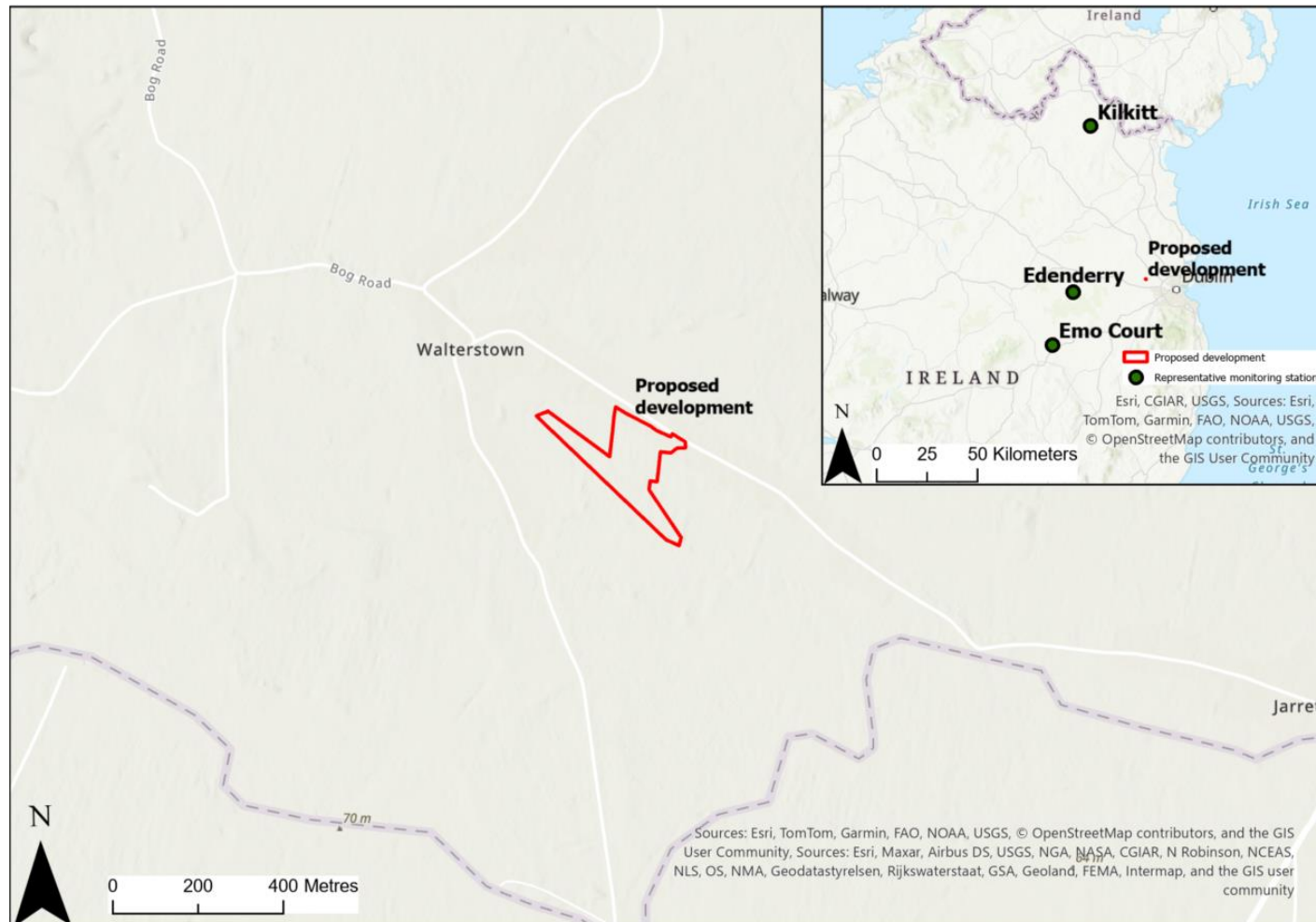
Table 5.4: Representative monitoring stations

Station Name	Location		Site Type	Distance from Proposed Development	Pollutants monitored	Rationale for reporting
	X	Y				
Emo Court Co. Laois	653677	706638	Rural Ireland (Zone D)	56km southwest	NO ₂	NO ₂ monitoring in similar rural environment to the Proposed Development
Kilkitt	672859	815335	Rural Ireland (Zone D)	80km north	NO ₂ and PM ₁₀	PM ₁₀ and NO ₂ monitoring in similar rural environment to the Proposed Development
Edenderry	663427	732896	Suburban	37km west	NO ₂ , PM _{2.5} and PM ₁₀	Contains PM _{2.5} monitoring

Source: EPA Annual Air Quality Reports and EPA Maps <https://gis.epa.ie/EPAMaps/>

Note: Coordinates are in Irish Transverse Mercator (ITM)

Figure 5.1: Proposed Development Location and Representative Air Quality Monitoring Stations



Source: Mott MacDonald

Table 5.5, Table 5.6 and Table 5.7 present annual mean NO₂, PM₁₀ and PM_{2.5} monitoring results from these three sites between 2021 and 2024. Data from 2021 has the potential to be impacted by effects associated with the coronavirus pandemic such as a reduction in overall traffic movements resulting in reduced background pollutant concentrations. Therefore, data from 2021 may not be representative of existing concentrations.

Table 5.5: Annual mean NO₂ concentration

Site Name	Site Type	Annual mean NO ₂ concentrations (µg/m ³)			
		2021	2022	2023	2024
Emo Court	Rural Ireland	3.6 (93)	3.3 (97)	2.3 (99)	2.6 (99)
Kilkitt	Rural Ireland	2.4 (100)	2.0 (100)	1.7 (77)	2.3 (98)
Edenderry	Suburban	-	7.3 (99)	8.6 (93)	9.7 (99)

Source: EPA Annual Air Quality Reports
Data Capture is presented in parentheses

Table 5.6: Annual mean PM₁₀ concentration

Site Name	Site Type	Annual mean PM ₁₀ concentrations (µg/m ³)			
		2021	2022	2023	2024
Kilkitt	Rural Ireland	7.8 (98)	8.5 (97)	7.1 (93)	7.1 (87)
Edenderry	Suburban	-	17.7 (99)	16.3 (100)	15.6 (99)

Source: EPA Annual Air Quality Reports
Data Capture is presented in parenthesis
- indicates no data available due to poor data capture.

Table 5.7: Annual mean PM_{2.5} concentration

Site Name	Site Type	Annual mean PM _{2.5} concentrations (µg/m ³)			
		2021	2022	2023	2024
Edenderry	Suburban	-	13.4 (96)	12.4 (100)	12.0 (99)

Source: EPA Annual Air Quality Reports
Data Capture is presented in parenthesis
- indicates no data available due to poor data capture.

Tables 5.5 and Table 5.6 show mean annual monitored concentrations of NO₂ and PM₁₀ are within compliance of the respective national AQS, even the more stringent limit values of Directive 2024/2881. Table 5.7 also highlighted that PM_{2.5} meets the current AQS standards, however in 2024, concentrations for PM_{2.5} were above the stringent limit values of Directive 2024/2881. As highlighted above, Edenderry is not fully representative of the Proposed Development, as it is situated in a more urban location. Given the lower concentration of PM₁₀ at the other two representative monitoring sites, it can be inferred that PM_{2.5} will also be lower and likely to meet the more stringent Directive 2024/2881.

5.5 Construction Phase Considerations

The magnitude and sensitivity descriptors that have been applied to assess the overall effect of the construction phase are presented in Appendix 5.1. Table 5.8 presents a summary of the dust emission magnitude assigned to each construction activity based on these descriptors presented in Table 1 within Appendix 5.1.

There are no ecological designated sites within 50m of potential dust sources of the Proposed Development or from roads to be used by construction traffic. The nearest ecological designation is the Rye Water Valley/Canton Special Area of Conservation (SAC) located approximately two kilometres south of the Proposed Development. Therefore, ecological designations are not considered further as part of this assessment.

Table 5.8: Dust Emission Magnitude

Activity	Dust Emission Magnitude	Justification
Demolition	Not applicable	No demolition activities.
Earthworks	Medium	Total site area of the Proposed Development is approximately 36,000m ² .
Construction	Small	Total building volume is approximately 10,000m ³ , no concrete batching, sandblasting and crushing on site.
Trackout	Large	It is estimated that there could be approximately 60 HGV movements in a single day during the peak of works.

Table 5.9 presents the sensitivity of the receptors to effects caused by construction activities and is based on the criteria presented in Appendix 5.1 (Table 2 to Table 5). Figure 5.2 and Figure 5.3 present the dust assessment buffers.

Table 5.9: Sensitivity of the Area

Activity	Dust soiling		Health effects of PM ₁₀	
	Sensitivity of Area	Comment	Sensitivity of Area	Comment
Demolition	Not applicable	No demolition activities.	Not applicable	No demolition activities.
Earthwork	Medium	There are between 1 and 10 high sensitivity receptors (approximately 3 residential properties within 20m of the work area).	Low	Background annual mean PM ₁₀ concentrations are <24µg/m ³ (See Table 5.6). There are between 1 and 10 high sensitivity receptors (approximately 42 residential properties) within 250m of the work area.
Construction	Medium		Low	
Trackout	Medium	There are between 1 and 10 high sensitivity receptors (approximately 9 residential properties within 20m of the trackout route (up to 250m from potential site exits)).	Low	As above, background annual mean PM ₁₀ concentrations are <24µg/m ³ (See Table 5.6). There are between 1 and 10 high sensitivity receptors (approximately 11 residential properties within 50m of the work area and up to 200m from potential site exits).

The overall risks to receptors to dust effects are presented in Table 5.10 below. These are based on Appendix 5.1 (Table 6 to Table 9).

Table 5.10: Summary of the risk of construction effects

Activity	Dust soiling effects	Human health effects
Demolition	Not applicable	Not applicable
Earthworks	Medium	Low
Construction	Low	Negligible
Trackout	Medium	Low

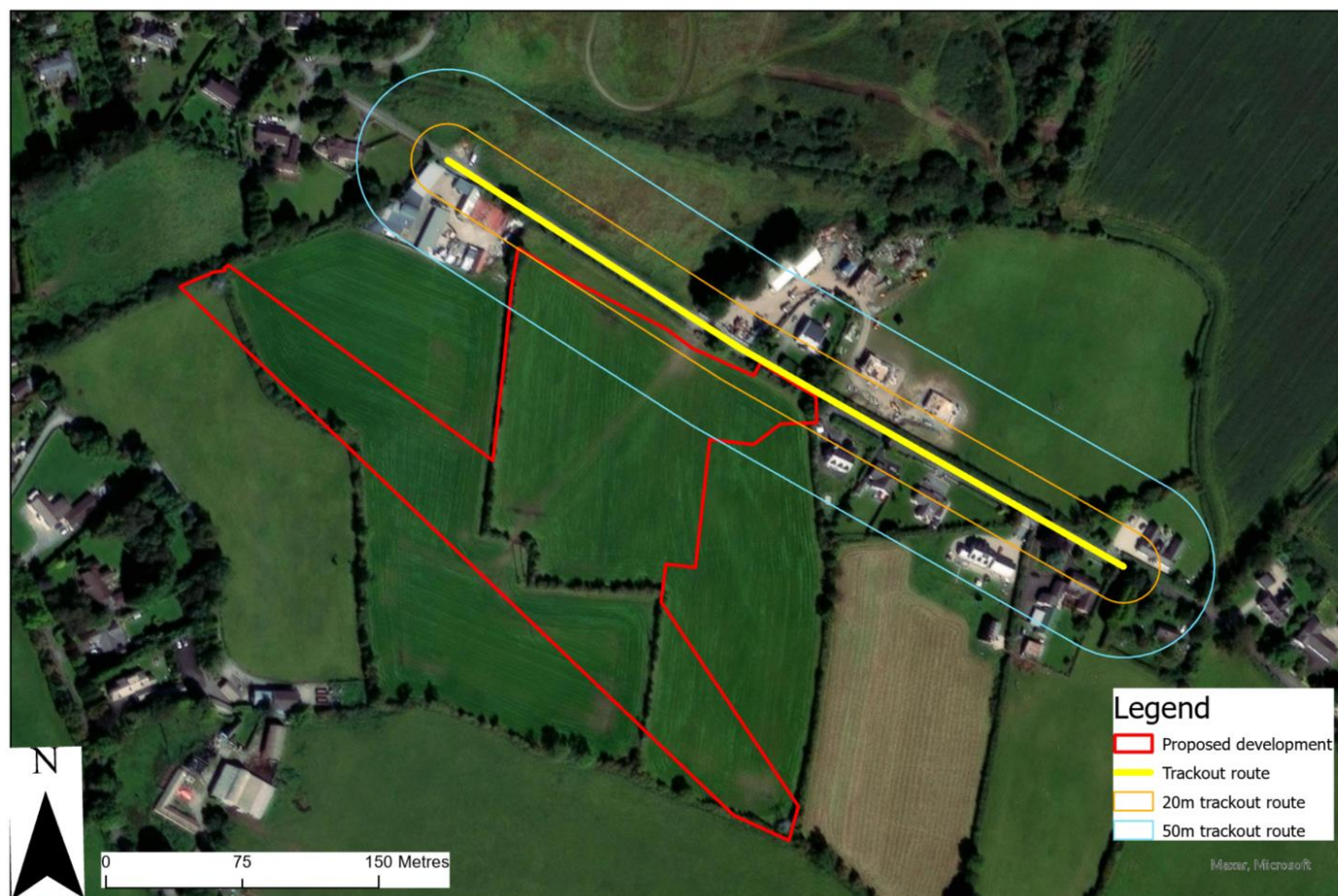
Dust soiling effects are 'Low' to 'Medium' and human health effects are 'negligible to 'Low' without mitigation. Mitigation measures appropriate for the level of risk have been presented in 5.6.1. These measures are set out within the Construction Environmental Management Plan (CEMP) which forms part of this submission.

Figure 5.2: Construction Buffering Zones



Copyright: Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/ NASA, USGS
Source: Mott MacDonald, 2025

Figure 5.3: Trackout buffering zones



Copyright: Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, GeoTechnologies, Inc, METI/ NASA, USGS
Source: Mott MacDonald, 2025

5.6 Mitigation and Monitoring Measures

5.6.1 Mitigation Measures

During the construction phase, there may be associated dust effects that are typical of such a development. Construction activities associated with the Proposed Development with no mitigation are predicted to have 'Medium' risk at worst for dust soiling effects, 'Low' risk at worst for human health effects.

Best practice mitigation measures from the IAQM²¹ guidance are presented below, in line with 'Medium' risks and will be incorporated into the Proposed Development's CEMP.

5.6.1.1 Standard Mitigation Applicable to all Areas (for medium risks)

- Communication and Site Management
 - Develop and implement a stakeholder communications plan before work commences on site.
 - Display the name and contact details of person(s) accountable for air quality and dust issues on the application site boundary. This will be the Environmental Manager.
 - Display the head or regional office contact information.
 - Develop and implement a dust management plan (DMP), which will include measures to control other emissions.
 - Record all dust and air quality complaints, identify causes and take appropriate measures to reduce emissions in a timely manner and record the measures taken.
 - Make a complaint log available to the planning authority, when requested.
 - Record any exceptional incidents that cause dust and or air emissions, either on or off site, and the action taken to resolve the situation in the log book.
- Monitoring
 - Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, and record inspection results. This will include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of the application site boundary, with actions taken to reduce dust further if necessary.
 - Carry out regular site inspections, record inspection results and make an inspection log available to the planning authority, when requested.
 - Increase frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Preparing and maintaining the site
 - Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible.
 - Erect solid screens or barriers around dusty activities or the application site boundary that are at least as high as any stockpiles on site.
 - Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period
 - Avoid site runoff of water or mud.
 - Keep site fencing and barriers clean using wet methods.

²¹ Institute of Air Quality Management (January 2024 (Version 2.2)). 'Guidance on the assessment of dust from demolition and construction.'

- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Operations vehicles / machinery and sustainable travel:
 - 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 a maximum-speed-limit of 15mph (24k/hr) on surfaced and 10mph (16km/hr) on unsurfaced haul roads and work areas
- Operations
 - Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.
 - Ensure an adequate water supply on the site for effective dust/ particulate matter suppression/ mitigation using non-potable water, where possible and appropriate.
 - 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 wherever appropriate.
 - Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Waste Management
 - No bonfires and burning of waste materials. Measures specific to earthworks
 - Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
 - Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
 - Only remove the cover in small areas during work and not all at once.
 - Measures specific to construction
 - 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, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Measures specific to trackout
 - Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
 - Avoid dry sweeping of large areas.
 - Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
 - Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
 - Record all inspections of haul routes and any subsequent action in a site log book.
 - Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsters and regularly cleaned.
 - Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10m from receptors where possible.

5.6.2 Monitoring Measures

At all times, these mitigation measures will be strictly monitored and assessed by the Environmental Manager. Site inspections will be carried out, and an inspection log will be made available to the local authority on request.

5.7 Residual Effects

With the successful incorporation of best practice mitigation as presented in Section 5.6 and the CEMP which accompanies the application, the residual impacts on dust emissions from construction activities would be negligible.

There are no significant impacts predicted during the construction and operational phases for air quality.

6 Climate

6.1 Introduction

This chapter describes the potential effects from the construction and operation of the Proposed Development (as described in Chapter 3) on climate. The assessment is qualitative in nature and considers the potential greenhouse gas (GHG) emissions²² arising from the Proposed Development and recommends mitigation measures to reduce potential impacts.

6.2 Policy and Guidance

The need for the Proposed Development is supported by European, national, regional, and local planning policies and objectives relating to energy infrastructure and energy security of supply. This section provides an overview of the relevant policies and guidelines.

GHG emissions can trap heat in the atmosphere and are recognised by the Kyoto Protocol²³ as needing to be controlled to limit the global temperature increase. The reduction of GHG emissions to achieve a low-carbon economy and mitigate climate change is a national ambition. Ireland is committed to maintaining the security of the country's energy system in the most cost-effective manner, whilst also achieving net zero GHG emissions by 2050 (Ireland's Climate Action Plan²⁴, updated 2025).

6.2.1 European Policies

6.2.1.1 Regulation (EU) 2021/1119²⁵

The Regulation (EU) 2021/1119, known as the European Climate Law, aims to align all EU policies to have a reduction of 55% in net GHG emissions by 2030 and achieve net zero emissions by 2050. This regulation includes the strengthening of policies with the climate neutrality objective and policies on adaptation to climate change, as well as the commitment to negative emissions after 2050.

The European Climate Law recognises the importance of a secure energy system and technological innovation as a driver for achieving the climate neutrality objective.

²² Greenhouse Gases (GHGs) refer to the seven gases covered by the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃). These are measured in units of carbon dioxide equivalent (CO₂e) which expresses the impact of each gas in terms of the amount of CO₂ that would create the same impact. GHGs are commonly referred to as carbon.

²³ UNFCCC (2012), Kyoto Protocol – Targets for the first commitment period, 2012, Available online at: <https://unfccc.int/process-and-meetings/the-kyoto-protocol/what-is-the-kyoto-protocol/kyoto-protocol-targets-for-the-first-commitment-period>.

²⁴ Department of Climate, Energy and the Environment (DCEE) (2025), Climate Action Plan 2025, Available online at: <https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/climate-action-plan-2025/>

²⁵ European Parliament (2021), Regulation (EU) 2021/1119, Available online at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R1119>.

6.2.1.2 Energy Roadmap 2025²⁶

The Energy Roadmap 2050 explores how the energy system can transition to a lower carbon system, in line with the targets for reducing greenhouse gasses. Further detail is provided in Chapter 2 of this PECR.

6.2.2 National Policies

6.2.2.1 Project Ireland 2040²⁷ - National Planning Framework

Project Ireland 2040 is a long-term strategy that aims to align the investment plans with the opportunities for Irish citizens and protection of Ireland's built and natural environment, including the climate ambitions. As described in further detail in Chapter 2, National Policy Objective 69 is of particular importance to climate change mitigation as it refers to reducing our carbon footprint by integrating climate action into the planning system.

6.2.2.2 Integrated National Energy and Climate Plan (NECP)²⁸

The National Energy and Climate Plan (NECP) outlines the country's energy and climate policies in detail for the period from 2021 to 2030 and looks onwards to 2050. The NECP collates the policies, measures and actions related to energy and climate outlined in a range of government plans: such as the Climate Action Plan, the National Development Plan, and Project Ireland 2040, into one cohesive document.

One of the measures within the NECP outlines that Ireland will “*facilitate infrastructure projects, including private sector commercial projects, which enhance Ireland's security of supply and are in keeping with Ireland's overall climate and energy objectives.*” Further detail on this is contained in Chapter 2.

6.2.2.3 Climate Action and Low Carbon Development (Amendment) Act 2021²⁹:

The Climate Action and Low Carbon Development Act aims to transition Ireland to a climate-resilient and climate-neutral economy by 2050. It introduces a legally binding framework for carbon budgets to set limits on GHG emissions for various sectors of the economy.

6.2.2.4 Climate Action Plan 2025^{30,24}

The most recent Climate Action Plan (CAP25) is the final CAP of the first five-year Carbon Budget. The Plan lays out a roadmap of actions which will ultimately lead Ireland to meeting their climate-related objectives such as being net zero by 2050. It notes that works to reinforce the electricity grid will be required to ensure it has the capacity to accommodate the increased power flows that will come as a result of the CAP 25. Further details are contained in Chapter 2.

²⁶ Energy Roadmap 2050, European Commission, 2014 [online] Available at: https://energy.ec.europa.eu/publications/energy-roadmap-2050_en [Accessed September 2025].

²⁷ Government of Ireland (2018), Project Ireland 2040, Available at: <https://www.gov.ie/en/campaigns/09022006-project-ireland-2040/>

²⁸ Government of Ireland (2024), Ireland's integrated National Energy and Climate Plan 2021-2030, Available online at: https://commission.europa.eu/document/download/2f11d301-7386-4078-957f-4a82c9b77efe_en?filename=IE_FINAL%20UPDATED%20NECP%202021-2030%20%28English%29.pdf

²⁹ Government of Ireland (2021), Climate Action and Low Carbon Development (Amendment) Act 2021, available online at: <https://www.irishstatutebook.ie/eli/2021/act/32/enacted/en/html>

³⁰ Climate Action Plan 2024, gov.ie, 2024 [online] Available at: <https://www.gov.ie/en/publication/79659-climate-action-plan-2024/> [Accessed September 2025].

6.2.2.5 National Policy Position on Climate Action and Low Carbon Development³¹

This document states a high-level direction of the Government to implement low-carbon economy plans.

6.2.3 Regional Policy

The Regional Spatial and Economic Strategy for the Eastern and Midlands Region³² (RSES) is a strategic planning and investment framework. Further details on this are set out in Chapter 2.

6.2.4 Guidelines

This PECR follows the considerations set out in the Institute of Sustainability and Environmental Professionals (ISEP³³) Guidance document on assessment of GHG Emissions and evaluating their significance³⁴ (referred to hereafter as the ISEP Guidance). This guidance includes the recommended approach for how to undertake a GHG assessment, the likely mitigation opportunities, and how to consider significance depending on the effects of a project.

PAS 2080:2023 Carbon Management in Buildings and Infrastructure³⁵ sets out a common approach to whole life carbon management in the provision of economic infrastructure. It promotes reduced carbon, reduced cost infrastructure delivery, more collaborative ways of working and a culture of challenge in the infrastructure value chain.

6.3 Methodology

6.3.1 Approach to Data Collection

A qualitative approach was taken to complete the assessment of the Proposed Development. The method for this report was as follows:

- Identify a local or national baseline of publicly available GHG emissions data including power sector emissions.
- Qualitatively assess the impact of the activities related to the proposed project including determining whether these will likely have a positive or negative effect on climate, compared to a scenario without the proposed project.
- Highlight potential mitigation measures.

The following information and data sources (Table 6.1) have been considered in preparing this chapter.

Table 6.1: Data Sources used to inform this Chapter

Data source	Date published	Source Contents
Ireland's National Inventory Report 2025	March 2025	Contains the GHG emissions inventory between 1990-2023
Climate Action Plan 2025	April 2025	National GHG commitments

³¹ Government of Ireland (2021), National Policy Position on Climate Action and Low Carbon Development, Available online at: <https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/national-policy-position-on-climate-action-and-low-carbon-development/>

³² EMRA (2019), Regional Spatial and Economic Strategy for the Eastern and Midland Region, Eastern and Midland Regional Assembly, Available at: <https://www.emra.ie/rses/>

³³ Formerly known as the Institute of Environmental Management and Assessment (IEMA)

³⁴ IEMA (2022), Assessing Greenhouse Gas Emissions and Evaluating their Significance, Available online at: https://www.iema.net/media/xmgpooopk/2022_iema_greenhouse_gas_guidance_eia.pdf

³⁵ British Standards Institution (2023), PAS 2080:2023 Carbon Management in Buildings and Infrastructure.

6.3.2 Approach to Assessment of Effects

A qualitative assessment has been undertaken which is deemed appropriate for the nature and scale of the project. This assessment is broken down by activity and includes the construction and operational stages of the project.

The ISEP guidance on evaluating significance of GHG emissions in EIA states; “*all new GHG emissions contribute to a negative environmental impact. However, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project’s emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible*”.

The different significance criteria are defined in the ISEP Guidance and include major adverse, moderate adverse, minor adverse, negligible and beneficial. Major or moderate adverse effects and beneficial effects are significant in the ISEP Guidance. Minor adverse and negligible effects are not significant.

As a detailed design has not yet been completed, data is not available to allow for a quantified assessment of the GHG emissions from the construction and operation of the Proposed Development. A qualitative assessment is presented within this chapter.

6.3.3 Study Area

GHG emissions are not bound by location. They affect the concentration of CO₂e in the global atmosphere, therefore impact assessment is based on the activities associated with the Proposed Development, rather than any specific geographical study area.

6.4 Receiving Environment

The function of the Proposed Development is to ensure reliable power distribution from energy generation sources to consumers. The carbon baseline is therefore taken as the energy sector GHG emissions generated in Ireland in 2023³⁶.

Based on Ireland’s National Inventory Report 2025³⁷, in 2023 the energy sector generated 31.4 MtCO₂e from which 7.5 MtCO₂e come from public electricity and heat production. This data comes from 15 electricity generating stations and includes the GHG emissions generated from coal, peat, oil, natural gas, and municipal solid waste (MSW) combustion.

According to the Inventory Report, there have been improvements in electricity production through energy efficiency and changing fuel types (including renewable energy generation). Overall, the trend in emissions from electricity and heat production has seen a decrease in emissions over the period 1990-2022. In 2023, emissions from this sector were at an all-time low as electricity imports accounted for almost 10 per cent of demand and renewables achieved over 40 per cent.

6.5 Construction Phase Considerations

A qualitative assessment has been undertaken which identifies the main activities that will have a carbon impact during the construction phase. These activities have been identified based on previous project experience and are outlined in Table 6.2.

³⁶ The year 2023 has been used as the baseline year as this is the most recent data available within Ireland’s National Inventory Report 2025.

³⁷ Environmental Protection Agency (2025), Ireland’s National Inventory Document 2025, available online at: <https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/Ireland's-NID-2025.pdf>

Table 6.2: Potential Construction Effects

Potential Effects	Description
Carbon emissions associated with the manufacture and processing of raw materials into products	Most of the carbon emissions in the construction phase are anticipated to be associated with manufacturing of materials for the substation. This includes the emissions associated with the manufacture of transformers and other electrical equipment within the substation. There will also be emissions associated with manufacture of access road materials, and line cable interface masts, and cabling.
Carbon emissions associated with transporting construction products to site	All materials will require transportation to the construction site. There will likely be a higher carbon impact for bespoke electrical equipment such as the transformers, which are often sourced from mainland Europe or internationally.
Carbon emissions associated with onsite construction activities	The site will require initial clearance and enabling works as well as civil works and installation of the substation. Carbon emissions are expected to result from fuel combustion within vehicles and / or machinery used during construction.

The project's construction carbon footprint would be relatively small and would not prevent Ireland from meeting their net-zero target. Therefore, in line with the ISEP Guidance, the effects from construction phase emissions are minor adverse and not significant.

6.6 Operation and Maintenance Phase Considerations

A qualitative assessment has been undertaken which identifies the main activities that will have a carbon impact during the operational phase. These activities have been identified based on previous project experience and are outlined in Table 6.3.

Table 6.3: Potential Operation and Maintenance Effects

Potential effects	Description
Carbon emissions associated with ongoing maintenance, repair & replacement	Some electrical equipment may have to be replaced more frequently throughout the design life which will have an impact on the lifetime carbon emissions.
Carbon emissions associated with lighting	The Proposed Development will require lighting for the substation building which will contribute to the overall carbon footprint of the project.

Primary emission sources are likely to be associated with ongoing maintenance, repair and replacement, and lighting. The operational emissions are anticipated to be smaller than the construction stage emissions. Emissions of SF₆ gases to the atmosphere are not considered to be a significant risk as the new switchgear will be contained and monitoring of SF₆ will be addressed through maintenance practices. In relation to operational effects on climate change, the following best practice will be implemented to prevent fugitive emissions of SF₆ during operation of the Proposed Development.

- Staff or any sub-contractors involved in equipment installation, servicing or disposal will be trained to ensure they understand the techniques required to minimise the generation of fugitive emissions. The training will include best management practices for handling, managing and monitoring SF₆.
- The supply and maintenance of the proposed equipment will comply with all relevant international standards and best practice such as:
 - BS EN 62271-203:2004 High-voltage switchgear and control gear. Gas-insulated metal enclosed switchgear for rated voltages above 52 kV;
 - BS EN 62271-4:2022. High-voltage switchgear and control gear. Part 4. Use and handling of sulphur hexafluoride (SF₆);
 - PD CLC/TR 62271-303:2009 High-voltage switchgear and control gear. Use and handling of sulphur hexafluoride (SF₆);

- BS EN 60376:2005 Specification of Technical Grade Sulphur Hexafluoride (SF₆) for Use in Electrical Equipment;
- BS EN 60480:2004 Guidelines for the checking and treatment of Sulphur Hexafluoride (SF₆) taken from electrical equipment and specification for its re-use;
- CIGRE 276: Guide for the Preparation of Customised 'Practical SF₆ Handling Instructions.' Task Force B3.02.01 (2005); and
- BS 6867:1987 Code of practice for maintenance of electrical switchgear for voltages above 36 kV.

Or other updated guidance and standards as appropriate

- Leak detection methods, i.e. pressure or density monitoring device, will be used as necessary and on a regular basis to identify any sources of fugitive emissions of SF₆ from equipment at the Proposed Development.

In terms of climate adaptation, energy infrastructure has a significant degree of resilience to change. It is designed to international standards and the same standards allow infrastructure to operate around the world in varying climatic conditions, including projected climate conditions for Ireland. Design of infrastructure is key in the management of climate change risks. Siting is also an important consideration particularly in relation to the management of flood risk.

As detailed in Chapter 9 of this PECR, a flood risk assessment has been undertaken for the Proposed Development which states that the proposed surface water management system will be designed to ensure that no flooding of the Proposed Development occurs for the critical storm with a 1 in 100-year return period, including a 30% allowance for climate change.

The effects from operation and maintenance phase emissions are therefore considered to be minor adverse and not significant.

6.7 Mitigation and Monitoring Measures

6.7.1 Mitigation Measures

It is recommended that emissions reduction measures are put in place as part of the Proposed Development throughout the lifecycle of the project, leveraging the ability to effect change to achieve GHG emissions reduction over time.

The following measures to reduce carbon emissions during design, construction and operation are proposed which are also articulated within the Construction Environmental Management Plan ((CEMP), submitted as part of this planning application):

- Design:
 - Use low-carbon materials where practicable such as low carbon concrete and/or steel with high recycled content where structurally appropriate; and
 - Consider maintenance processes within the design, for example choosing materials with longer durability or reduced maintenance requirements.
- Construction:
 - Use of renewable electricity where practical, such as solar-power, for construction lighting or construction cabins;
 - Minimise construction waste and set targets to divert waste from landfill;
 - Use of vehicles and plant with low exhaust emissions;
 - Substitute fuels for plant and equipment using electricity or low-carbon fuels where possible (for example use of alternative fuels such as Hydrotreated Vegetable Oil (HVO) for construction equipment);

- Implement regular maintenance of construction equipment to ensure it is running efficiently;
- Plant and equipment to be monitored (e.g. through telemetry) to ensure they are not left running unnecessarily;
- Optimising transport of materials to site e.g. choosing local suppliers or more sustainable transport options;
- Engaging the supply chain to reduce the number of vehicle movements relating to site material;
- Minimise transport and travel demand of staff during construction by having a travel management plan for site personnel to encourage car-sharing, active travel, use of buses, and prioritise electric vehicles; and
- Use of more efficient construction cabins (with insulation, renewable energy generation, low-energy lighting etc.);
- Operation:
 - Incorporate energy efficiency into the operation of the Proposed Development (using motion-activated low-energy lighting, building management systems where appropriate).

6.8 Residual Effects

There will be unavoidable GHG emissions resulting from the construction and operational phases of the Proposed Development as materials, energy and fuel use, and transport will be required. In line with ISEP Guidance, *“the goal of the EIA process should be to reduce the project’s residual emissions at all stages”* and therefore measures (such as those detailed in Section 6.7) are recommended.

It is also important to consider the wider impacts of the Proposed Development, in terms of how it fits with national policies on GHG reduction. The expansion and improvement of Ireland’s electricity network is crucial to deliver Ireland’s Climate Action Plan and net zero by 2050 initiative. This new substation is therefore strategically important in supporting Ireland to decarbonise.

7 Noise and Vibration

7.1 Introduction

This chapter presents an assessment of the Proposed Development on receptors sensitive to noise and vibration. The assessment is based on the Proposed Development as described in Chapter 3 of this PECR.

The assessment considers predictions of potential temporary noise and vibration impacts on the surrounding environment as a result of the construction of the Proposed Development, and an assessment of the noise impacts during the operational phase. Cumulative effects are also considered. The purpose of the assessment is to identify any requirements to apply mitigation measures to reduce potential effects to within acceptable levels.

7.2 Policy and Guidance

The Chapter 2 Planning Policy and Land Use Context chapter of this report describes the wider policy and legislative context applicable to the Proposed Development. Policies and guidance documents of potential relevance to noise and vibration are set out in this section.

7.2.1 Policies

The Environmental Noise Regulations (ENR)³⁸ transposes the EU Directive 2002/49/EC³⁹ (commonly referred to as the Environmental Noise Directive (END)) for the strategic control of environmental noise within the Republic of Ireland. The ENR was revised and revoked by the European Communities (Environmental Noise) Regulations 2018⁴⁰.

Nuisance due to noise is dealt with by the Environmental Protection Agency Act S.I. No. 7/1992 (as amended)⁴¹, and the Protection of the Environment Act 2003 S.I. No.27/2003 (as amended)⁴² require Best Available Techniques in controlling noise as a result of human activity “[...] which may be harmful to human health or the quality of the environment, result in damage to material property, or impair or interfere with amenities and other legitimate uses of the environment [...]”. Both acts clarify that ‘noise’ includes vibration.

7.2.2 Guidelines

The Environmental Protection Agency (EPA) has not produced guidance specific to the Proposed Development, relevant content of the EPA noise guidance NG4⁴³ that relates only to scheduled activities has been used.

There are no statutory standards in Ireland relating to noise and vibration limit values for construction works or for environmental noise relating to the operational phase. In the absence of specific statutory Irish guidelines, the assessment has made reference to the following non-statutory national guidelines, where available, in addition to international standards and

³⁸ Environmental Noise Regulations, 2006 (S.I. No. 140/2006).

³⁹ The European Parliament and the Council of the European Union, 2002. Directive 2002/49/EC of 25 June 2002 relating to the assessment and management of environmental noise.

⁴⁰ The European Communities (Environmental Noise) Regulations 2018 (Statutory Instrument No. 549/2018).

⁴¹ Government of Ireland. Environmental Protection Agency Act, 1992.

⁴² Government of Ireland. Protection of the Environment Act, 2003.

⁴³ Environmental Protection Agency Office of Environmental Enforcement (2016). Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relations to Scheduled Activities (NG4).

guidelines relating to noise and/or vibration impact for environmental sources stated in Section 7.2.1:

- British Standard Institution (BS) 5228-1:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.
- BS 5228-1:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration’
- EC Noise Emission by Equipment for Use Outdoors (Amendment) Regulations (S.I. No. 241/2006)
- Environmental Protection Agency Office of Environmental Enforcement (January 2016). Guidance Note for Noise Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).
- ISO 9613 (2024) Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation’.
- National Roads Authority (2004). Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Revision 1.
- National Roads Authority (2014) Good Practice Guide for the Treatment of Noise during the Planning of National Road Schemes Noise Guidelines.
- UK Department of Transport and Welsh Office (1988) Calculation of Road Traffic Noise (CRTN)
- World Health Organization (WHO) (1999). Guidelines for Community Noise.
- WHO (2018). Environmental Noise Guidelines for the European Region.

7.3 Methodology

The Proposed Development is expected to give rise to both temporary (construction) and permanent (operational) noise and vibration impacts. The potential for these to result in significant adverse effects has been considered within separate construction and operational assessments. This section describes the approach to the assessment based on the various relevant requirements and criteria. Cumulative impacts due to the contributions of noise from other nearby licenced sites are also assessed.

7.3.1 Approach to Data Collection

The information and data sources given in Table 7.1 have been considered during the production of this chapter.

The data used is considered to be a *reasonable case scenario* as information have been provided by ESB (2025) and then combined with professional judgment in agreement with the project team. Following a procurement process, a different manufacturer may be chosen. Notwithstanding this, the noise associated with the Proposed Development will not exceed what has been assessed as part of this application.

Table 7.1: Data Sources used to Inform this Noise and Vibration Chapter

Data Source	Date Published	Data Contents
Manufacturer test report noise data for two transformers size with forced cooling	May 2019 March 2011	Transformers
• 110/38 kV - 63 MVA [1/3 octave data available]		
• 38 kV/MV - 15 MVA (ABB)		
(accessed September 2025)		

Data Source	Date Published	Data Contents
EirGrid Evidence Based Environmental Studies Study 8: Noise (accessed September 2025)	May 2016	Noise survey on the 110 kV substation at Dunfirth
Manufacturer (Trench) test report noise data for ENK 45/200/5.000 arc suppression coil (accessed September 2025)	March 2022	Arc suppression coil
Manufacture (SDMO) technical data sheet for J110K (accessed September 2025)	August 2025	Standby diesel generator

7.3.2 Approach to Assessment of Effects

7.3.2.1 Construction Noise

In the absence of an Irish construction noise methodology or statutory guidelines, the following British Standard (BS) has been adopted for the assessment of temporary noise impacts due construction at Noise Sensitive Locations (NSLs)⁴⁴.

BS 5228 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise (2009+A1:2014) provides comprehensive guidance including details of typical noise levels associated with items of plant and activities, prediction methods, and options for mitigation measures, and therefore has been considered appropriate for use in this assessment.

Based on the BS 5228 Part 1 ‘Example method 2 – 5dB(A) change’ in BS 5228 Part 1 2009+A1:2014, noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5dB or more, subject to lower cut-off values of 65dB, 55dB and 45dB $L_{Aeq, T}$ from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect.

The specific inventory of plant and working methods to be applied during the construction phase will be devised by the appointed Contractor. The Contractor is not yet appointed; therefore, these specific details are not available to inform the assessment of potential noise and vibration impacts. However, the assessment has been undertaken based on the impacts of construction activities that are expected to be required. The construction activities are chosen to represent a reasonable worst-case scenario. It is assumed that most works can be undertaken during weekday and Saturday daytime periods and that works during the Sundays, bank holidays and night-time would only be undertaken by exception.

7.3.2.2 Construction Traffic

Changes in noise from road traffic on public roads can arise due to diversion routes (not required for the Proposed Development) or due to additional traffic for the transfer of materials and equipment and the attendance of site personnel. The National Roads Authority Guidelines⁴⁵ and Guidance⁴⁶ do not provide a method for the assessment of temporary changes in road traffic noise associated with construction, specifically. However, the 2014 Guidance describes requirements for noise monitoring in Section 3.13. This states:

⁴⁴ NSLs are taken from EPA NG4 Guidance (2016) and are defined as “Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other installation or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.”

⁴⁵ National Roads Authority (2004) Guidelines for the treatment of noise and vibration in national road schemes, Revision 1

⁴⁶ National Roads Authority (2014) Good practice guide for the treatment of noise during the planning of national road schemes noise guidelines

“The baseline noise level should be established for every noise-sensitive building or group of buildings where traffic noise levels are likely to change significantly as a result of the scheme. This includes areas where traffic flows are reduced by 20% or more, and where existing flows are increased by 25% or more. Traffic noise will also change where traffic parameters other than total flow volumes are changed. An increase in the percentage of heavy vehicles, or in traffic speed, will also lead to increases in traffic noise. It is sufficient to calculate the Basic Noise Level with and without the scheme to determine whether there would be a difference of 1dB or more.”

This is mainly concerned with permanent changes in road traffic noise but indicates that a change of 1dB is considered to be significant. Although the Proposed Development is not a road scheme, this is adopted for the assessment of temporary changes in road traffic noise because of the Proposed Development on a precautionary basis.

7.3.2.3 Construction Vibration

The methodology and case studies described within BS 5228 - Part 2: Vibration (2009+A1:2014) have been used for the prediction of ground-borne vibration from some types of construction activity. It should be noted that the generation, transmission and reception of ground-borne vibration is affected by many parameters including energy input, boundary impedances and the properties of the intervening ground.

BS 5228 Part 2:2009+A1:2014 provides comprehensive guidance on the assessment of vibration due to construction activity. It considers levels of vibration from construction in terms of peak particle velocity (PPV) defined as the instantaneous maximum velocity reached by a vibrating element as it oscillates about its rest position and is expressed in millimetres per second (mm/s). Moreover, it provides guidance on the levels of vibration associated with human perception and disturbance (threshold values are in Table 7.2), the onset of potential structural damage to different types of buildings and Table 7.3 guidance on the potential onset of cosmetic damage to buildings (threshold values are in Table 7.3) due to vibration arising during construction.

Table 7.2: BS 5228 Part 2 guidance on the human perception of vibration due to construction activity

Vibration level (PPV mm/s)	Effect
0.14	Vibration might be perceptible in most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3	Vibration might be just perceptible in residential environments.
1.0	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning has been given to the residents.
10.0	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.

BS 5228 Part 2:2009+A1:2014 states that low frequency vibration at:

- a PPV of 15mm/s may cause cosmetic damage in un-reinforced or light framed structures (e.g. for residential / light commercial use)
- a PPV of 50mm/s may cause cosmetic damage in heavy commercial buildings.

These values apply to transient vibration which does not induce a resonant response in structures and low-rise buildings. A source of continuous low frequency vibration may induce a vibration response in buildings or structures at their resonant frequencies. The building would then be subject to additional dynamic forces arising from its own motion. Therefore, BS 5228

Part 2:2009+A1:2014 recommends that the values given should be reduced by 50% to consider dynamic magnification due to resonances.

Table 7.3: BS 5228 Part 2 guidance on potential cosmetic damage to buildings due to construction activity

Vibration level (PPV mm/s)	Effect
Less than 7.5	Low risk of cosmetic damage to un-reinforced or light framed structures / buildings (e.g. residential buildings)
7.5 or more	Onset of increased risk of cosmetic damage to un-reinforced or light framed structures / buildings

7.3.2.4 Operational Noise

The EPA NG4 Guidance (2016) sets out a methodology for setting appropriate noise criteria on operational noise emissions with the potential to affect NSLs. NSLs are defined as:

“Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other installation or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.”

Firstly, sites are screened to determine whether they are Quiet Areas based on the proximity of the Proposed Development to urban areas and other major sources of environmental noise. The Quiet Area Noise Criteria for applicable sites is a limit defined as 10dB below the average background noise level for the day (07:00 to 19:00), evening (19:00 to 23:00) and night-time (23:00 to 07:00) periods obtained by long-term noise monitoring.

For NSLs that are not identified as being within Quiet Areas, the NSLs are first screened for low background noise defined as those where the average background noise levels (L_{AF90}) are less than or equal to:

- Daytime: 40dB L_{AF90}
- Evening: 35dB L_{AF90}
- Night-time: 30dB L_{AF90}

The noise impact assessment criteria for NSLs with low background noise are:

- Daytime (07:00 to 19:00) 45dB $L_{Ar,T}$
- Evening (19:00 to 23:00) 40dB $L_{Ar,T}$
- Night-time (23:00 to 07:00) 35dB $L_{Aeq,T}$

where $L_{Ar,T}$ is the rated noise level, which is equal to the L_{Aeq} plus any correction for tonal or impulsive acoustic features.

Where low background noise criteria are not met, then the general criteria apply as follows:

- Daytime (07:00 to 19:00) 55dB $L_{Ar,T}$
- Evening (19:00 to 23:00) 50dB $L_{Ar,T}$
- Night-time (23:00 to 07:00) 45dB $L_{Aeq,T}$

The EPA NG4 Guidance states that the limit values for noise from licensed sites apply to:

“noise attributable solely to on-site activities, expressed as a free field value at any NSL”.

It is clarified that in the night-time:

“Tonal noise from the facility should not be audible at any NSL”. However, no methodology is provided to test whether sound will be audible at any NSL. Operational noise due to the transformers has included the assumption of tonal features in the assessment for a conservative assessment approach and therefore corrections are applied to the specific noise levels to represent the calculated rating levels. The NG4 states:

“A penalty of 5dB for tonal and/or impulsive elements is to be applied to the daytime and evening measured $L_{Aeq,T}$ values to determine the appropriate rating level ($L_{Ar,T}$)”

The operational noise levels will be predicted by using 3-dimensional computer modelling software that based on the methodology provided in ISO 9613-2 (2024) at all of the considered NSLs.

7.3.3 Study Area

The study area is defined as 300m from the application site boundary of the Proposed Development for construction noise impacts as shown in Figure 7.1. Locations within the study area have been identified that are the closest receptors that are sensitive to noise and vibration. These are residential properties and are reported as NSLs as described in the Section 7.4.1.

Figure 7.1: Study Area of the Proposed Development



Source: OpenStreetMap contributors with Mott MacDonald notes

7.4 Receiving Environment

7.4.1 Locations

The Proposed Development site is a greenfield in the village of Walterstown, County Meath, a rural area to the north-west of Dublin. It is surrounded by residential properties mainly to the west and east, and agricultural land primarily to the north and south. The location of the site and NSLs are presented in Figure 7.1.

The site can be accessed by public roads off the local road L1015 and the regional R149 road off the M4, however, it can also be accessed in other ways as it sits between the M4 and the M3. Other major transport routes are represented by:

- The Clonsilla-Navan railway line, approximately 2.1km to the north-east.
- The Dublin to Maynooth railway line, approximately 2.1km to the south.
- Weston Airport (local flights including helicopters), approximately 4.2km to the south.

7.4.2 Baseline

No baseline noise monitoring has been undertaken for this assessment. It is assumed that baseline ambient noise levels are such that:

- **Construction:** the cut-off values for the assessment of construction noise are applied without relaxation on a precautionary basis (and likely due to rural/quiet environment)
- **Operation:** the criteria for Areas with Low Background Noise apply as described in the NG4 guidance

7.5 Construction Phase Considerations

7.5.1 Construction Noise

A description of the activities has been developed based on what is expected to occur during the main stages of the construction phase in line with similar projects and through consultation with the project team. The noise level for each construction plant has been taken from BS 5228 Part 1 - Annexes C and D and corrected for utilisation time based on the estimated percentage of time the plant is expected to be in use over a typical working day.

This is based on the noise impact assuming the activity occurs at the proposed substation's perimeter fence (that correspond to the 'core of the site') and, only for the *site preparation* phase, also by the site entrance (the closest part of the application site boundary to the NSL where work would effectively happen).

Table 7.4 shows the plant noise levels predicted for each construction phase.

Table 7.4: Noise-emitting Plant expected to be used during the Construction Phase

Phase	Plant description	Qty	% on time	BS 5228 reference	L _{Aeq,10m} (dB)	Corrected combined L _{Aeq,10m} (dB)
Site Preparation – Groundworks and concrete platform	Tracked excavator 30t	1	50	C.2.16	75	84
	Mini excavator with hydraulic breaker	1	10	C.5.2	83	
	Dozer 28t	1	50	C.2.11	79	
	Articulated dump truck 23t	1	50	C.2.32	74	

Phase	Plant description	Qty	% on time	BS 5228 reference	L _{Aeq,10m} (dB)	Corrected combined L _{Aeq,10m} (dB)
	Grader	1	10	C.6.31	86	
	Hand-held circular saw	1	5	C.5.36	87	
	Vibratory roller 12t	1	25	C.5.21	80	
	Cement pump and cement mixer truck discharging	1	25	C.4.24	67	
	Concrete mixer truck	1	25	C.4.27	79	
	Cement spreader	1	25	C.4.18	75	
	Generator	1	100	C.4.78	66	
	Compressor	1	50	D.7.29	74	
	Pump	1	50	C.4.88	68	
Civils Construction works - Construction of 110 kV GIS building and 38 kV building	Tracked excavator 30t	1	50	C.2.16	75	81
	Dozer 28t	1	50	C.2.11	79	
	CFA piling rig	1	25	C.12.40	81	
	Tracked mobile crane 55t	1	25	C.3.29	70	
	Mobile telescopic crane 80t	1	25	C.4.39	77	
	Cement pump and cement mixer truck discharging	1	25	C.4.24	67	
	Concrete mixer truck	1	25	C.4.27	79	
	Cement spreader	1	25	C.4.18	75	
	Poker vibrator	1	25	C.4.34	69	
	Generator	1	100	C.4.78	66	
Electrical Installation works – Installation of transformers and equipment	Tracked excavator 30t	1	50	C.2.16	75	79
	Articulated dump truck 23t	1	50	C.2.32	74	
	Hand-held circular saw	1	5	C.5.36	87	
	Telescopic handler / forklift	3	25	C.2.35	71	
	Tracked mobile crane 55t	1	25	C.3.29	77	
	Generator	1	100	C.4.78	66	

The outcomes of Table 7.4 (i.e. corrected combined L_{Aeq,10m} (dB)), have then been used to predict the noise level at the closest NSLs shown in Table 7.5. The noise effects were calculated accounting for distance between the works and the receivers and assuming soft ground. For activities occurring near the site entrance, a noise screening effect has been incorporated into the calculations due to the close proximity of the works to NSL1 and NSL2, located at the northeast boundary of the site.

Table 7.5: Construction Noise Levels at NSLs due to the Proposed Development

Construction phase	Activity	Predicted noise level, L _{Aeq} (dB)				
		NSL1	NSL2	NSL3	NSL4	NSL5
<i>Proposed substation's perimeter fence - approx. 75m from closest NSL</i>						
Site preparation	Groundworks and concrete platform	65	64	54	55	57
Civils construction works	Construction of 110 kV GIS building and 38 kV building	63	62	52	53	55
Electrical installation works	Installation of transformers and equipment	60	59	50	51	52
<i>Site entrance area - approx. 20m from closest NSL</i>						

Construction phase	Activity	Predicted noise level, L_{Aeq} (dB)				
		NSL1	NSL2	NSL3	NSL4	NSL5
Site preparation	Groundworks and concrete platform	68 *	62 *	-	-	-

Remark: * Noise screening has been implemented as a mitigation measure between the construction works NSL1 and NSL2.

Additionally, Table 7.6 shows the calculated distance from the proposed substation's perimeter fence and the site entrance (unless otherwise stated) when the weekday time and weekends construction threshold, in accordance with BS 5228-1, are predicted to be exceeded and at which NSLs this would occur. These two thresholds have been reported because construction working hours are expected to be Monday to Friday from 07:00 to 19:00 and Saturday from 08.00 to 14.00.

Table 7.6: Predicted Buffer Distance for each Phase of Construction and the Number of NSLs within the Buffer

Construction Phase	65dB L_{Aeq} threshold Weekday time (7.00-19.00) and Sat morning (07.00-13.00)		55dB L_{Aeq} threshold Evenings and weekend (Sat from 13.00 and Sun)	
	Distance buffer within which the threshold is predicted to be exceeded (m)	NSLs where construction noise levels potentially exceed the threshold value	Distance buffer within which the threshold is predicted to be exceeded (m)	NSLs where construction noise levels potentially exceed the threshold value
Site preparation	74	NSL1, NSL2 (site entrance works only)	206	NSL1, NSL2, NSL4, NSL5
Civils construction works	59	-	165	NSL1, NSL2
Electrical installation works	46	-	129	NSL1, NSL2

The Site Preparation phase is programmed over eight weeks for the entire site, consequently the duration of this phase by the site entrance area would be considerably shorter. Due to the shorter distances from the closest NSLs, the predicted exceedances are expected to be managed within the Construction Environmental Management Plan (CEMP) and advance community liaison.

7.5.2 Construction Vibration

Construction activities that are expected to generate ground-borne vibration associated with the construction phases at the closest NSLs (approximately 20m) include:

- Excavation
- Vibratory compaction to fill materials and rolling of surfacing as part of new ducting and cabling

Table 7.7 presents the impact of vibration due to different construction activities. Annex E of BS 5228 Part 2:2009+A1:2014 includes an empirical method for the prediction of vibration arising from steady state vibratory compaction.

The assessment also considers the impact of vibratory piling in case that this is required during any stage of construction within the proposed substation perimeter fence (approximately 75m from closest NSL). This describes the worst-case source of ground-borne vibration. BS 5228-2:2009+A1:2014 Annex E includes an empirical method for the prediction of vibration arising from all operation (i.e. steady state and start up/run down) vibratory piling.

Table 7.7: Assessment of Vibration at the Closest NSL

Activity	Predicted PPV at the closest NSL (mm/s)	Comparison with threshold values	
		Human perception (1 mm/s)	Cosmetic damage (7.5 mm/s)
<i>Approx. 20m from the closest NSL</i>			
Vibratory compaction – steady state	0.78	Not exceeded	Not exceeded
<i>Approx. 75m from the closest NSL</i>			
Vibratory piling	0.46	Not exceeded	Not exceeded

This shows that when the ground works for the new ducting and cabling works will be undertaken at the closest part of the works to the closest adjacent dwellings, it is likely that vibration levels would be just perceptible but would not exceed thresholds for complaint in terms of human perception and cosmetic damage. This would also be the case for any vibratory piling works undertaken within the proposed substation's perimeter fence.

7.5.3 Construction Traffic

To access the Proposed Development site, the Contractor will be required to utilise existing narrow country roads to the northern boundary of the application site that via the L2218 or the L5051 roads, then connect to the R157 or the R149 and ultimately to the M3.

The project team estimate that traffic movement will peak at 30 HGV/day during *construction phase – civils works* and will be up to 36 vehicles/day for personnel with abnormal load only required for the delivery of the transformers (further detail is provided in Chapter 13). Consequently, it is expected that:

- temporary local impact on narrow country roads will be managed within the CEMP
- due to the size of the Proposed Development site, additional movements will be a minimal addition to the average road traffic parameters for the local and regional roads

7.6 Operation and Maintenance Phase Considerations

The operational noise assessment implements the procedures of ISO 9613-2⁴⁷ using a three-dimensional acoustic model developed using DataKustik CadnaA software. The detail of the calculation methodology and assumptions are:

- Noise source elements which represent operational activities;
- Screening elements such as buildings and plant enclosures;
- Downward-curving propagation path (downwind) according to ISO 9613-2;
- Sensitive receptor elements at first floor level;
- Ground absorptive (G=0.5); and
- Temperature (10 °C) and Humidity (70%).

The basic formula of the noise model to predict the noise level for each noise source is given below:

$$L_{fT}(DW) = L_w + D_c - A$$

Where

⁴⁷ ISO 9613 (2024) Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation'.

$L_{fT}(DW)$	is the equivalent continuous downwind octave-band sound pressure level at a receiver location in dB
L_w	is the octave-band sound power level in dB, re 1pW
D_c	is the directivity correction in dB
A	is the octave-band attenuation in dB

The attenuation term A is given as follows:

$$A = A_{div} + A_{atm} + A_{gr} + A_{bar} + A_{misc}$$

Where

A_{div}	is the attenuation due to geometrical divergence in dB
A_{atm}	is the attenuation due to atmospheric absorption in dB
A_{gr}	is the attenuation due to ground effect in dB
A_{bar}	is the attenuation due to a barrier in dB
A_{misc}	is the attenuation due to miscellaneous other effects in dB, such as the attenuation due to propagation through foliage, an industrial site or a built-up region of houses.

Sound reflections are also considered by using image sources method. The overall noise level at each of the NSLs are then calculated by logarithmic additions of all octave-band as well as all considered noise sources.

The internal layout of the Proposed Development is shown in Figure 7.2. A list of operational noise sources is presented in Table 7.8 with the steady state sound power levels (SWL) that have been applied within the acoustic model. The noise emission data of plant items for the Proposed Development have been obtained from the manufacturer's datasheet or from other similar projects with similar specifications. It is assumed that all plants will operate continuously with no significant tonal or impulsive features. Three scenarios have been considered in the noise model:

- **Scenario 1 - normal operation**

During normal operation of the substation, the 110/38 kV power transformers and the 38 kV/MV power transformers will be operating and producing noise. The arc suppression coils and diesel generator will not be producing noise.

- **Scenario 2 - Earth fault**

One arc suppression coil will emit noise during the fault condition until the fault is repaired. The associated power transformer, either 110/38 kV or 38 kV/MV will not be operational and will not be producing noise. All other power transformers will continue to operate and produce noise.

- **Scenario 3 - LV mains supply failure**

The standby diesel generator fitted with a silencer will operate to maintain the control and protection systems until the LV supply has been restored. All power transformers will continue to operate and produce noise.

The data used is considered to be a *reasonable case scenario*. Following a procurement process, a different manufacturer may be chosen. Notwithstanding this, the noise associated with the Proposed Development will not exceed what has been assessed.

Figure 7.2: Site Layout of the Proposed Development



Source: Planning drawing reference 229101684-MMD-00-XX-DR-C-0121-P01, with Mott MacDonald notes

Table 7.8: List of Noise Sources considered within the Acoustic Model for the Operation of the Proposed Development

Scenario	Description	Number of items	Sound power level dB(A)
1	Normal operation	2 transformers 110/38 kV 63 MVA with cooling fan	77 (each)
		2 transformers 38k V/MV 15 MVA	70 (each)
2	Earth fault	1 Arc Suppression Coil	84
		2 transformers 110/38 kV 63 MVA with cooling fan	77 (each)
		1 transformer 38 kV/MV 15 MVA	70
3	LV mains supply failure	1 diesel generator with silencer	86
		2 transformers 110/38 kV 63 MVA with cooling fan	77 (each)
		2 transformers 38k V/MV 15 MVA	70 (each)

Source: ESB, 2025 and Mott MacDonald

The predicted operational noise levels, rounded to the nearest whole decibel value, for each NSL are presented in Table 7.9. Although NSL4 is adjacent to NSL5 (Figure 7.1), NSL5 benefits from partial shielding by the farm building whereas NSL4 does not. Consequently, the predicted noise level at NSL5 is lower despite it being slightly closer to the Proposed Development. Noise contours plots produced by the acoustic model are presented in Figure 7.3 to Figure 7.5.

Table 7.9: Predicted operational noise levels at NSLs due to the Proposed Development

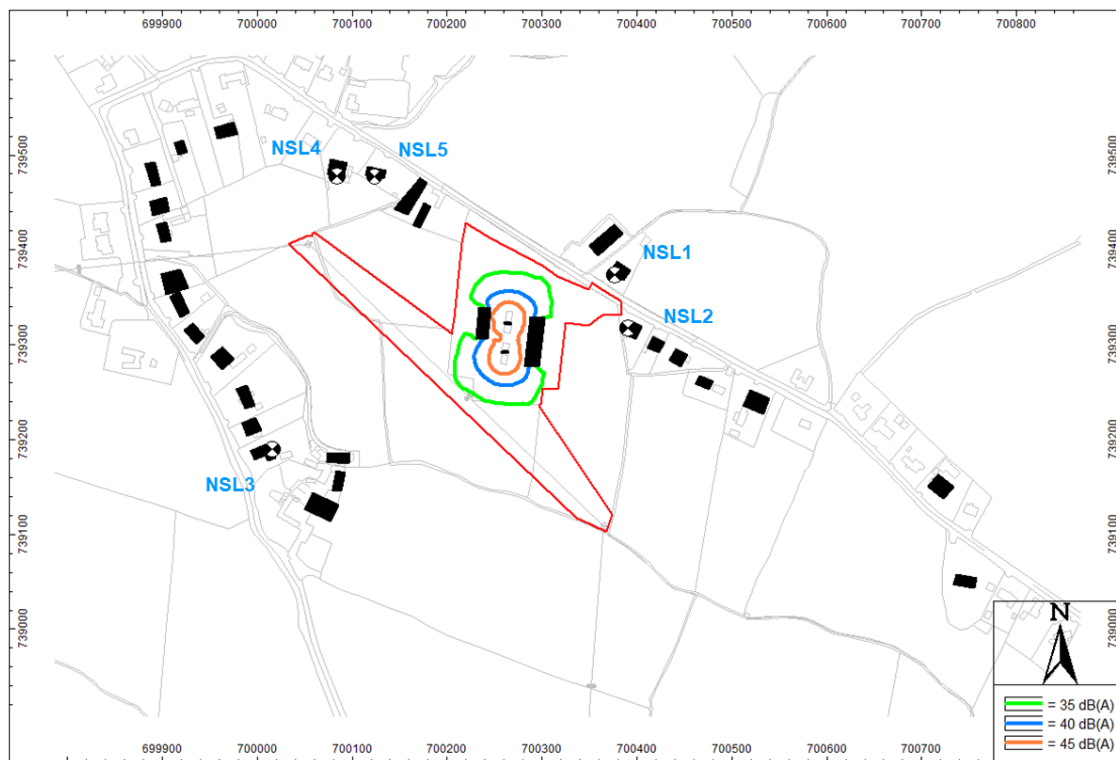
Operational scenario		NSL1	NSL2	NSL3	NSL4	NSL5
1 - Normal operation ^[1]	Predicted noise level, L_{Aeq} (dB)	26	20	21	21	18
	Correction, dB	+5dB tonality penalty				
	Rating noise level, $L_{A,Tr}$ (dB)	31	25	26	26	23
2 - Earth fault ^[1]	Predicted noise level, L_{Aeq} (dB)	27	20	26	27	21
	Correction, dB	+5dB tonality penalty				
	Rating noise level, $L_{A,Tr}$ (dB)	32	25	31	32	26
3 - LV mains supply failure ^[2]	Predicted noise level, L_{Aeq} (dB)	36	35	24	28	22
	Correction, dB	N/A				
	Rating noise level, $L_{A,Tr}$ (dB)	36	35	24	28	22

Notes:

[1] A 5dB tonality penalty has been applied due to the characteristic tonal nature of transformer noise.

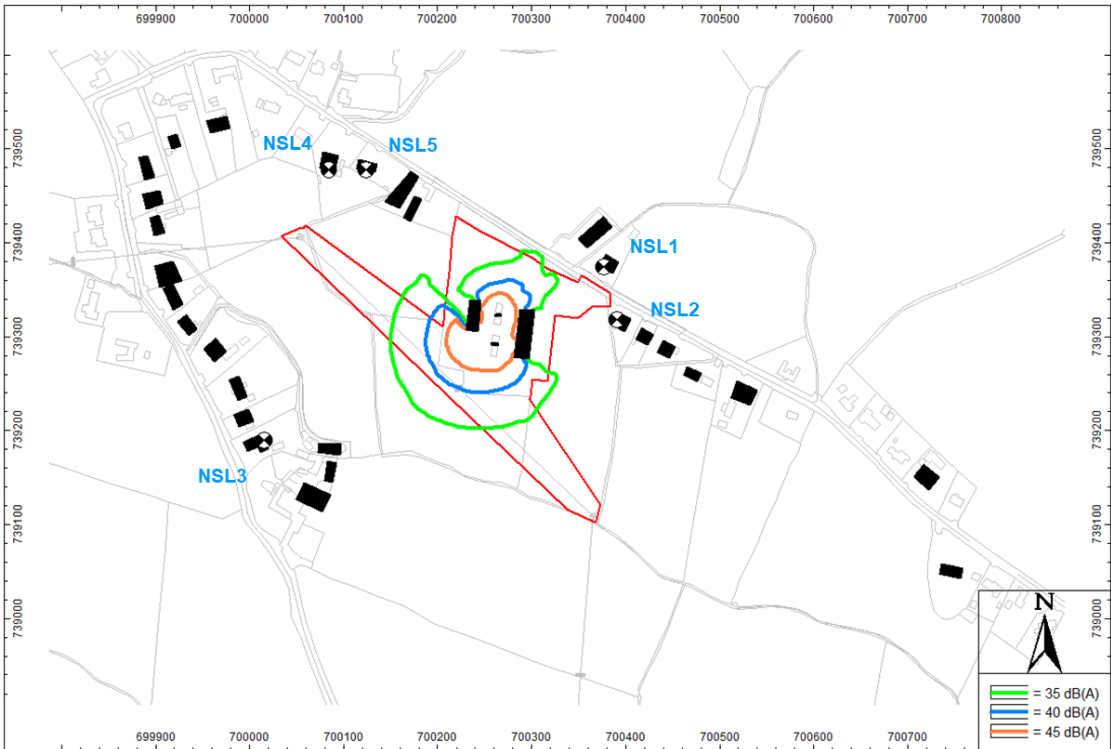
[2] No penalty is applied for Scenario 3, as the predicted noise levels at NSLs are primarily influenced by the emergency generator. Tonal and impulsive characteristics are not expected in this case.

Figure 7.3: Noise Contours Plot of Predicted Operation Noise Levels for Scenario 1



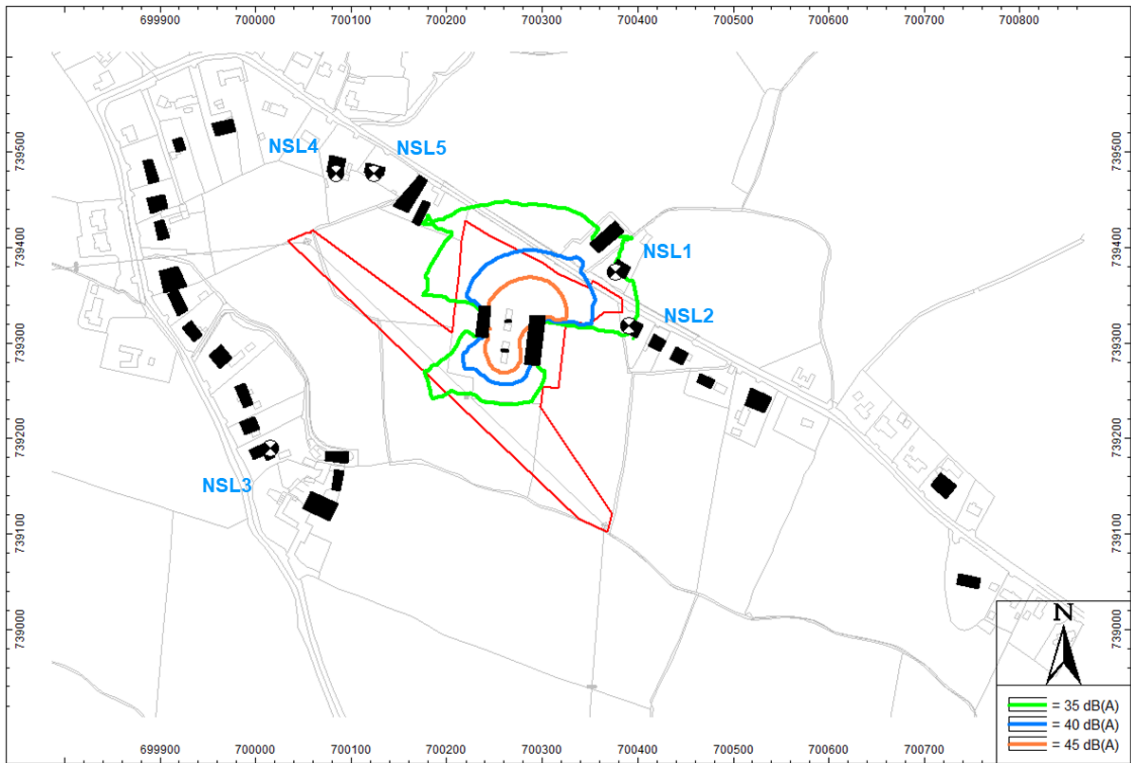
Source: Mott MacDonald

Figure 7.4: Noise Contours Plot of Predicted Operation Noise Levels for Scenario 2



Source: Mott MacDonald

Figure 7.5: Noise Contours Plot of Predicted Operation Noise Levels for Scenario 3



Source: Mott MacDonald

For a conservative assessment, a +5dB tonality penalty has been applied to Scenario 1 (normal operation) and Scenario 2 (earth fault) due to the dominance of transformer noise. All predicted noise levels at the NSLs are well below the NG4 guidance criteria for quiet areas: 45dB L_{Aeq} during daytime, 40dB L_{Aeq} in the evening, and 35dB L_{Aeq} at night.

Given the low magnitude of the predicted operational noise, it is unlikely to be perceptible at NSLs. Furthermore, based on the findings of the EirGrid Evidence-Based Environmental Studies, noise survey data from a comparable site indicated no distinct tonal elements associated with the transformer. Therefore, clearly audible tonal noise at NSLs is not expected for this development.

For scenario 3, only NSL1 is predicted to marginally exceed the 35dB L_{Aeq} night-time set in NG4 while others are below it. This, however, is an emergency scenario that is expected to occur rarely and for very limited time, consequently no noise mitigation is suggested.

7.7 Mitigation and Monitoring Measures

The following specific mitigation measures will be implemented during the construction phase:

- phasing of the construction works to reduce the impact due to simultaneous activities
- use of quieter equipment and enhanced noise reduction kit (e.g. exhaust silencers)
- use of a temporary acoustic barrier (2.4m height) during site preparation to provide screening of activities affecting NSL1 and NSL2. The barrier material will have a mass per unit area exceeding 7kg/m² in accordance with the recommendations of BS 5228 Part 1:2009+A1:2014 (for example, plywood panels with a minimum thickness of 13mm).

Additionally, noise and vibration will be minimised by the following.

- Construction works will reduce after 12:00 on a Saturday to avoid the sensitivity of the afternoon period
- Due to the short distance between site entrance area and the NSL1 and NSL2 it is important to engage with the residents before site preparation, even if this phase is very short (considering it is programmed over eight weeks for the entire site)
- ESB will appoint a designated point of contact to deal with community queries and complaints during the construction period.

In accordance with best practice, noise emissions will be minimised at source to minimise the exposure site personnel to noise from construction.

The CEMP will be implemented during the construction phase to minimise any construction noise and vibration impacts and in consultation with local councils. The Contractor is obliged to comply with Local Authority controls on noise and vibration during construction. This will include (but will not be limited to):

- setting limits for the control of noise and vibration from construction activities
- the provision of mitigation measures required whilst adopting best practicable means
- noise or vibration monitoring where disturbance is reported as required.

A comprehensive noise and vibration monitoring protocol will also be implemented. As part of the CEMP, the Contractor will also develop and implement a stakeholder communications plan.

No specific mitigation or monitoring measures are proposed for the operational phase. However, complaints from local resident will be investigated, corrective action taken (if need be) and logged accordingly.

7.8 Residual Effects

The Proposed Development is expected to generate noise during both the construction and operational stages.

The assessment has considered the exceedances of threshold given by BS 5228-Part 1 and the NG4 guidance for areas with low background noise, based on predictions of noise arising during construction and operation.

Following the implementation of mitigation measures (refer to Section 7.7 for details), the residual effects due to noise and vibration during the works are predicted to be minor and temporary during the construction phase.

During the operational phase, potential significant effects are only expected to arise under Scenario 3, during emergencies. This affects only the two closest receptors and will be limited in duration. The predicted received noise levels are only marginally above night-time guideline value.

8 Biodiversity

8.1 Introduction

This chapter provides an assessment of the potential ecological effects of the Proposed Development at Walterstown, Dunboyne, Co. Meath (Figure 3.1). A detailed description of the Proposed Development is included in Chapter 3 of this PECR.

The purpose of this chapter is to:

- Establish and evaluate the baseline ecological environment, as relevant to the Proposed Development
- Identify, describe and assess all potentially significant ecological effects associated with the Proposed Development
- Set out the mitigation measures required to address any potentially significant ecological effects and ensure compliance with relevant nature conservation legislation
- Provide an assessment of the significant of any residual ecological effects
- Identify any appropriate compensation, enhancement or post-construction monitoring requirements.

8.2 Policy and Guidance

The Chapter 2 Planning Policy and Land Use Context chapter of this report describes the wider policy and legislative context applicable to the proposed development.

The collation of ecological baseline data and the preparation of this assessment has had regard to the following legislation, policy and guidance documents. This is not an exhaustive list but the most relevant legislation, policies and guidance to the preparation of this PECR chapter.

8.2.1 Legislation

The following international legislation is relevant to the Proposed Development:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora; hereafter referred to as the 'Habitats Directive'. The Habitats Directive is the legislation under which the Natura 2000 network of protected sites was established. Special areas of conservation (SACs) are designated for the protection of natural habitat types listed under Annex I and the habitats of the species listed under Annex II, of the Habitats Directive.
- Directive 2009/147/EEC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds; hereafter, referred to as the 'Birds Directive'. The Birds Directive is the legislation under which special protection areas (SPAs) are designated for the protection of endangered species of wild birds listed under Annex I of that directive.
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy hereafter referred to as the 'Water Framework Directive'. The Water Framework Directive is the legislation under which the protection and improvement of water quality in all waters (rivers, lakes, groundwater and transitional coastal waters) is required, with the aim of achieving good ecological status by 2015, or at the latest, by 2027.

The following national legislation is relevant to the Proposed Development:

- Wildlife Acts 1976 to 2021, hereafter collectively referred to as the 'Wildlife Acts'; which legislate at the national level for the protection of wildlife and for the control of activities that may harm wildlife. All bird species, 22 other animal species or groups of species, and 86 species of flora are protected under this legislation.
- Planning and Development Acts 2000 to 2021, hereafter, collectively referred to as the 'Planning and Development Acts', which is the legislative basis for Irish planning. Under this legislation, development plans (usually implemented at Local Authority level) must include mandatory objectives for the conservation of natural heritage and for the conservation of European sites. It also sets out the requirements for environmental assessment with respect to planning, including transposition of the Habitats Directive and Birds Directive into Irish law.
- European Communities (EC) (Birds and Natural Habitats) Regulations 2011 to 2015, hereafter, referred to as the 'Birds and Habitats Regulations'. This legislation transposes the Habitats Directive and the Birds Directive into Irish law. It also contains regulations (49 and 50) that deal with invasive species (those included within the Third Schedule of the regulations).
- European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003), which transposes the Water Framework Directive into Irish law.
- Flora (Protection) Order 2022, which lists species of plants protected under Section 21 of the Wildlife Acts.

8.2.2 Policy

Relevant national and local policies and objectives from various plans have been reviewed and are detailed below.

National Biodiversity Action Plan 2023-2030

Relevant Outcome 3C: Planning and development will facilitate and secure biodiversity's contributions to people. All Public Authorities and private sector bodies move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure.

Meath County Council Climate Action Plan 2024-2029

Relevant Goal 3: Protected and Enhance Meath's Natural Environment by Supporting Biodiversity and Increasing Climate Resilience:

- Objective 3.1 Support the responsible management, protection and enhancement of Meath's natural heritage, biodiversity and environment.

Meath County Development Plan 2021-2027

• Chapter 8 Cultural and Natural Heritage Strategy:

Biodiversity

- HER POL 27: To protect, conserve and enhance the County's biodiversity where appropriate.
- HER POL 28: To integrate in the development management process the protection and enhancement of biodiversity and landscape features wherever possible, by minimising adverse impacts on existing habitats (whether designated or not) and by including mitigation and/or compensation measures as appropriate.
- HER POL 31: To ensure that the ecological impact of all development proposals on habitats and species are appropriately assessed by suitably qualified professional(s) in accordance with best practice guidelines – e.g. the preparation of an Ecological Impact Assessment (EclA), Screening Statement for Appropriate Assessment, Environmental

Impact Assessment, Natura Impact Statement (NIS), species surveys etc. (as appropriate)

Statutory Nature Reserves

- HER POL 32: To permit development on or adjacent to designated Special Areas of Conservation, Special Protection Areas, Natural Heritage Areas, Statutory Nature Reserves or those proposed to be designated over the period of the Plan, only where the development has been subject to the outcome of the Appropriate Assessment process and has been carried out to the satisfaction of the Planning Authority, in consultation with National Parks and Wildlife.
- 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.

Protecting Biodiversity in Meath – Non-Designated Sites:

- 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.

Protected Species

- HER POL 36: To consult with the National Parks and Wildlife Service and take account of their views and any licensing requirements, when undertaking, approving or authorising development which is likely to affect plant, animal or bird species protected by law.

Woodlands, Hedgerows and Trees

- HER POL37: 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 unavoidable, 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 40: To protect and encourage the effective management of native and semi-natural woodlands, groups of trees and individual trees and to encourage the retention of mature trees and the use of tree surgery rather than felling, where possible, when undertaking, approving or authorising development.
- HER POL 41: To protect trees the subject of Tree Preservation Orders (see Map 9.3), Champion and Heritage Trees identified on the Tree Register of Ireland and Heritage Tree Database when undertaking, approving, or authorising development.
- HER POL 42: To promote the preservation of individual trees or groups of trees as identified on the Heritage Maps in Volume 2 and to manage these trees in line with arboricultural best practice.

Invasive Species:

- HER POL 43: To promote best practice in the control of invasive species in the carrying out its functions in association with relevant authorities including TII and the Department of Transport, Tourism and Sport.
- HER POL 44: To require all development proposals to address the presence or absence of invasive alien species on proposed development sites and (if necessary) require applicants to prepare and submit an Invasive Species Management Plan where such a species exists to comply with the provisions of the European Communities (Birds and Natural Habitats) Regulations 2011-2015.

Peatlands:

- HER POL 45: To ensure that peatland areas which are designated (or proposed for designation) as NHAs, SACs or SPAs are conserved for their ecological, climate regulation, archaeological, cultural and educational significance.

Wetlands:

- HER POL 48: To manage, enhance and protect the wetlands of the County having regard to the 'County Meath Wetland Survey 2010' and ensure that there is an appropriate level of assessment in relation to proposals which would involve draining, reclaiming or infilling of wetland habitats.

Green Infrastructure:

- HER POL 55: To recognise the economic, social, environmental and physical value of Green Infrastructure.
- HER POL 56: To require that all Land Use Plans protect, manage and provide where possible green infrastructure in an integrated and coherent manner.
- **Chapter 11 Development Management Standards and Land Use Zoning Objectives**
 - DM OBJ 7: Sustainable Urban Drainage Systems (SUDS) measures are required to form part of the design of all developments.
 - DM OBJ 11: Existing trees and hedgerows of biodiversity and/or amenity value shall be retained, where possible.

Boundary Treatments

- MP POL 8: To require the provision of high quality, durable, appropriately designed and secure boundary treatments in all developments.
- DM POL 9: To support the retention of field boundaries for their ecological/habitat significance, as demonstrated by a suitably qualified professional. Where removal of a hedgerow, stone wall or other distinctive boundary treatment is unavoidable, mitigation by provision of the same boundary type will be required.

Draft Meath Biodiversity Action Plan 2025-2030

Relevant policies from the Draft Meath Biodiversity Action Plan 2025-2030 include:

- **9: Leading the Way in Policy** – Support the implementation of the Birds and Habitats Directives in protecting, and where possible, in achieving an improvement in the conservation status of protected species and habitats in County Meath.
- **10: Leading the Way in Policy** – Support the review and update of policies, objectives and development management standards in the Meath County Development Plan. Policies and objectives updated to support the following:

- No net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investing in Blue-Green infrastructure.
- Biodiversity measures and nature-based solutions are considered in new public and private projects and developments, where appropriate.
- Alignment of plans and the design and delivery of public projects and private developments with Inland Fisheries Ireland's guidance document 'Planning for Watercourses in the Urban Environment'.
- Minimisation of the impact of artificial lighting on nocturnal biodiversity.
- **15: Leading the Way in Planning** – Develop and implement a Green Infrastructure Strategy in accordance with international best practice and emerging national guidance.
- **16: Leading the Way in Planning** – Support habitat retention and the integration of biodiversity measures into plans and the design and delivery of public projects and private developments, aiming for no net loss of biodiversity and biodiversity net gain where possible.
- **17: Leading the Way in Planning** – Support the integration of nature-based solutions into plans and the design and delivery of public projects and private developments.
- **18: Leading the Way in Planning** – Align public projects and private developments with Inland Fisheries Ireland's guideline document 'Planning for Watercourses in the Urban Environment' and update development management standards as appropriate.
- **19: Leading the Way in Planning** – Apply appropriate lighting specifications and mitigation measures to new development, new projects, lighting upgrades and existing lighting stock, as appropriate, to minimise disturbance to local biodiversity.
- **20: Leading the Way in Planning** – Protect existing swift nesting sites where possible, establish new sites in existing public and private properties; and request integration of artificial swift nest bricks & boxes in new development.
- **21: Leading the Way in Planning** – Develop and provide guidance on the management of biodiversity issues for developers in the planning process.

Planning and Development Acts 2024

Meath County Council is obliged to take biodiversity into account when considering plans/proposals for development, to include both statutorily protected nature conservation sites and habitats and species in the wider county.

8.2.3 Guidelines

In valuing the ecological receptors and the potential impacts on biodiversity arising from construction and operation of the Proposed Development, the following guidance was considered including:

- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2024)
- Ecology Guidelines for Electricity Transmission Projects, A Standard Approach to Ecological Impact Assessment of High Voltage Transmission Projects (EirGrid, 2020)
- Nature Inclusive Design Pilots (EirGrid, 2022)
- A Guide to Habitats in Ireland (Fossitt, 2000)
- Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2011)
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (National Roads Authority, 2009)
- Ecological Surveying Techniques for Protected Flora and Fauna during the planning of National Road Schemes (National Roads Authority, 2009)

- Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes (National Roads Authority, 2005)
- Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes (National Roads Authority, 2008)
- Guidelines for the Treatment of Bats During the Construction of National Road Schemes (National Roads Authority, 2005)
- Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th Edition (Bat Conservation Trust, 2024)
- A Framework for the Assessment of Groundwater Dependent Terrestrial Ecosystems under the Water Framework Directive (EPA, 2008)

8.3 Methodology

8.3.1 Statement of Competence

Authors

- **Siún Ní Cheallaigh** BSc (Hons), MSc, ACIEEM (Ecologist, Mott MacDonald). Siún is an Ecologist with four years of post-graduate experience in ecological consultancy. She has prepared Appropriate Assessments (AA) Screening Reports and Natura Impact Statements (NIS) reports for a variety of projects. Siún has experience carrying out walkover field surveys for protected species including birds, mammals and amphibians. She also has experience performing Fossitt (2000) habitat surveys, breeding bird surveys, wintering bird surveys, and marine mammal surveys.
- **Lisa O'Dowd** BSc (Hons) MSc, ACIEEM (Senior Ecologist, Mott MacDonald). Senior Ecologist with six years' professional experience in ecological assessments including Appropriate Assessment, Natura Impact Statement, Preliminary Ecological Appraisal, Ecological Impact Assessment and Biodiversity chapter of Environmental Impact Assessment. Experience in terrestrial fieldwork, data management, data analysis and report writing in Ireland and the United Kingdom (UK). Lisa is a member of the Irish CIEEM policy group involved in updating guidance for the industry.
- **Roger Macnaughton** BSc (Hons), MSc, MCIEEM (Senior Associate Ecologist, Mott MacDonald). Roger is a qualified and experienced environmental consultant specialising in ecology. He has over twenty three year's professional experience in the environmental consultancy sector and an additional seven years of primarily research-based experience in freshwater and marine ecology. He specialises in the delivery of Ecological Impact Assessment (EclA) and Appropriate Assessment (AA) for a broad range of projects potentially affecting; terrestrial, freshwater and marine ecology. His project related experience to date includes; two 400 kV overhead lines, five 110 kV overhead lines, overhead line up-rates, electricity substations, underground power cables, 35 terrestrial wind farms, two marine wind farms and five solar farms. Roger has extensive experience carrying out and co-ordinating walkover field surveys for protected species (birds, mammals, amphibians), along with Fossitt (2000) botanic/ habitat surveys, aquatic and fishery assessment, and targeted invasive species surveys.

Surveyors

- **Fintan Damer** BSc (Hons), MSc (Hons) (Senior Ecologist, Mott MacDonald). Fintan is a qualified and experienced ecologist with over five years of full-time experience in ecological consultancy. He has thirty years of practical knowledge in undertaking ornithological field studies and surveys, consisting of breeding bird surveys and wintering wetland surveys. Fintan has conducted numerous baselines ecological surveys including those for otter, badger, invasive species, terrestrial botanical surveys, and bat surveys on a wide variety of

project types. He also has good working knowledge for the baseline execution of freshwater aquatic surveys. He has been involved in the preparation of Ecological Impact Assessment (EIA) and Appropriate Assessment (AA) screening reports as well as more focused biotic Environmental Reports.

8.3.2 Desk Study

A desk study was carried out on 12 August 2025 to collate available information on the local ecological environment within the boundary of, and in the vicinity of, the Proposed Development. The following resources were used to inform the assessment presented in this chapter of the PECR report:

- Data on European sites (SACs and SPAs), Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) as held by the National Parks and Wildlife Service (NPWS) from <https://www.npws.ie/protected-sites> and <https://www.npws.ie/maps-and-data>. Refer to Section 8.4 and Figure 8.1 for descriptions and locations of protected sites in the vicinity of the Proposed Development.
- Records of rare and protected species for the 2km grid square(s), as held by the National Biodiversity Data Centre (www.biodiversityireland.ie) or the 10km grid square(s), as held by NPWS. Refer to Section 8.4.2 for all desk study flora and fauna records.
- Spatial information relevant to the planning process including land zoning and planning applications from the Department of Housing, Government and Local Heritage web map portal, available from <https://myplan.ie/>.
- Ordnance Survey Ireland mapping and aerial photography from <http://map.geohive.ie/>
- Data on waterbodies, available for download from the Environmental Protection Agency (EPA) web map service, available from <https://gis.epa.ie/EPAMaps/>
- Information on soils, geology and hydrogeology in the area available from the Geological Survey Ireland (GSI) online Spatial Resources service, available from <https://www.gsi.ie/en-ie/data-and-maps/Pages/Groundwater.aspx>
- Information on the conservation status of birds in Ireland from Birds of Conservation Concern in Ireland (Gilbert *et al.*, 2021)
- Published and unpublished NPWS reports on protected habitats and species including Irish Wildlife Manuals and associated reports⁴⁸
- Conservation Objectives reports, Site Synopses, Natura 2000 Data forms, Backing Documents and Maps prepared by the NPWS⁴⁹
- Maps of landscape favourability for each Irish bat species at a 5km resolution as per the NBDC mapping website⁵⁰
- Information on the location, nature and design of the Proposed Development supplied by the applicant's design team.
- Appropriate Assessment (AA) Screening Report for the Proposed Development, completed by Mott MacDonald Ltd.

An overview of the information considered in the desk study and the size of the study area is outlined in Table 8.1.

⁴⁸ [Maps and Data | National Parks & Wildlife Service](#)

⁴⁹ <https://www.npws.ie/protected-sites>

⁵⁰ Available from: <https://maps.biodiversityireland.ie/> Accessed: August – December 2024.

Table 8.1: Overview of the Desk Study

Data Type	Ecological Receptor	Data Source	Study Area
Internationally Designated Sites	Special Areas of Conservation (SACs) and candidate SACs (cSACs)	NPWS Designated Sites Viewer	10km
	Special Protection Areas (SPAs) and candidate SPAs (cSPAs)	NPWS Designated Sites Viewer	10km
	Ramsar Sites	Irish Ramsar Wetlands Committee	10km
National Statutory and Non-statutory sites	Natural Heritage Areas (NHAs)	NPWS Protected Sites	10km
	Proposed Natural Heritage Areas (pNHAs)	NPWS Protected Sites	10km
	Nature Reserves	NPWS Protected Sites	2km
	Wildfowl Sanctuaries	NPWS Protected Sites	2km
	I-WeBS Sites	Birdwatch Ireland	2km
	Biosphere Reserves		2km
	<i>Margaritifera</i> sensitive areas	NPWS data	2km
	Non-designated wetland sites	Map of Irish Wetlands	2km
Species	Legally protected and notable species records including: - Terrestrial and aquatic fauna including mammals, birds, reptiles, amphibians, fish and invertebrates - Rare higher plants	NBDC Biodiversity Map viewer, Article 17 2019 Data (Habitats Directive), Article 12 2019 Data (Birds Directive), NPWS data request	2km
	Protected Bryophytes	FPO Map Viewer - Bryophytes	2km
	Protected Vascular Plants	FPO Map Viewer – Vascular Plants	2km
	Bat habitats, landscape features and commuting routes	Aerial imagery, NBDC Biodiversity Map viewer	2km

8.3.2.1 Consultation

A pre-application meeting was held with Meath County Council (MCC) on 11 November 2025 (reference PP2025/380C). Further details are provided in Section 1.5.1.

8.3.3 Field Surveys

A site walkover survey was conducted on 31 July 2025 by an experienced ecologist to assess and identify the habitats, presence of mammal activity, invasive species, sensitive bird species, amphibians and aquatic species within the boundary of the Proposed Development.

8.3.3.1 Habitats and Flora

Habitat survey methods were conducted in accordance with the methodology described in *Best Practice Guidance for Habitat Survey and Mapping*⁵¹. Habitats were classified to level three according to the scheme outlined in the *Guide to Habitats in Ireland*⁵². Classification of European Annex 1 habitats was informed with reference to the *EU Interpretation Manual for EU Habitats*⁵³ having regard to the *Irish Vegetation Classification*⁵⁴ where relevant.

Additionally, the area was searched for Species protected under the Flora (Protection) Order, 2022 or listed under the *Ireland Red List No. 10: Vascular Plants*⁵⁵.

Evidence of invasive plant species listed in Part 1 and non-native animal species listed in Part 2 of the Third Schedule of S.I No. 477 of 2011, European Communities (Birds and Natural Habitats) Regulations 2011 were also searched for.

The presence of any drains was noted to identify pathways for surface water pollutants to connect into the wider environment.

8.3.3.2 Fauna Surveys

Terrestrial Mammals (excl. Bats)

The presence or absence of terrestrial mammal species was surveyed through the detection of field signs such as tracks, markings, foraging signs, droppings and by direct observation.

Bats

A visual assessment of potential bat roost features in trees was undertaken during the site walkover, following the methodology outlined in *Bat Surveys for Professional Ecologists: Good Practice Guidelines*⁵⁶. Trees which may be affected by the Proposed Development works were examined for potential roost features.

Birds

No dedicated bird surveys were undertaken at the site. Birds were instead surveyed in an ad hoc fashion during the site walkover. Birds were identified by sight and by the identification of songs and calls. The general location and the activity of birds were recorded using the British Trust for Ornithology (BTO) species and activity codes.

Other Protected Species

A visual assessment of the potential for habitats of other protected species, such as common lizard (*Zootoca vivipara*), common frog (*Rana temporaria*), smooth newt (*Lissotriton vulgaris*), marsh fritillary (*Euphydryas aurinia*) and aquatic species was also undertaken during the site walkover.

⁵¹ Smith G., O'Donoghue, P., O'Hara, K., Delaney, E., (2011) Best Practice Guidance for Habitat Survey and Mapping'

⁵² Fossit, J (2000) A Guide to Habitats in Ireland

⁵³ European Commission, (2013) Interpretation Manual of European Union Habitats. EUR 28.Nature ENV B.3.

⁵⁴ <https://biodiversityireland.shinyapps.io/vegetation-classification/>

⁵⁵ Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. (2016) *Ireland Red List No. 10: Vascular Plants*. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

⁵⁶ Collins, J. (ed.) (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edition). The Bat Conservation Trust, London.

8.3.3.3 Survey Limitations

No species-specific fauna surveys were completed, and fauna were instead recorded on an ad hoc basis during the multidisciplinary walkover survey on 31 July 2025. This is not considered to be a limitation as the Proposed Development is a relatively small project to install a new electricity distribution station in managed agricultural farmland where habitats of ecological value will largely be retained.

All areas of the Proposed Development site were accessible, and the level of survey conducted is considered sufficient to inform locations and evaluation of sensitive ecological receptors.

8.3.4 Ecological Valuation and Assessment of Impacts

8.3.5 Zone of Influence

In the context of an ecological impact assessment generally (CIEEM, 2024) the Zone of Influence (Zol) to potential impacts from a proposed development is defined as:

“The area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries” and that “the zone of influence will vary for different ecological features depending on their sensitivity to an environmental change.”

The Zol varies depending on the construction and operational activity and the sensitivity of the receptor (e.g., flora, birds, terrestrial mammals) to the effect encountered.

The Zol identified for various ecological receptors, having regard to the potential for impact as outlined previously are precautionary and as detailed below:

- Footprint of the Proposed Development for direct damage to habitats.
- Localised dust deposition may occur during construction. Dust effects to ecological receptors were identified as 50m within the boundary of the site; and/or 50m of the route(s) used by construction vehicles on the public road up to 250m from the site entrance(s).
- 74m for moderate noise effects (>65dB LAeq to wetland bird species, based on noise modelling conducted for the project (refer Chapter 7 accompanying PECR). This assessment indicates that the noise levels drop to 65dB at 74m from noise source during construction phase of the Proposed Development i.e. imperceptible effect. Worst case noise levels during operational phase are 36dB at 74m from the noise source (imperceptible effect).
- 150m for breeding otter holts⁵⁷,
- Catchment wide Zol for surface waterbodies
- 250m for groundwater dependant terrestrial ecosystems (GWDTEs)⁵⁸

8.3.5.1 Ecological Valuation

Ecological receptors (including identified sites of ecological importance) are valued with regard to the ecological valuation examples set out in *Guidelines for Assessment of Ecological Impacts*

⁵⁷ National Roads Authority (2006). Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes.

⁵⁸ Kilroy G, Dunne F, Ryan J, O'Connor A, Daly D, Craig M, Coxon C, Johnston P and Henning M (2008). *A Framework for the Assessment of Groundwater Dependent Terrestrial Ecosystems under the Water Framework Directive*. Environmental Research Centre Report. Environmental Protection Agency Ireland.

of National Roads Schemes: Revision 2⁵⁹ and the guidance provided in *Guidelines for Ecological Impact Assessment in the UK and Ireland*⁶⁰. Refer to Table 8.2 for the ecological valuation criteria. In accordance with these guidelines, important ecological features within the Zol of the Proposed Development which are “*both of sufficient value to be material in decision making and likely to be affected significantly*” are considered to be Important Ecological Features (IEFs). IEF’s are generally ecological features of local importance (higher) value or greater.

Table 8.2: Site Valuation Criteria

Ecological Value	Description
Internationally Important	Sites designated (or qualifying for designation) as an SAC or SPA under the EU Habitats or Birds Directives Undesignated sites that fulfil criteria for designation as a European Site Features essential to maintaining the coherence of the Natura 2000 network Sites containing ‘best examples’ of the habitat types listed in Annex I of the Habitats Directive Resident or regularly occurring populations of birds listed in Annex I of the Birds Directive and species listed in Annex II and/or Annex IV of the Habitats Directive Ramsar Sites World Heritage Sites Biosphere Reserves Sites hosting significant species populations under the Bonn Convention Sites hosting significant populations under the Berne Convention Biogenetic Reserves European Diploma Sites Salmonid waters
Nationally Important	Sites or waters designated or proposed as an NHA Statutory Nature Reserves Refuge for fauna and flora protected under the Wildlife Acts National Parks Undesignated sites fulfilling criteria for designation as an NHA; Statutory Nature Reserves; Refuge for Fauna and Flora protected under the Wildlife Act and/or a National Park Resident or regularly occurring populations (assessed to be important at the national level) of species protected under the Wildlife Acts and/or species listed on the relevant Red Data list) Sites containing viable areas of the habitat types listed in Annex I of the Habitats Directive
County Importance	Areas of Special Amenity Areas subject to a Tree Preservation Order Areas of High Amenity, or equivalent, designated under the County Development Plan Resident or regularly occurring populations (assessed to be important at the County level) of species of birds listed in Annex I of the Birds Directive, species listed in Annex II and/or IV of the Habitats Directive, species protected under the Wildlife Acts and/or species listed on the relevant Red Data list Site containing area(s) of the habitat types listed in Annex I of the Habitats Directive that do not fulfil criteria for valuation as of International or National Importance County important populations of species, or viable area of semi-natural habitats or natural heritage features identified in the National or local Biodiversity Action Plan Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county

⁵⁹ National Roads Authority (2009) Guidelines for Assessment of Ecological Impacts of National Roads Schemes, Revision 2.

⁶⁰ CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.3.

Ecological Value	Description
	Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level
Local Importance (higher value)	Locally important populations of priority species or habitats or natural heritage features identified in the Local Biodiversity Action Plan Resident or regularly occurring populations (assessed to be important at the Local level) of species of birds listed in Annex I of the Birds Directive, species listed in Annex II and/or IV of the Habitats Directive, species protected under the Wildlife Acts and/or species listed in the relevant Red Data list Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value
Local Importance (lower value)	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife Sites of features containing non-native species that are of some importance in maintaining habitat links

Source: NRA, 2009

8.3.5.2 Assessment of Impacts

Impacts were assessed and characterised in accordance with the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*⁶¹ as reproduced in Table 8.3. Only key ecological receptor (IEF) impacts are assessed.

Table 8.3: Impact Magnitude and Duration Criteria

Impact Magnitude	Definition
Quality of Effects	Positive Effects A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
	Neutral Effects No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
	Negative/adverse Effects A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Significance of Effect	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

⁶¹ EPA (2022) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*

Impact Magnitude	Definition
Duration and Frequency of Effects	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
	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 one to seven years
	Medium-term Effects Effects lasting seven to fifteen years.
	Long-term Effects Effects lasting fifteen to sixty years.
	Permanent Effects Effects lasting over sixty years
	Reversible Effect Effects that can be undone, for example through remediation or restoration
	Frequency of Effects Once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually

Source: EPA, 2022

8.4 Receiving Environment

8.4.1 Designated Sites

The location of designated sites in relation to the Proposed Development is presented in Figure 8.1.

[illegible]

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8.4.1.1 European Sites

The Birds Directive (2009/147/EC) and Habitats Directive (92/42/EEC) put an obligation on EU Member States to establish the Natura 2000 network. The Natura 2000 network comprises sites of the highest biodiversity importance for rare and threatened habitats and species across the EU. In Ireland, the Natura 2000 network of European sites comprises special areas of conservation (SACs) and special protection areas (SPAs). SACs are selected for the conservation of Annex I habitats (which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. These are collectively referred to as 'European sites'.

The Proposed Development does not overlap with any European sites. The nearest European site to the Proposed Development is the Rye Water Valley/Cartron SAC (001398) which is located approximately 2.1km to the south.

European sites identified as present in the study area and potentially within the ZoI of the Proposed Development, their distance from the Proposed Development and their qualifying interests/special conservation interests are presented below in Table 8.4.

As part of the planning application submission Mott MacDonald has prepared a screening for Appropriate Assessment (AA) report which investigated the potential for the proposed works to have significant effects on European Site(s), either alone or in combination, with other plans or projects. The assessment has concluded that there is no potential for significant effects on European sites in the absence of mitigation from the proposed works.

While the Rye Water Valley/Cartron SAC is within 3km of the Proposed Development, there is no potential for direct impacts to the SAC through habitat loss. No QI species from this SAC are present within the Proposed Development site. There is no viable hydrological link between this SAC and the Proposed Development. The only watercourse near the boundary of the Proposed Development is the Oranstown Stream, which is 90m from the nearest construction works. The Oranstown stream runs under the Grand Canal Main Line before entering the River Liffey approximately 2.1km to the south. The entry point is downstream of the SAC.

Ramsar sites are wetland sites designated to be of international importance under the Ramsar Convention. The Ramsar Convention is an intergovernmental environmental treaty which was established in 1971 by UNESCO and came into force in 1975. No Ramsar sites were identified within the footprint of the Proposed Development, or within the 2km surrounding the site.

Table 8.4: European Sites within 10km of the Proposed Development

Site Name	Approximate Distance between the Proposed Development and European Sites (straight line) at closest point (km)	Qualifying Interests (Qis) / Special Conservation Interests (SCIs)
Special Areas of Conservation (SACs)		
Rye Water Valley/Cartron SAC [001398] ⁶²	2.1km	- Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] <i>Vertigo angustior</i> (Narrow-mouthed whorl snail) [1014] <i>Vertigo moulinsiana</i> (Desmoulin's whorl snail) [1016]

⁶² NPWS (2021) Conservation Objectives: Rye Water Valley/Cartron SAC 001398. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage

8.4.1.2 Sites of National Importance

Natural Heritage Areas

Natural Heritage Areas (NHAs) are the basic wildlife designation in Ireland under the Wildlife Acts to protect habitats, species or geology of national importance. Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation. Proposed Natural Heritage Areas (pNHAs) were published on a non-statutory basis in 1995 and have not since been statutorily proposed or designated.

No NHAs were identified within the footprint of the Proposed Development, or within the 10km search area surrounding the site.

Proposed Natural Heritage Areas

Proposed Natural Heritage Areas (pNHAs) are sites which were published on a non-statutory basis in 1995 (and again in the 2010s) but that have not since been statutorily proposed or designated. These sites are of significance for wildlife and habitats. Prior to statutory designation, pNHAs are still subject to limited protection, in the form of:

- Agri-environmental farm planning schemes support the objective of maintaining and enhancing the conservation status of pNHAs;
- There is a requirement for the Forest Service to gain NPWS approval before they will pay afforestation grants on pNHA lands; and,
- A recognition of the ecological value of pNHAs by Planning and Licencing Authorities.

pNHAs identified within the study area and potentially within the ZOI of the Proposed Development are outlined below in Table 8.5.

Table 8.5: Proposed Natural Heritage Areas (pNHAs) with potential connectivity to the Proposed Development

Site Name	Approximate Distance to the Proposed Development (straight line) at closest point (km)	Corresponding European Site
Rye Water Valley/Carton pNHA	2.1km	Rye Water Valley/Carton SAC
Royal Canal pNHA	1.9km	None
Liffey Valley pNHA	3.3km	None
Grand Canal pNHA	7km	None

Some of these pNHAs are included within European site boundaries, refer to Table 8.2.

8.4.1.3 Other National Sites

Other sites of nature conservation in relation to the proposed development are discussed hereunder.

- No National Park occurs within the vicinity of or has connectivity to the Proposed Development.
- No Nature Reserve occurs within the vicinity of or has connectivity to the Proposed Development.

- Cappaghgreen Commonage wetland habitat (MIW_MH527), listed on the Map of Irish Wetlands⁶³, is located approximately 0.1km north of the Proposed Development. This is wet grassland of local (moderate) conservation value.
- Rathleek Pond (MIW_MH551) and Grange Golfcourse Ponds (MIW_MH356) are wetland habitats, listed on the Map of Irish Wetlands, located approximately 0.5km southwest and approximately 1.7km northwest, respectively, of the Proposed Development. They are of unknown ecological value and have not been surveyed.

8.4.2 Desk Study Results

8.4.2.1 Rare and Protected Flora

No Flora Protection Order, 2022 (FPO) bryophyte locations were identified within the 2km grid square (O03E) surrounding the Proposed Development.

No rare and protected flora species were identified in the desktop study as having been recorded within the 2km grid square (O03E) surrounding the Proposed Development over the last 15 years.

The habitats on the site (managed farmland) are generally unsuitable for rare and protected flora.

8.4.2.2 Mammals

Records of mammals from the NBDC⁶⁴ over the last 15 years, within the 2km grid square (O03E) surrounding the Proposed Development, are listed in Table 8.6.

Table 8.6: Mammal species recorded within 2km grid square O07S – NBDC Records

Species Name	Scientific Name	Last Record Date	Protection Level
Hedgehog	<i>Erinaceus europaeus</i>	24/07/2011	Protected Species (Wildlife Acts)

Source: NBDC

There were no records of mammals from the NPWS data request received on 21 August 2025, from within the last 15 years inside the 10km grid square (O03) which includes the Proposed Development.

8.4.2.3 Amphibians and Reptiles

No records of amphibians and reptiles within the last 15 years were identified inside the 2km grid square (O03E) which includes the Proposed Development.

8.4.2.4 Birds

All birds, their nests and their eggs are protected by Irish legislation. Given this, only records of species listed under Annex I or II of the EU Birds Directive, or those listed as Amber or Red under the Birds of Conservation Concern Ireland (BoCCI) list were considered during this desk study. All records taken from NBDC within the 2km grid square (O03E) which includes the Proposed Development, over the last 15 years, were included. These are listed in Table 8.7.

⁶³ wetland.maps.arcgis.com/apps/View/index.html?appid=e13b75c3bcab4932b992aa0169aa4a32&extent=-12.6266,51.3236,-3.2168,55.4102

⁶⁴ <https://maps.biodiversityireland.ie/Map> - Accessed 16/09/2025

Table 8.7: Bird species recorded within 2km grid square O07S – NBDC Records

Species Name	Scientific Name	Last Record Date	Protection Level
Woodpigeon	<i>Columba palumbus</i>	31/12/2011	Annex II & Annex III (EU Birds Directive)
Yellowhammer	<i>Emberiza citrinella</i>	31/12/2011	Red (BoCCI)

Source: NBDC

There were no records of birds from the NPWS data request received on 21 August 2025, from within the last 15 years and inside the 10km grid square (O03) surrounding the Proposed Development.

No important wintering bird *ex situ* are known in the area⁶⁵. The area is not an area identified as sensitive to windfarm development⁶⁶ indicating low usage by waterfowl in the locality.

8.4.2.5 Invasive Species

No records of invasive species listed under the First Schedule of S.I. No. 374 of 2024 within the last 15 years were identified within the 2km grid square (O03E) which includes the Proposed Development.

8.4.3 Field Survey Results

No evidence of any Qualifying Interest (QI) or Special Conservation Interest (SCI) species designated under any nearby SAC or SPA were recorded within or in proximity to the Proposed Development during site visits. Based on the desk study no wintering bird surveys were conducted or required to inform the assessments.

The results of the field surveys carried out within the boundary of the Proposed Development are summarised below.

8.4.3.1 Habitats and Flora

A description of the habitats located within the Proposed Development site is presented hereunder.

No rare or threatened species, species listed under the Flora (Protection) Order 2022, or Annex I habitats protected under the Habitats Directive, were recorded or are likely to occur within the site. There are no Annex I habitats present within the Proposed Development site or immediate vicinity.

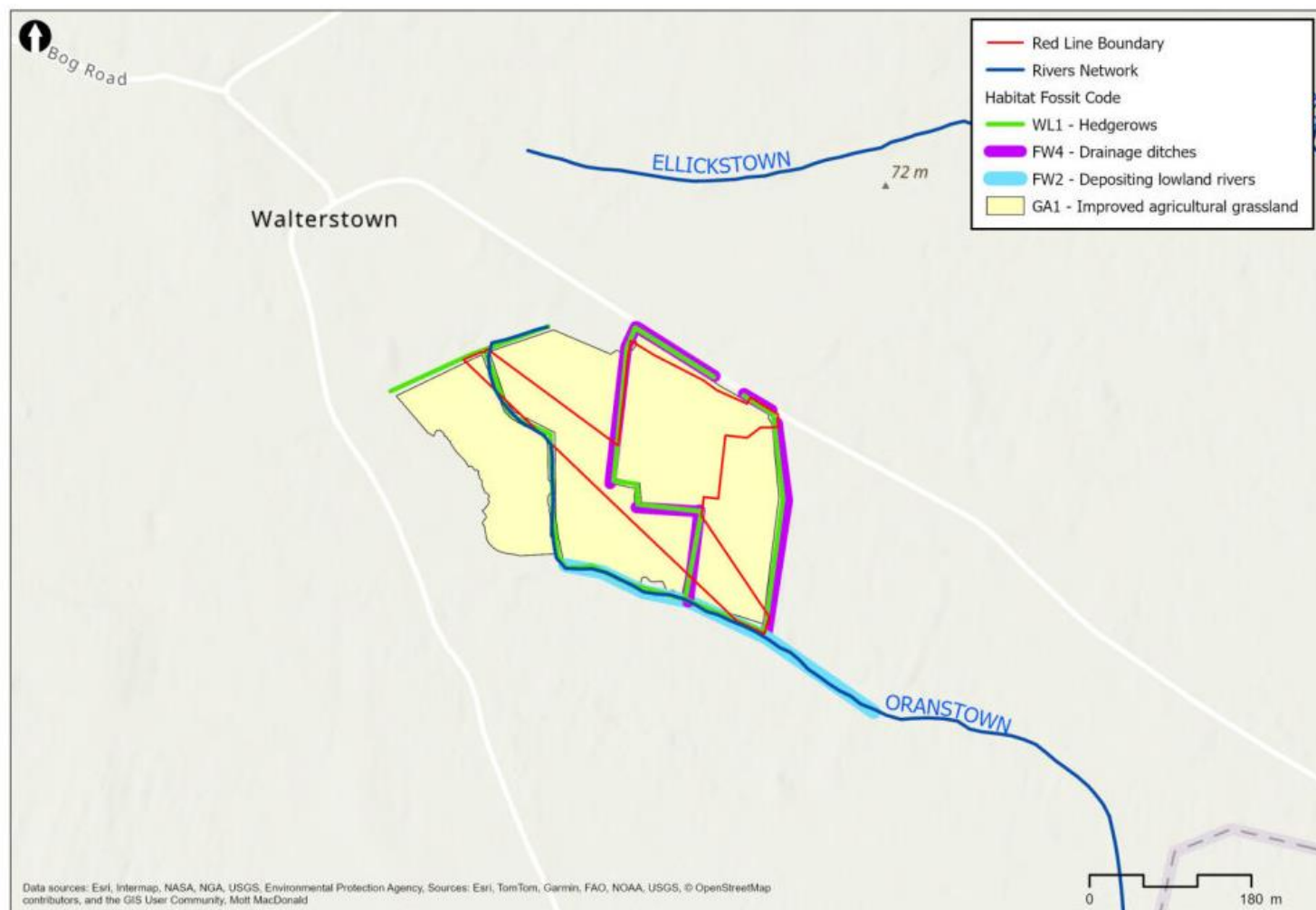
A habitat map of the Proposed Development and surrounding areas is provided in Figure 8.2.

A summary of the habitats encountered within the application site is presented in Table 8.8 along with their ecological evaluation. Further details relating to each habitat is expanded upon below.

⁶⁵ I-WeBS Coverage

⁶⁶ Maps - Biodiversity Maps

Figure 8.2: Habitats within the boundary of the Proposed Development



Source: Mott MacDonald

Table 8.8: Habitats recorded within the boundary of the Proposed Development

Habitat	Description	Ecological Value (NRA Guidelines, 2009)
FW2 – Depositing/lowland river	The Oranstown Stream runs approximately 90m west and south of the proposed construction works. It crosses the existing overhead line; however, the closest construction works will be 90m from this watercourse.	Local Importance (Higher value)
FW4 – Drainage ditches	There is a drainage ditch on the northern boundary near the site entrance and on the eastern boundary. They may be wet at certain times of year and provide breeding habitat for common frog (<i>Rana temporaria</i>).	Local Importance (Higher value)
GA1 – Improved agricultural grassland	Improved agricultural grassland fields make up most of the site.	Local Importance (Lower value)
WL1 - Hedgerows	Site boundaries	Local Importance (Higher value)

Source: Mott MacDonald

FW2 – Depositing/lowland river

The Oranstown Stream runs crosses the site boundary at the existing overhead line to the west (see Figure 8.2), however it is 90m from any proposed construction works. There is further hydrological connectivity to the Oranstown stream via drainage ditches on the site. The Oranstown Stream has 'Poor' Water Framework Directive (FWD) status. While the Oranstown Stream is of poor status and low ecological value, it provides connectivity to the Liffey River which has higher WFD status and is an important ecological receptor for aquatic ecology. The Oranstown stream is evaluated to be of local ecological importance (higher value). No works are proposed within or adjacent to this river, however there is hydrological connectivity between the on-site drainage ditches (FW4) and the Oranstown stream, therefore it is an IEF.

FW4 – Drainage ditches

On the northern boundary of the site, near the site entrance, and along the eastern boundary, there are drainage ditches. These drainage ditches appeared dry on the date of the walkover survey but may be wet at other times of year. Fool's water cress (*Apium nodiflorum*) was recorded in the drainage ditch. The drainage ditches are heavily shaded by adjacent hedgerows. Although these drainage ditches are of low floral biodiversity, they may be wet at other times of year and provide breeding habitat for common frog (*Rana temporaria*). This habitat is therefore considered to be of local importance (higher value) and an IEF (Figure 8.3).

GA1 – Improved agricultural grassland

This is the dominant habitat type located throughout the main body of the Proposed Development site, and it is bordered by linear habitats, such as hedgerows and treelines. This habitat is intensively managed with low biodiversity value due to its low floral diversity. It is therefore considered to be of local importance (lower value) and not an IEF (Figure 8.4).

WL1 – Hedgerows

Hedgerows were identified within all boundaries around the site of the Proposed Development and included species such as hawthorn (*Crataegus monogyna*), dogrose (*Rosa canina*), bramble (*Rubus fruticosus*), holly (*Ilex aquifolium*), sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*), blackthorn (*Prunus spinosa*), leylandii (*Cupressus x leylandii*), European gorse (*Ulex europaeus*), guelder rose (*Viburnum opulus*), hazel (*Corylus avellana*), honeysuckle

(*Lonicera periclymenum*), elder (*Sambucus nigra*) and ivy (*Hedera helix*). Hedgerows are an important habitat for local wildlife, providing suitable habitat for potential roosts, nests, foraging opportunities and commuting routes throughout the wider area. While this habitat is widespread across the county and does not link other features of particular ecological importance, in this case it is quite native species rich. Therefore, this habitat is considered to be of local importance (higher value) and an IEF (Figure 8.5 and Figure 8.6).

Figure 8.3: Drainage Ditches (FW4) Habitat



Source: Mott MacDonald

Figure 8.4: Improved Agricultural Grassland (GA1) Habitat



Figure 8.5: Hedgerow (WL1) Habitat



Source: Mott MacDonald

Figure 8.6: Hedgerow (WL1) Habitat



8.4.3.2 Mammals

The entirety of the site was examined for evidence of terrestrial mammal species such as badger, otter, pine marten, Irish hare and red squirrel.

During the field survey, an active badger (*Meles meles*) sett (Figure 8.7) with signs of fresh digging was identified on the southern boundary. This badger sett is not a main sett (single entrance recorded). Any works taking place will be more than 50m away from this badger sett, as recommended by NRA guidelines for site works in the vicinity of badger setts⁶⁷.

Figure 8.7: Active Badger Sett near Southern Boundary



Source: Mott MacDonald

One possible bat roost (tree) feature was recorded (Figure 8.8) within the hedgerow on the site boundary. This tree will not be disturbed by the Proposed Development.

⁶⁷ National Roads Authority (2019) Guidelines for the treatment of badgers prior to the construction of national road schemes

Figure 8.8: Mature Sycamore with Ivy Cover – Possible Bat Roost Feature (that will not be disturbed)



Source: Mott MacDonald

No conclusive evidence for the presence or activity of any other mammal species was detected during the field surveys.

8.4.3.3 Amphibians and Reptiles

The entirety of the site was examined for evidence of reptile and amphibian species such as smooth newt (*Lissotriton vulgaris*), common frog and common lizard (*Zootoca vivipara*). No evidence for the presence or activity of these species was identified during the site walkover. The improved grassland (GA1) habitat where the Proposed Development will largely be located is not suitable for these species.

Drainage ditches were dry at the time of survey; however, it is possible that they could hold sufficient water at other times of year to provide a breeding site for common frog.

8.4.3.4 Birds

Two singing male yellowhammer (*Emberiza citrinella*) were recorded within the boundary of the Proposed Development during the walkover survey. While they were not recorded during the breeding bird season, the possibility that these individuals were late breeders cannot be discounted.

Yellowhammer are a Red-listed breeding species in Ireland (BoCCI). Their range in Ireland is confined to the south, east and parts of the midlands. They are a common species in the area surrounding the Proposed Development. The dominant habitat within the Proposed Development is improved agricultural grassland (GA1), which is not considered important habitat for foraging or breeding yellowhammer. Their presence at the Proposed Development site is considered to be of local importance (higher value) and they are therefore an IEF.

8.4.3.5 Invasive Species

No invasive species listed under the First Schedule of S.I. No. 374 of 2024 were recorded or are likely to occur within the site.

8.4.4 Summary of Important Ecological Features (IEFs)

Significant ecological features, also known as Important Ecological Features (IEFs), are considered to be valued at local importance (higher value) or higher as per NRA (2009) and CIEEM (2022) guidelines. Species, habitats and features not qualifying as IEFs are not subjected to impact assessment in line with NRA (2009) and CIEEM (2022). Table 8.9 below summaries the ecological evaluation of all receptors, taking into consideration legal protection, conservation status and local abundance.

Table 8.9: Summary of the ecological evaluation

Ecological Receptor	Ecological Valuation	IEF Status
Designated Sites		
Rye Water Valley/Carlton SAC	International importance	No (no hydrological connectivity)
Royal Canal pNHA	National importance	No (hydrological connectivity)
Rye Water Valley/Carlton pNHA	National importance	No (no hydrological connectivity)
Liffey Valley pNHA	National importance	Yes (hydrological connectivity)
Grand Canal pNHA	National importance	No (no hydrological connectivity)
Flora and Habitats		
Depositing/Lowland River (FW2) (Oranstown Stream)	Local importance (higher value)	Yes (hydrological connectivity)
Hedgerows (WL1)	Local importance (higher value)	Yes (adjacent to works)
Improved Agricultural Grassland (GA1)	Local importance (lower value)	No
Drainage Ditches (FW4)	Local importance (higher value)	Yes (hydrological connectivity)
Fauna Species		
Badger	Local importance (higher value)	Yes (burrow avoided but close to works)
Yellowhammer	Local importance (higher value)	Yes (hedgerow breeding habitat)

Source: Mott MacDonald

8.5 Construction Phase Considerations

An assessment of potential impacts caused by the construction phase on identified IEFs is presented hereunder.

8.5.1 European Sites

This section assesses whether the Proposed Development is likely to result in significant effects to any European Sites in the context of the habitats and species for which the sites are selected. These are the qualifying interests (Qis) for SACs and special conservation interests (SCIs) for SPAs, and the conservation objectives supporting their conservation status. This assessment follows the same assessment methodology for European Sites required under the Habitats Directive, as presented in the Appropriate Assessment (AA) Screening report accompanying this application.

The Rye Water Valley/Carlton SAC is the only European Site identified within the Zol of the Proposed Development, as outlined previously in Table 8.3. However, this SAC does not overlap with the Proposed Development and there is therefore no potential for significant effects

to the SAC through direct habitat loss. No QI species from this SAC are present within the Proposed Development site. There is no viable hydrological link connecting the SAC to the Proposed Development. Therefore, the construction of the Proposed Development is unlikely to have significant impacts on this SAC.

Mott MacDonald prepared a screening for Appropriate Assessment report (which accompanies this application) which investigated the potential for the Proposed Development to have significant effects on European Site(s) (including Rye Water Valley/Carton SAC) either alone or in combination with other plans or projects.

The report concludes that *“The current assessment investigates the potential for significant effects arising from the proposed works on the SCIs and QIs of European sites within the Natura 2000 network. The assessment considers whether the proposed works, either alone or in combination with other projects or plans, will have a significant effect on these European sites. It is concluded that there is no potential for significant effects on any European sites from the project alone or in-combination with other plans or projects.”*

No other International (Ramsar) or European Sites were identified during the desk study.

No adverse effects are likely to occur to any designated sites.

8.5.2 Sites of National Importance

The Proposed Development does not overlap with any nationally designated sites, i.e., Natural Heritage Areas (NHAs) or proposed Natural Heritage Areas (pNHAs). There are no NHAs within the Zol of the Proposed Development. The closest pNHA to the Proposed Development is Rye Water Valley/Carton pNHA, c. 2.1km south of the Proposed Development. This pNHA is within the Rye Water Valley/Carton SAC. As discussed in Section 8.5.1, there will be no direct or indirect impacts to this SAC and therefore, to this pNHA, as a result of the Proposed Development.

Nationally designated sites considered relative to the Proposed Development are listed in Table 8.10.

Table 8.10: Nationally designated sites within the Zol of the Proposed Development

Site name	Approximate Distance to Proposed Development	Does this site fall within an SAC?
Proposed Natural Heritage Areas (pNHAs)		
Royal Canal pNHA (002103)	1.9km south	No
Rye Water Valley/Carton pNHA (001398)	2.1km south	Yes - Rye Water Valley/Carton SAC
Liffey Valley pNHA (000128)	3.3km south	No
Grand Canal pNHA (002104)	7km south	No

According to the site synopsis available from NPWS⁶⁸, Royal Canal pNHA (002103) is designated for its hedgerow, calcareous grassland, reed fringe, open water, scrub and woodland habitats. There are otters present within the pNHA, and the rare FPO (2022) designated opposite-leaved pondweed (*Groenlandia densa*) has been recorded here. This pNHA is located c. 1.9km south of the Proposed Development. The Oranstown stream passes under the Royal Canal hence there is no direct hydrological connectivity.

⁶⁸ NPWS (2009). *Proposed Natural Heritage Area Site Synopsis Portfolio*. Updated November 2009. Available online at www.npws.ie [Accessed 15 August 2025]

Liffey Valley pNHA (000128) is designated for its quality as a salmon river, its mixed deciduous woodland and wet marsh habitats, and threatened flora species such as green figwort (*Scrophularia umbrosa*), hairy St. John's wort (*Hypericum hirsutum*) and yellow archangel (*Lamiastrum galeobdolon*). The Proposed Development is c.3.3km north of Liffey Valley pNHA and it is tenuously hydrologically connected to the pNHA via the Oranstown Stream.

Grand Canal pNHA (002104) is designated for its hedgerow, calcareous grassland, reed fringe, open water, scrub and woodland habitats. The rare and FPO (2022) protected opposite-leaved pondweed (*Groenlandia densa*) was recorded here. There is no hydrological link between the Proposed Development site and this pNHA as the Oranstown river flows under the Grand Canal.

No impacts will arise to Royal and Grand Canal pNHA. The effects on Liffey Valley pNHA is assessed as **imperceptible**. This assessment is based on; the distance from the pNHA to the Proposed Development, design buffers on site between works and drainage ditches possibly providing hydrological connectivity and the mitigation included as part of the design of the Proposed Development.

8.5.3 Habitats and Flora

The Proposed Development will require localised impacts to some existing habitats within the site.

Rare and Protected Flora

No rare or protected flora species were identified within the site of the Proposed Development. Therefore, there will be no significant impacts to rare or protected flora as a result of the construction of the Proposed Development.

Table 8.11 summarises potential impacts on IEF habitats associated with the works.

Table 8.11: Impacts on Habitats within the Proposed Development Boundary

Habitat type	Extent of habitat within site redline boundary	Total habitat loss	Habitat value	Potential impacts	Scale of impacts
Depositing/lowland rivers – FW2	183.5m	No loss	Local importance (higher value)	There will be no hydro-morphological impacts to this habitat as it is located 90m from nearest proposed construction works. No significant negative impacts to water quality as a result of surface water run-off is likely, as a result of the mitigation measures included in the project design.	In the absence of standard and proposed construction pollution controls, the potential impact is assessed as negative, slight and temporary
Drainage ditches (FW4)		No loss	Local importance (higher value)	Construction outfall will be directed into these drainage ditches. Pre-construction mitigation will be implemented to check for breeding frogs before works commence, if works are proposed during	In the absence of mitigation, the scale of impact is assessed as negative, slight and temporary.

Habitat type	Extent of habitat within site redline boundary	Total habitat loss	Habitat value	Potential impacts	Scale of impacts
				the breeding season between the February and end of July. A site ecologist will monitor the presence of frog spawn and move frog spawn if present.	
Hedgerows (WL1)	476 m	27 m	Local importance (higher value)	Approximately 27 m will need to be cleared to create access through the site entrance.	In the absence of mitigation, the scale of impact is assessed as negative, moderate and permanent.

Source: Mott MacDonald

Depositing/lowland river (FW2), drainage ditch (FW4) and hedgerow (WL1) habitats were identified within the site of the Proposed Development as IEFs of local importance (higher value).

Depositing/lowland River (FW2)

The depositing/lowland river (FW2) habitat Oranstown Stream is located approximately 90m from the proposed construction works. This watercourse has 'Poor' WFD status. Drainage ditches on the site are potential conduits for soil water runoff, petroleum, cement and other pollution sources during the construction phase. There is potential for short term pollution releases during the construction phase to possibly reach downstream aquatic ecology receptors locally in the Oranstown Stream. In the absence of standard and proposed construction pollution controls the potential impact is assessed as negative, slight and temporary.

Drainage ditch (FW4)

There are drainage ditches on the site boundaries that at the time of survey, were dry, but may hold water at other times of year. These drainage ditches may provide breeding habitat for the common frog. Drainage ditches on the site are potential conduits for soil water runoff, petroleum, cement and other pollution sources during the construction phase. There is potential for short term pollution released during the construction phase to possibly reach aquatic ecology receptors. In the absence of standard and proposed construction pollution protocols, and proposed mitigation measures for breeding common frogs, the potential impact is assessed as negative, slight and temporary.

Hedgerow (WL1)

One section of hedgerow on the northern boundary near the site entrance, c. 27m (54m²) in length (area), will be removed for health and safety (sightlines) and width requirements for the new entrance. The potential loss is assessed as being negative, moderate and permanent. In view of the Meath County Council policy for no net loss of biodiversity during development outlined in the *Draft Meath Biodiversity Action Plan 2025-2030* there is a need to provide replacement woody vegetation type habitat of biodiversity value.

Non-IEF habitats

The Proposed Development will include the permanent loss of sections of the non-IEF improved agricultural grassland (GA1) habitat, which will be replaced by hard surfaces. This habitat is

species-poor, and the loss of this habitat is not significant at any scale. Impacts to non-IEF habitats are assessed as not significant.

Invasive Species

No invasive species were recorded on the site.

8.5.4 Fauna

Badgers

Increased human presence and/or the noise and vibration associated with construction works has the potential to displace badgers from both breeding places and from foraging habitat. The noise and vibration associated with general construction works, such as heavy machinery and excavations, can affect badger setts at distances of up to 50m. Rock breaking, blasting and pile driving can potentially affect setts at greater distances of up to 150m. However, no rock breaking, blasting or pile driving will be taking place during the construction of the Proposed Development.

The identified active badger sett to the south of the Proposed Development site is approximately 110m from the red line boundary on the southern side and therefore well outside the recommended 50m buffer from general construction works. As construction works will typically be undertaken during normal daylight working hours and badgers are nocturnal animals, displacement from their foraging areas is unlikely to affect the local badger population and will not result in a likely significant negative effect at any geographic scale.

There will be a loss of foraging habitat (removal grassland) and barriers (fencing) to commuting through the site following the construction of a new security fence. The loss of foraging habitat has been assessed as negative, slight and permanent at a local scale.

Bats

No potential bat roost features will be impacted by the Proposed Development.

The habitats present within the site of the Proposed Development are considered suitable for foraging and commuting bats moving through the local and wider area. As works will not be at night when bats are active no significant disturbance is likely.

The small-scale loss of c. 27m of hedgerows will result not result in a significant loss of foraging and commuting habitat for common bat species as they will continue to forage over gaps in hedgerows. In this absence of mitigation and compensation, this is assessed as negative, not significant and permanent effect at a local scale.

Other Terrestrial Mammals

Increased activity and human presence, noise, fencing and habitat loss as a result of the Proposed Development works may disturb or displace other mammal species such as Irish hare from foraging habitats due to disturbance and/or loss of habitat during the construction phase of the Proposed Development. However, given the widespread availability of similar habitats within the vicinity of the Proposed Development site and within the wider area, potential impacts on other mammals during the construction phase is assessed as imperceptible.

The drainage ditch (FW4) habitats may provide suitable breeding habitat for common frogs if wet at certain times of the year. These drainage ditches may provide breeding habitat for the common frog, as discussed under Section 8.5.3 Habitats and Flora.

Breeding Birds

No significant assemblages of breeding birds are likely on the site. Boundary hedgerows and scrub habitats will support typical common breeding bird species.

Vegetation clearance has potential to result in a small-scale loss (c.27m) loss of potential nesting and forage habitat. In the absence of mitigation and compensation, should clearance be carried out during the nesting season (1st March-31st August), there is potential for negative, slight and temporary impacts to nesting birds (including Yellowhammer – red listed) within hedgerow and scrub habitats inside the footprint of the Proposed Development.

The construction of the Proposed Development is unlikely to result in the loss of important foraging habitat for birds including yellowhammer species. The site is largely improved grazed agricultural grassland (GA1), which is not an important foraging habitat for yellowhammer.

8.5.5 Water Courses (Oranstown Stream, Royal Canal, Liffey)

No direct impacts will arise to the Oranstown Stream, which is approximately 90m south of the proposed construction works, and drainage ditches within the application site boundary. Given hydrological connectivity to downstream aquatic habitats of ecological importance, pollution impacts are a consideration. There is some potential for surface water run-off associated with site clearance, excavations, and stockpiled materials. Further information relating to surface water impacts associated with the proposed works are provided in Chapter 9 Surface Water Resources and Flooding.

Given the incorporation of good practise construction controls and other standard control measures outlined in Chapter 9, it is considered that any runoff impacts to aquatic habitats and fisheries downstream are likely to have a worst case temporary, imperceptible effect, at a local geographical scale.

No measurable effects are likely on the Oranstown Stream, Royal Canal and Liffey River further downstream.

8.6 Operation and Maintenance Phase Considerations

8.6.1 European Sites

There will be no impact to European Sites during the operation and maintenance of the Proposed Development.

8.6.2 Sites of National Importance

There will be no impact to sites of National importance during the operation and maintenance of the Proposed Development.

8.6.3 Habitats and Flora

There will be no impacts to habitats of ecological value during the operation or maintenance of the Proposed Development.

8.6.4 Fauna

Badgers

The proposed security fencing may pose a barrier to commuting and dispersal of badgers through the site to suitable habitats on either side of the Proposed Development. In the absence of mitigation, this is assessed as an **imperceptible and permanent** effect at a local scale. Badgers will continue to forage around hedgerows and remaining grass areas surrounding the site and will not be hindered significantly moving through the local area.

Bats

Low level security (automatic) lighting is proposed at the substation. It is likely that this will lead to localised increased levels to commuting and forage habitat (Hedgerows). This is likely to result in a **permanent imperceptible** effect noting that similar developments with similar proposed lighting have been assessed by Mott MacDonald ecologists where bats continue to roost in roost features adjacent to new substations.

8.6.5 Water Courses (onsite and offsite)

Effective mitigation measures have been included in the construction design, management of construction programme and during the operational phase of the Proposed Development. This is in line with good practice, rather than for the purpose of avoiding or reducing any potential negative effects to European Sites.

8.7 Mitigation Measures

8.7.1 Construction Phase

Mitigation which will be employed to reduce effects on biodiversity from the Proposed Development are described hereunder.

Mitigation is prescribed regarding the 'Mitigation Hierarchy' set out by EPA (2022) and CIEEM (2024). Guidelines require mitigation by avoidance as a first approach. Where this is not achievable, measures to prevent impacts from giving rise to adverse effects will be adopted (e.g. design of bunded storage for chemicals). Where impacts cannot be avoided, e.g. generation of noise, mitigation by reduction of impact is prescribed to limit the exposure of the ecological receptor to an acceptable level (often achieved by interrupting the pathway between the source and receptor). When adverse effects cannot be prevented, mitigation to counteract the effects are proposed where possible e.g. offsetting measures.

The following mitigation measures will be implemented prior to commencement and throughout the duration of the proposed works.

- An Environmental Clerk of Works (EnCoW) will be appointed prior to commencement of works to ensure adherence to the outlined mitigation.
- This will include monitoring and auditing the works and Contractor programmes and works method statements, to ensure mitigation is correctly implemented and impacts to IEFs are minimised and avoided where practical.
- The construction programmes for projects in the vicinity of the Proposed Development will be reviewed and considered regarding the final construction programme for the project. This is to ensure temporary disturbance is minimised to biodiversity and appropriate water pollution prevention measures to protect off site water courses.

8.7.1.1 Pre-Construction Confirmatory Surveys

In advance of enabling works, the Contractor will commission pre-construction confirmatory surveys of IEFs outlined in the PECR. These surveys will update the findings of the surveys completed in July 2025. Surveys will specifically confirm updated distribution of, and inform any revisions to proposed mitigation for:

- Badger setts within the Zol of the Proposed Development.
- Frog spawn within the drainage ditches in the Zol of the Proposed Development if construction works take place during breeding season between February and end of July.

Confirmatory badger surveys will be carried out having regard to *Surveying Badgers* (Harris et al. 1989) and record signs of badgers including tracks, hair, latrines and setts.

No badger setts were recorded in surveys to date as potentially being at risk of disturbance from proposed works.

8.7.1.2 Habitat

Removal of c. 27m (54m²) of hedgerow habitat will be monitored by the site EnCoW to ensure adjacent areas of hedgerow habitat are demarcated and avoided.

Chapter 12 includes a proposal for extensive replanting (landscaping) with native woodland species. An area of approximately 5000m² (0.5Ha) will be planted with a native woodland mix of tree species. This replanting greatly exceeds woodland (hedgerow) loss (approximately 54m²) due to impacts from the Proposed Development.

In addition to woodland planting an extensive area of grassland will be set out within the site during the final construction phase, refer to Section 8.7.2.

8.7.1.3 Invasive species

No First Schedule listed invasive plant species (S.I. No. 374 of 2024) were recorded. However, they could establish before construction phase. Prior to works commencing a full confirmatory invasive species survey will be carried out by an ecologist, appointed by the Contractor, in accordance with Guidance of Transport Infrastructure Ireland⁶⁹. All other surveys will be carried out having regard to guidance of NRA (2009). The pre-construction invasive species surveys will be carried out within the works areas, including compound locations and laydown areas, and along proposed access tracks to identify the presence of all invasive species within and adjacent to works areas.

Any additional findings of this invasive species survey will be incorporated into the final CEMP for the works. The measures relating to the Invasive Species will be identified prior to any works commencing. These measures will be regularly reviewed and updated throughout the works to include for any additional invasive species encountered.

An Invasive Species Management Plan is appropriate as a precautionary measure. This will set out site-specific and species-specific measures to manage invasive species for example if new invasives have established since baseline surveys. It will incorporate the following measures as a minimum:

- All machinery will be steam-cleaned prior to entering site
- Any stands of invasive species that are recorded within the site will be clearly marked out as restricted areas. No works will be carried out within the exclusion zones unless fully supervised by the EnCoW.
- The EnCoW will carry out a toolbox talk for all construction personnel which will provide information on how to identify and manage invasive species.
- A Check, Clean, Dry protocol will be undertaken with all equipment, machinery and vehicles entering and leaving the application site boundary.
- Any fill that is required will be from a licensed facility identified by the Contractor.

⁶⁹ TII (2020) The Management of Invasive Alien Plant Species on National Roads – Technical Guidance. Available online: <https://cdn.tii.ie/publications/GE-ENV-01105-01.pdf> [Accessed 11 September 2025]

8.7.1.4 Badgers

An active badger sett was identified along the Proposed Development site's southern boundary. This is not in an area where works are proposed and there are no risks of impact from the proposed development. Other badger setts may establish close to works areas between baseline surveys and construction phase.

Prior to any works commencing, a pre-construction badger survey will be carried out. Surveys will be conducted having regard to *Surveying Badgers* (Harris et al. 1989) and record signs of badgers, including tracks, hair, latrines and setts. The extent of survey area will be defined as 150m beyond all works areas within suitable habitat as set out in *Guidelines for the Treatment of Badgers during the Construction of National Road Schemes* (NRA, 2006) to determine if there has been any change in badger and sett activity or expansion to the current sett.

A description of setts, i.e., main sett, annex sett, or outlier sett will be provided by an ecologist, appointed by the Contractor, along with the level of activity at each. This will allow for an understanding of the importance of setts in the wider context of the local badger population.

As per the *Guidelines for the Treatment of Badgers during the Construction of National Road Schemes*, where setts have been confirmed, no heavy machinery will be used within 30m. Lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance and light work, such as digging by hand or scrub clearance will not take place within 10m of sett entrances.

Unless otherwise agreed in writing with the competent authority, during the breeding season (December to June inclusive), none of the above works will be undertaken within 50m of active setts, neither will blasting or pile driving within 150m of active setts. An assumption that a sett is active will apply unless proven otherwise during the course of investigation.

All identified exclusion zones, as outlined above, will be clearly marked out on site and communicated to all site staff prior to works commencing.

Where works may interfere with a badger sett directly, exclusion will take place as per NRA guidelines.

During the construction phase management and protection measures should also include:

- No excavations are to be left uncovered or without a means of egress (a sloped plank for example) overnight, as badgers may fall in or enter in search of food and become trapped
- No buildings or storage units are to be left open overnight, as badgers may enter and become trapped
- No poisonous or potentially harmful substances or materials are to be left unsecured overnight
- No vehicles or machinery are to be used installing exclusion fencing or gates

If a badger is discovered or any activity suggesting badgers have been disturbed during construction, all work must cease immediately, and the EnCoW should be notified as soon as possible to detail how best to proceed.

8.7.1.5 Bats

No features likely to support bat roosts requiring removal were identified within potential works areas.

Temporary lighting may be required during the construction phase of the works. Any temporary lighting associated with the construction works will be placed strategically by the Contractor following consultation with the ecologist appointed by the contractor such that illumination

beyond the works area is controlled and kept to a minimum. Lighting will be cowed and directional, to reduce significant light splay. Lighting will be directed away from potential roosts and foraging habitats such as hedgerows and watercourses.

8.7.1.6 Breeding Birds

The removal of vegetation which may be used as nesting sites by breeding birds, will be cleared where possible outside of the birds nesting season (1st March to 31st August inclusive).

Where vegetation clearance is proposed within the nesting season, an ecologist appointed by the contractor will conduct pre-construction surveys to assess risk of disturbance to nesting birds to inform vegetation clearance activity. In the event where pre-construction surveys confirm or presume nesting birds are present, an exclusion zone will be established around the nesting bird (to include the risk of abandonment due to indirect disturbance), and no vegetation clearance may proceed until young have fledged, or nesting has failed. Pre-construction confirmatory surveys will be undertaken no more than 72 hours before clearance, after which repeat surveys will be required if vegetation has not been cleared.

8.7.1.7 Frogs

Where construction works are proposed between the frog breeding season (1st February to 31st July inclusive), a site ecologist appointed by the contractor will conduct pre-construction surveys to check for frog spawn within drainage ditches before works commence. The site ecologist will monitor the presence of frog spawn and relocate frog spawn if present.

8.7.1.8 Watercourses (onsite and offsite)

No direct impacts to watercourses will be required. A setback distance for works of at least 90m will be retained to the Oranstown Stream (EPA Code 09O10). Detail on water pollution controls during the construction and operation phase are outlined in Section 9.8. Surface water management including attenuation pond to control runoff during operational phase are additionally outlined in Section 3.3.5 to ensure water quality downstream is protected.

8.7.2 Operation Phase

No permanent lighting is proposed at the substation. Lighting will be automatic and triggered only when required for human access and health and safety requirements. Lighting will be cowed and directional, to reduce significant light splay. Lighting will be directed away from possible roost feature and foraging habitats (woodland) used by bats. Final lighting plans will be consistent with recommendations in Collins (2023)⁷⁰ and reviewed by an ecologist.

In addition to woodland planting an extensive area of grassland will be set out within the site during the final construction phase. This grassland will be managed in a pollinator friendly manner consistent with recommendations in the All-Ireland Pollinator Plan. This will include minimal grass mowing to allow development of flowering native plant / grass species with cuttings to be removed from grassland areas. No wildflower seed mixes are proposed as they can do more harm than good.

8.8 Residual Effects

The residual effects of the Proposed Development with implementation of mitigation and additional biodiversity enhancement measures are outlined below.

⁷⁰ Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

8.8.1 Designated Sites

No adverse residual effects are likely to designated sites.

8.8.2 Habitats and Flora

With effective implementation of the woodland planting and low maintenance management of grassland, residual effects to habitats are assessed as positive effects at a local scale. There will be a net increase (c.a. 0.5Ha) in woody vegetation relative to minor hedgerow loss within the site and locality. In addition, c. 0.8Ha of grassland within the site will be managed for pollinator insects and to promote natural regeneration of native grassland.

These proposed biodiversity enhancement measures will increase the extent of woodland habitat in the local area and with grassland management will create a habitat of greater ecological value than the baseline which is intensively managed farmland.

8.8.3 Non-volant mammals

Residual imperceptible effects are assessed for non-volant mammals (badgers, hedgehog and other fauna). The provision of woodland habitat and the likelihood that disturbance will not significantly increase during the operational phase means smaller mammals can be expected to continue using suitable habitat on the site. Overall residual effects on non-volant mammals are likely to be imperceptible given extensive alternative habitat in the wider area for larger species including badger.

8.8.4 Bats

Residual effects to bats are assessed as imperceptible. Foraging habitat including hedgerows will largely be retained and increased by the planting of new woodland. The new attenuation pond will provide a potential additional food source for bats.

8.8.5 Birds

Residual effects to breeding birds are assessed as imperceptible. The biodiversity enhancement plan will include additional habitat for common woodland/ hedgerow nesting passerine species.

8.8.6 Frogs

Residual effects to breeding frogs are assessed as imperceptible. The new attenuation pond will provide a potential additional breeding habitat for frogs.

8.8.7 Watercourses (onsite and offsite)

No residual effects are likely to watercourses and associated aquatic ecology with implementation of appropriate SuDS design and pollution control mitigation.

9 Surface Water Resources and Flooding

9.1 Introduction

This chapter considers the potential effects arising from the Proposed Development on surface water including flood risk. The assessment is based on the development as described in Chapter 3.

The assessment of effects on biodiversity is discussed in Chapter 8 Biodiversity. The assessment of effects on groundwater resources is presented in Chapter 10 Land, Soils, Geology and Hydrogeology.

This chapter considers the Proposed Development, in relation to:

- Surface water drainage
- Water supply and wastewater discharge
- Water Framework Directive (WFD) surface water objectives
- Flood risk

Proposed environmental control measures and mitigation measures are presented as appropriate.

9.2 Policy and Guidance

The Chapter 2 Planning Policy and Land Use Context chapter of this report describes the wider policy and legislative context applicable to the Proposed Development. Legislation, policies and guidance documents of potential relevance to the surface water resources and flood risk are set out in this section.

These policy and guidance documents have been used to inform this chapter.

9.2.1 Legislation

This chapter has been prepared having regard to:

- S.I. No. 272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 (as amended by S.I. No. 296/2009; S.I. No. 386/2015; S.I. No. 327/2012; and S.I. No. 77/2019; S.I. No. 288/2022; and giving effect to Directive 2008/105/EC on environmental quality standards in the field of water policy and Directive 2000/60/EC establishing a framework for Community action in the field of water policy, i.e. the Water Framework Directive, (WFD)).
- European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003), which gave legal effect to the WFD in Ireland.
- Directive 2007/60/EC 'Floods Directive' on the assessment and management of flood risk.

This assessment has regard to case law which recognises the obligation of the Competent Authority when deciding upon an application for development consent that this potentially affects both assigned and unassigned water bodies.

9.2.1.1 Water Framework Directive

The Water Framework Directive (WFD) 2000/60/EC commits EU member states to achieve good qualitative and quantitative status of all inland and coastal waters at six-year intervals.

The WFD classification scheme for surface water quality includes five status classes: High, Good, Moderate, Poor and Bad based on the biological and supporting physicochemical [nutrients, oxygen condition, temperature, transparency, salinity and river basin specific pollutants (RBSPs) and hydromorphological quality elements.

Good status means achieving satisfactory quality water, suitable for local communities' drinking, bathing, agricultural, industrial and recreational needs, while maintaining ecosystems that can support all the species of plants, birds, fish and animals that live in these aquatic habitats.

While the overall objective of the WFD is to achieve good status, some waterbodies require extra protection by virtue of their location in a protected area or their function as drinking water or bathing water. In accordance with the requirements of the WFD and the associated national regulations a register of protected areas has been set out for each River Basin District in Ireland. The protected areas are identified as those requiring special protection under existing National or European legislation, either to protect the surface water resource, or to conserve habitats or species that directly depend on those waters.

The different protected areas included in this register are European drinking water protected areas, designated waters such as fish protected areas and shellfish protected areas, nitrates vulnerable zones, urban wastewater sensitive areas and bathing water protected areas.

The objective of the WFD is to achieve water quality of at least Good Status in rivers, lakes, groundwater, estuaries and coastal waters by 2027 at the latest. The *Water Action Plan 2024 – A River Basin Management Plan for Ireland* was published in 2024 by the Department of Housing, Local Government and Heritage (DHLGH) in line with the EU Water Framework Directive (WFD) (2000/60/EC). This is the third cycle of River Basin Management Plan (RBMP) for the period of 2022-2027.

9.2.2 Policies

Within the Meath County Development Plan 2021-2027, the following objectives and policies relate to surface waters:

Wastewater

INF OBJ 13: *To ensure that septic tanks, proprietary effluent treatment systems and percolation areas are located and constructed in accordance with the recommendations and guidelines of the EPA and the Council to minimise the impact on surface water of discharges.*

Sustainable Urban Drainage Systems

INF OBJ 15: *To require the use of SuDS⁷¹ in accordance with the Greater Dublin Regional Code of Practice for Drainage Works for new developments (including extensions).*

INF OBJ 16: *To ensure that all new developments comply with Section 3.12 of the Greater Dublin Regional Code of Practice for Drainage Works V6 which sets out the requirements for new developments to allow for Climate Change.*

INF OBJ 18: *To ensure that new developments provide for the separation of foul and surface water drainage networks within application site boundaries.*

INF OBJ 19: *To ensure that developments permitted by the Council which involve discharge of wastewater to surface waters or groundwaters comply with the requirements of the EU Environmental Objectives (Surface Waters) Regulations and EU Environmental Objectives (Groundwater) Regulations.*

⁷¹ Sustainable Drainage System (SuDS)

Flood Risk Management

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.*

INF OBJ 25: *To require the use of Sustainable Urban Drainage Systems (SuDS) to minimise and limit the extent of hard surfacing and paving and require the use of sustainable drainage techniques where appropriate, for new development or for extensions to existing developments, to reduce the potential impact of existing and predicted flooding risks.*

9.2.3 Guidelines

This section has been prepared having regard to:

- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (National Roads Authority, 2009).
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (Inland Fisheries Ireland, 2016)
- Water Action Plan 2024 – A River Basin Management Plan for Ireland (DHLGH, 2024)
- Planning for Watercourses in the Urban Environment: A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning (Inland Fisheries Ireland, 2020)
- Control of Water Pollution from Construction Sites - Guide to Good Practice (C532) (Construction Industry Research and Information Association (CIRIA), 2001)
- The Planning System and Flood Risk Management – Guidelines for Planning Authorities (Office of Public Works/Department of Environment, Heritage and Local Government, 2009)
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022)

9.3 Methodology

9.3.1 Approach to Data Collection

The following information and data sources (Table 9.1) have been considered during the production of this chapter.

Table 9.1: Data Sources used to inform the Surface Water Resources and Flooding Chapter

Data Source	Date Published	Data Contents
Environment Protection Agency (EPA) Water Quality in Ireland 2019-2024 (accessed September 2025)	2025	Water Quality
Environment Protection Agency WFD Status 2019-2024 Water Framework Ireland Map viewer databases (EPA Maps) (accessed September 2025)	2025	WFD status, risks and objectives
EPA Maps databases (EPA Maps) (accessed September 2025)	2025	River network, designated sites, water quality data and WFD status
OPW Flood Mapping (https://www.floodinfo.ie/map/floodmaps/)	2025	Identified flood risk

Data Source	Date Published	Data Contents
Meath County Development Plan 2021-2027	2021	Flood risk
Tailte Éireann Mapping (accessed September 2025)	2025	Topographical data

9.3.2 Approach to Assessment of Effects

9.3.2.1 Water Framework Directive Assessment Methodology

A qualitative desktop study has been undertaken to identify the baseline characteristics relating to the hydrology of surface waterbodies in proximity to the Proposed Development. The study consists of a review of existing baseline data including water quality data from the EPA and the River Basin Management Plans. The review includes the County Development Plan and consideration of the policies and objectives of the Plan in relation to surface water and flooding.

9.3.2.2 Flood Risk Assessment (FRA) Methodology

This assessment considers the flood risk to the Proposed Development during construction and operation of the 110 kV GIS substation. This assessment has been undertaken through reviewing the OPW flood risk maps and noting watercourse locations with respect to the development.

The Flood Risk Guidelines aim to integrate flood risk management into the planning process to assist the delivery of sustainable development. They aim to encourage a transparent and consistent consideration of flood risk in the planning process.

The objectives of the Flood Risk Guidelines are to:

- Avoid inappropriate development in areas at risk of flooding
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water runoff
- Ensure effective management of residual risks for development permitted in floodplains
- Avoid unnecessary restriction of national, regional or local economic and social growth
- Improve the understanding of flood risk among relevant stakeholders
- Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management

The Flood Risk Guidelines categorise flood risk in the form of three Flood Zones. These Flood Zones each relate to geographical areas at high, moderate or low flood risk, depending on if they are zone A, B or C respectively. Table 9.2 provides a definition of each Flood Zone.

The flood risk likelihood is defined as a percentage risk of occurring in any year. For example, a flood event may be described as having an annual exceedance probability (AEP) of 1%, this is commonly written as a 1 in 100-year flood event. Critical infrastructure vulnerable to flooding should be in Flood Zone C where possible.

Table 9.2: Definition of Flood Zones

Flood Zones	Descriptions
A	The AEP of flooding from rivers and seas is highest (greater than 1% AEP for flooding, or 0.5% AEP for coastal flooding).
B	The AEP of flooding from rivers and the sea is moderate (between 0.1% AEP and 1% AEP for river flooding, and between 0.1% AEP and 0.5% AEP for coastal flooding).
C	The probability of flooding from rivers and the sea is low (less than 0.1% AEP for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in Zone A or B.

Source: The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Office of Public Works, 2009).

The OPW Guidelines state that a Justification Test is required if highly vulnerable development is proposed in Flood Zone A or B, and if less vulnerable development is proposed in Flood Zone A. Since the Proposed Development is fully located in Flood Zone C, a justification test is not required.

The flood risk assessment for construction phase is presented in Section 9.5.4 and for operation and maintenance phase in Section 9.6.3.

This is a Stage 1 Flood Risk Assessment in accordance with OPW guidance, which considers the flood risks posed to the site and identifies whether further analysis is required.

9.3.3 Study Area

The extent of the study area reflects the distance over which significant changes to the water environment are likely to occur. This distance is influenced by the physical extent of the works, the nature of the receiving environment and the way the effects may be propagated.

The study area is defined by the proximity of the proposed works to receiving watercourse. It is noted that there are no direct works within any identified surface water body as part of the Proposed Development.

The zone of influence for this assessment extends downstream from works areas in terms of potential effects on surface water quality. A 250m radius from the Proposed Development boundary has been applied for the study area and is considered appropriate to encompass all water bodies that may be susceptible to impacts due to the Proposed Development.

9.4 Receiving Environment

9.4.1 WFD Overview

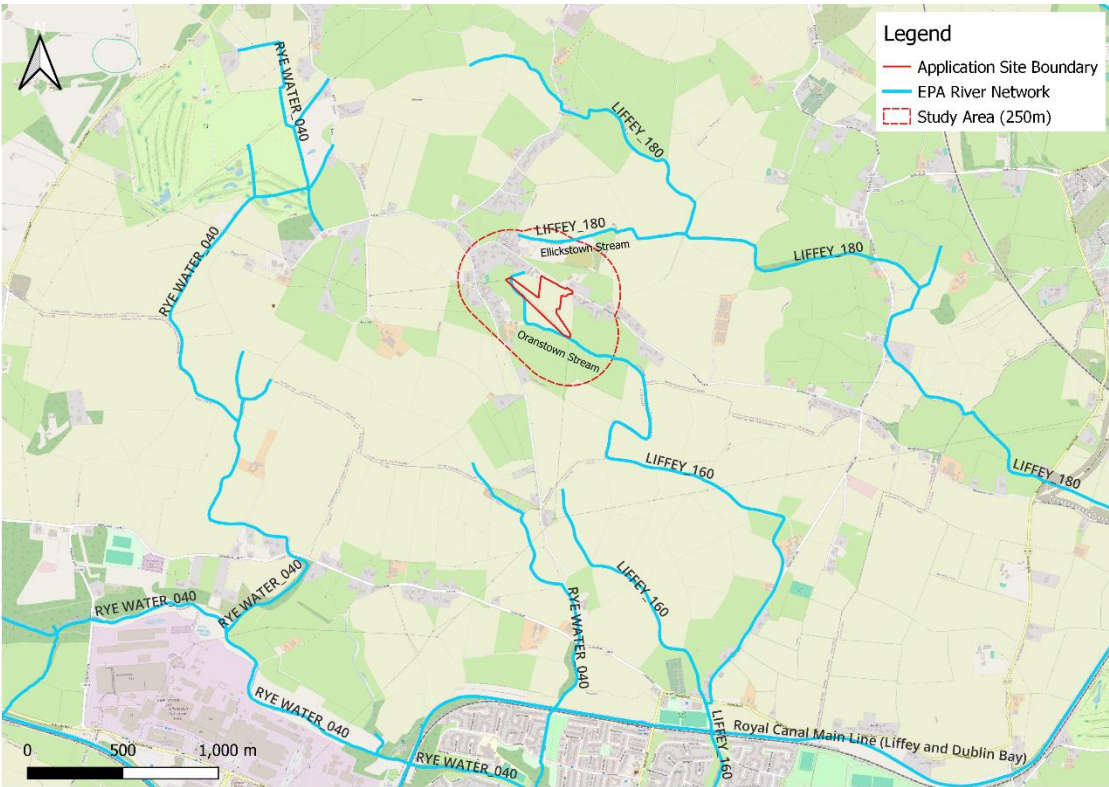
The Proposed Development is in Liffey and Dublin Bay (ID 09) WFD catchment, Liffey_SC_100 (ID 09_1) sub catchment and LIFFEY_160 river sub basin. There are two watercourses within the study area.

The Oranstown Stream (EPA code 09O10) runs along the application site boundary to the (see Figure 9.1). Oranstown Stream is approximately 90m to the south and west of from the proposed construction works. This watercourse eventually drains into River Liffey approximately 4.6km downstream of the Proposed Development site. The Oranstown Stream has a Poor WFD status based on the 2019-2024 period. The Risk is under review for this watercourse. Oranstown Stream is not designated as a Special Area of Conservation, salmonid river or shellfish area or nutrient sensitive river.

The Ellickstown Stream (EPA code 09E05) is also within the study area (see Figure 9.1). This watercourse is approximately 168m from the application site boundary, and approximately 250m from nearest construction works. The Ellickstown Stream has a Poor WFD status based on the

2019-2024 period, and At Risk of failing to meet the WFD objectives by 2027. Ellickstown Stream is not designated as a Special Area of Conservation, salmonid river or shellfish area or nutrient sensitive river. Due to the distance between this stream and proposed construction works, and the topography of the site which is downhill from the Ellickstown Stream no impacts are anticipated to this watercourse and therefore, not discussed further.

Figure 9.1: Water Network in vicinity of Proposed Development



Source: Mott MacDonald, based on EPA Maps 2025

9.4.2 Existing Drainage System

The site is currently greenfield, and the site drains from north to south. A drainage ditch runs along the application site boundary to the west and the south, draining into the Oranstown Stream (see Figure 8.2).

The existing road at the north of the site has shallow ditches on both sides. The intensive vegetation and small slope suggest that they mostly retain and infiltrate surface water, rather than collecting and discharging to a specific recipient.

9.4.3 Flood Risk

Table 9.3 identifies potential categories of flood risk and the associated risk to Proposed Development. Figure 9.2 provides a map showing location of Proposed Development identified flood risk as per the OPW flood risk maps.

Table 9.3: Potential Sources of Flood Risk

Source	Mechanism	Baseline Risk
Fluvial flooding	Exceedance of the flow capacity of the channel of a river, stream, or other natural watercourse (which may be	The Oranstown Stream crosses the application site boundary. The OPW River and Fluvial present

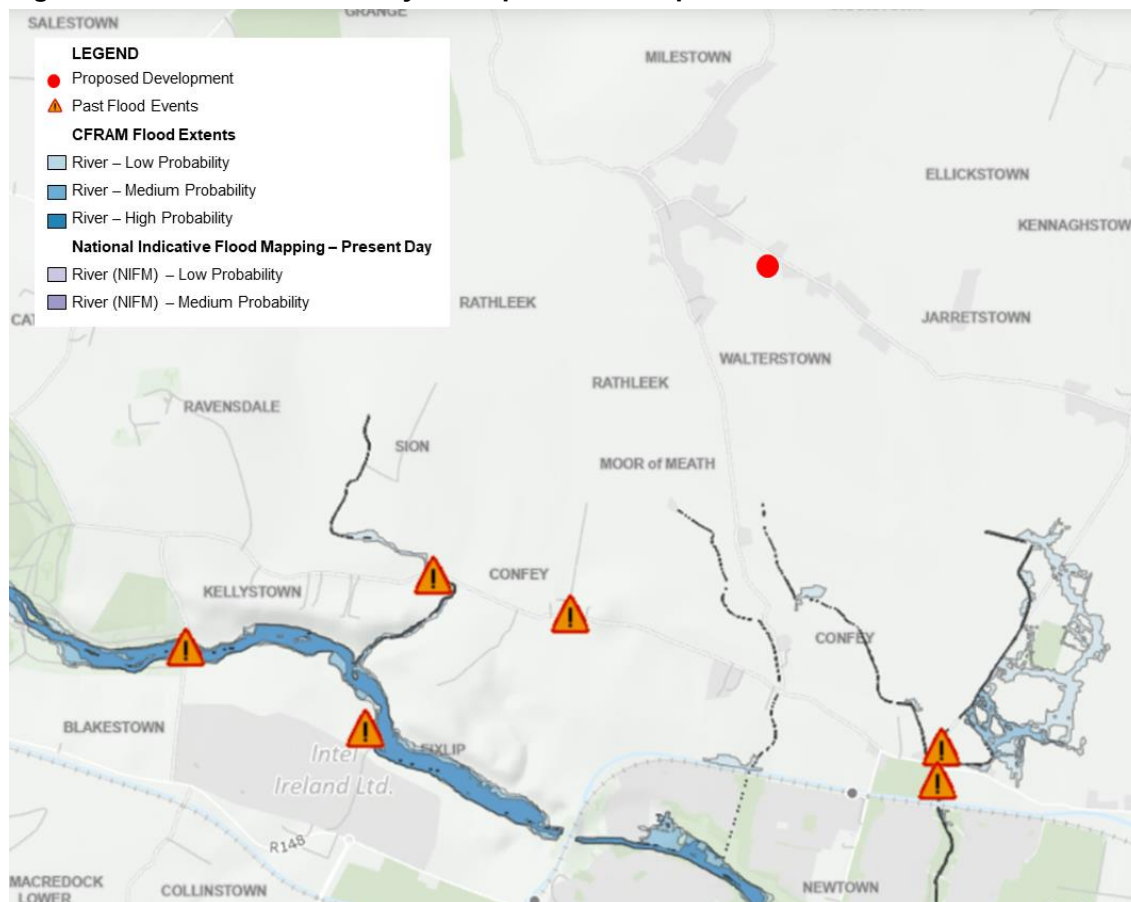
Source	Mechanism	Baseline Risk
	culverted in some cases). Fluvial flooding is typically associated with heavy rainfall events, and excess water spills onto the river floodplain.	day flood extents ⁷² do not extend within the application site boundary. The Proposed Development site is uphill from the closest flood extents approximately 760m to the south (associated with Moor_of_Meath watercourse). No historical flood events are recorded on the OPW Flood Maps associated with the Oranstown Stream. The nearest recorded historical flood event is approximately 1.5km south west of the development site from 2002 (associated with Rye Water river).
Coastal and tidal	Caused by high astronomical tide, storm surges, and local bathymetric effects, often in combination. In estuaries and watercourses affected by tide-locking, flooding can occur as a result of high tidal levels and high fluvial flows in combination.	The development is located approximately 18km from the coast at the closest location. The development is outside OPW coastal present day flood extents and is not at risk of coastal flooding.
Surface water (pluvial)	Water flowing over the ground surface that has not reached a natural or artificial drainage channel. This can occur when intense rainfall exceeds the infiltration capacity of the ground, or when the ground is so highly saturated that it cannot accept any more water.	Pluvial surface water and runoff could affect the development. No past surface water flood events have been recorded at the site as recorded on the OPW Flood Maps. The proposed drainage strategy for the substation compound is discussed in Section 3.3.5. The proposed surface water management system will be designed to ensure that no flooding of the proposed site occurs for the critical storm with a 1 in 100-year return period, including a 30% allowance for climate change. A line-end attenuation basin will be proposed to allow the discharging flow to be restricted to the pre-development greenfield runoff rate.
Groundwater	Raised groundwater levels, typically following prolonged rain (that may be slow to recede). High groundwater levels may result in increased overland flow flooding. Normally associated with catchments where porous substrate and/or aquifers exist.	The development is not located within a Geological Survey Ireland (GSI) groundwater flooding extent. ⁷³
Human / mechanical error	Blockage or overloading of pipes, sewers, canals, and drainage channels or failure of pumping systems. Typically occurs following heavy rainfall or because of high-water levels in a receiving watercourse.	Blockage of pipes and sewers, or failure of pumping systems could affect the development. There is no recorded historical incident of flooding because of infrastructure failure or blockage at the development site.

Source: Adapted from: CIRIA (2004) Development and Flood Risk, C624, Box 2.3 and OPW (2009) *The Planning System and Flood Risk Management, Guidelines for Planning Authorities*.

⁷² Office for Public Works (2020) Flood Maps. Available Online: <https://www.floodinfo.ie/map/floodmaps/> (Last accessed: September 2025)

⁷³ Groundwater Survey Ireland (2020) Groundwater Flooding Probability Maps. Available Online: <https://www.floodinfo.ie/map/floodmaps/> (Last accessed: September 2025)

Figure 9.2: Flood Risk in vicinity of Proposed Development



Source: Mott MacDonald, based on EPA Water Network and OPW Flood Maps

There are no flood extents identified within the development site as per the OPW flood maps. This is consistent with the Meath County Council Strategic Flood Risk Assessment.⁷⁴ No past flood events have been recorded at the site as recorded by the OPW Flood Maps.

The development is located within Flood Zone C where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding)⁷⁵.

Based on the assessment of potential risk to the development from the various categories of flood risk sources, the development could potentially be at risk from surface water (pluvial) and human error / infrastructure failure. These flood risk sources have been assessed for the development during construction phase (Section 9.5.4) and operational phase (Section 9.6.3).

9.5 Construction Phase Considerations

Given the nature of the Proposed Development, the potential for effects on the surface water environment associated with the construction phase are the following:

- Sediment runoff during movement of construction vehicles within the site.

⁷⁴ Meath County Council Strategic Flood Risk Assessment Maps at <https://www.arcgis.com/apps/instant/portfolio/index.html?appid=84a669c14a84416c92b3583ffd774e58> (accessed September 2025)

⁷⁵ Office for Public Works (2009) Guidelines for Planning Authorities: The Planning System and Flood Risk Management November 2009

- Sediment runoff from vegetation clearance to facilitate construction of access road.
- Sediment runoff associated with excavation works and foundation works.
- Accidental spillages or leaks of hydrocarbon / chemical contaminants or concrete to surface water features.
- Release of cement into the surface water environment where poured concrete will be used during construction of 110 kV GIS building and internal access road.
- Impacts on drainage patterns from construction of stormwater drainage network and working near watercourses.
- Impacts on flood risk.

9.5.1 Surface Water Quality

Vegetation clearance and excavations can pose a risk to surface water quality through surface water runoff and the release of sediment to watercourses. Ground damage from construction vehicles and machinery can also cause rutting and increased erosion of soils. Construction access within the site may affect surface runoff patterns, creating alternative flow paths, promoting erosion and localised flooding.

Elevated levels of sediment could impact on spawning fish, through issues including the sedimentation of spawning gravels, clogging of fish gills and reduction in dissolved oxygen.

Accidental release of potentially polluting substances such as oils (hydrocarbons) can result in impacts on the aquatic environment. The release of hydrocarbons can impact water dependent species resulting in disruption to neurosensory, abnormal behaviour and development issues as well as direct impacts on fertility. Oil spills can reduce the capacity of a waterbody to exchange oxygen as well as result in oil coating the gills of aquatic species causing lesions on respiratory surfaces. This can result in respiratory difficulties for aquatic organisms. Benthic invertebrates can be adversely affected if fractions of hydrocarbons settle and accumulate in sediments. This can result in the mortality of populations and prevent future colonisation.

Concrete and cement are highly alkali and fresh concrete has corrosive properties. Concrete wash water is a particularly severe pollutant, as it typically has a high pH (11-12) coupled with extremely high suspended sediment content. In the freshwater environment, pH levels which are elevated beyond natural conditions can have impacts upon water bodies.

Schedule 5 of SI 272 of 2009 (European Communities Environmental Objectives (Surface Waters) Regulations 2009) includes the following (WFD) pH limits for rivers and lakes:

1. Soft water $4.5 < \text{pH} < 9.0$, where soft water is $\leq 100 \text{ mg/l CaCO}_3$; and
2. Hard water $6.0 < \text{pH} < 9.0$, where hard water is $> 100 \text{ mg/l CaCO}_3$.

There are no in-stream works proposed within Oranstown Stream. The nearest proposed works to the Oranstown Stream is the construction of the new LCIM (including foundations), approximately 90m east of the watercourse. All construction works will be carried out at a distance of more than 10m from the drainage ditches. If dewatering is required during construction phase, sediment control and pollution prevention measures included in Section 9.7 will be applied.

The sensitivity of the receiving surface water environment (Oranstown Stream and drainage ditches) at the site is medium noting the Poor WFD status of the watercourse and distance of more than 10m from proposed construction works. Slight effects are anticipated on water quality, in the absence of mitigation.

9.5.2 Hydromorphology

There are no proposed works to drainage ditches or the Oranstown Stream and so hydromorphology will not be affected.

9.5.3 Water Supply, Wastewater and Drainage Infrastructure

During construction, welfare facilities will be provided at compounds, and any discharges will be connected to a sealed holding tank to be emptied and disposed of off-site by a licenced contractor to an approved licenced facility. Water will be tankered onto site as required. Consequently, no effects on water supply or wastewater during the construction phase are anticipated.

9.5.4 Flood Risk

The construction phase of the development will result in the removal of existing vegetation, including localised trees and shrubs along the northern boundary of the site and will involve construction phase temporary structures being installed and the installation of concrete plinths and platform foundations.

The removal of vegetation will result in increased exposed soils and reduced attenuation and absorption of pluvial surface water. Increased vehicle and plant operations and people movement on the site is expected to compact the exposed soils and has the potential to cause channels and areas of pooling during and following rainfall events. As a result, the flood risk from pluvial surface waters is expected to increase locally on the site comparative to the baseline. The effect in the absence of mitigation would be minor but is expected to be addressed by the drainage design.

Construction compounds which require temporary hardstanding are all located within Flood Zone C, there is minimal risk to natural flow routes during the construction duration.

9.6 Operation and Maintenance Phase Considerations

9.6.1 Surface Water Quality

During the operational phase, there will be no direct emissions to the Oranstown Stream.

As discussed in Section 3.3.5 the surface water runoff from the substation compound will be discharged to the existing field ditch located along the southern boundary of the site. This ditch drains into the Oranstown Stream southeast of the Proposed Development site.

The drainage design has been developed incorporating SuDS principles to manage the quantity and quality of runoff during rainfall events. Surface water runoff from the substation compound will be collected via a gravity drainage system (consisting of filter and carrier drains) and managed using an attenuation pond/retention basin with a flow control device on the outlet.

The four transformers are proposed to be constructed within raised concrete bunds. The surface water within these bunds will be pumped and treated via oil/water separator pumps (e.g. Entexol Bund-Sep or similar) and discharged into the proposed surface water drains. Rainwater collected from building roofs will be collected via surface water drains. The filter drains will connect to the surface water drains which discharge into the proposed attenuation basin.

The proposed surface water management system will incorporate the following features to reduce the risk of pollution and improve the quality of surface water which will be discharged from the site, following the recommendations of Volume 2 - New Development of the Greater Dublin Strategic Drainage Study (GDSDS).

- Concrete bunds and oil separator dewatering pumps at the transformer areas;
- Runoff from the road surfaces will be intercepted by infiltration drains or local dispersion, to provide source control;
- Attenuation basin with impermeable geomembrane lining to reduce the risk of potentially contaminated surface water infiltration into the groundwater;
- Emergency shut-off valve chambers located upstream and downstream of the attenuation basin to prevent discharge from the drainage network in an emergency event and during periodic maintenance.

Given the nature of the surface water design which has embedded mitigation it is expected that no effects are likely on surface water quality of the stream and drainage ditches within the development site.

9.6.2 Water Supply, Wastewater and Drainage Infrastructure

As mentioned in Section 9.6.1 the surface water runoff from the substation compound will be discharged to the existing field ditch located along the southern boundary of the site. Surface water runoff from the site access road will be locally dispersed to the ground. The dispersed surface water from the road will locally infiltrate into the ground and evaporate. Surface water runoff from roads within the site will be collected via infiltration drains located along the side of these roads.

The drainage design has been developed incorporating SuDS principles and the proposed drainage strategy complies with the recommendations as outlined in the Greater Dublin Strategic Drainage Study. The proposed surface water management system will be designed to ensure that no flooding of the proposed site occurs for the critical storm with a 1 in 100-year return period, including a 30% allowance for climate change. A line-end attenuation basin will be proposed to allow the discharging flow to be restricted to the pre-development greenfield runoff rate.

A proprietary flow control device (e.g. a 'Hydro-Brake' or similar) will be used to restrict discharge from the pond to pre-development 'greenfield' equivalent runoff rates. The allowable discharge rates will be calculated using the Institute of Hydrology Report 124 methodology and selected in accordance with the requirements of Volume 2 of the GDSDS.

Once the substation is operational, a new connection for potable water supply will be required for welfare facilities (1No. toilet, hand wash basin and mess room sink) within the GIS building. The potable water demand will be relatively low as the proposed substation will normally be unmanned and operated remotely. Potable water supply for the GIS building is proposed to be sourced via a new connection from the existing public watermain located within Jarretstown Lane, subject to connection request application to Uisce Éireann. A Confirmation of Feasibility (CoF) was received from Uisce Éireann on 12 November 2025 (pre-connection enquiry reference CDS25007947), as provided in Appendix 3.2.

During operation, domestic type wastewater will be produced by the onsite welfare facilities (1No. toilet, hand wash basin and mess room sink). It is anticipated that a two person crew will be visiting the substation three days in a week, at a maximum. The wastewater will be collected in a proposed waste water storage tank located outside the substation compound (refer to planning drawing 229101684-MMD-00-XX-DR-D-0100). This will ensure easy access for wastewater to be tankered off the site, as necessary, by a licenced haulier.

With embedded mitigation in drainage design, and minimal quantities of water requirement during the operational phase, no likely effects are anticipated on water supply, wastewater and drainage infrastructure.

9.6.3 Flood Risk

The Proposed Development increases the area of hardstanding through construction of hardstanding areas within the substation compound and the internal access road. There is potential to increase pluvial (rainwater) surface water runoff causing pooling and unintentional drainage channels or rivulets.

The drainage design will allow for the drainage of surface waters from pluvial sources across the site. The proposed surface water management system will be designed to ensure that no flooding of the proposed site occurs for the critical storm with a 1 in 100-year return period, including a 30% allowance for climate change.

Once the works are complete, the drainage design of the site will result in land draining at a rate comparable to the baseline scenario. Therefore, the Proposed Development will not increase flood risk in the area.

The Proposed Development is mainly surrounded by agricultural lands therefore minimising pluvial sources in vicinity of the site. The local road Jarretstown Lane, to the north of the application site boundary, drains to ditches on either side of the road. There is also a row of houses to the east of the site. Based on the OPW flood risk maps and the topography of the site, the Proposed Development is not considered to be at risk from pluvial sources in vicinity of the site.

9.7 Mitigation and Monitoring Measures

9.7.1 Mitigation Measures

9.7.1.1 Construction Phase

The following mitigation measures will be implemented prior to commencement and throughout the duration of the proposed works. These measures are included in the CEMP, which will remain a 'live' document which will be reviewed regularly and revised as necessary in consultation and agreement with the Local Authority to ensure that the measures implemented are effective.

- An Environmental Clerk of Works (EnCoW) will be appointed prior to commencement of works.
- Works will not be carried out during extreme rainfall or high flows events. Met Éireann provides 5-day weather forecasts on its website (www.met.ie) and works will not take place at least during yellow, amber, and red weather warnings as monitored by the onsite EnCoW.

All pollution control measures will be designed, installed, and maintained in accordance with CIRIA guidance for '*Environmental Good Practice on Site*' (C741) and '*Control of water pollution from linear construction projects. Technical guidance*' (C648) to minimise impacts to the Oranstown Stream. The following will be implemented.

- A Resource and Waste Management Plan will be developed to ensure that waste generated during the project will be managed in a way that ensures the relevant provisions of the Waste Management Act 1996 and associated amendments and regulations are met, particularly with regard to the use of appropriately permitted Waste Contractors and destinations for waste materials.
- Sediment erosion and pollution control measures will be included in the CEMP and will be implemented for all construction works. This includes measures to manage soil and silt-laden water on site, accidental leaks/spills to ground and water quality monitoring to ensure compliance with environmental quality standards specified in the relevant legislation. The

plan for erosion and sediment control will also specifically deal with the potential impacts of material deposition areas during the construction phase for Proposed Development.

- All construction staff will be properly trained to respond to accidental discharge or leaks and appropriate spill management kits will be in place to allow rapid response on site. An Incident Response Plan will be in place detailing the procedures to be undertaken in the event of spillage of chemical, fuel or other hazardous substances or wastes, logging of non-compliance incidents and any such risks that could lead to a pollution incident at any point over the proposed working areas.
- Prior to commencement of construction, the Contractor will prepare method statements for discharge of water from construction activities. ESB will apply for any permit licence agreements, if required, to permit the discharge of water during the construction phase.
- Water from construction activities will not be directly discharged into Oranstown Stream. Any such water will be treated and it will be ensured that the respective water quality statutory limits are met as set under the relevant EU environmental objectives for surface water.

The following mitigation measures will be implemented prior to commencement and throughout the duration of the works:

- Temporary gravel road with terram underneath will be provided where higher traffic volumes are anticipated to minimise tracking.
- Tracking beside drainage ditches linked to the Oranstown Stream (approximately 90m west of proposed construction works at the closest point) will be avoided, to avoid damage to the bankside.
- A buffer zone of 10m will be maintained, between storage and working areas and drainage ditches potentially linked to the Oranstown Stream, taking account of the minimum working area required to facilitate the works.
- Oil or fuel stored within the construction site, will be kept in a bunded area, at least 10m from drainage ditches. Vehicle maintenance will not occur within 10m of drainage ditches. All machinery will be in good working order, free from any leakage of fuel, oil or hydraulic fluid
- The time period over which areas of digging are left open will be reduced insofar as is reasonably practicable.
- Re-instatement method statements will be subject to approval by the EnCoW.
- Concrete will be brought to site by covered truck. Wet concrete operations adjacent to watercourses will be avoided.
- The Contractor will ensure that all concrete truck wash watering / cleaning is undertaken offsite where possible and remote from drains and watercourses.
- To reduce the risk of contamination arising as a result of spills or leakages, measures including, but not limited to, the following will be employed.
 - All collected waste will be managed in accordance with the Waste Management Act 1996, and associated Regulations;
 - Fuels, chemicals, liquid and solid waste will be stored on impermeable surfaces;
 - Refuelling of plant, equipment and vehicles will be carried out on impermeable surfaces;
 - All tanks and drums will be bunded in accordance with established best practice guidelines; and
 - Spill kits will be provided and carried by all crews during underground cable installation works.
- Temporary works will be designed so as not to increase flood risk elsewhere from overland flow, by limiting excavated lengths and providing suitable drainage provision.

- Silt fences (to Hy-Tex Premium specification or similar) and silt traps will be installed prior to commencement of works and will be inspected daily to inform adaptive management as required. The locations of same will be determined by the EnCoW.
- The Emergency Response Plan and environmental control and mitigation measures described in the CEMP will be agreed prior to construction with the Local Authority if requested by means of condition.
- The temporary construction compound will be secured with hoarding/fencing around the compound perimeter as appropriate.
- Temporary facilities will be provided at the construction compound including construction phase car parking and welfare facilities and temporary material storage areas as necessary. Any discharges from temporary welfare facilities will be connected to a sealed holding tank to be emptied and disposed of off-site by a licensed contractor to an approved licenced facility.
- Storage of fuel and refuelling will be undertaken within bunded hardstanding areas. Water will be brought to site via tankers until a connection to the mains water supply is established.

Silt Control Measures

- Silt control measures will be used to control silt generated from activities on site, and if dewatering is required, and prevent it gaining access to surface drainage which could convey silt to larger streams and watercourses including Oranstown Stream close to the site.
- Silt control measures include silt traps which can be located in small drains where flow is small and silt fences where runoff from large areas needs to be controlled.
- Silt fences must be installed in the working areas and not at the watercourse.
- Access routes will be delineated such that an appropriate set back distance from watercourses is maintained. Where works are to be undertaken in vicinity of watercourses (including ditches), a 10m setback distance will be delineated by the EnCoW on site.
- Where distances between the works and watercourse allow, a minimum setback distance of 10m from the watercourse will be maintained.
- Where the site is constrained, the best available set back distance will be employed taking account of the minimum working area required to facilitate the works.

Silt Fences

- Silt fences will be installed downslope of the area where silt is being generated on disturbed ground.
- To be effective the silt fence must contain the area where silt is generated and must terminate on high ground (i.e. an elevated area not in the watercourse).
- Silt fences will be constructed using a permeable filter fabric (e.g. Hy Tex Terrastop Premium silt fence or similar) and not a mesh.
- The base of the silt fence will be bedded at least 15-30cm into the ground at 2 metre intervals.
- Once installed the silt fence will be inspected regularly, daily during the proposed works, weekly on completion of the works for at least one month, but more frequently after heavy rains.
- Any failures in the integrity of the silt fence will be rectified immediately.
- Two lines of silt curtain / fence will be installed, where considered necessary, by the EnCoW.
- Any build-up of sediment along the fence boundary will be removed daily.
- Silt fences will be maintained until vegetation on the disturbed ground has re-established. Re-instatement method statements will be subject to approval by the EnCoW.

- The silt fencing must be left in place until the works are completed (which includes removal of any temporary ground treatment).
- Silt fences will not be removed during heavy rainfall.
- The silt fence will not be pulled from the ground but cutaway at ground level and posts removed.
- A record of when it was installed, inspected and removed will be maintained.

Silt Traps

The purpose of the trap is to reduce the level of solids in the slowly flowing water including drainage ditches on the site. The silt trap works by allowing a build-up of water behind it slowing flow and allowing solids to settle out. The following requirements will apply:

- Silt traps will only be placed in drains downstream of working areas where the volume of water flow is expected to be low.
- Silt traps will be made of terram or similar material, not mesh.
- The trap will be staked into the banks of the drain / watercourse such that no water can flow around the sides.
- The material will be bedded into the drain bed/watercourse to prevent water flowing beneath it.
- The height of the trap will be lower than the bank heights. The upper edge will be fixed to a timber cross piece. This will allow water to overtop the silt trap and not burst through or around it.
- Inspections will be carried out daily; during the proposed works, weekly on completion of the works for at least one month, and after heavy rains, and monthly thereafter until bare areas have developed new growth.
- Any build-up of solids will be carefully removed without removing any vegetation growing on the bottom.
- In sensitive areas a series of silt traps will be placed in the drain.
- The silt trap will not be pulled from the ground but cutaway at ground level and posts removed.
- A record of when it was installed, inspected and removed will be maintained.

9.7.1.2 Operation and Maintenance Phase

The proposed surface water drainage system will incorporate the following features to reduce the risk of pollution and improve the quality of surface water which will be discharged from the site:

- The silt traps in the manholes will reduce the risk of silt buildup (blockage) in the surface water drains.
- Emergency shut-off valve chambers located upstream and downstream of the attenuation basin to prevent discharge from the drainage network in an emergency event and during periodic maintenance.
- The transformer and ASC areas will be bunded and fitted with an in-bund interceptor to prevent any oil entering the drainage system.
- To prevent the silt-up in the proposed attenuation basin the surface water runoff is managed via source control. The proposed site drainage will have gentle slope that prevents soil erosion via heavy runoff.

To prevent risk of blockage, filter drains will be covered using a grate or screen to prevent waste (like leaves, twigs) or debris to enter the drains.

9.7.2 Monitoring Measures

Throughout the works, regular visual checks for evidence of turbidity or floating oil in the watercourse adjacent to the proposed works area both upstream and downstream will take place.

9.8 Residual Effects

Following the implementation of mitigation measures as detailed in Section 9.7, effects on surface waters and flooding will be negligible. The mitigation measures detailed will prevent any major effects on surface waters and no flood risk mitigation measures are required.

The proposed works will not cause a deterioration of the status of any surface or groundwater body under the WFD guidelines and will not undermine the attainment of good status of such waterbodies.

10 Land, Soil, Geology and Hydrogeology

10.1 Introduction

This chapter considers the potential effects arising from the Proposed Development on Land, Soils, Geology and Hydrogeology. The assessment is based on the development as described in Chapter 3.

10.2 Policy and Guidance

The Chapter 2 Planning Policy Context of this report describes the wider policy and legislative context applicable to the Proposed Development. Policies and guidance documents of potential relevance to the Land, Soils, Geology and Hydrogeology are set out in this section.

10.2.1 Policies

This chapter has been prepared in accordance with the requirements of European Union Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the 'EIA Directive') as amended by Directive 2014/52/EU (European Commission, 2014).

The requirements of the following legislation have also been complied with:

- The Water Framework Directive (WFD) 2000/60/EC (European Commission, 2000) provides a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater. The WFD requires Member States to establish river basin districts and, for each district, a river basin management plan (RBMP) which is revised, implemented and reviewed every six years. The Groundwater Daughter Directive 2006/118/EC (European Commission, 2006) establishes a regime which sets groundwater quality standards and introduces measures to prevent or limit the input of pollutants into groundwater, and was amended by Directive 2014/80/EU (European Commission, 2014). The WFD was implemented in Ireland by Statutory Instrument (S.I.) 722/2003 (Office of the Attorney General, 2003). Objectives for protection of groundwater against pollution and deterioration were implemented in S.I. 9/2010 (S.I. No. 9/2010 - European Communities Environmental Objectives (Groundwater) Regulations, 2010).
- EU Directive 80/68/EEC (European Commission, 1979), amended by the Priority Substances Directive 2013/39/EU (European Commission, 2013), concerns the collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors. The objective of the Directive 2013/39/EU is to protect the environment from the adverse effects of these waste water discharges, and is implemented in Ireland as S.I. No. 684/2007 (S.I. No. 684/2007 - Waste Water Discharge (Authorisation) Regulations, 2007).
- The Drinking Water Directive 98/93/EC (European Commission, 1998), amended by Directive 2020/2184 (European Commission, 2020) concerns water quality for human consumption, and is implemented in Ireland as S.I. No. 122/2014 (Office of the Attorney General, 2014). Thresholds for potable groundwater quality indicators are specified in S.I. No. 366/2016 (Office of the Attorney General, 2016).
- The Waste Framework Directive 2008/98/EC (European Commission, 2008) provides waste management principles for the protection of water, soils and places of special interest, and establishes an order of preference for managing and disposing of waste.

Geology is recognised as an important component of natural heritage. National legislation require various branches of Government and statutory agencies to consult and take due regard for potential conservation of geological heritage features. These include Geological Heritage Sites and County Geological Sites, which may be viewed online (Geological Survey Ireland, 2024).

10.2.2 Guidelines

- Guideline for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (Institute of Geologists of Ireland, 2015).
- Guidelines on the information to be contained in Environmental Impact Assessment Reports. Environmental Protection Agency (Environmental Protection Agency, 2022).
- Guidelines on the Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (National Road Authority, 2009) (now Transport Infrastructure Ireland (TII)).
- Planning for Watercourses in the Urban Environment: A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning (Inland Fisheries Ireland, 2020).
- Control of Water Pollution from Construction Sites - Guide to Good Practice (C532) (CIRIA, 2001).
- Methodology for establishing groundwater threshold values and the assessment of chemical and quantitative status of groundwater, including an assessment of pollution trends and trend reversal. Wexford: Environmental Protection Agency (Craig, 2024).

10.3 Methodology

10.3.1 Approach to Data Collection

The following information and data sources (Table 10.1) have been considered during the production of this chapter.

Table 10.1: Data Sources used to inform the Land, Soil, Geology and Hydrogeology Chapter

Data Source	Date Published	Data Content
Land and Land Use		
CORINE Land Cover (Copernicus Land Monitoring Service, 2018) (Accessed September 2025)	2018	Corine Land Use
EPA database (Environmental Protection Agency, 2025) (Accessed September 2025)	2025	Waste management facilities
MapGenie 6-inch First Edition (Tailte Éirean, 2025) (Accessed September 2025)	2025	Historical mapping
MapGenie 25 inch (Tailte Éirean, 2025) (Accessed September 2025)		Historical aerial imagery
MapGenie Imagery 1996-2000, 2001-2005, 2006-2012, 2013-2018 (Tailte Éirean, 2025) (Accessed September 2025)		

Data Source	Date Published	Data Content
Soils and Geology		
Geological Survey Ireland (GSI) Web Map Viewer (Geological Survey Ireland, 2025) (Accessed September 2025)	2025	Superficial deposits (scale 1: 50,000); Bedrock geology (scale 1: 100,000); and Historical landslide and landslide susceptibility.
Irish Soil Information System (National Soil Survey of Ireland, 1983) (Accessed September 2025); EPA database (Environmental Protection Agency, 2025) (Accessed September 2025)	2025	SIS national soils; Radon risks; Special Areas of Conservation (SACs); Special Protection Areas (SPAs); and Natural Heritage Areas (NHA).
Hydrogeology		
GSI Web Map Viewer (Geological Survey Ireland, 2025) (Accessed September 2025)	2025	Groundwater bodies; Karst features including caves, dry valleys, enclosed depressions, estavelles, springs, superficial solution features, swallow holes and turloughs; Karst traced underground connections; Groundwater resource potential; Groundwater vulnerability; Wells and springs; Group Scheme and Public Supply Source and; Protection areas.
EPA Maps (Environmental Protection Agency, 2025) (Accessed October 2025)	2025	National water monitoring stations; Hydrometric gauges; WFD waterbodies (Groundwater, lake, river, coastal and transitional) and status; and WFD catchments and sub catchments.
EPA Water Quality in Ireland 2019-2024 (Environmental Protection Agency, 2025) (Accessed October 2025)	2025	Factors determining WFD status; and Nutrients and trends.

10.3.2 Approach to Assessment of Effects

The criteria used to define receptors for the study area (based on a 500m buffer zone extended around each proposed working area) are summarised below in Table 10.2.

Table 10.2: Summary of Key Receptors to be Considered

Environmental Elements	Key Receptor
Land and Land Use	Land use types and potential contaminants
Soils and Geology	• Soils, superficial deposits, bedrock geology and other geological features, further to a review of GSI data and site-specific ground investigation. • Mapped karst landforms including caves, dry valleys, enclosed depressions, estavelles, springs, superficial solution features, swallow holes and turloughs. • Geological heritage sites. • Geohazards: recorded events, primarily landslides, karst features. • Economic geological sites.

Environmental Elements	Key Receptor
Hydrogeology	● Groundwater body and both quantitative and qualitative status classification as assigned under the WFD. ● Groundwater: Groundwater abstractions from Public Supply Schemes, Group Water Schemes and local domestic/agricultural wells (with varying degrees of location accuracy) mapped by the GSI including Source Protection Zones (SPZs). ● Traced underground connections of known water dye trace studies. ● Groundwater discharges. ● Groundwater Drinking Water Protection Areas. ● Aquifer Type, as assigned by the GSI; relates to the aquifers productivity in terms of well yields as detailed below: ● LI – Locally Important Aquifer – Bedrock which is moderately Productive only in Local Zones. ● Lm – Bedrock which is generally Moderately Productive ● Lk – Locally Important Aquifer – Karstified to a limited degree or area ● Rkd – Regionally Important Aquifer-Karstified (diffuse) ● Lg – Locally Important Aquifer – Sand and gravel ● Aquifer Vulnerability ● Designated sites that are hydrologically or hydrogeologically connected to the Proposed Development (e.g. by the way of karst connections, or by linear features such as water courses). ● Boreholes

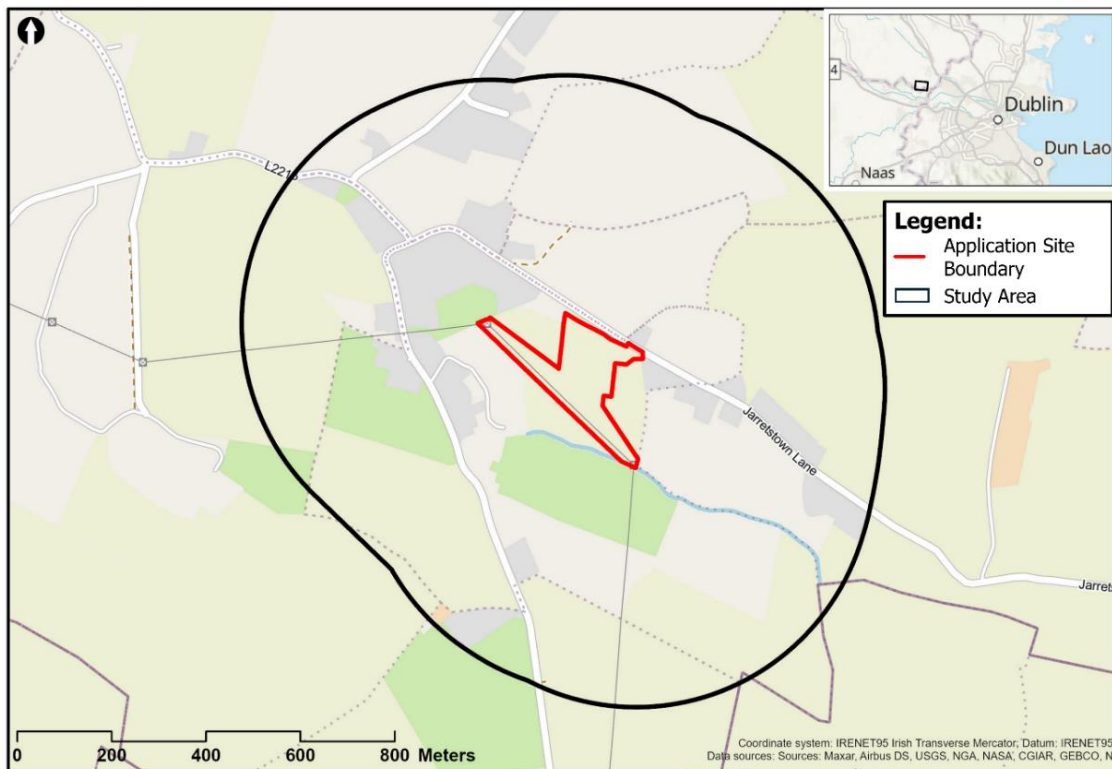
This report is subject to the following limitations:

- The sources of information used in the assessment are listed in Table 10.1. Information sources include third party data and publicly available information, which are assumed to be correct. Mott MacDonald have not validated nor warrant the information presented in these third-party reports.
- The report is based on outline design presented in Chapter 3 at the current level of available information.
- Any findings presented in this report should be re-evaluated if additional information is presented through additional investigation or design information.

10.3.3 Study Area

The study area in this PECR comprises land within the application site boundary and a 500m buffer from these structures. The study area is shown in Figure10.1.

Figure 10.1: Study Area for the Proposed Development



Source: Mott MacDonald

10.4 Receiving Environment

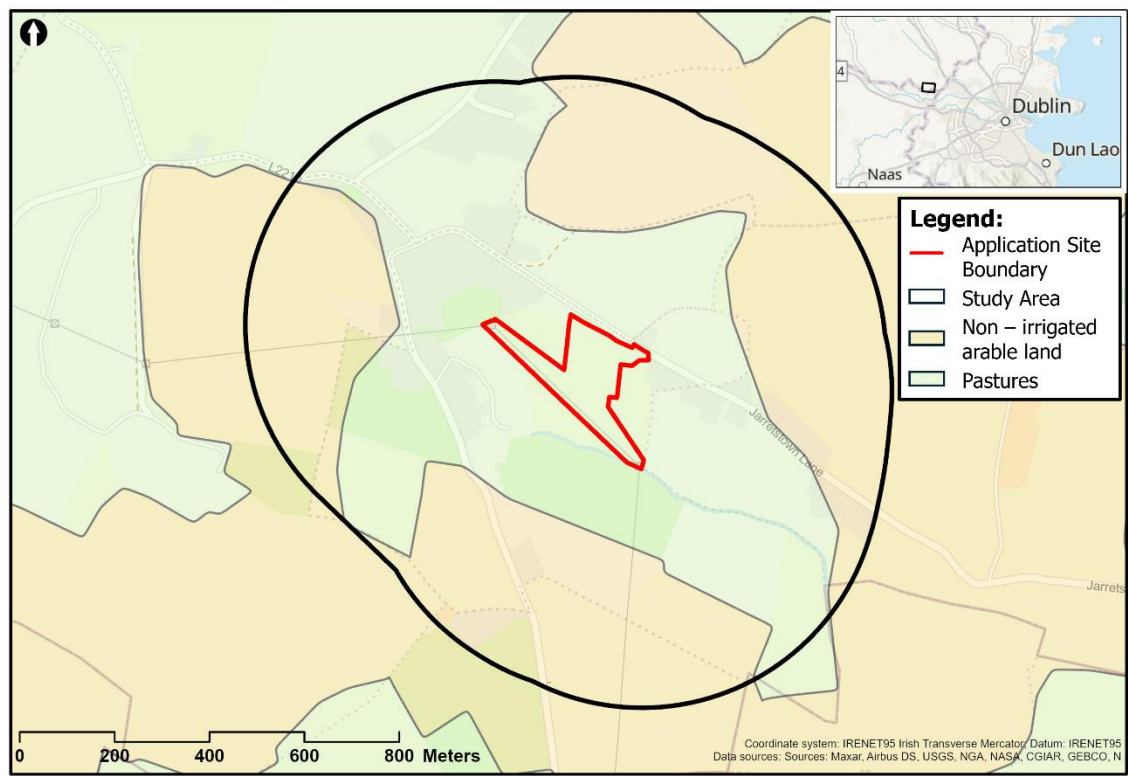
The following sections present an overview of the baseline conditions for the receiving environments and associated receptors (following methodology provided in in Section 10.3.2) within the study area.

10.4.1 Land and Land Use

The land surface topography within the application site ranges from 68m above Ordnance Datum (Malin) (m AOD) to 72m AOD (Map, 2025).

Current land use within the application site, as identified by Corine Land Use mapping (Copernicus Land Monitoring Service, 2018), is exclusively agricultural, comprising grazed pasture (60%) and non-irrigated arable land (40%), with aerial imagery indicating active cereal crop production in the arable areas. No active quarries, pits, or waste management facilities are recorded within the study area (Geological Survey Ireland, 2025). The spatial distribution of land uses is seen in Figure 10.2.

Figure 10.2: Distribution of Land Use across the Study Area



Source: (Copernicus Land Monitoring Service, 2018)

A review of historical mapping and aerial imagery (Tailte Éirean, 2025) has been undertaken to assess land use changes within the Land Ownership boundary (Onsite) as well as within the 500 m buffer zone (offsite). Table 10.3 provides a summary of the site history.

Table 10.3: Historical Land Use changes within the Study Area

Year & Source	Onsite	Offsite
1837 – 1842 MapGenie 6 inch First Edition (Tailte Éirean, 2025)	Undeveloped farmland, field layout is different from current layout. A road runs along the northern site border.	Mostly undeveloped farmland. Farm and residential buildings located immediately north west, immediate northeast, and 50 m southwest. A quarry is located approximately 100 m west.
1845 MapGenie 6 inch Last Edition (Tailte Éirean, 2025)	No change other than the field layouts.	Quarry is no longer recorded.
1888 – 1913 MapGenie 25 inch (Tailte Éirean, 2025)	No significant change.	No significant change.
1995 MapGenie Imagery (1995) (Tailte Éirean, 2025)	No significant change.	Possible builders yard located immediate north. Residential development to the west in Walterstown, and to the east of the site.
1996 MapGenie Imagery 1996 – 2000 (Tailte Éirean, 2025)	No change other than the field layouts.	No significant change.
2001 – 2018 MapGenie Imagery 1996 – 2000, 2001-2005, 2006-	Fields shown as current layout.	No significant change. In March 2012 builders' yard has expanded northward.

Year & Source	Onsite	Offsite
2012, 2012-2018 (Tailte Éirean, 2025)		

10.4.2 Soils and Geology

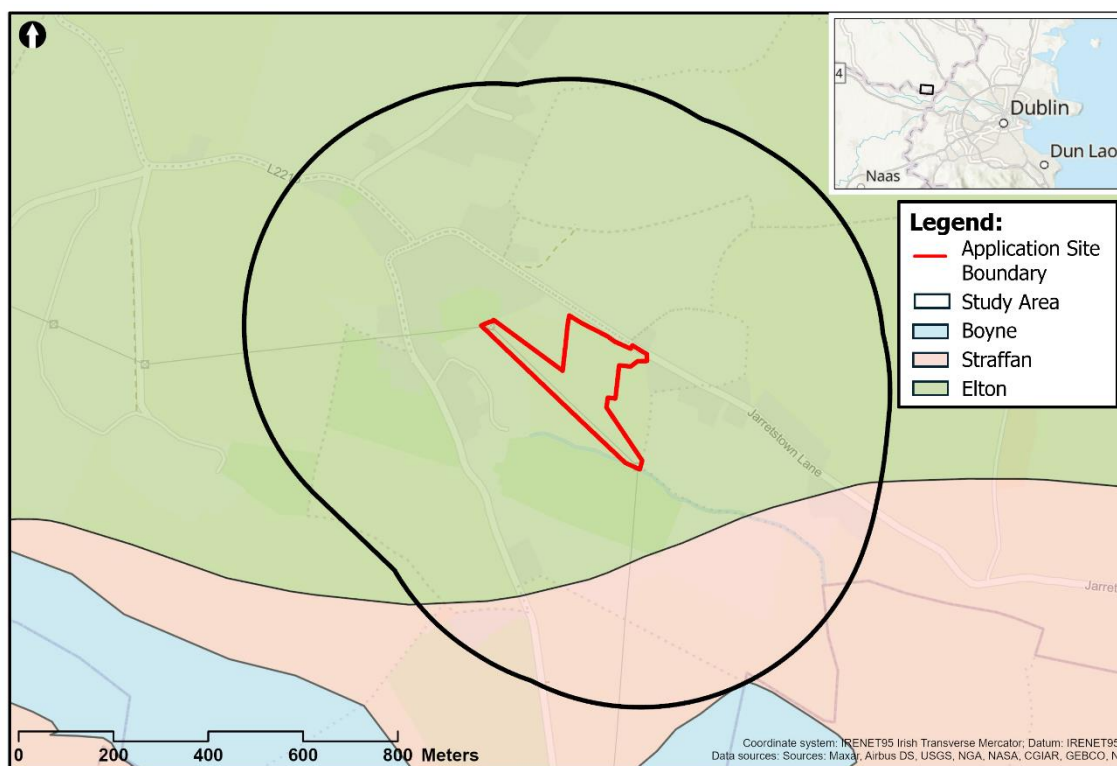
Soils, superficial deposits and bedrock geology in the study area have been identified by consulting GSI geological mapping (Geological Survey Ireland, 2025) and EPA Maps (Environment Protection Agency, 2025).

10.4.2.1 Soils

The spatial distribution of soil types across the study area is shown in Figure 10.3. Two soil types are identified within the study area including:

- Elton: Luvisols and Surface water Gleys, developed on drift composed mainly of limestone with some siliceous stones (Environmental Protection Agency, 2014). These soils are typically deep, well-drained, and friable, with favourable structure and moisture retention that supports use. (National Soil Survey of Ireland, 1983).
- Straffan: Surface water Gleys and Luvisols commonly associated with fluvio-glacial outwash gravels and calcareous Brown Earths on lower slopes over limestones bedrock (Environmental Protection Agency, 2014). Straffan deposits are excessively well-drained and exhibit higher fertility and drainage characteristics due to the presence of calcareous Brown Earths (National Road Authority, 2009).

Figure 10.3: Soil Types found in the Study Area

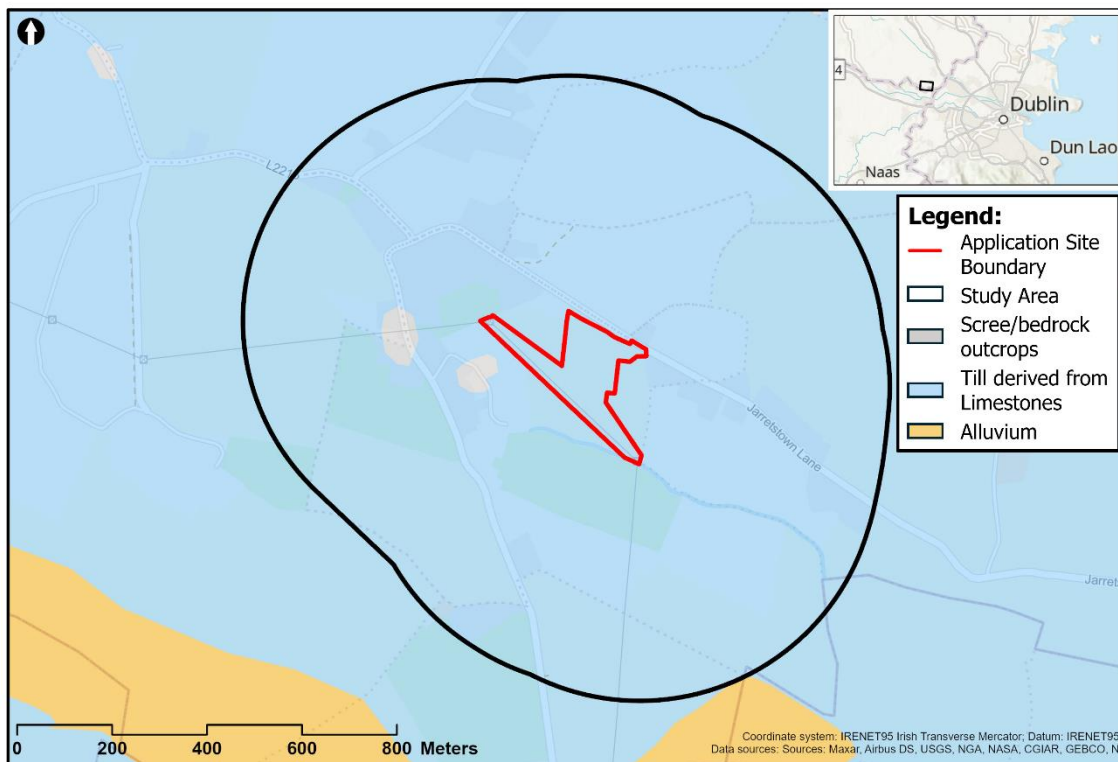


Source: (Environment Protection Agency, 2025)

10.4.2.2 Superficial Deposits

The GSI 1:50,000 scale mapping reproduced in Figure 10.4 shows the distribution of the superficial deposits in the study area. The majority of the study area is till derived from the bedrock limestone. The thickness of the superficial deposits is likely to be variable across the study area with superficial deposits absent in some locations (Geological Survey Ireland, 2025).

Figure 10.4: Distribution of Superficial Deposits across the Study Area



Source: (Geological Survey Ireland, 2025)

10.4.2.3 Bedrock Geology

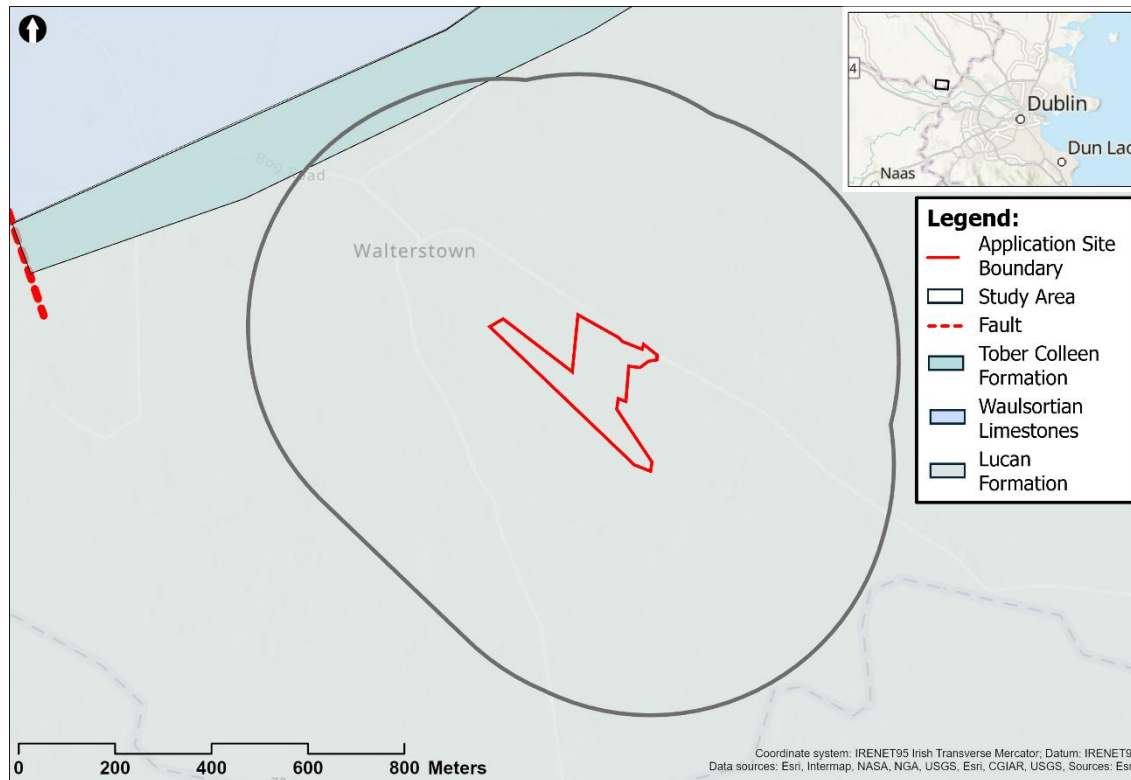
The GSI 1:100,000 scale geology mapping indicates that the bedrock underlying the study area consists of a succession of gently folded Carboniferous Limestone Formations (Figure 10.5). Most of the project area is characterised by the Lucan Formation, which overlies the Tober Colleen Formation in the Dublin Basin. The Lucan Formation comprises “*dark grey to black, fine-grained, occasionally cherty, micritic limestones that weather to pale grey, with rare dark coarser-grained calcarenitic limestones, sometimes graded*”. In the north Dublin Basin, the beds are interpreted as fine-grained distal turbidites. The Lucan Formation has a thickness ranging from 300 m to 800 m (Geological Survey Ireland, 2025).

On the northeastern side of the project area, the Tober Colleen Formation is present. This formation passes down to Waulsortian limestones (if present) or to the Malahide Formation, and comprises “*dark-grey, calcareous, commonly bioturbated mudstones with subordinate thin micritic limestones*”. Its thickness typically ranges from 50m to 250m (Geological Survey Ireland, 2025).

No mineral localities are shown on the IGS mineral localities mapping for the study area. Structural measurements, faults and fissures within the study area are absent (Geological Survey Ireland, 2025). Additionally, no verified GSI bedrock boreholes are recorded within the study area.

At a mapping scale of 1:40,000, no karst landforms are mapped within or near the study area by GSI (Geological Survey Ireland, 2025). The 1:250,000 scale physiographic mapping indicates that the study area is “flat to gently undulating glacial sediments” (Geological Survey Ireland, 2025).

Figure 10.5: Bedrock Geology within the Study Area



Source: (Geological Survey Ireland, 2025)

10.4.2.4 Landslides

No landslide events have been mapped within the study area. The landslide susceptibility within 500m of the scheme working area is ‘low’ (Geological Survey Ireland, 2025).

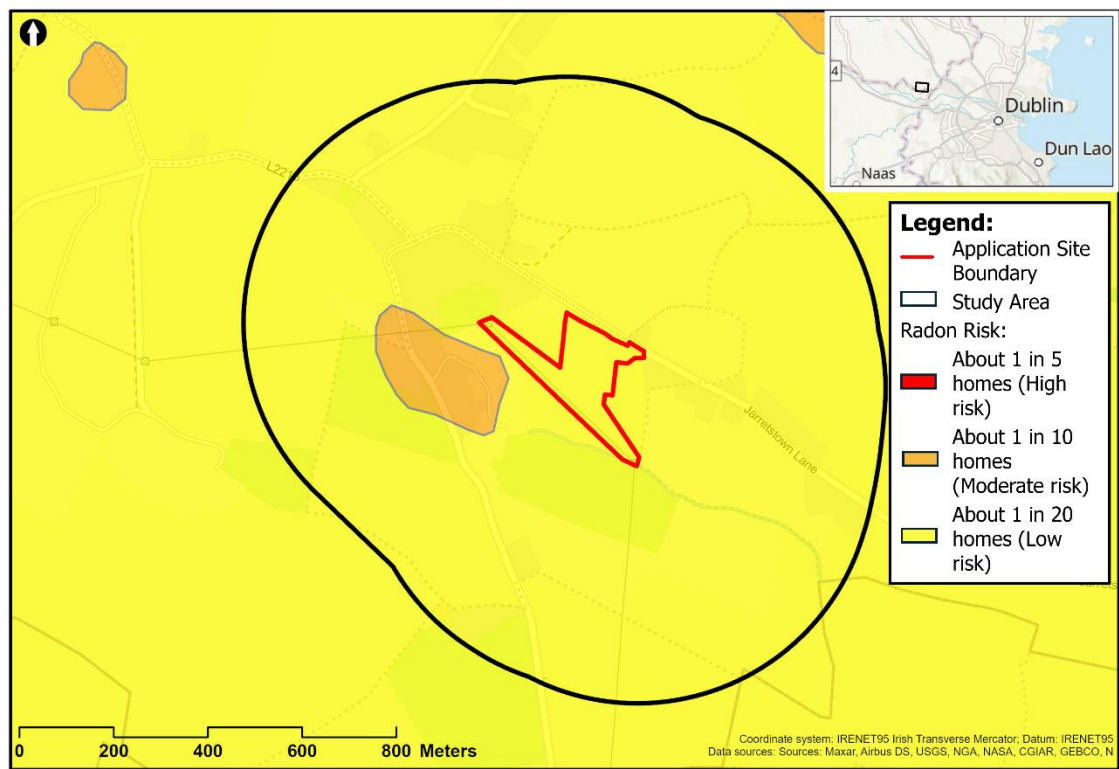
10.4.2.5 Geological Heritage

The GSI Geological Heritage mapping portal does not identify any geological heritage sites within the study area (Geological Survey of Ireland, 2021).

10.4.2.6 Radon

The EPA Radon Map, shown on Figure 10.6, categorises radon risk based on indoor radon measurements and geological information, including bedrock type, quaternary geology, soil permeability and aquifer type (Environmental Protection Agency, 2025). This map shows that the study area is primarily located in an area where 5% of homes are estimated to be above the reference level of 200 becquerels per cubic metre (Bq/m³). Radon risk in these areas is considered to be low. A small portion of the buffer area is estimated to have approximately 10% of homes exceeding the reference level, indicating a moderate risk.

Figure 10.6: Radon Risk within the Study Area



Source: (Environmental Protection Agency, 2025)

10.4.3 Hydrogeology

A series of hydrogeological elements/attributes including Karst features, aquifer designations, aquifer vulnerability, springs, boreholes and groundwater Source Protection Areas (SPA) have been reviewed using GSI Groundwater Data Viewer (Geological Survey Ireland, 2025) and EPA maps (Environmental Protection Agency, 2025).

10.4.3.1 WFD Groundwater Status

The study area lies within the Dublin WFD groundwater body (GWB). The WFD groundwater status during 2019-2024 is summarised in Table 10.4.

The groundwater within the study areas is classified as calcium bicarbonate water, indicating a very hard water (350 - 480mg/l (CaCO₃)), with a high alkalinity (300 - 350mg/l (CaCO₃)). Conductivity of groundwater ranges from 550 to 900µS/cm (Geological Survey Ireland, 2024) indicating fresh water.

Table 10.4: Summary of WFD Groundwater Body Classification within the Study Area

WFD Classification	Dublin
EU Code	IE_EA_G_008
Overall Groundwater Status	Good
Quantitative Groundwater Status	Good
Chemical Groundwater Status	Good

Source: (Environmental Protection Agency, 2025)

10.4.3.2 Aquifers and Groundwater Flow

The majority of the study area is underlain by Dinantian shales and limestone, which are classified by the Geological Survey of Ireland (GSI) as locally important aquifers (LL) - bedrock that is moderately productive only in zones. In the northwest portion of the study area, the Tober Colleen Formation and Dinantian pure unbedded limestone are also present and classified as poor aquifers (PL) – bedrock generally unproductive except for occasional localised zones. No sand or gravel aquifers are present within the study area (Geological Survey Ireland, 2025).

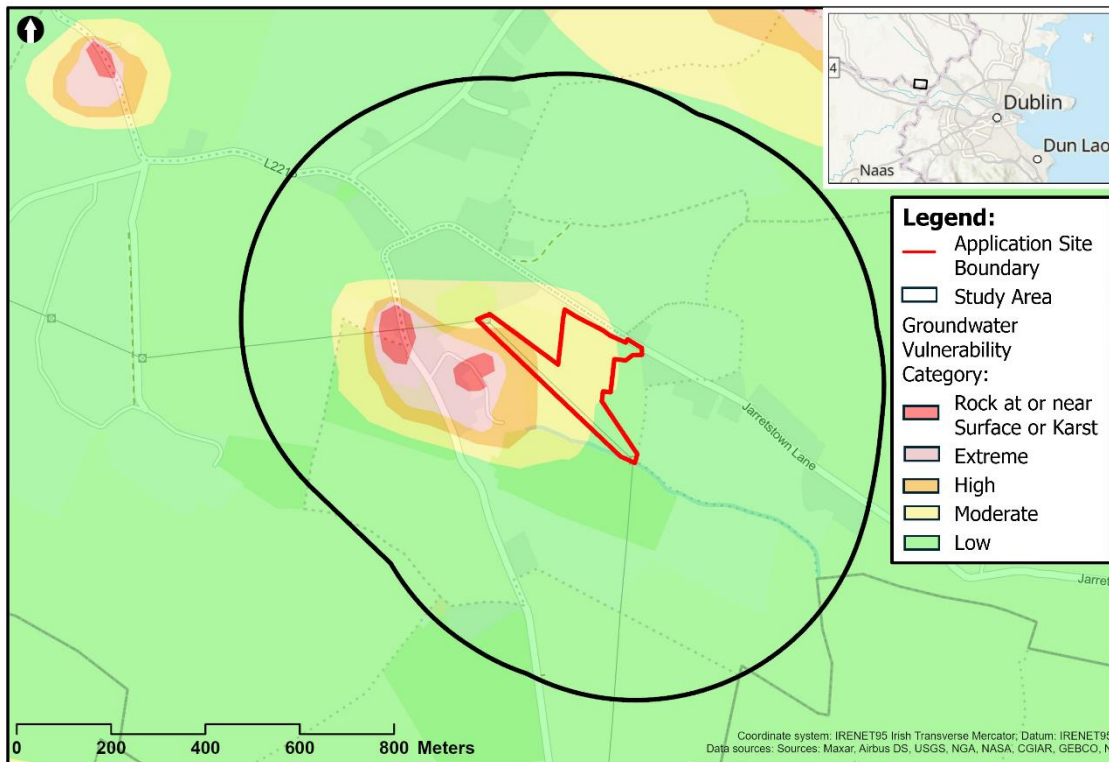
The underlying aquifer is characterised by negligible primary porosity, with groundwater movement occurring predominantly through fractures, some of which may have been enhanced by karstification or dolomitisation (Geological Survey Ireland, 2004). Within the Dublin WFD groundwater body, the regional flow direction is towards the coast, as well as the River Liffey and Dublin City to the northeast of the study area. Groundwater flow is expected to occur mainly within the upper weathered zone.

Pumping test analysis conducted in this groundwater body suggested transmissivity values of between 50 and 150m² /d, suggesting moderate permeability (Geological Survey Ireland, 2004).

10.4.3.3 Groundwater Vulnerability

Groundwater vulnerability has been assessed using the GSI Groundwater Data Viewer (Geological Survey Ireland, 2025), with results presented in Figure 10.7. Groundwater vulnerability indicates the potential for contaminants to reach the underlying aquifer, considering factors such as subsoil thickness, permeability, quarries, deep pits, and borehole density. Within the study area, vulnerability classes range from Low to Extreme, with some zones identified as "*Rock at or Near Surface or Karst.*" Extreme vulnerability is most prevalent where bedrock is at or near the surface - particularly in the western part of the study area - while vulnerability classification generally decreases with distance from these zones (see Figure 10.7). Estimated annual groundwater recharge across the area is approximately 1–150 mm/year.

Figure 10.7: Groundwater Vulnerability in the Study Area



Source: (Geological Survey Ireland, 2023)

10.4.3.4 Protected Areas, Wells, Springs and Abstractions

No Group Water Schemes, Public Supply Source Protection Areas, are located within the study area. Additionally, there are no identified karst features, springs, traced underground connections, or private groundwater abstractions (Geological Survey Ireland, 2025).

A screening of private groundwater abstractions was conducted using the GSI Groundwater Data Viewer (Geological Survey Ireland, 2025). The dataset does not provide precise abstraction locations but depicts areas of potential location using circles of varying size, according to accuracy. One abstraction circle (Well Unique ID: IE_GSI_GW_Well_11949), 2km in diameter, overlaps slightly with the southeast corner of the study area. However, the well is recorded as being in County Kildare, and therefore it has been largely discounted from consideration in this assessment.

10.5 Construction Phase Considerations

Based on the description of the Proposed Development as presented in Chapter 3, activities that could potentially affect land, soil and hydrogeology include:

- Use of construction plant (including generators)
- Refuelling of plant
- Construction of foundations
- Excavation and trenching works for underground cable routes and water mains connection
- Temporary site drainage
- Stockpiling and reuse of soils

The assessed potential effects on land, soils and hydrogeology from the construction activities as described in Chapter 3 are set out below.

Overall, construction phase activities will result in predominantly temporary effects which, without the implementation of mitigation measures, would potentially result in minor effects on the receiving environment. The development will result in the permanent loss of topsoil over the footprint of the Proposed Development.

The Construction Environmental Management Plan (CEMP) and Resource and Waste Management Plan (RWMP) provide a framework of environmental management procedures that will be implemented prior to commencement of, and throughout the duration of, the proposed works. An Environmental Clerk of Works (EnCoW) will be employed to oversee the implementation of mitigation. The CEMP along with RWMP and TMP (included as appendices to the CEMP) are submitted along with the application.

The following potential effects on land, soils and hydrogeology have been identified:

Permanent loss of soils within the footprint of the Proposed Development.

- Excavation and storage of soils has the potential to result in mobilisation of any existing soil contamination via leaching.
- Excavation and foundation work has the potential to result in soil erosion, soil compaction and soil displacement due to a number of activities including:
 - Construction of GIS building
 - Construction of control buildings
 - Creation and use of access tracks
 - Storage of construction equipment and materials
 - Delivery of equipment and materials.
- There is a risk of leaks and spills from plant, vehicles and equipment (e.g. fuels and hydrocarbons).
- There is a risk of leaks of hazardous chemicals into the soil and groundwater if not properly contained.
- Vehicles entering the site for construction purpose have the potential to leak hydrocarbons onto the road surface and thereby into the soil and groundwater.
- Loss of concrete, cement or alkaline fluids to ground resulting in water quality effects, which can give rise to high alkalinity waters and slurries which could deteriorate groundwater quality.
- Improper storage and disposal of construction materials and wastes can introduce contaminants into the aquifer.

10.6 Operation and Maintenance Phase Considerations

Operational phase activities that could potentially affect land, soil and hydrogeology include:

- Leakage of oil from transformers.
- Leakage from waste water storage tank.
- Leakage from the on site generator.
- Routine maintenance can involve the use of chemicals. Improper handling or accidental spills during these activities can lead to contamination.
- Vehicles entering the site for operational and maintenance purpose have the potential to leak hydrocarbons onto the road surface and being carried into the soil and groundwater.

10.7 Mitigation and Monitoring Measures

10.7.1 Mitigation Measures

- All works will be undertaken in accordance with the CEMP.
- Any contaminated soils, sediment or groundwater that is encountered will be managed in accordance with best practice guidelines (Environmental Protection Agency, 2013). Any contamination discovered during the construction will be assessed using a Contaminated Land Risk Assessment (CLRA). Where a significant risk to human health or controlled waters is identified the contamination will be remediated on-site or excavated and disposed of as classified waste in accordance with the Waste Management Act, 1996, as amended, and all associated regulations. Contamination management will comply with all relevant legislation and be undertaken in consultation with the EPA and any other relevant authorities as outlined in the CEMP.
- Storage of contaminated material, if encountered on-site, will be avoided where possible. If storage on site is necessary, contaminated material will be strictly segregated into designated bunded areas where contaminants cannot leach into the underlying ground. Contaminated materials will be covered with impermeable sheeting to minimise the generation of leachate.
- Handling and stockpiling of soils will be undertaken in accordance with a Soil Management Plan that incorporates good practice guidance including, but not limited to, the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra 2009, 2009).
- Excavated soil material for reuse will be stored at least 15m from drains and watercourses.
- Refuelling will only occur in designated refuelling areas with sealed drainage systems and spillage control.
- The risk to construction and maintenance workers from dermal contact, inhalation, or ingestion of contaminated soil will be prevented by following standard good practice measures, including use of appropriate PPE and following good practice hygiene measures.
- Machinery will be managed to ensure that the number of trips is limited to the minimum required at each location.
- The proposed generator will be sealed and bunded so will not generate contaminated drainage/runoff.
- The transformers will be placed on bunded concrete plinths with a sealed drainage system to capture any leaks and spills from these units. Water collected in these bunds will be pumped via oil/water separator pumps (e.g. Entexol Bund-Sep or similar) and discharged to the attenuation pond directly (bypassing the filter drain system).
- The attenuation pond will be lined to limit infiltration of any contaminated water that enters the pond.
- An emergency shut-off valve chamber will be installed on all discharge pipes upstream of the attenuation pond and filter drain to allow discharge from the drainage network to be controlled in an emergency.
- A penstock will be installed at the attenuation pond outlet headwall to prevent discharge of flows to the outfall in the event of an emergency event.
- Protocols for dealing with fires, leaks and chemical spills will be included in the Emergency Incident Response Plan.

10.7.2 Monitoring Measures

Routine monitoring of equipment will be carried out to minimise the likelihood of leaks/spills occurring and ensure that any leaks are quickly detected and controlled.

10.8 Residual Effects

Following mitigation, the remaining component of an effect is considered a residual effect.

The greatest potential risk to land, soil and hydrogeology is posed by leakage of transformer oil, which could contaminate agricultural soil and groundwater. Providing the mitigation measures are adhered to then this risk is appropriately mitigated.

Thus, based on the location of the site, the proposed construction methodology, and the implementation of proposed mitigation measures, no significant residual effects have been identified to land, soil or hydrogeology.

11 Architecture, Archaeology and Cultural Heritage

11.1 Introduction

This chapter provides an assessment of the potential impacts and likely significance of the Proposed Development on Cultural Heritage receptors. The assessment is based on the development as described in Chapter 3 of this PECR.

This study assesses the importance and sensitivity of the known, as well as the potential archaeological, architectural and cultural heritage environment in the context of the Proposed Development. Where appropriate, mitigation and monitoring measures are proposed, to avoid, prevent, reduce or offset any impacts of the Proposed Development.

11.2 Policy and Guidance

Chapter 2 Planning Policy and Land Use Context chapter of this report describes the wider policy and legislative context applicable to the Proposed Development. Legislation, policies and guidance documents of potential relevance to cultural heritage are set out in this section.

11.2.1 Legislation and Policies

This report has been undertaken in accordance with the provisions of the following legislative procedures:

- Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023
- National Monuments Acts 1930-2014, as amended
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999
- Meath County Development Plan 2021-2027
- Local Government (Planning and Development) Acts 2000-2016
- The Planning and Development Act 2000, as amended

11.2.2 Guidelines

The scope and methodology for the baseline assessment here have been devised in consideration of the following guidelines:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022)
- Frameworks and Principles for the Protection of the Archaeological Heritage (Department of Arts, Heritage, Gaeltacht and the Islands (DAHGI), 1999)
- Guidelines for Planning Authorities and An Bord Pleanála on Carrying Out Environmental Impact Assessment (Department of Housing Local Government and Heritage (DoHLGH), 2018)
- Architectural Heritage Protection: Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government, 2011)
- Cultural Heritage Guidelines for Electricity Transmission Projects: A Standard Approach to Archaeological, Architectural and Cultural Heritage Impact Assessment of High Voltage Transmission Projects (EirGrid, 2015)

- Standard and Guidance for Commissioning Work or Providing Consultancy Advice on Archaeology and the Historic Environment (Chartered Institute for Archaeologists (CIfA), 2020)
- Heritage Ireland 2030: A Framework for Heritage (Department of Housing, Local Government and Heritage, 2022)
- Archaeology in the Planning Process, Planning Leaflet 13 (The Office of the Planning Regulator and the Department of Housing, Local Government and Heritage, 2022)

11.3 Methodology

11.3.1 Approach to Data Collection

A field inspection of the Proposed Development site was undertaken by Dermot G. Moore of Rubicon Archaeology Ltd on 31 July 2025.

The primary purpose of a field inspection is to assess the site in order to identify any potential low-visibility archaeological and/or historical sites or other elements that are not currently recorded, and which may be impacted on by the Proposed Development, as well as to survey any known monuments or sites and to consider the relationship between them and the surrounding landscape.

The methodology used during the field inspection involved recording the present land use as well as the existing topography for the area comprising the Proposed Development site. A photographic record and written description were compiled for any known and/or potential sites of archaeological, architectural and/or cultural significance.

The following information and data sources (Table 11.1) were considered during the production of this chapter.

Table 11.1: Data Sources used to inform this Chapter

Data Source	Date Published	Data Contents
National Monuments Service List of National Monuments in State Care: Ownership and Guardianship (accessed August 2025)	March 2009	List of National Monuments in State Care: ownership and guardianship
National Monuments Service List of Preservation Orders and the Register of Historic Monuments (accessed August 2025)	2025	A list of Preservation Orders and the Register of Historic Monuments
National Monuments Service Record of Monuments and Places (RMP) (accessed August 2025)	1996	A list of monuments and places with specific statutory protection
National Monuments Service Files of the Sites and Monuments Record (SMR) (accessed August 2025)	2025	A record of known archaeological sites and monuments in Ireland
National Monuments Service Updated SMR available at Protection and Designation of Monuments - National Monuments Service www.archaeology.ie (accessed August 2025)	2025	A continuously updated record of known archaeological sites and monuments in Ireland
National Inventory of Architectural Heritage (NIAH) Building Survey (accessed August 2025)	2025	An inventory of buildings considered to be of architectural merit
Meath County Development Plans	2021	Policy in relation to heritage and information pertaining to protected structures
Irish Antiquities Division, National Museum of Ireland Topographical Files (accessed August 2025)	2025	Stray archaeological finds recovered in Ireland outside of licensed excavation

Data Source	Date Published	Data Contents
Urban Archaeological Surveys (accessed August 2025)	1985	Urban Archaeological Surveys data
Ordnance Survey first and subsequent editions, Collection: OS Maps - OS200 - Blacklight Search Results (accessed August 2025)	2025	Historic cartographic sources
Ordnance Survey Name books/letters/memoirs (accessed August 2025)	2025	Information pertaining to the cultural landscape of Ireland in the mid-19th century
National Folklore Collection (accessed August 2025)	2025	Folklore collections collated in the 1930s
Early maps and estate maps (accessed August 2025)	2025	Historic cartographic sources
Aerial photographs (accessed August 2025)	2025	Both historic (CUCAP) and modern aerial photography
Excavations Bulletin (Maps - Excavations.ie) (accessed August 2025)	2025	Information pertaining to previous licensed archaeological excavations undertaken in the state
For townland names (Browse logainm.ie) (accessed August 2025)	2025	Placename etymology
Teagasc Soil Information System (http://gis.teagasc.ie/soils/index.php) (accessed August 2025)	2025	Soil

11.3.2 Approach to Assessment of Effects

To categorise the baseline environment in a systemised manner, ‘baseline values’ have been assigned to each identified site of cultural heritage significance and/or potential within the study area. The baseline value of a site is determined with reference to the ‘importance’ and ‘sensitivity’ of the site.

The importance of a site is determined based on the following criteria: legal status, condition, historical associations, amenity value, ritual value, specimen value, group value and rarity.

The sensitivity of a site is determined based on the presence of extant remains and/or the potential for associated sub-surface remains of the feature to be present *in situ*.

It should be noted that the National Monuments Act 1930–2014, as amended does not differentiate between recorded archaeological sites on the basis of relative importance or sensitivity. In addition, the Planning and Development Act 2000 (as amended) does not differentiate between Protected Structures or Areas of Architectural Conservation on the basis of relative importance or sensitivity either. Consequently, professional judgement has been exercised to rate these features based on their perceived importance and sensitivity in relation to physical impacts and impacts on setting.

Taking the above factors into consideration, the criteria that have been defined are provided in Table 11.2.

Table 11.2: Baseline Values of Sites

Subject	Baseline Value
- Designated Built Heritage Receptors rated as being of international importance, including associated historic gardens and designed landscapes. - Designated features of international intangible heritage value. - Designated historic landscapes of international value.	Very High

Subject	Baseline Value
- National Monuments. - Other designated Cultural Heritage Receptors of international importance. - World Heritage Properties.	
- Architectural Conservation Areas. - Built Heritage Receptors rated as being of national importance by the NIAH, including associated historic gardens and designed landscapes. - Historic landscapes (designated or undesignated) of outstanding interest and of demonstrable national value. These will be well-preserved historic landscapes exhibiting considerable coherence, time-depth, or other critical factors. - Other designated or undesignated Cultural Heritage Receptors of demonstrable national importance. - Places or features of national intangible heritage value. - Protected Structures. - Recorded Monuments (or sites and monuments scheduled for inclusion on the RMP) of high quality and importance. - Sites and monuments subject to a Preservation Order or Temporary Preservation Order. - Undesignated receptors of high quality and importance. - World Heritage Tentative List properties.	High
- Built Heritage Receptors rated as being of regional importance by the NIAH, including associated historic gardens and designed landscapes. - Historic landscapes of regional value (designated or undesignated). - Historic townscapes or built-up areas with demonstrable historic integrity in their buildings or built settings (e.g. including street furniture and other structures). - Other designated or undesignated receptors of regional Cultural Heritage importance. - Places or features of regional intangible heritage value. - Recorded Monuments (or sites and monuments scheduled for inclusion on the RMP).	Medium/High
- Built Heritage Receptors rated as being of local importance by the NIAH, including associated historic gardens and designed landscapes. - Historic landscapes whose value is limited by poor preservation and/or poor survival of contextual associations. - Historic townscape or built-up areas of limited historic integrity in their buildings or built settings (e.g. including street furniture and other structures). - Other designated or undesignated Cultural Heritage Receptors of local importance. - Places or features of local intangible heritage value. - Receptors compromised by poor preservation of contextual associations with inherent, albeit limited, Cultural Heritage value. - Undesignated historic buildings of modest quality in their fabric or historical association.	Low

Table 11.3 lists the type of impacts that a Proposed Development may have on the cultural heritage resource (after Environmental Protection Agency, 2022).

Table 11.3: Type of Impacts

Type of Impacts	Definition
Direct	Direct impacts arise where an archaeological, architectural and/or cultural heritage feature or site is physically located within the footprint of the Proposed Development, or its associated physical impact zone, whereby the removal of part, or all of the feature or site is thus required.
Indirect	Indirect impacts arise when an archaeological, architectural, or cultural heritage feature is not located within the footprint of the Proposed Development, or its associated physical impact zone, and thus is not impacted directly. Such an impact could include impact on setting or impact on the zone of archaeological potential of site whereby the actual site itself is not physically affected.

Type of Impacts	Definition
Cumulative	The addition of many impacts to create a large, significant impact.
Undeterminable	Whereby the full consequence that the Proposed Development may have on the cultural heritage resource is not known
Residual	The degree of environmental change that will occur after the proposed mitigation measures have taken impact.

The methodology used to assess the magnitude of potential pre-mitigation impacts, as well as residual impacts, of the Proposed Development on the baseline environment is presented in Table 11.4.

Table 11.4: Criteria used for Rating Magnitude of Impact

Impact Magnitude	Definition
Severe	Applies where mitigation would be unlikely to remove adverse impacts. Reserved for adverse, negative impacts only. These impacts arise where an archaeology site is completely and irreversibly destroyed. An impact that obliterates the architectural heritage of a structure or feature of national or international importance. These impacts arise where an architectural structure or feature is completely and irreversibly destroyed by the Proposed Development. Mitigation is unlikely to remove adverse Impacts.
Major	An impact which, by its magnitude, duration or intensity, alters an important aspect of the environment. An impact like this would be where part of a site would be permanently impacted upon, leading to a loss of character, integrity and data about an archaeological feature/site. An impact that by its magnitude, duration or intensity alters the character and/or the setting of the architectural heritage. These impacts arise where an aspect or aspects of the architectural heritage is/are permanently impacted upon leading to a loss of character and integrity in the architectural structure or feature. Appropriate mitigate is likely to reduce the impact. A beneficial or positive Impact that permanently enhances or restores the character and/or setting of a feature of archaeological or cultural heritage significance in a clearly noticeable manner
Moderate	A medium impact arises where a change to a site/monument is proposed which though noticeable, is not such that the archaeological integrity of the site is compromised, and which is reversible. This arises where an archaeological feature can be incorporated into a modern-day development without damage and that all procedures used to facilitate this are reversible. A medium impact to a site/monument may also arise when a site is fully or partly excavated under license and all recovered data is preserved by record. An impact that results in a change to the architectural heritage which, although noticeable is not such that alters the integrity of the heritage. The change is likely to be consistent with existing and emerging trends. Impacts are probably reversible and may be of relatively short duration. Appropriate mitigation is very likely to reduce the impact. A beneficial or positive impact that results in partial or temporary enhancement of the character and/or setting of a feature of archaeological or cultural heritage significance in a clearly noticeable manner.
Minor	An impact which causes changes in the character of the environment, such as visual impact, which are not high or very high and do not directly impact or affect an archaeological feature or monument. An impact that causes some minor change in the character of architectural heritage of local or regional importance without affecting its integrity or sensitivities. Although noticeable, the impacts do not directly impact on the architectural structure or feature. Impacts are reversible and of relatively short duration. Appropriate mitigation will reduce the impact. A beneficial or positive impacts that causes some minor or temporary enhancement of the character of an architectural heritage significance which, although positive, is unlikely to be readily noticeable.

Impact Magnitude	Definition
Negligible	An impact on archaeological features or monument capable of measurement but without noticeable consequences. An impact on architectural heritage of local importance that is capable of measure merit but without noticeable consequences. A beneficial or positive impacts on architectural heritage of local importance that is capable of measurement but without noticeable consequences.

The significance level of a construction or operation impact on a feature is assessed by combining the magnitude of the impact and baseline value of the feature. The matrix in Table 11.5 provides a guide to decision-making but is not substitute for professional judgement and interpretation, particularly where the baseline value or impact magnitude levels are not clear or are borderline between categories. The permanence of the impacts is also taken into account, with irreversible impacts being more significant while temporary or reversible changes are likely to be less significant.

Table 11.5: Criteria for Assessing Significance Level of Impacts

Magnitude of Impact	Baseline Value				
	Very High	High	Medium / High	Medium / Low	Low
Severe	Very significant	Very significant	Significant	Moderate	Slight
Major	Significant	Significant	Moderate	Slight	Slight
Moderate	Moderate	Moderate	Slight	Slight	Negligible
Minor	Moderate	Slight	Slight	Negligible	Negligible
Negligible	Slight	Slight	Negligible	Negligible	Negligible

There were no significant limitations or restrictions encountered during the compilation of this PECR. All third-party reports, data and mapping were reviewed and are understood to be correct for the purposes of this report.

11.3.3 Study Area

The study area has been defined in respect of two factors:

- The ability of sites/information sources to provide information pertaining to the archaeological potential of the Proposed Development site, and
- The potential physical impact, as well as impact on setting, that the proposed scheme may have on sites of cultural heritage significance.

Taking these factors into account, the study area has been defined as follows (Table 11.6).

Table 11.6: Dimensions of the Study Area

Subject	Study Area
National Monuments and Recorded Archaeological Monuments (RMPs)	Within 1km of the proposed development.
Protected Structures and/or their curtilage	Within 1km of the proposed development.
Architectural Conservation Areas (ACAS)	Within 1km of the proposed development.
Structures recorded in the NIAH	Within 1km of the proposed development.
Unregistered features of cultural heritage	Within 1km of the proposed development.
Townland boundaries	Within the Proposed Development footprint
Areas of archaeological potential	Within the Proposed Development footprint

Subject	Study Area
Previous excavations	Within any townland traversed by the Proposed Development
Topographical files	Within any townland traversed by the Proposed Development

11.4 Receiving Environment

The site of the Proposed Development is in the townland of Walterstown within the civil parish of Dunboyne, approximately 3.8km south of Dunboyne town centre. The site is greenfield, occupying a single field with a hedgerow boundary and is currently in use for agriculture. The landscape is characterised by residential dwellings and improved agricultural fields within a low-lying level agricultural hinterland.

According to the Teagasc Soil Information System (<http://gis.teagasc.ie/soils/index.php>), the main soil association is Elton, a fine loamy drift with limestones. The underlying geology is Lucan Formation, a dark limestone and shale.

11.4.1 Archaeological and Historical Background

11.4.1.1 Prehistoric Period (4000 BC–AD 400)

Mesolithic

There are no Mesolithic sites within the study area, nor in close proximity to the study area.

Neolithic

There are no Neolithic sites within the study area, nor in close proximity to the study area. There are examples of ring-ditches found outside the study area which could date from the Neolithic period onwards. Ring-ditches are defined as circular fosses that are usually less than 20m in diameter and are visible as cropmarks on aerial photographs. They could be ploughed out barrows, roundhouses, or other features.

Bronze Age

There are no Bronze Age sites within the study area. Approximately 2.25km north of the Proposed Development, excavation took place for the M3 Dunboyne link road and uncovered evidence of an enclosure complex that dated back to the Early Bronze Age. A Bronze Age disc-headed pin was uncovered (Excavations 2004, No. 1198, 04E0485).

Iron Age

There is a lack of archaeological evidence of human activity in the Iron Age compared to the Bronze Age, medieval, and post-medieval in the study region, which is common throughout Ireland. There are no Iron Age sites within the study area, nor in close proximity to the study area.

11.4.1.2 Medieval Period (AD 400–1540)

Early Medieval Period

There are no early medieval sites found within the study area. As mentioned previously, there are examples of ring-ditches in the local environs which could date from any prehistoric period onwards. There are no ringforts within the region, which is rare for early medieval Ireland, which may suggest the use of ring-ditches in the area instead. The excavation on the M3 Dunboyne link road produced early medieval dates as well as numerous contemporary finds such as tanged iron blades, glass beads, lignite bracelets, and ringed pins (Excavations 2004, No. 1198, 04E0485).

Late Medieval Period

The late medieval period (AD 1169–1550) in Ireland is generally considered to begin with the arrival of the Anglo-Normans in AD 1169. There is one later medieval monument within the study area, CH003, and RMP, a castle – motte (ME053-003----), as shown in Figure 11.1. The mound was previously overgrown but recently the gorse has been removed. The motte is locally known as ‘The Moat.’ Mottes are artificial, steep sided earthen mounds which is located within the main castle tower. These were constructed by the Anglo-Normans in the 12th and 13th century AD.

Post-medieval (AD 1540–1700) and Early Modern Period (AD 1700–1850)

There are two early modern sites within the study area, CH001 - Jarretstown Parish Church and CH002 – Graveyard, both RMPs (ME053-005----/ME053-005001- respectively). These are shown in Figure 11.1. The church had burials until c. AD 1820, however, John O’ Donovan stated the graveyard was still being used for the burial of unbaptised infants in AD 1836. The graveyard is labelled as ‘Old Burying Ground’ on Ordnance Survey mapping.

11.4.2 Toponymy of Townland/s

The Irish landscape is divided into approximately 60,000 townlands and the system of landholding is unique in Western Europe for its scale and antiquity. Many townlands predate the arrival of the Anglo-Normans, and Irish historical documents consistently use townland names throughout the historic period to describe areas and locate events accurately in their geographical context. The townland names and boundaries were standardised in the 19th century when the Ordnance Survey began to produce large-scale maps of the country. The original Irish names were eventually anglicised to varying degrees, depending in part upon the linguistic skills of the surveyors and recorders. A study of the townland names can provide information on aspects of cultural heritage including descriptions of the use of the landscape by man and the potential presence of archaeological or cultural heritage sites or features.

There are twelve townlands within the 1km study area. The site is situated within the townland of Walterstown. The Walterstown townland boundary is already broken by the existing road network.

Table 11.7: List of Townlands within the Study Area

English Name	Irish Name	Glossary
Walterstown	None	Walter’s Town
Rathleek	None	‘rath or earthen fort, fort of the flagstone’
Jarretstown	<i>Baile Gheairaid</i>	‘Gerrard’s town’
Cappaghcreen	<i>Ceapach críon</i>	withered plot
Ellickstown	<i>Baile ilic</i>	n/a
Milestown	<i>Baile mhílis</i>	Miles Town
Bogganstown	<i>Baile an bhogáin,</i>	‘town of the bog’
Knockudder	<i>Cnoc odair</i>	‘otter’s hill’
Sion	None	none
Confey	<i>Confaí</i>	‘hound-field’
Moor Of Meath	<i>Móin na Mídhe</i>	‘bog of Meath’
Kennaghstown	None	none

11.4.3 Recent Excavations

The Excavations Bulletin is an annual account of all excavations carried out under license. The database is available online at www.excavations.ie and includes excavations from 1969 onwards. This database was consulted as part of the desktop research for this report to establish if any archaeological investigations had been carried out within the study area (see Section 11.3.3)

There has been one excavation in the study area, CH004. An assessment of a portion of the River Lyreen identified a 19th century retaining wall, a line-stoned drain, an iron sluice gate, and two arched culverts (03D069; 03R127).

11.4.4 Intangible Heritage/Irish Folklore Commission

Cultural Heritage is a broad term that includes Archaeological Heritage, Built Heritage, Portable Heritage, and other resources inherited from the past by contemporary society. It consists of the tangible and intangible traces of the interactions between people and places, people and nature and people and objects through time (TII 2022, 8). In Ireland, work was done by the Irish Folklore Commission, and its successors, to collect and preserve Irish folklore. The Schools' Collection, for example, are a compilation of folklore and local traditions collected by pupils of 5,000 primary schools. The children collected this material from family members and neighbours (Dúchas 2025).

There is no intangible heritage/folklore within the 1km study area.

11.4.5 Designated Archaeological Sites

11.4.5.1 Known or Suspected Archaeological Monuments (SMR and RMP)

A Sites and Monuments Record (SMR) was issued for all counties in the State between 1984 and 1992 and is continually updated and supplemented as additional monuments are discovered. The SMR is an inventory containing a numbered list of known or suspected monuments accompanied by 6-inch Ordnance Survey maps (at a reduced scale). The SMR formed the basis for issuing the Record of Monuments and Places (RMP) - the statutory list of recorded monuments established under Section 12 of the National Monuments (Amendment) Act 1994. Under this Act, each site recorded in the RMP is granted statutory protection. When the owner or occupier of a property, or any other person, proposes to carry out, or to cause, or to permit the carrying out of any work at or in relation to a recorded archaeological monument, they are required to give notice in writing to the Minister for Housing, Local Government and Heritage two months before commencing that work.

In total there are four known or suspected monuments within the study area (listed in Table 11.8 and shown in Figure 11.1). None of the monuments are within the Proposed Development and none have their zone of notification crossed.

Table 11.8: Recorded Monuments within the Study Area

CH ID	Type	ID Code	Short Description	Townland
CH001	RMP	ME053-005----	Church	Jarretstown
CH002	RMP	ME053-005001-	Graveyard	Jarretstown
CH003	RMP	ME053-003----	Castle - motte	Knockudder
CH005	RMP	ME053-004----	Church	Rathleek

Figure 11.1: Cultural Heritage Sites within the Study Area



Source: Rubicon Archaeology Ltd

11.4.5.2 National Monuments

National Monuments are broken into two categories: National Monuments in the ownership or guardianship of the state and National Monuments in the ownership or guardianship of a local authority. Section 8 of the National Monuments (Amendment) Act 1954 provides for the publication of a list of monuments, the preservation, of which, are considered to be of national importance. Two months' notice must be given to the Minister for Housing, Local Government and Heritage where work is proposed to be carried out at or in relation to any National Monument.

There are no National Monuments within the study area.

11.4.5.3 Sites with Preservation Orders

The National Monuments Act 1930-2014 as amended provide for the making of Preservation Orders and Temporary Preservation Orders in respect of National Monuments. Under Section 8 of the National Monument Act 1930 (as amended) the Minister for Housing, Local Government and Heritage, can place a Preservation Order on a monument if, in the Ministers' opinion, it is a National Monument in danger of being or is actually being destroyed, injured or removed or is falling into decay through neglect. The Preservation Order ensures that the monument shall be safeguarded from destruction, alteration, injury, or removal, by any person or persons without the written consent of the Minister.

There are no sites with preservation orders in the study area.

11.4.5.4 Record of Protected Structures

The Meath County Development Plan 2021-2027 was consulted for schedules of Protected Structures. These are buildings that a planning authority considers to be of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social, and/or technical point of view. Protected Structures receive statutory protection from injury or demolition under Section 57 (1) of the Local Government Planning and Development Act 2000, as amended. Protected structure status does not exclude development or alteration but requires the developer to consult with the relevant planning authority to ensure that elements which make the structure significant are not lost during development.

If a structure is included in the Record of Protected Structures (RPS), the protection extends to:

- The interior of the structure
- The land in its curtilage. Curtilage means the land and outbuildings immediately surrounding a structure which is (or was) used for the purposes of the structure.
- Any other structures on that land and their interiors.
- All fixtures and features forming part of the interior and exterior of the protected structure or any structure on the grounds attached to it.

Inclusion of these structures in the RPS means that their importance is recognised, they are legally protected from harm and all future changes to the structure are controlled and managed through the development control process (for example, planning permission) or by issuing a declaration under Section 57 of the Planning and Development Act 2000, as amended.

There are no protected structures within the study area.

11.4.6 Designated Architectural Heritage Sites

In 1997, Ireland ratified the Granada Convention on architectural heritage. This provided the basis for a national commitment to the protection of the architectural heritage throughout the country. The Local Government Planning and Development Act 2000, as amended and the

Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999, made the legislative changes necessary to provide for a strengthening of the protection of architectural heritage.

Architectural Conservation Areas

The Meath County Development Plan 2021-2027 was consulted for records relating to Architectural Conservation Areas (hereinafter 'ACAs'). The stated objective of ACAs is to conserve and enhance the special character of the area, including traditional building stock and material finishes, spaces, streetscapes, landscape and setting.

There are no ACAs within the study area.

National Inventory of Architectural Heritage (NIAH)

The National Inventory of Architectural Heritage (hereinafter the 'NIAH') is a state initiative under the administration of the DoHLGH and was established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999. Its purpose is to identify, record and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently, as an aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister for Housing, Local Government and Heritage to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS).

There are no NIAHs within the study area.

11.4.7 Undesignated Cultural Heritage (UCH) Sites within the Proposed Development Site

This section deals with sites that are considered to be of cultural heritage value, but which do not fall within the above categories as they are not registered. Such sites may include lime kilns, dwellings/outhouses, trackways or townland boundaries etc. identifiable on the First Edition 6/25-inch OS maps and/or noted during the field visit.

11.4.7.1 Sites identifiable on Cartographic Sources

The First Edition 6-inch Ordnance Survey Sheet (1840) and the First Edition 25-inch Survey (1902) were consulted to identify undesignated cultural heritage sites that may be impacted on by the Proposed Development.

There are no UCHs within the study area.

11.4.7.2 Sites identifiable on Aerial Photography and Satellite Imagery

Ortho-rectified aerial photography available from the Ordnance Survey of Ireland was inspected in order to identify possible features of cultural and heritage significance. Aerial photography from the 1995, 2000, and 2005 fly-overs was inspected, as well as the latest OSI images, LiDAR imagery (where available), Google Earth and Bing Maps satellite imagery.

No additional undesignated cultural heritage sites were identified on other aerial photography and satellite imagery within the study area.

11.4.7.3 Sites identified during Field Inspection

The Proposed Development was inspected by Dermot G. Moore. No further potential features/sites of archaeological potential were identified during site inspection.

11.4.7.4 Areas of Archaeological Potential

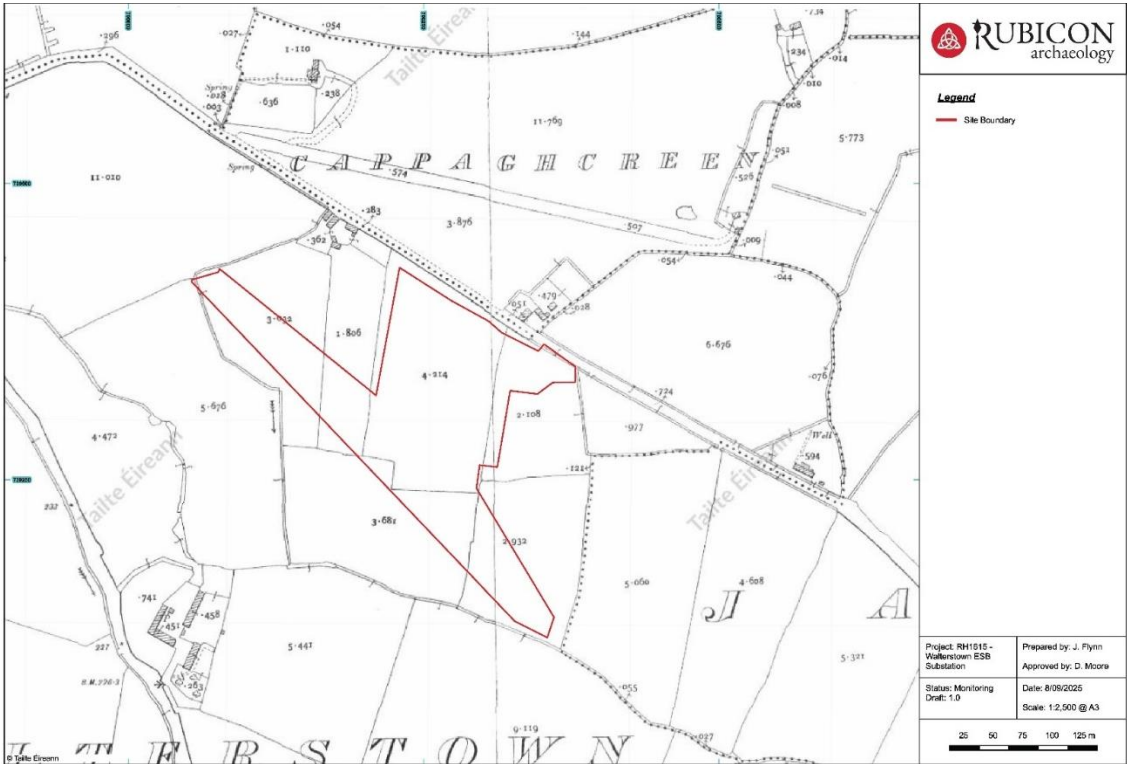
Areas of archaeological potential (AAPs) are additional areas or locations whose landscape characteristics suggest a higher potential for unknown archaeological features to be present e.g. riverine, estuarine or peatland environments. There are no areas of archaeological potential identified within the study areas.

Figure 11.2: First Edition 6 inch OS map within the Proposed Development



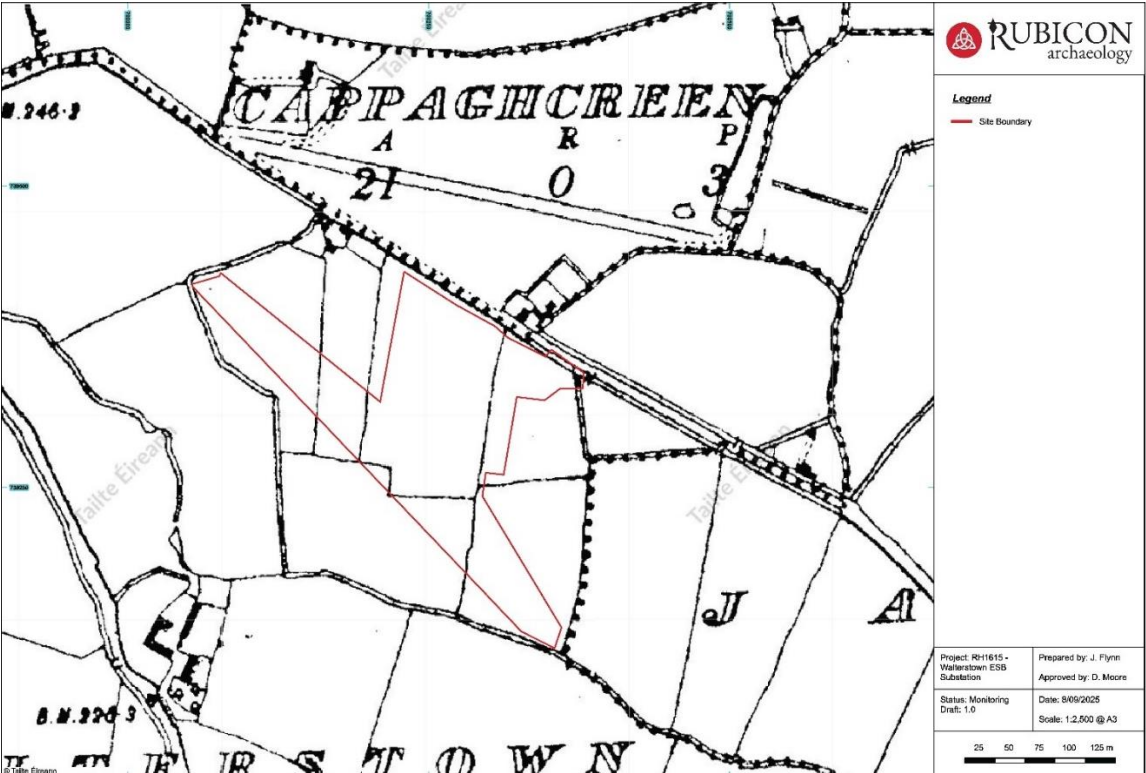
Source: Rubicon Archaeology Limited, 2025

Figure 11.3: First Edition 25 inch OS Map within the Proposed Development



Source: Rubicon Archaeology Limited, 2025

Figure 11.4: Cassini 6 inch Edition within the Proposed Development



Source: Rubicon Archaeology Limited, 2025

11.5 Construction Phase Considerations

The assessment is based on the description of the Proposed Development as described in Chapter 3 of this PECR.

The development is within a greenfield site with no known previous developments.

The Proposed Development will avoid direct impact with any known designated or undesignated archaeological features during the construction phase. There will be no direct impact on the CH sites (CH001–CH003, CH005) within the study area. However, there remains a potential for unknown sub-surface archaeology. The proposed works represent a localised direct impact on any surviving subsurface archaeology and is unavoidable.

110 kV GIS Building and 38 kV GIS Building

Any groundworks required for the 110 kV GIS building and 38 kV GIS building may have a direct impact on any unknown subsurface archaeological deposits.

2 no. 110 /38kV TSO Transformers, 2 no. 38 kV DSO Transformers and 3 no. Arc Suppression Coils

Any groundworks required for the 2 no. 110/38 kV TSO transformers, 2 no. 38 kV DSO transformers and 3 no. arc suppression coils may have a direct impact on any unknown subsurface archaeological deposits.

2 no. Line Cable Interface Masts (LCIMs)

Any groundworks required for the 2 no. LCIMs may have a direct impact on any unknown subsurface archaeological deposits.

Cable Connection

Any groundworks required for the cable connection from substation to LCIMs may have a direct impact on any unknown subsurface archaeological deposits.

Associated Works

Any groundworks for the associated site development works including access road, landscaping etc. may have a direct impact on any unknown subsurface archaeological deposits.

11.6 Operation and Maintenance Phase Considerations

Operational activities include maintenance activities which may require vehicular access. However, it is likely that the proposed access road would be utilised, and the impact on known upstanding cultural heritage sites is negligible.

The maintenance and repair of underground cables arise in situations where there is an incident on the line or a need to undertake a cable patrol. In such incidents, work is likely to be carried out as much as possible within the cable joint bay (EirGrid 2015, 44). Much of the impact of the proposed underground cable would have been identified during the construction phase and appropriate archaeological mitigation measures put in place to resolve the impact on the cultural heritage sites.

Most impacts occur during the construction phase of a development, and subject to the implementation of the appropriate archaeological mitigation measures during this phase, no impacts are predicted during the routine operation of the substation and overhead line, and no further mitigation measures are required. No specific operational phase mitigation measures are required.

11.7 Mitigation and Monitoring Measures

11.7.1 Mitigation Measures

The following mitigation will be implemented during pre-construction Ground Investigation (GI) works.

- Monitoring of Ground Investigation (GI) works will be performed under licence from the NMS. The GI works will take the form of Geobore S soil and rock boreholes, soil and rock boreholes, trial pits, soakaway infiltration tests, and ground profiling geophysics in the form of electrical resistance tomography and seismic refraction. Topsoil will be stripped as part of the work of the trial pits and will encompass individual areas 1 m x 2–3 m in plan.

To mitigate the impact of the construction of the proposed substation, the following mitigation strategy will be implemented during the construction phase of the development:

- As part of the programme of advance archaeological works prior to construction of the proposed substation, a combination of advance archaeological geophysical survey and advance archaeological test trenching will be undertaken ahead of construction under license to the National Monuments Service Section of the Department of Housing, Local Government and Heritage by a suitably qualified archaeologist in areas not previously disturbed by services, roads or other modern construction, and where such works are practicably feasible. A detailed methodology will be agreed in advance with the National Monuments Service.
- During construction, archaeological monitoring will be undertaken on groundworks associated with the proposed cable route and access road where such works are practicably feasible. This will be under license to the National Monuments Service Section of the Department of Housing, Local Government and Heritage by a suitably qualified archaeologist. A detailed methodology will be agreed in advance with the National Monuments Service.
- The cable trench will be kept to a minimum width.
- Should archaeological features or deposits be discovered during archaeological testing or monitoring, the extent of such features/deposits will be determined, a GPS location of the site will be established and works at this location will cease. A strategy will be proposed to the County Archaeologist and National Monuments Service to preserve the site *in situ*, where possible. Where preservation *in situ* cannot be achieved, either in whole or in part, then a programme of full archaeological excavation will be proposed, to ensure the preservation by record of the portion of the site that will be directly impacted upon. This work will be carried out by a suitably qualified archaeologist under license and in accordance with the provisions of the National Monuments Acts 1930-2014. The results of any archaeological test testing, surveys and/or excavation will be submitted in a report to the local authority, the Heritage and Planning Division, Department of Housing, Local Government and Heritage and the National Museum of Ireland.
- A report on the above archaeological works will be compiled on completion of the works and sent to the local authority and National Monuments Service (Department of Housing, Local Government and Heritage) and the National Museum of Ireland.

11.8 Residual Effects

Subject to the implementation of the appropriate archaeological mitigation measures during the construction phase of the development, no significant residual impacts on archaeological, architectural and cultural heritage are predicted.

12 The Landscape

12.1 Introduction

This chapter provides an assessment of the potential effects and likely significance of the Proposed Development on The Landscape. The assessment is based on the Proposed Development as described in Chapter 3.

Landscape Impact Assessment (LIA) relates to assessing effects of a development on the landscape as a resource in its own right and is concerned with how the Proposed Development will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character.

Visual Impact Assessment (VIA) relates to assessing effects of a development on specific views and on the general visual amenity experienced by people. This deals with how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements. Visual impacts may occur from; Visual Obstruction (blocking of a view, be it full, partial or intermittent) or Visual Intrusion (interruption of a view without blocking).

12.2 Policy and Guidance

The Chapter 2 Planning Policy and Land Use Context chapter of this report describes the wider policy and legislative context applicable to the Proposed Development. Policies and guidance documents of potential relevance to landscape are set out in this section.

12.2.1 Policies

The Proposed Development is located in County Meath, and the study area of 5km radius (as described in Section 12.3.3) traverses the Counties of Dublin (2km southeast) and Kildare (600m southeast).

12.2.1.1 Meath County Development Plan 2021-2027

A Landscape Character Assessment was produced for County Meath and is incorporated into the current County Development Plan. The Meath County Development Plan has identified and categorised 4 different Landscape character Types (LCTs); Lowland Areas, Hills and Upland Areas, River Corridors and Estuaries and Coastal Areas. The Proposed Development is situated in the 'Lowland Areas' LCT. The LCTs are then subdivided into a series of 19 geographically distinct Landscape Character Areas (LCAs). The proposed development is contained in LCA 11 – 'South East Lowlands', which is classified as being an area of 'Moderate' sensitivity.

Figure 12.1: Excerpt from Meath Landscape Character Assessment indicating Landscape Character Types

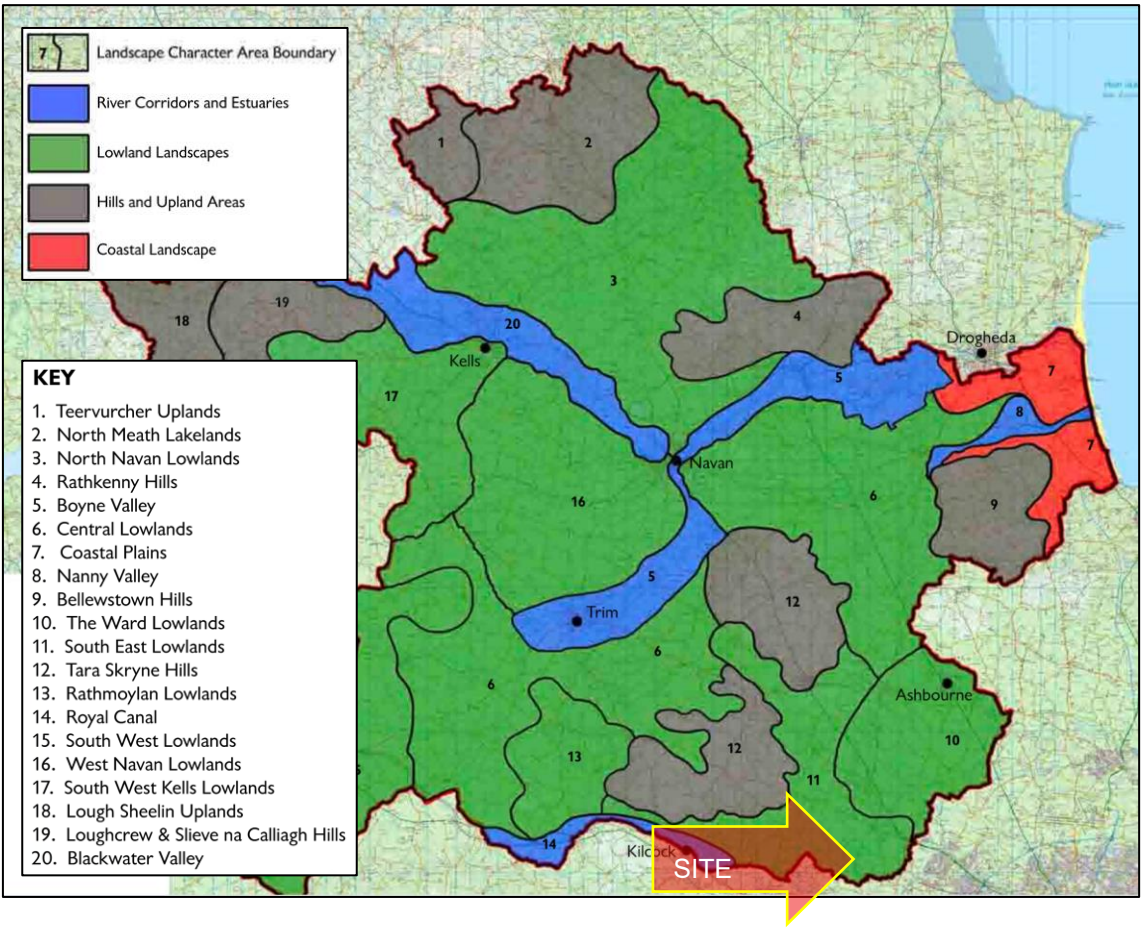
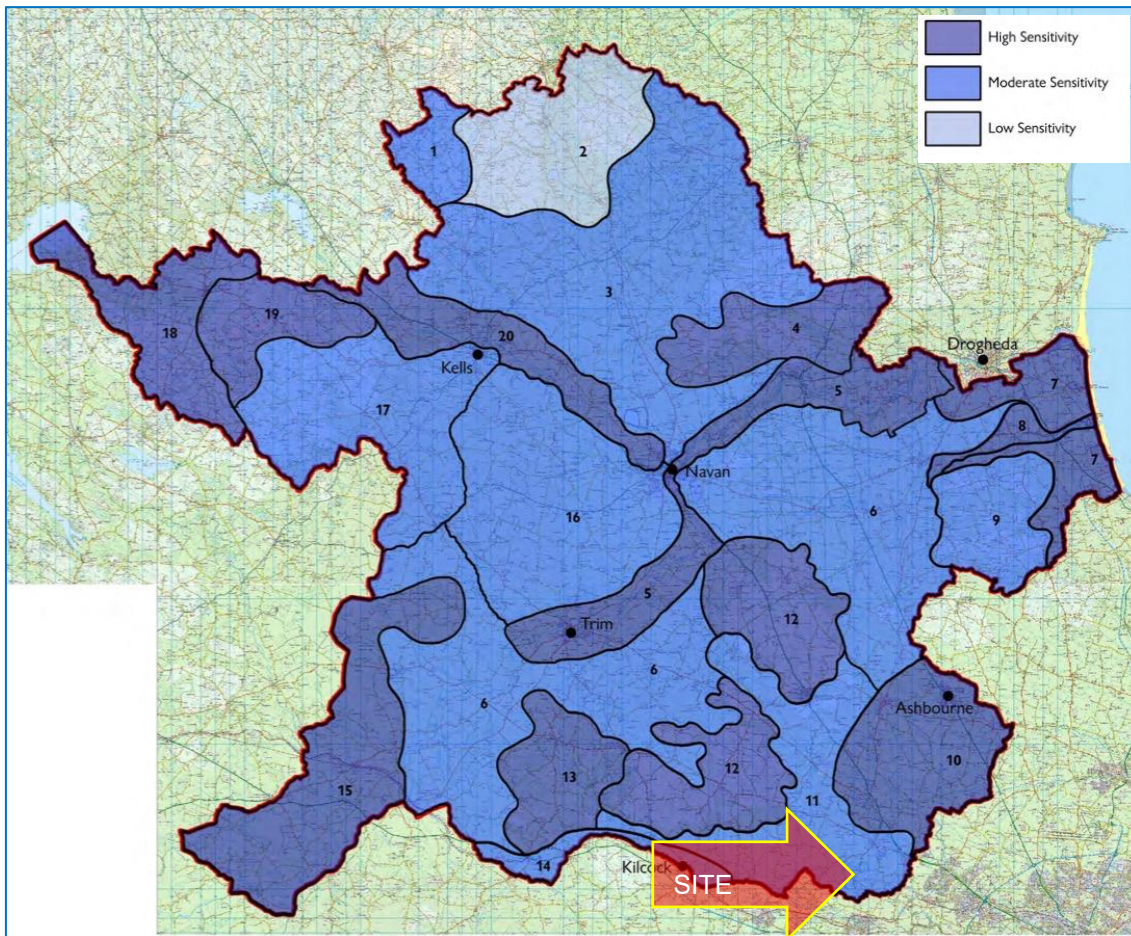


Figure 12.2: Excerpt from Meath Landscape Character Assessment indicating Landscape Character Areas and sensitivities



The Meath County Development Plan 2021-2027 contains a number of policies relating to landscape and the following are deemed to be relevant to this Proposed Development:

- Protect and enhance the quality, character, and distinctiveness of the landscapes of the County in accordance with national policy and guidelines and the recommendations of the Meath Landscape Character Assessment, to ensure that new development meets high standards of siting and design.
- To discourage proposals necessitating the removal of extensive amount of trees, hedgerows and historic walls or other distinctive boundary treatments.
- To ensure that the management of development will have regard to the value of the landscape, its character, importance, sensitivity and capacity to absorb change.

12.2.1.2 Fingal County Development Plan 2023-2029

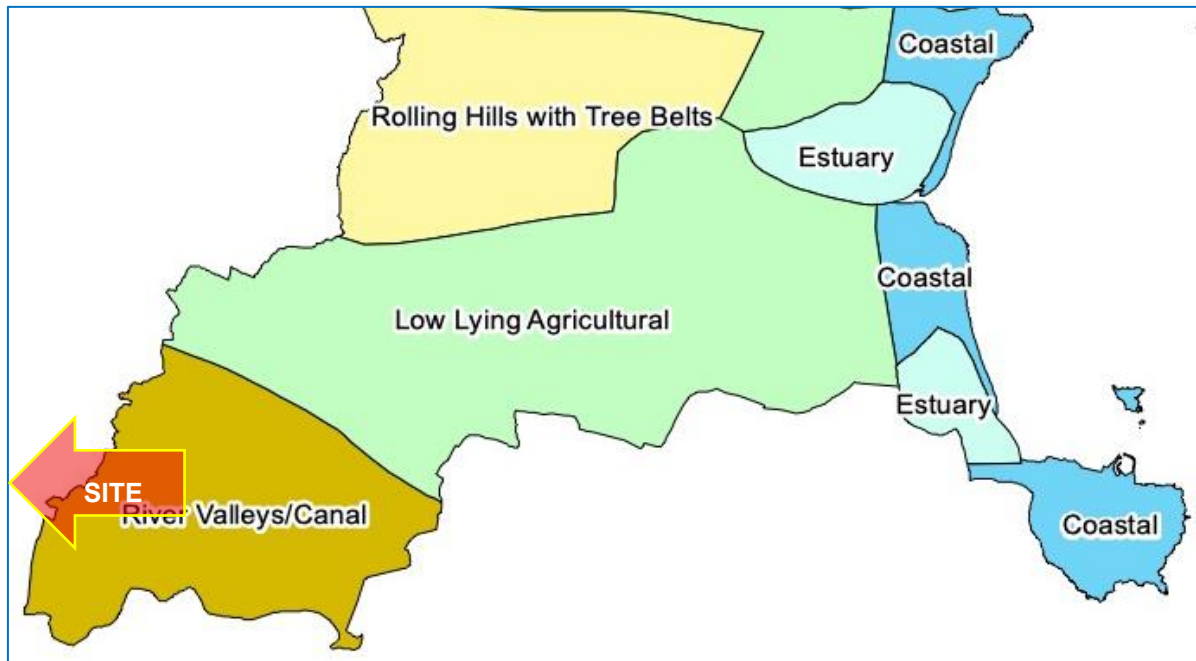
A Landscape Character Assessment was carried out by Fingal County Council and incorporated into the current County Development Plan. The Development Plan provides for the classification of Fingal's landscapes into the following Landscape Character Types:

- Rolling Hills Type
- High Lying Type
- Low Lying Type
- Estuary Type

- Coastal Type
- River Valley and Canal Type

The Proposed Development study area falls within the River Valley/Canal Landscape Type which is attributed a High Landscape Value and High Landscape Character. As shown in Figure 12.3, the Proposed Development is west of Fingal County Development Plan extents.

Figure 12.3: Excerpt from Fingal Landscape Character Assessment indicating Landscape Character Types



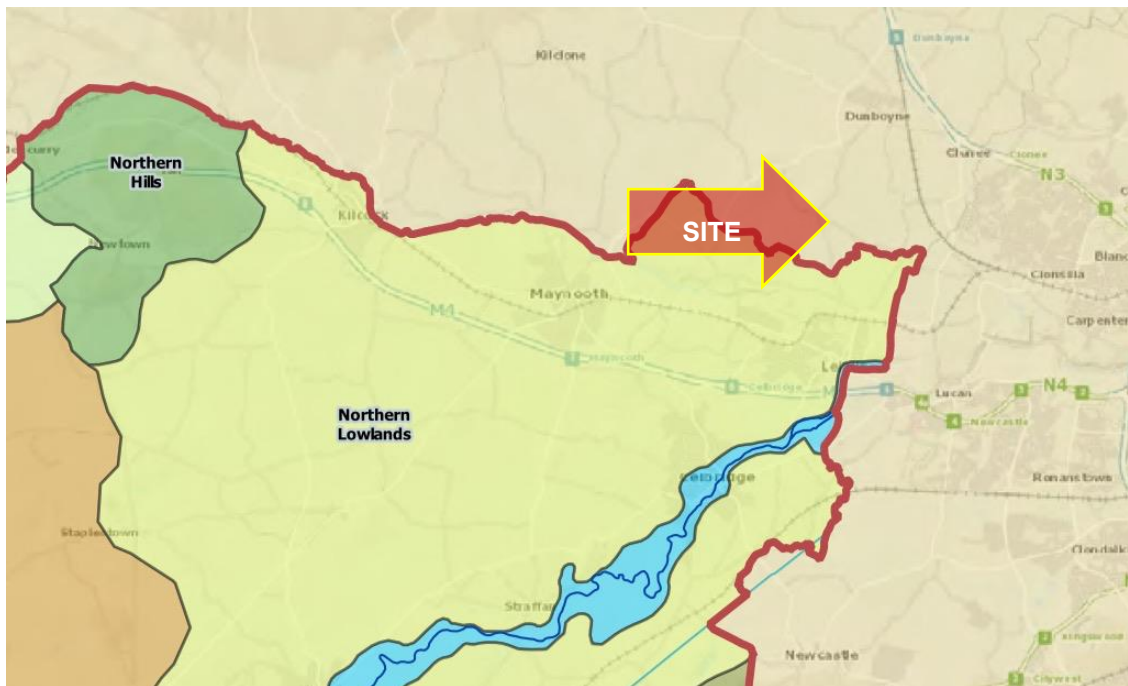
The Fingal County Development Plan 2023-2029 contains a number of policies relating to landscape and the following are deemed to be relevant to this Proposed Development.

- Ensure the preservation of the uniqueness of a landscape character type by having regard to the character, value and sensitivity of a landscape when determining a planning permission.
- Protect skylines and ridgelines from development
- Ensure development reflects and, where possible, reinforces the distinctiveness and sense of place of the landscape character types, including the retention of important features or characteristics, taking into account the various elements which contribute to their distinctiveness such as geology and landform, habitats and scenic quality, settlement pattern, historic heritage, local vernacular heritage, land use and tranquillity.
- Resist development such as houses, forestry, masts, extractive operations, landfills, caravan parks and campsites, and large agricultural/horticulture units which interfere with the character of highly sensitive areas with a view or prospect of special amenity value, which it is necessary to preserve.

12.2.1.3 Kildare County Development Plan 2023-2029

A Landscape Character Assessment was carried out by Kildare County Council and incorporated into the current County Development Plan. The County Development Plan divides the county into 16 Landscape Character Areas. The Proposed Development study area falls within the Northern Lowland Landscape Character Type and River Liffey Landscape Character Area. The Northern Lowlands are classified as having a Low Landscape Sensitivity and the River Liffey Landscape Type is classified as having a Special Sensitivity.

Figure 12.4: Excerpt from Kildare Landscape Character Assessment indicating Landscape Character Areas



The Kildare County Development Plan 2023-2029 contains a number of policies relating to landscape and the following are deemed to be relevant to this Proposed Development;

- Ensure that consideration of landscape sensitivity is an important factor in the determining development uses. In areas of high landscape sensitivity, the design, type and the choice of location of the Proposed Development in the landscape will be critical considerations.
- Ensure that local landscape features, including historic features and buildings, hedgerows, shelter belts and stone walls, are retained, protected and enhanced where appropriate, so as to preserve the local landscape and character of the area.
- Preserve, where appropriate, the open character of commonage.
- Recognise that the lowlands and the transitional area are made up of a variety of working landscapes, which are critical resources for sustaining the economic and social well-being of the county and include areas of significant landscape and ecological value, which are worthy of protection. Such landscape, include the internationally recognised landscape of Punchestown and its environs.
- Continue to facilitate appropriate development in the Eastern Transition Lands, in an incremental and clustered manner, where feasible, that respects the scale, character and sensitivities of the local landscape, recognising the need for sustainable settlement patterns and economic activity within the county.

12.2.1.4 Views of Recognised Scenic Value

Views of recognised scenic value are primarily indicated within the current development plan in the context of scenic routes/view designations, but they might also be indicated on touring maps, guidebooks, roadside rest stops or on post cards that represent the area.

There are nine scenic views and one scenic route designations within the study area all contained within the County Kildare and included below:

- RL1 – Leixlip – Views of River Liffey from Leixlip Bridge

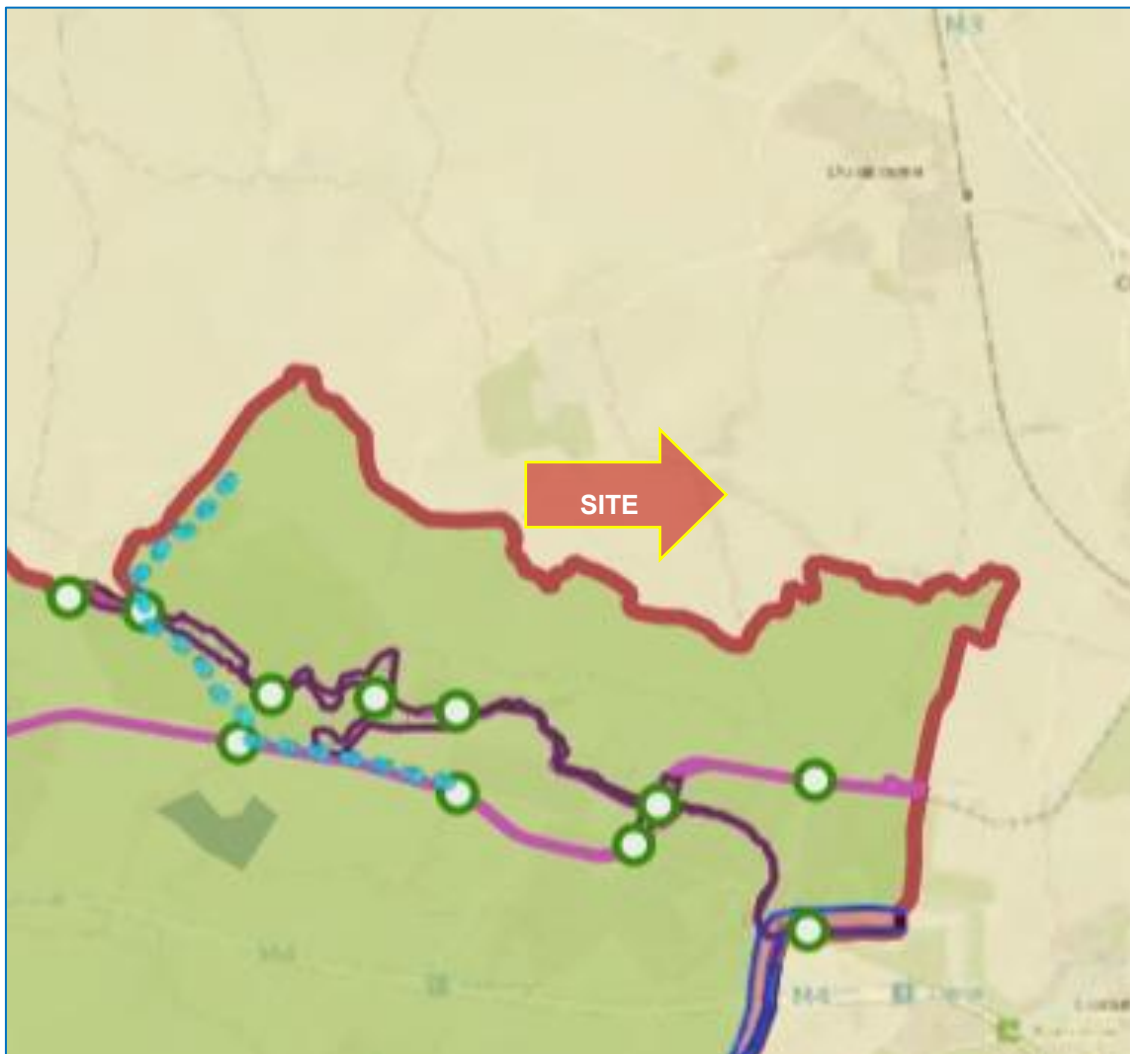
- RC2 – Newtown/Leixlip – Views of Royal Canal from Cope Bridge
- RC3 – Easton/Leixlip – Views of Royal Canal from Louisa Bridge
- RC4 – Collinstown – Views of Royal Canal from Deey Bridge
- RC5 – Railpark/Donaghmore – Views of Royal Canal from Pike Bridge
- RC12 – Leixlip – Views of Royal Canal and Rye Water Aqueduct
- RW01 Kellystown/Blakestown – Views of Rye Water River from Black Bridge
- RW02 – Carton Demesne – Views of Rye Water from Carton Bridge

There is once scenic route designation within the study area, included below:

- SR 28 – Carton Demense – Views within the Carton Demesne Walls, to and from Carton House, the Lake and Woodland Areas.

No scenic view / route designations in Meath or Fingal fall within the 5km study area.

Figure 12.5: Excerpt from Kildare Landscape Character Assessment indicating Scenic view (green circles) and Scenic Routes (blue dotted line)



12.2.2 Guidelines

This LVIA uses methodology as prescribed in the following guidance documents:

- Environmental Protection Agency (EPA) publication 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022).
- Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment (GLVIA), 2013.

12.3 Methodology

12.3.1 Approach to Data Collection

Production of this Landscape and Visual Impact Assessment involved:

- A desktop study to establish an appropriate study area, relevant landscape and visual designations in the current Meath County Development Plan as well as other sensitive visual receptors. This stage culminates in the selection of a set of potential viewpoints from which to study the effects of the Proposed Development.
- Fieldwork to establish the landscape character of the receiving environment and to confirm and refine the set of viewpoints to be used for the visual assessment stage.
- Assessment of the significance of the landscape impact of the development as a function of landscape sensitivity weighed against the magnitude of the landscape impact.
- Assessment of the significance of the visual impact of the development as a function of visual receptor sensitivity weighed against the magnitude of the visual impact.
- Incorporation of mitigation measures to reduce potential impacts and estimation of residual impacts once mitigation has become established.

12.3.2 Approach to Assessment of Effects

12.3.2.1 Landscape Impact Assessment Criteria

When assessing the potential impacts on the landscape resulting from a Proposed Development, the following criteria are considered:

- Landscape character, value and sensitivity;
- Magnitude of likely impacts; and
- Significance of landscape effects.

The sensitivity of the landscape to change is the degree to which a particular landscape receptor (Landscape Character Area (LCA) or feature) can accommodate changes or new elements without unacceptable detrimental effects to its essential characteristics. Landscape Value and Sensitivity is classified using the following criteria set out in Table 12.1.

Table 12.1: Landscape Value and Sensitivity

Sensitivity	Description
Very High	Areas where the landscape character exhibits a very low capacity for change in the form of development. Examples of which are high value landscapes, protected at an international or national level (World Heritage Site/National Park), where the principal management objectives are likely to be protection of the existing character.
High	Areas where the landscape character exhibits a low capacity for change in the form of development. Examples of which are high value landscapes, protected at a national or regional level (Area of Outstanding Natural Beauty), where the principal management objectives are likely to be considered conservation of the existing character.
Medium	Areas where the landscape character exhibits some capacity and scope for development. Examples of which are landscapes, which have a designation of protection at a county level or at non-designated local level where there is evidence of local value and use.

Sensitivity	Description
Low	Areas where the landscape character exhibits a higher capacity for change from development. Typically, this would include lower value, non-designated landscapes that may also have some elements or features of recognisable quality, where landscape management objectives include, enhancement, repair and restoration.
Negligible	Areas of landscape character that include derelict, mining, industrial land or are part of the urban fringe where there would be a reasonable capacity to embrace change or the capacity to include the development proposals. Management objectives in such areas could be focused on change, creation of landscape improvements and/or restoration to realise a higher landscape value.

Source: Guidelines for Landscape and Visual Impact Assessment (GLVIA), 3rd Edition (Landscape Institute UK and Institute of Environmental Management and Assessment, 2013).

The magnitude of a predicted landscape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of the Proposed Development. The magnitude takes into account whether there is a direct physical impact resulting from the loss of landscape components and/or change that extends beyond the Site boundary that may have an effect on the landscape character of the area. Refer to Table 12.2.

Table 12.2: Magnitude of Landscape Impacts

Magnitude of Impact	Description
Very High	Change that would be large in extent and scale with the loss of critically important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an extensive change of the landscape in terms of character, value and quality.
High	Change that would be more limited in extent and scale with the loss of important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to a considerable change of the landscape in terms of character, value and quality.
Medium	Changes that are modest in extent and scale involving the loss of landscape characteristics or elements that may also involve the introduction of new uncharacteristic elements or features that would lead to noticeable changes in landscape character, and quality.
Low	Changes affecting small areas of landscape character and quality, together with the loss of some less characteristic landscape elements or the addition of new features or elements that would lead to discernible changes in landscape character, and quality.
Negligible	Changes affecting small or very restricted areas of landscape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing landscape or are hardly perceivable leading to no material change to landscape character, and quality.

Source: Guidelines for Landscape and Visual Impact Assessment (GLVIA), 3rd Edition (Landscape Institute UK and Institute of Environmental Management and Assessment, 2013).

The significance of a landscape impact is based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact. The significance of landscape impacts is arrived at using the following matrix set out in Table 12.3.

Table 12.3: Impact Significance Matrix

Scale/Magnitude	Sensitivity of Receptor				
	Very High	High	Medium	Low	Negligible
Very High	Profound	Profound-substantial	Substantial	Moderate	Slight
High	Profound-substantial	Substantial	Substantial-moderate	Moderate-slight	Slight-imperceptible
Medium	Substantial	Substantial-moderate	Moderate	Slight	Imperceptible

Sensitivity of Receptor

Low	Moderate	Moderate-slight	Slight	Slight-imperceptible	Imperceptible
Negligible	Slight	Slight-imperceptible	Imperceptible	Imperceptible	Imperceptible

Source: Guidelines for Landscape and Visual Impact Assessment (GLVIA), 3rd Edition (Landscape Institute UK and Institute of Environmental Management and Assessment, 2013).

Note: The significance matrix provides an indicative framework from which the significance of impact is derived. The significance judgement is ultimately determined by the assessor using professional judgement. Due to nuances within the constituent sensitivity and magnitude judgements, this may be up to one category higher or lower than indicated by the matrix. Judgements indicated in purple are considered to be 'significant impacts' in EIA terms.

12.3.2.2 Visual Impact Assessment Criteria

As with the landscape impact, the visual receptors have an anthropogenic basis. It considers factors such as the perceived quality and values associated with the view, the landscape context of the viewer, the likely activity they are engaged in and whether this heightens their awareness of the surrounding landscape. A list of the factors considered by the assessor is estimating the level of sensitivity for a particular visual receptor is outlined below and to establish visual receptor sensitivity at each Viewshed Reference Points (VPRs).

12.3.2.3 Susceptibility of Visual Receptors

In accordance with Guidelines for Landscape and Visual Impact Assessment (GLVIA3), visual receptors most susceptible to changes in views and visual amenity are:

- Residents at home;
- People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focussed on the landscape and on particular views;
- Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;
- Communities where views contribute to the landscape setting enjoyed by residents in the area; and
- Travellers on road, rail or other transport routes where such travel involves recognised scenic routes and awareness of views is likely to be heightened".
- Visual receptors that are less susceptible to changes in views and visual amenity include;
- "People engaged in outdoor sport or recreation, which does not involve or depend upon appreciation of views of the landscape; and
- People at their place of work whose attention may be focussed on their work or activity, not their surroundings and where the setting is not important to the quality of working life".

12.3.2.4 Values Associated with the View

- Recognised scenic value of the view (CDP designations, guidebooks, touring maps, postcards etc). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of CDPs, for example, a public consultation process is required.
- Views from within highly sensitive landscape areas. Again, highly sensitive landscape designations are usually part of a county's Landscape Character Assessment, which is then

incorporated within the CDP and is therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the landscape around them.

- Primary views from dwellings. A Proposed Development might be seen from anywhere within a particular residential property with varying degrees of sensitivity. Therefore, this category is reserved for those instances in which the design of dwellings or housing estates, has been influenced by the desire to take in a particular view. This might involve the use of a slope or the specific orientation of a house and/or its internal social rooms and exterior spaces.
- Intensity of use, popularity. This relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at county or regional scale;
- Provision of elevated panoramic views. This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas.
- Sense of remoteness and/or tranquillity. Receptors taking in a remote and tranquil scene, which is likely to be fairly static, are likely to be more receptive to changes in the view than those taking in the view of a busy street scene, for example.
- Degree of perceived naturalness. Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by distinctly manmade features.
- Presence of striking or noteworthy features. A view might be strongly valued because it contains a distinctive and memorable landscape feature such as a promontory headland, lough or castle.
- Historical, cultural and / or spiritual significance. Such attributes may be evident or sensed by receptors at certain viewing locations, which may attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings.
- Rarity or uniqueness of the view. This might include the noteworthy representativeness of a certain landscape type and considers whether the receptor could take in similar views anywhere in the broader region or the country.
- Integrity of the landscape character. This looks at the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components.
- Sense of place. This considers whether there is special sense of wholeness and harmony at the viewing location.
- Sense of awe. This considers whether the view inspires an overwhelming sense of scale or the power of nature.

Those locations which are deemed to satisfy many of the above criteria are likely to be of higher sensitivity. Overall sensitivity may be a result of a number of these factors or, alternatively, a strong association with one or two in particular.

12.3.2.5 Visual Impact Magnitude

The magnitude of visual effects is determined on the basis of two factors; the visual presence (relative visual dominance) of the Proposed Development and its effect on visual amenity.

Visual presence is a somewhat quantitative measure relating to how noticeable or visually dominant the Proposed Development is within a particular view. This is based on a number of aspects, aside from scale in relation to distance. Some of these aspects include the extent and complexity of the view, as well as the degree of existing contextual movement experienced. The backdrop against which the development is presented and its relationship with other focal points or prominent features within the view is also considered. Visual presence is essentially a

measure of the relative visual dominance of the Proposed Development within the available vista and is often, though not always, expressed as one of the following terms:

- Minimal;
- Sub-dominant;
- Co-dominant;
- Dominant;
- Highly dominant.

The magnitude of visual impacts is classified in Table 12.4.

Table 12.4: Magnitude of Visual Impact

Criteria	Description
Very High	The Proposed Development obstructs or intrudes into a large proportion or critical part of the available vista and is without question the most noticeable element. An extensive degree of visual change will occur within the scene completely altering its character, composition and associated visual amenity
High	The Proposed Development obstructs or intrudes into a significant proportion or important part of the available vista and is one of the most noticeable elements. A considerable degree of visual change will occur within the scene substantially altering its character, composition and associated visual amenity
Medium	The Proposed Development represents a moderate intrusion into the available vista and is a readily noticeable element. A noticeable degree of visual change will occur within the scene perceptibly altering its character, composition and associated visual amenity
Low	The Proposed Development intrudes to a minor extent into the available vista and may not be noticed by a casual observer and/or the Proposed Development would not have a marked effect on the visual amenity of the scene
Negligible	The Proposed Development would be barely discernible within the available vista and/or it would not influence the visual amenity of the scene

12.3.2.6 Visual Impact Significance

As stated above, the significance of visual impacts is a function of visual receptor sensitivity and visual impact magnitude. This relationship is expressed in the same significance matrix and applies the same EPA definitions of significance as used earlier in respect of landscape impacts (refer to Table 10.3).

12.3.2.7 Quality and Timescale of Effects

In addition to assessing the significance of landscape effects and visual effects, the EPA Guidance for EIAs⁷⁶ requires that the quality of the effects is also determined. In relation to the quality of effects, Table 3.4 of the current EPA Guidance states that these could be 'Positive', 'Neutral' or 'Negative/Adverse Effects'. A description of each is included below;

- *“Positive Effects: A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).*
- *Neutral Effects: No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.*

⁷⁶ Environmental Protection Agency (EPA) publication 'Guidelines on the Information to be contained in Environmental Impact Statements (2022)

- *Negative/Adverse Effects: A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance)."*

Landscape and Visual effects are also categorised according to their duration:

- Temporary – Effects lasting less than a year;
- Short Term – Effects lasting one to seven years;
- Medium Term – Effects lasting seven to fifteen years;
- Long Term – Effects lasting fifteen to sixty years; and
- Permanent – Effects lasting over sixty years.

12.3.3 Study Area

Due to the nature of the landscape setting, the development and height of the proposed structures, a 5km study area radius from the application site boundary has been applied to this landscape assessment. From similar studies, it is anticipated that the Proposed Development is not likely to give rise to significant landscape or visual impact beyond approximately 2km. In the interest of a comprehensive appraisal, a 5km radius study area is used in this instance.

12.4 Receiving Environment

12.4.1 Landscape Baseline

The landscape baseline represents the existing landscape context and is the scenario against which any changes to the landscape brought about by the Proposed Development will be assessed. A description of the landscape context of the Proposed Development site and wider study area is provided below under the headings of landform and drainage, vegetation and land use, centres of population and houses, transport routes and public amenities and facilities. Although this description forms part of the landscape baseline, many of the landscape elements identified also relate to visual receptors i.e. places and transport routes from which viewers can potentially see the Proposed Development.

Figure 12.6: Landscape Context of the Study Area



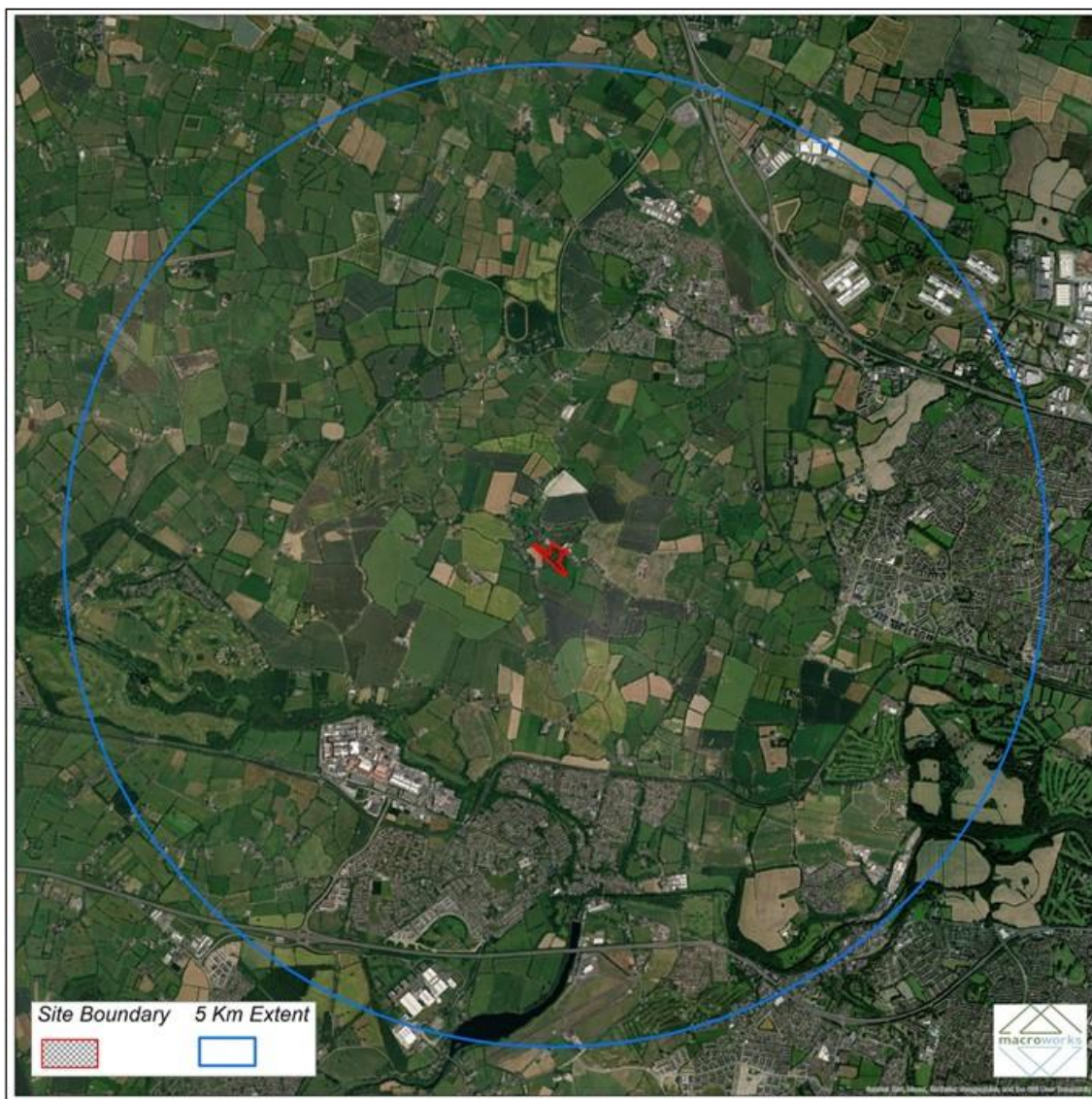
12.4.1.1 Landform and Drainage

The Proposed Development is located within an area of low rolling terrain north of the River Liffey. The western quadrant and the centre of the study area comprise mainly of agricultural farmland with large geometric fields. The south of the study area is defined by the River Liffey as it runs easterly through the town of Leixlip. The north-east of the study area transitions into urban settlements of Dunboyne, Clonsilla and Ongar. The most notable watercourse within the study area is the River Liffey located approximately 2.3km south of the Proposed Development. The topography of the study area is highly influenced by the river valley to the south of the study area. Other notable watercourses in the area include the Royal Canal running adjacent to the Liffey through Leixlip and travelling north towards Clonsilla and the Rye Water that runs through the Carton Demesne from the west of the study area until it meets the River Liffey in Leixlip and then continuing north-east towards Lucan.

12.4.1.2 Vegetation and Land Use

The predominant land use within the central study area is rolling pastoral farmland comprising of medium to large sized geometric fields. These agricultural lands are bound by dense and mature hedgerows which accounts for the majority of the vegetation within the study area. To the south and north of the development the land use transitions from productive agricultural land to peri urban as the fields meet the townlands of Leixlip and Dunboyne. Dense mature woodland cloak the corridor of the river and canal corridors traversing the study area creating a distinct difference to the surrounding agricultural pastoral land. The study area is heavily influenced by anthropogenic activity as can be seen by the large residential urban areas and multiple industrial parks including the two large technology campuses of Intel in Leixlip and Meta in Dunboyne.

Figure 12.7: Land Use Mix within the Study Area



12.4.1.3 Centres of Population and Houses

The Proposed Development is situated between multiple large centres of population. The town of Leixlip is located approximately 2km south of the Proposed Development at its nearest point, while Dunboyne is approximately 2.3km to the north of the Proposed Development. Other notable centres of population include Ongar and Clonee, both situated in the north-eastern quadrant of the study area. Apart from these larger centres of population, the centre of the study area is comprised of loose linear housing patterns with the closest residential receptors located on the local road running directly north, east and west of the Proposed Development. The Proposed Development surroundings are highly influenced by the expanding urban settlements to the north, south and east of the study area.

12.4.1.4 Transport Routes

There are two major routes that traverse the area briefly in the north and the south of the study area. The M3 crosses the study area in the north-east quadrant passing north of Dunboyne to continue south through Clonee and Ongar. The M4 passes through Leixlip in the south connecting Lucan and Maynooth. There are also multiple regional roads traversing the area. The regional road network runs along the edges of the study area connecting the multiple towns and villages bordering the Proposed Development. The area immediately surrounding the Proposed Development is connected by a network of local roads running towards the centre of the study area and connecting a more rural landscape to the regional roads.

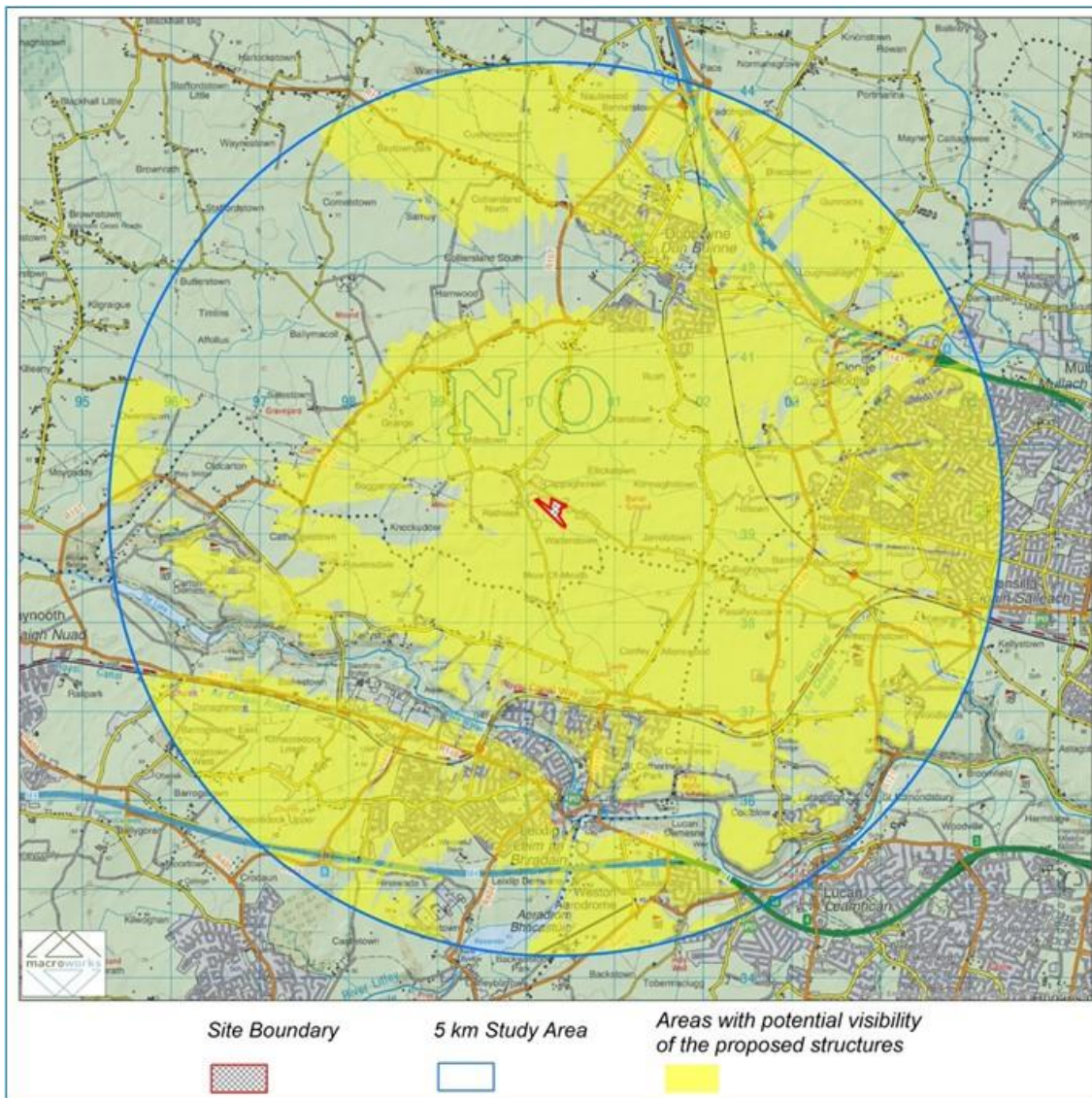
12.4.1.5 Tourism, Heritage and Public Amenities

The predominant heritage and public amenity within the study area would be the River Liffey to the south of the Proposed Development. The Liffey offers a multitude of greenways and walking trails throughout the southern quadrant of the study area. Other notable public and tourism amenities in the area include Carton House and Demesne, which incorporates a highly regarded golf course and is located 3.3km away in the south-west of the study area. Dunboyne Castle Hotel is another tourism amenity in the area located approximately 2.6km north of the Proposed Development. With Carton House to the west of the site it is one of the largest tourism and public amenities in the area. There are also a number of public parks throughout the study area including St. Catherine's Park to the south-east located between Leixlip and Lucan and Fort Lucan Adventureland Park to the south-east of the study area. There are several outdoor recreational amenities in the area including Carton House golf course, Westmanstown golf course and several sports pitches located in Dunboyne and Leixlip.

12.4.2 Visual Baseline

Only those parts of the receiving environment that potentially afford views of the Proposed Development are of concern to this section of the assessment. A computer-generated Zone of Theoretical Visibility (ZTV) map has been prepared to illustrate where the Proposed Development is potentially visible from. The ZTV map is based solely on terrain data (bare ground visibility), and ignores features such as trees, hedges or buildings, which may screen views. Given the complex vegetation patterns within this landscape, the main value of this form of ZTV mapping is to determine those parts of the landscape from which the Proposed Development will definitely not be visible, due to terrain screening within the 5km study area.

Figure 12.8: Zone of Theoretical Visibility Map



The following key points are illustrated by the 'bare-ground' ZTV map (see Figure 12.8):

- There is comprehensive potential for visibility within the central study area within approximately 1km of the site and this continues unabated for the full eastern portion of the study area.
- Theoretical visibility extends from about 2km to the south before it breaks for the River Liffey corridor and then re-emerges on the southern side of the Liffey.
- Visibility is truncated by elevated ground from around 2km to the northwest of the site out to the edge of the study area. The same scenario occurs to the north but visibility re-emerges in the outer northern portion of the study area.

12.5 Environmental Considerations

As set out in the methodology section, the assessment of landscape effects requires separate consideration of landscape sensitivity and landscape impact magnitude, which are then combined to determine the significance of the landscape effect.

12.5.1 Landscape Value and Sensitivity

Landscape value and sensitivity are considered in relation to a number of factors highlighted in the Guidelines for Landscape and Visual Impact Assessment 2013, which are set out below and discussed relative to the proposal site and wider study area.

The Proposed Development is located within the South-east Lowlands which the Meath CDP classifies as a highly sensitive landscape area. The wider study area includes areas of high amenity value such as the River Liffey and the greenways associated with the River Valley. However, the site itself is largely enclosed due to pre-existing vegetation, and the undulating terrain in this area provides extra screening of the Proposed Development. The sensitive landscape surrounding the River Liffey is also sufficiently distanced from the immediate surrounds of the site and will not impact the views afforded to or from the Liffey. There are several scenic views and one scenic route all associated with the River Liffey, but these are discrete to the development site.

The immediate surrounds of the study area is a robust rural landscape comprised of gently rolling terrain cloaked in pastoral farmland and geometric network of hedgerows. The wider surrounds of the site are heavily influenced by the growing urban settlements to the north, south and east and there is a notable transition from a predominantly rural character to one that is of a higher intensity and more peri-urban in character.

For the reasons outlined above, the sensitivity of Landscape receptors within the study area typically ranges between High-Medium and Medium-Low. High-Medium sensitivity is generally associated with the scenic pastoral context flanking the River Liffey. Medium-Low sensitivity applies to other, more typical views within the working rural landscape such as that containing the site and the majority of the northern and eastern study area.

12.5.2 Construction Phase Landscape Considerations

During the construction stage there will be construction-related activity within and around the site, and nearby approach roads. This will include, but is not limited to:

- Site preparation works and groundwork operations;
- Removal of existing vegetation/landcover;
- Localised foundation work including the installation of underground services;
- HGVs transporting materials to and from the site;
- Movement of heavy machinery on-site;
- Temporary storage of demolition debris/construction materials on-site;
- Security fencing/hoarding and site lighting.

The physical impacts on the site's land cover will be permanent and not readily reversible, albeit this relates to ground cover that is already modified for agricultural purposes and is generally flat and, therefore, has limited cut and fill requirements to achieve a level site.

There will be impacts on the study area's character due to the intensity of movement and clutter of temporary structures associated with the construction works. Still, these are likely to be very localised within the immediate surrounds of the site and substantially screened thereafter by intervening vegetation. The primary impacts at this location are deemed to be those associated with the earthworks and site clearance. Construction stage impacts will be 'short term' in duration (ca. 12 months for civil works and 18 months for electrical installation) and will be localised within the immediate setting and approach roads to the site.

For the above reasons, the magnitude of landscape impacts during the construction stage is deemed to be **Medium** within the site and its immediate surrounds (<500m), however, this quickly

reduces to **Low** in the wider surrounds of the study area where visibility of construction activity is likely to be very limited. In combination with the **Medium-low** landscape sensitivity designation outlined above, the significance of construction stage impacts is deemed to be **Moderate-slight** within the site and its immediate surrounds, however, this quickly reduces to **Slight** and **Imperceptible** within the wider study area. The quality of the construction stage effects will be **Negative**.

12.5.3 Operation and Maintenance Phase Landscape Considerations

During the operation and maintenance phase of the Proposed Development, which is the permanent phase of the development, the main landscape effects will result from the change in character.

The proposed substation will increase the scale, intensity and diversity of built development within the immediate rural surrounds. It is of utilitarian form that will generate a more industrial and less rural character, but one that is not unfamiliar in the study area particularly to the north, east and south where the prevailing character is the peri-urban hinterland of Dublin City and its nearest suburbs and satellite settlements. These areas are characterised by urban edge industrial and transport development as well as considerable electrical infrastructure development. In this sense, the Proposed Development represents an intensification of an emerging presence within the rural hinterland area rather than one that will appear wholly out of place and ambiguous. For these reasons, the magnitude of landscape effect is deemed to be Medium-low within the central study area (<500m), thereafter reducing to Low and Negligible within increasing distance and as the Proposed Development becomes a perceptually smaller component of a broader rural hinterland landscape.

On balance of the **Medium-low** landscape sensitivity of the site and the **Medium-low** magnitude of landscape effect within the central study area, the significance of operational stage impacts is deemed to be **Moderate-slight** within the site and its immediate surrounds, however, this quickly reduces to **Slight** and **Imperceptible** within the wider study area. The quality of the operational stage effects will be **Negative**.

12.5.4 Identification of Viewshed Reference Points as a Basis for Assessment

Viewshed Reference Points (VRPs) are the locations used to study the visual impacts of a Proposed Development in detail. It is not warranted to include each and every location that provides a view of a development as this would result in an unwieldy report and make it extremely difficult to draw out the key impacts arising from the Proposed Development. Instead, the selected viewpoints are intended to reflect a range of different receptor types, distances and angles. The visual impact of a Proposed Development is assessed by MacroWorks using up to six no. categories of receptor type as listed below:

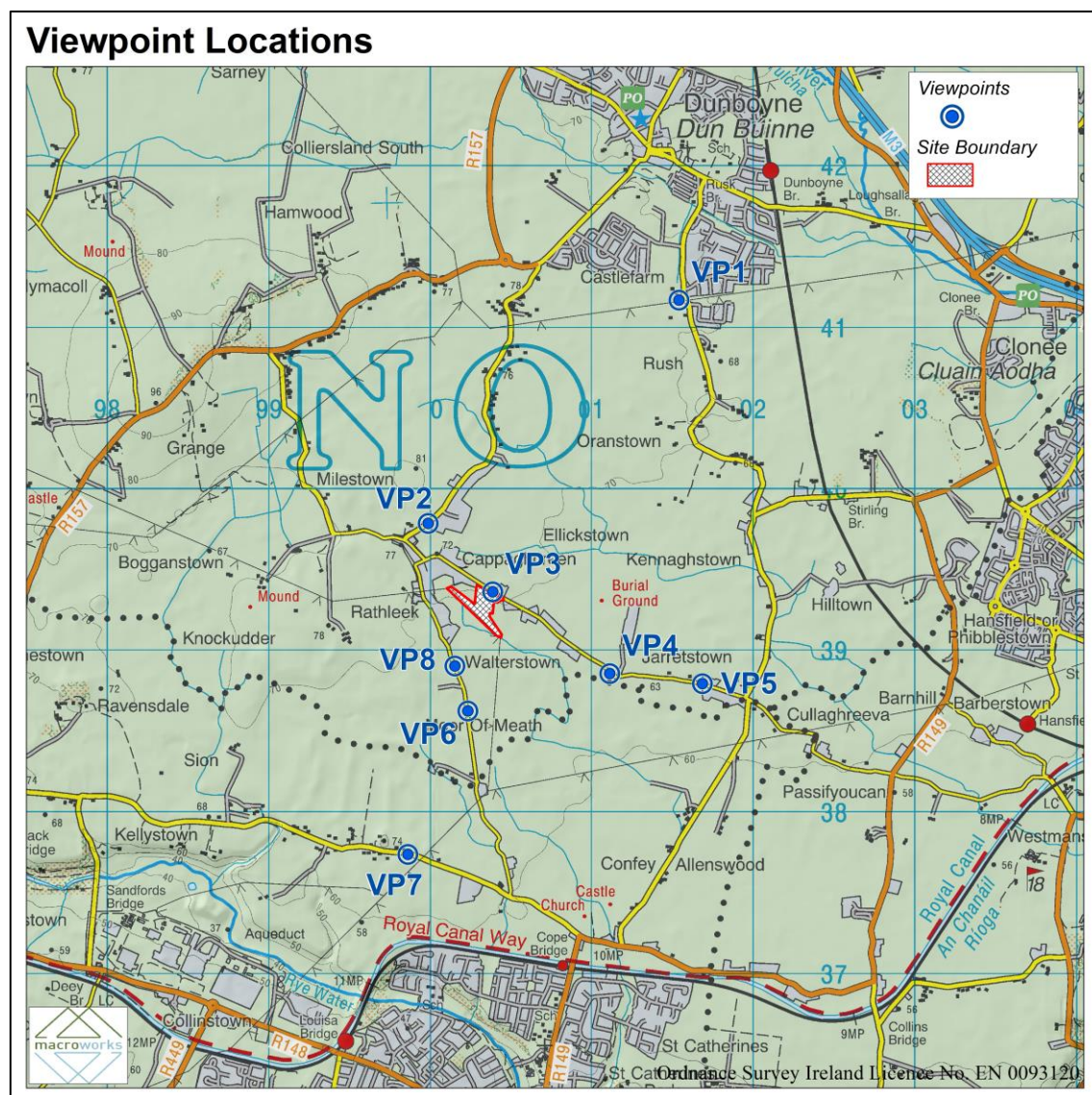
- Key Views (from features of national or international importance) (KV);
- Designated Scenic Routes and Views (SR/SV);
- Local Community views (LCV);
- Centres of Population (CP);
- Major Routes (MR);
- Amenity and heritage features (AH).

VRPs might be relevant to more than one category, and this makes them even more valid for inclusion in the assessment. The receptors that are intended to be represented by a particular VRP are listed at the beginning of each viewpoint appraisal. The VRPs selected in this instance are set out in Table 12.5.

Table 12.5: Outline Description of Selected Viewshed Reference Points (VRPs)

VRP No.	Location	Representative of	Direction of view
VP1	St. Peter's GAA Dunboyne	LCV, CP	SW
VP2	L2219 at Commons Upper	LCV	SE
VP3	L2220 at Walterstown	LCV	S
VP4	L2220 at Jarretstown	LCV	NE
VP5	L2220 near Cullaghreeva	LCV, CP	NE
VP6	L2218 at Moor of Meath	LCV	N
VP7	L1015 at Confey	CP, AH	NE
VP8	L2218 at Walterstown	LCV	NE

Figure 12.9: Viewpoint Location Map



12.5.5 Visual Receptor Sensitivity

The study area generally presents as a typical peri-urban landscape. Albeit with some localised areas of scenic amenity, associated with the southern portion of the study area where views of

the River Liffey are offered. This is further recognised within the Kildare CDP through designated scenic routes and views in recognition of its scenic qualities. These views are consequently deemed to be of High Sensitivity. These views are associated with scenic designations overlooking the River Liffey and its surrounds.

Views of the working agricultural landscape are generally pleasant in terms of its rolling pastoral aesthetic and green settled working character. The network of hedgerows and vegetation throughout it contributes to some sense of naturalness and, combined with its rolling topography, generates a sense of containment in many locations. However, while a pleasant pastoral aesthetic is apparent throughout the central study area, the surrounding local and wider landscape is also influenced by an array of anthropogenic features such as the large urban settlements to the south and north-east, the major transport routes and large industrial developments. Overall, the sensitivity of visual receptors within the typical working landscape context are typically assigned a Medium-low receptor sensitivity.

Key differentials in terms of visual receptor sensitivity relate to the occupation of the visual receptor and whether views of the surrounding landscape are inherent part of the experience. Static residential receptors are considered generally more susceptible to changes in views over those where views are experienced transiently by those travelling through the landscape, particularly on major transport routes where road infrastructure and traffic volume draw from visual amenity. Likewise, receptors located in closer proximity to the site are considered more susceptible to changes in views over those where views are experienced at a distance.

On the basis of the site-specific factors outlined above and in accordance with the general visual receptor sensitivity considerations contained in the methodology Section 1.2.5, visual receptor sensitivity judgements are provided for each representative viewpoint in the table below.

12.5.6 Visual Impact Magnitude

The assessment of visual impacts at each of the selected viewpoints is aided by photomontages of the Proposed Development. Photomontages are a 'photo-real' depiction of the scheme within the view utilising a rendered three-dimensional model of the development, which has been geo-referenced to allow accurate placement and scale. For each viewpoint, the following images have been produced:

1. Existing view;
2. Outline view (yellow outline showing the extent of the Proposed Development including all associated overground works overlaid on the photograph);
3. Montage view
4. Montage view with mitigation established.

Table 12.6: Assessment of Visual Impact

VRP No.	Existing View / Receptor	Sensitivity of Receptor	Magnitude of Visual Impact	Significance of Effect
VP1	St. Peter's GAA Dunboyne This view is afforded from the car park of St. Peter's GAA Dunboyne. The foreground facing south is unobstructed across the expanse of the GAA pitch while a mature treeline dominates the background and contains the view in the near middle distance. This view is representative of local community receptors, recreationalists and a centre of population.	Medium low	The Proposed Development will not be visible from this location due to the dense layers of vegetation in the direction of the site. Therefore, the magnitude of the visual effect is considered Negligible and Neutral in terms of quality.	Imperceptible/ Neutral/ Permanent
VP2	L2219 at Commons Upper This view is afforded from local road L2219. The view has a clear foreground allowing for clear views in the direction of the Proposed Development. The background of the view is contained by residential dwellings and beyond the houses is a dense mature tree line.	Medium low	The Proposed Development will not be visible from this location due to the dense layers of vegetation in the direction of the site. Therefore, the magnitude of the visual effect is Negligible and of a Neutral quality.	Imperceptible/ Neutral/ Permanent
VP3	L2220 at Walterstown This view is afforded from the L2220 at Walterstown. This is a brief view of the Proposed Development site seen through a gateway in the dense hedgerow immediately to the north of the Proposed Development. This view is representative of the local residences along the road corridor and the local community of Walterstown.	Medium low	From this viewpoint a clear view of the proposed substation can be seen in its entirety through the gateway, but not from the road on either side of the gate. The substation consists of a series of substantial sized shed structures and there is also a clutter of external switch gear lightning poles end masts and a perimeter security fence. It is a visually dominant feature that brings a utilitarian industrial character to the otherwise typical rural scene, but without interrupting any key aspects of visual amenity. Prior to mitigation, the magnitude of visual effect is deemed to be High-medium and the quality of that effect, Negative. Once mitigation screen planting across the gateway has become established, the proposed substation facility will not be visible but the view is further contained. The magnitude of visual impact is deemed to reduce to Low.	<i>Pre-mitigation</i> Substantial-moderate/ Negative/ Short-term <i>Post-mitigation</i> Slight/ Neutral-Negative/ Permanent

VRP No.	Existing View / Receptor	Sensitivity of Receptor	Magnitude of Visual Impact	Significance of Effect
VP4	L2220 at Jarretstown This view is located to the east of the site representative of the local community views in this area. This is a broad open view afforded from local road L2220 overlooking a low-lying hedgerow into the expansive agricultural land beyond. The view is contained by the mature tree line and residential dwelling towards the background of the view.	Medium low	The Proposed Development will not be visible from this viewpoint location due to high degree of existing intervening vegetation in the direction of the Proposed Development. Therefore, the magnitude of effect is deemed negligible by default.	Imperceptible/ Neutral/ Permanent
VP5	L2220 near Cullaghreeva This is a roadside view-oriented west toward the site to represent the local community views at this location of several dwellings. The view is largely contained by the dense vegetation in the foreground that blocks the eastern half of the view in which the Proposed Development is located. It is more open to the south.	Medium low	Due to the dense vegetation no visibility of the Proposed Development is possible from this viewpoint. therefore, the magnitude of visual impact is deemed negligible.	Imperceptible/ Neutral/ Permanent
VP6	L2218 at Moor of Meath This is a gateway view that affords a relatively open view of the landscape beyond due to the flat expanse of the agricultural field beyond. The view is bisected by a dense hedgerow in the background to the east looking towards the Proposed Development a mature tree line contains the view. The west of the view is contained by the local road and the vegetation lining it.	Medium low	The proposed substation will be completely screened by the intervening vegetation in the foreground and the background. Thus, the magnitude of visual impact is negligible	Imperceptible/ Neutral/ Permanent
VP7	L1015 at Confey This is a contained view from the L1015 at Confey to represent the local community and the centre of population from this viewpoint close to the settlement of Leixlip. The view is contained by the dense mature vegetation dominating the midground and the existing barn beyond the hedgerow.	Medium low	The Proposed Development will not be visible from here due to the vegetation screening. Thus, the magnitude of visual impact is Negligible by default. This is an illustrative view – to illustrate the absence of Proposed Development visibility from this settlement.	Imperceptible/ Neutral/ Permanent

VRP No.	Existing View / Receptor	Sensitivity of Receptor	Magnitude of Visual Impact	Significance of Effect
VP8	L2218 at Walterstown This is a contained view from the roadside of the L2218 with a view-oriented north. The view is contained by dense vegetation to the west while the mid ground is clear across an agricultural field, a residential dwelling contains the view to the east. Towards the background of the view there is a mature treeline with partial views into the field beyond.	Medium low	Through the gaps in the treeline, partial views of the substation pylons are afforded. Through the lower gaps in the hedgerow the fence and substation can be partially and intermittently seen. The existing vegetation helps to anchor the development within the landscape and provides screening of the majority of the substation. Overall, the magnitude of visual effect is deemed to be Low and Negative. As the mitigation planting (woodland thicket) is provided on the other side of the site, it will not have any mitigating effect from here.	Slight/ Neutral-negative/ Permanent

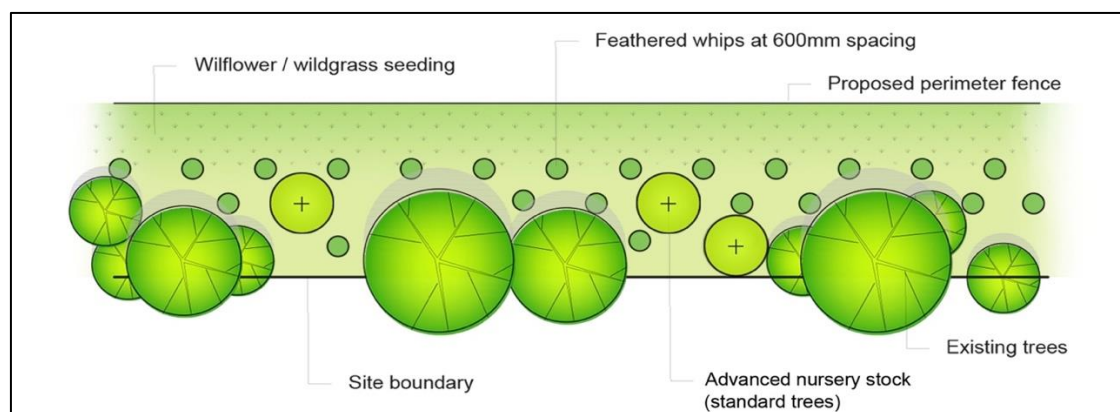
12.6 Mitigation and Monitoring Measures

12.6.1 Mitigation Measures

The main mitigation by avoidance measure employed in this instance is the siting of the Proposed Development in a robust landscape with surrounding pre-existing urban settlements. The Proposed Development does not traverse any landscapes of high sensitivity or value nor does it disrupt any areas of visual sensitivity. In addition to mitigation by avoidance measures, retention of existing hedgerow boundaries within and around the site aids visual screening and maintains the existing field pattern. In this respect, the Proposed Development is not perceived to impose itself on the existing landscape pattern.

In addition to retaining the existing hedgerows within around the site, it is also proposed to bolster existing perimeter and internal hedgerows with under-planting and inter-planting of whip transplants (i.e. Hedgerow Type 1 – see Figure 12.10) in order to ensure dense and consistent screening of the site in perpetuity. This will be undertaken where required to thicken and fill gaps in the existing hedgerow network prior to the construction phase, thus allowing for any growth in the period between a grant of planning permission and construction of the development. Advanced nursery stock in the form of 8-10cm girth trees will be used to fill any noticeable gaps and plant species will be selected to complement the existing broadleaf hedgerow species mix around the site and will be of local provenance. Where not already exceeded by existing vegetation, it is intended to manage hedgerows up to 3-4m in height. This height will be achieved by a combination of allowing lower sections of existing hedgerows to mature, filling obvious gaps with advanced nursery stock and providing an additional line of whip planting to selected hedgerows that require densification. Refer to Appendix 12.2 for Landscape and Ecological Mitigation Plan. It is also proposed to plant a dense woodland thicket around the eastern and northern sides of the site in the directions of the nearest road and residential receptors. This is particularly effective mitigation at VP3, which represents local residents and road users immediately to the north of the site.

Figure 12.10: Hedgerow Type 1: indicative boundary planting detail showing the approach to inter-planting and under-planting of existing hedgerows (where consolidation is needed).



12.7 Residual Effects

Section 12.5 includes an assessment of visual impacts, during operational phase, at surrounding visual receptors within the study area. Visual impacts were assessed at eight viewpoint locations, which represent different viewing distances, angles, and receptor types. This included consideration of mitigation screen planting which has an ameliorating effect at VP3 in particular. Thus, residual effects are the same as those assessed in Section 12.5.

13 Traffic and Transport

13.1 Introduction

This Chapter considers the potential effects arising from the construction of a new 110 kV/38 kV/MV Gas Insulated Switchgear (GIS) substation located in the townland of Walterstown, Dunboyne, County Meath (hereafter referred to as ‘the Proposed Development’) on Traffic and Transport.

A detailed description of the Proposed Development is provided in Chapter 3 (Description of the Proposed Development). Air quality and noise matters pertaining to Traffic and Transport are discussed in Chapter 5 (Air Quality), Chapter 6 (Climate) and Chapter 7 (Noise and Vibration).

Traffic associated with the operation and maintenance of the Proposed Development is expected to be limited and infrequent, with an estimated three vehicles accessing and departing the site per week. On this basis, the potential effects associated with the operational phase of the Proposed Development are not likely to be significant and have therefore not been considered in detail as part of this assessment.

The assessment as documented in this Chapter is supported by a construction Traffic Management Plan (TMP), included in Appendix B of the Construction Environmental Management Plan (CEMP), also submitted as part of this application.

13.2 Policy and Guidance

This section sets out transport policy and guidance relevant to the assessment of Traffic and Transport effects of the Proposed Development at a National level as well as those produced locally by Meath County Council (MCC).

13.2.1 Policies

Table 13.1 provides a summary of the policies relevant to Traffic and Transport.

Table 13.1: Policy Summary

Document Title	Source and Year	Policy Detail	Relevance to Assessment
Consolidated Meath County Development Plan 2021-2027	MCC website, 2025 ⁷⁷	The Consolidated Meath County Development Plan contains an overview of transport policy context. Some of the key and relevant transport policies and objectives are as follows: The plan prioritises the development of a sustainable integrated transport system that: reduces reliance on private cars, promotes modal shift to public transport, walking and cycling and support regional accessibility and compact growth. Variation highlights include: Variation 1 & 2: Updated zoning and land use to support compact growth and transport integration; and	This policy is considered to be integral to the assessment process unless stated otherwise.

⁷⁷ [Meath County Development Plan | Meath.ie](#). Accessed: 03 September 2025

		Variation 3: Further refinements to support sustainable development and infrastructure delivery.	
Regional Spatial & Economic Strategy 2019-2031	Eastern and Midlands Regional Assembly's website, 2019 ⁷⁸	The Eastern and Midlands Regional Assembly's Regional Spatial and Economic Strategy (RSES) contains guiding principles on the integration of land use and transport, including: <i>"New development areas, including peripheral areas, should be permeable for walking and cycling and the retrospective implementation of walking and cycling facilities should be undertaken in existing neighbourhoods, in order to give a competitive advantage to these modes. Where possible, developments shall provide for filtered permeability."</i> Additionally, the RSES contains regional policy objectives to support the guiding principles, including: RPO 8.3: <i>"That future development is planned and designed in a manner which maximises the efficiency and protects the strategic capacity of the metropolitan area transport network, both existing and planned and to protect and maintain regional accessibility."</i>	This policy is considered to be integral to the assessment process unless stated otherwise.
Project Ireland 2040	Government of Ireland website, 2019 ⁷⁹	The National Development Plan 2021-2030, which makes up part of Project Ireland 2040, includes the Irish Government's strategy for sustainable mobility.	This policy is considered to be integral to the assessment process unless stated otherwise.

Source: Varies by policy document

13.2.2 Guidelines

The assessment described in this Chapter has been undertaken with due consideration of the guidance and principles set out within the following documents:

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Environmental Protection Agency (EPA), 2022)⁸⁰
- Traffic and Transport Assessment Guidelines (Transport Infrastructure Ireland (TII), 2014)⁸¹
- Environmental Assessment of Traffic and Movement (Institute of Environmental Management & Assessment (IEMA), 2023)⁸²
- Rural Road Link Design, (DN-GEO-03031, TII Publications (TII, 2017)⁸³

⁷⁸ Regional Spatial and Economic Strategy 2019-2031, Eastern and Midlands Regional Assembly. Accessed: 03 September 2025

⁷⁹ National Development Plan 2021-2030, Government of Ireland. Accessed: 03 September 2025

⁸⁰ Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, Environmental Protection Agency. Accessed: 03 September 2025

⁸¹ Traffic and Transport Assessment Guidelines, TII. Accessed 03 September 2025

⁸² Environmental Assessment of Traffic and Movement. Institute of Environmental Management & Assessment (IEMA), July 2023 Accessed 23 September 2025

Note – IEMA rebranded as Institute of Sustainability & Environmental Professionals (ISEP) in 2025

⁸³ Rural Road Link Design, TII. Accessed 03 September 2025

13.3 Methodology

13.3.1 Approach to Data Collection

A desktop study was undertaken to review logical access routes and to identify any potentially sensitive locations i.e. locations which are likely to be more vulnerable to change in traffic flow or profile (collision clusters, high footfall areas, and/or areas in close proximity to a school).

No relevant traffic count information was available on the TII traffic count data website at the time of writing. Traffic volumes were instead obtained from the East Meath - North Dublin Grid Upgrade Environmental Impact Assessment Report (EIAR)⁸⁴, submitted under planning reference VA06F-319422.

Data on Personal Injury Collisions (PICs) was sought from the Road Safety Authority (RSA) website; however, it is understood that the RSA is in the process of reviewing its collision data sharing policies and procedures and therefore data cannot be shared until this review is complete⁸⁵.

13.3.2 Approach to Impact Assessment

The assessment detailed in this report has been undertaken through a combination of desktop study and reference to current policy advice and best practice in line with consultation with statutory agencies.

Predicted construction vehicle movement volumes have been compared to baseline traffic flows to identify if there are likely to be periods where the increase in traffic could impact the local road network or adjacent communities.

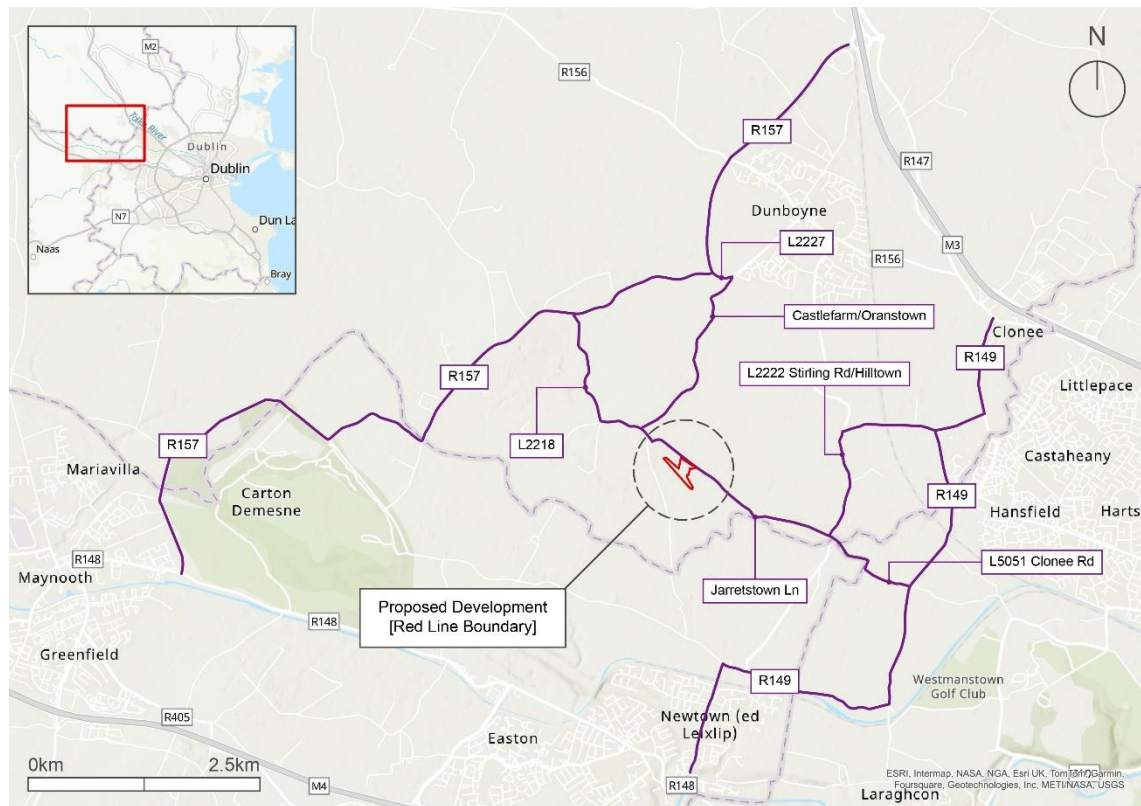
13.3.3 Study Area

The study area for the purpose of this Chapter has been defined as the public road network in the immediate vicinity of the Proposed Development which will be used by personnel and construction traffic (e.g. delivery of materials) routing to and from the site during the construction phase. These roads are illustrated in Figure 13.1.

⁸⁴ [EirGrid \(Jacobs\) | East Meath – North Dublin Grid Upgrade EIAR Vol 2 | Chapter 14 Traffic & Transport](#). Accessed 23 September 2025.

⁸⁵ [RSA Website | Road Traffic Collision Data](#). Accessed 23 September 2025.

Figure 13.1: Location Plan



Source: Mott MacDonald

The Proposed Development will be accessed from the existing rural road (Jarretstown Lane) at the northern boundary of the site. Jarretstown Lane links to the R157 via the L2218 c.2km west of the site access and to the R149 c.3km east of the site access. Both routes provide access to the M3 Motorway.

As vehicles travel to and from the Proposed Development, they will disperse across the broader road network. Consequently, as vehicles move further away from the development, the likelihood that high numbers of vehicles will use the same routing patterns becomes lower, resulting in less development traffic and lower impacts on Traffic and Transport.

13.3.4 Limitations

It has been necessary to make a number of assumptions to support the Traffic and Transport assessment which are detailed in the following sub-sections of this Chapter.

Full details of construction activities would be confirmed post-consent.

Confirmation of the construction route(s) will be agreed with MCC (as local roads authority) prior to the commencement of the development.

13.4 Receiving Environment

13.4.1 Road Network and Route Profiles

The characteristics of public road sections in the study area have been reviewed as part of the desktop study and are set out in Table 13.2.

Table 13.2: Road Network and Route Profiles

Road	Speed Limit (km/h)	Description
R157	50/60/80	The R157 is a single carriageway with one lane in each direction connecting the R148 to the M3 at Junction 5. The road runs along the west and north boundary wall of Carton House and bypasses Dunboyne. No pedestrian footpath or streetlighting is present. No schools, hospitals or other sensitive receptors are present along the section of the route that would be utilised by construction HGVs.
L2227	50/60	The L2227 is a single carriageway with one lane in each direction connecting the R157 with Maynooth Road. The road is bounded by agricultural land but also provides access to some residential properties. A pedestrian footpath and minimal streetlighting is present on one side of the carriageway on the exit arm of the L2227/R157 roundabout. No schools, hospitals or other sensitive receptors are present along the section of the route that would be utilised by construction HGVs.
Castelfarm/Oranstown	50/60	Castelfarm/Oranstown is a narrow two-way single carriageway rural road connecting the L2227 to the L2218. The road is bounded by agricultural land but also provides access to some residential properties and farms. No pedestrian footpaths or street lighting is present. No schools, hospitals or other sensitive receptors are present along the section of the route that would be utilised by construction HGVs.
L2218	60	The L2218 is a narrow two-way single carriageway rural road connecting R157 to Jarretstown Lane. The road is bounded by agricultural land but also provides access to some residential properties and farms. No schools, hospitals or other sensitive receptors are present along the section of the route that would be utilised by construction HGVs.
Jarretstown Lane	60	Jarretstown Lane is a narrow two-way single carriageway rural road connecting the L2218 to the L5051. The road is bounded agricultural land but provides access to some residential properties and farms. No pedestrian footpaths or street lighting is present. Access to the Proposed Development will be taken from Jarretstown Lane. No schools, hospitals or other sensitive receptors are present along the section of the route that would be utilised by construction HGVs.
R149	60/80	The R149 is a single carriageway with one lane in each direction connecting the R156 (and further the M3 at Junction 4) to the M3 to the R148. The road runs in a north to south direction and bypasses Clonee and Williamstown. Pedestrian footpaths and street lighting are sparsely present as the road passes through Clonee but aren't present for the majority of the route. No schools, hospitals or other sensitive receptors are present along the section of the route that would be utilised by construction HGVs.
L2222 Stirling Road / Hilltown	60	The L2222 Stirling Road/Hilltown is a narrow two-way single carriageway rural road connecting R149 to Jarretstown Lane. The road is bounded by agricultural land but also provides access to some residential properties and farms. No pedestrian footpaths or street lighting is present. No schools, hospitals or other sensitive receptors are present along the section of the route that would be utilised by construction HGVs.
L5051 Clonee Road	60	The L5051 Clonee Road is a narrow two-way single carriageway rural road connecting R149 to Jarretstown Lane. The road is bounded by agricultural land but also provides access to some residential properties and farms. No pedestrian footpaths or street lighting is present. No schools, hospitals or other sensitive receptors are present along the section of the route that would be utilised by construction HGVs.

Source: Mott MacDonald

Traffic flow information was only available at the time of writing (September 2025) for the R157.

13.4.2 Baseline Traffic Flows

The only traffic volume data available to inform this report were instead obtained from the East Meath - North Dublin Grid Upgrade Environmental Impact Assessment Report, submitted under planning reference VA06F-319422. This data has been uplifted to year 2027 (when construction is scheduled to commence) using a growth factor from TII's Travel Demand Projections⁸⁶. A "central growth" factor has been applied for "light vehicles" (e.g. cars/light goods vehicles) and "heavy vehicles" (e.g., HGVs) which is 1.73% for "light vehicles" and 3.65% for "heavy vehicles".

This data is presented in Table 13.3.

Table 13.3: Road Network and Route Profiles

Road	AADT 2026	Average Daily HGV 2026	AADT 2027	Average Daily HGV 2027
R157 – north of M3 Parkway	15,212	795	15,490	824
R157 – southwest of L2228 Summerhill Road	8872	475	9035	492

Source: East Meath - North Dublin Grid Upgrade Environmental Impact Assessment Report, Jacobs 2024

13.4.3 Public Transport

Several bus services serve the local settlements (e.g. Dunboyne, Clonee, Ongar, Newtown and Collinstown) surrounding the Proposed Development, however there are no bus stops within the vicinity of the Proposed Development site. Table 13.4 summarises the local services and their associated frequencies.

Table 13.4: Local Bus Routes

Route	Route Summary	Weekday Frequency	Weekend Frequency
105 ⁸⁷	Blanchardstown Shopping Centre – Dunboyne – Ratoath – Ashbourne – Duleek – Drogheda Bus Station	First departure: 06:45 from Blanchardstown Every 30 minutes until 20:45 Then hourly until 22:45	Saturday: Similar to weekday schedule, with slightly reduced frequency in early morning and late evening Sunday: Hourly service
70 ⁸⁸	Burlington Road – Leeson Street, Dawson Street, O'Connell Bridge – Cabra, Ashtown, Navan Road – Clonee, Littlepace – Dunboyne Village	First departure: 07:00 from Burlington Road Every 20-30 minutes during peak hours Every 30-60 minutes off-peak Last departure: 23:30 from both ends	Saturday: 06:30 – 23:30, every 30-60 minutes Sunday: 08:00 – 23:30, every 60 minutes
70D ⁸⁹	DCU Helix – Ballymun Road, Cabra, Ashtown – Blanchardstown Village – Littlepace, Clonee – Dunboyne Village	Single daily departure from DCU Helix at 17:05 Arrival At Dunboyne Village at 18:14 No return service from Dunboyne to DCU on this route	No service

⁸⁶ Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, Transport Infrastructure Ireland (2021). Accessed: 4 September 2025.

⁸⁷ [Bus 105 Stops & Times in Dublin](#). Accessed 4 September 2025

⁸⁸ [70 \(Dunboyne - Burlington Rd\) Bus, route scheme and schedule, Dublin](#). Accessed 4 September 2025

⁸⁹ [Dublin Bus 70D bus - Dublin](#). Accessed 4 September 2025

270 ⁹⁰	Dunboyne Village – Clonee – Littlepace – Huntstown – Blanchardstown Shopping Centre	First departure: 06:00 from Dunboyne Every 60 minutes Last departure: 23:30 from Dunboyne	Saturday: Similar to weekday schedule, every 60 minutes Sunday: Reduced service, every 60 minutes
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Source: Various

13.5 Construction Phase Considerations

13.5.1 Construction Schedule and Programme

The construction of the Proposed Development will generate addition traffic within Walterstown and its environs. Construction is expected to commence in year 2027. The construction works will include site preparation works, construction of the main building and structures and site finishing works. It is envisaged that the civil works will take approximately 12 months to complete. Following this, electrical installation and commissioning will take place for approximately 18 months. This is subject to availability of required outages of the existing 110 kV overhead line from the electrical transmission system, operator, EirGrid and the time of year, weather conditions and the availability of specialised equipment. The outline construction schedule is shown in Table 13.5.

Table 13.5: Outline Construction Schedule

Phase	Activity	Approximate Timeline	Total
Civil Construction	Site Preparation	8 weeks	52 weeks
	Civil Construction	44 weeks	
Electrical Installation	Electrical Installation	52 weeks	78 weeks
	Electrical Commissioning	26 weeks	

Source: ESB

13.5.2 Working Hours

Construction activities will be undertaken during 07:00 – 19:00 Monday to Friday and 08:00 – 14:00 Saturday.

No construction works will take place outside these hours, unless such work:

- Is required under exceptional circumstances; or
- Is carried out with the prior written approval of MCC.

13.5.3 Construction Personnel

The total number of construction personnel on-site will vary during the construction of the Proposed Development but is expected to peak at 45.

It is conservatively assumed that the average vehicle occupancy for construction personnel travelling to/from the study area (i.e. to/from a home location) will be 1.25 persons. This will result in 36 additional vehicles using the surrounding road network on a daily basis during the peak of construction, equivalent to 72 vehicle movements per day.

⁹⁰ Go-Ahead Ireland 270 bus - Dublin. Accessed 4 September 2025

13.5.4 HGVs

In total approximately 2800 HGV vehicle movements are anticipated, to import site equipment, plant, materials, including stone & concrete during civil works, the majority of which will be front loaded in the early stage of the construction works. The above vehicle assumptions include the estimated volume of imported and exported materials.

It is anticipated that the peak daily number of HGVs required to facilitate construction activity will be 30, resulting in a maximum of 60 additional HGV movements on the study area road network.

13.5.5 Construction Vehicle Movements

Peak construction personnel movements (set out in Section 13.5.3) combined with the peak number of anticipated HGV movements (set out in Section 13.5.4) could generate a total of 132 additional vehicle movements per day during the peak of construction which is anticipated to be a duration of approximately two months.

13.5.6 Abnormal Loads

Vehicles transporting an abnormal load must adhere to the maximum weight, length and weight limits set down by Road Traffic (Construction and Use of Vehicles) Regulations 2003, S.I. 5 of 2003 and the maximum height limit set down in Road Traffic (Construction and Use of Vehicles) (Amendment) Regulations 2008, S.I.366 of 2008. If any of these thresholds are exceeded, then the load is considered abnormal.

It is understood that there will be a requirement for the movement of abnormal loads during the development. The precise load arrangements and delivery methods will not be known until the construction tender stage is completed. Accordingly, specific traffic management requirements and localised arrangements for the delivery of abnormal loads will be identified through the completion of an Abnormal Load Assessment; to be undertaken by the appointed Contractor(s) and agreed with in advance of construction with the appropriate reviewing authorities.

Where practical, abnormal loads will be transported, by specialist haulage contractors, overnight, and it is therefore, in conjunction with the low number of movements, probable that associated disruption to road network operation will be negligible.

13.5.7 Construction Traffic Effect

Based on the assumptions listed in this section, the peak period of construction (anticipated to be a duration of approximately two months) would result in an additional 132 vehicle movements on the study area road network.

Based on the AADT data outlined in Section 13.4.2, Table 13.6 summarises the total traffic volume, including additional movements generated during the peak construction period of the Proposed Development, with specific reference to HGV numbers. 2026 AADT data has been factored up to 2027 using Background Traffic Growth Forecast Estimation: Central Growth Factors, as established by the TII Project Appraisal Guidelines 2016⁹¹.

⁹¹ [PE-PAG-02017](#). Accessed 29th September 2025

Table 13.6: Construction Traffic Effect (Baseline Flows + Construction Traffic)

Road	2027 AADT [No. HGVs]	2027 AADT + Construction Trips [No. HGVs]	% Change [% Change HGVs]
R157 – north of M3 Parkway	15490 [824]	15622 [884]	<1% [7%]
R157 – southwest of L2228 Summerhill Road	9035 [492]	9166 [552]	1% [12%]

Source: Mott MacDonald

The addition of trips generated by the construction of the Proposed Development would constitute an increase of 1% on the R157. HGV traffic on the R157 would increase by up to 12%.

While no traffic flow data was available, at the time of writing, for Jarretstown Lane, the numbers of additional vehicle movements are considered low enough to be non-detrimental to the operation of this road.

In summary, it has been assessed that the 132 additional vehicle movement (during the peak construction period which is expected to be a duration of approximately two months) would not result in a significant effect on the local road network during the construction phase.

13.6 Operation and Maintenance Considerations

The Proposed Development will be monitored and operated remotely by a management team during the operation phase. It will be visited periodically by security and/or maintenance personnel for routine inspection.

Based on a conservative estimate, a maximum of three vehicles will access and depart the site weekly. The impact from these visits is considered to have a negligible effect on the local road network.

13.7 Mitigation and Monitoring Measures

13.7.1 Mitigation Measures

All construction phase Traffic and Transport effects will be temporary in nature and will cease upon completion of the works. These effects (none of which have been assessed to be 'significant') will nevertheless be mitigated through adoption of a regulated and approved construction TMP.

In line with established good practice, a development and location specific construction TMP has been developed for the purposes of this assessment and will be further developed as necessary, in consultation with MCC and the Gardaí, prior to construction commencement.

This will ensure that potential effects resulting from construction traffic are always kept to a minimum. This will include (but will not be limited to) such measures as:

- Details of wheel washing facilities on site to minimise the effect of dust and debris
- Details of temporary traffic signage to be installed to warn road and recreational route users to the presence of the works access and the associated likely presence of large or slow-moving construction traffic

Specific traffic management requirements and localised arrangements for the delivery of abnormal loads will be identified through the completion of an Abnormal Load Assessment; to be undertaken by the appointed Contractor(s) and agreed with in advance of construction with the appropriate reviewing authorities.

13.7.2 Monitoring Measures

The implementation and monitoring of the construction TMP will be the responsibility of the appointed Contractor.

The construction TMP, as a 'live document', will be reviewed on a regular basis by the appointed Contractor prior to and during the construction phase of the Proposed Development and will be developed accordingly within the parameters assessed in the PECR. The construction TMP will be subject to change during the Proposed Development's evolution which will confirm the efficacy and implementation of all relevant mitigation measures and commitments identified in the application documentation.

13.8 Residual Effects

There are 'no significant' residual traffic and transport impacts predicted during the construction and operation phases.

14 Material Assets and Waste Management

14.1 Introduction

This chapter considers the potential effects arising from the Proposed Development on Material Assets and Waste. The assessment is based on the development as described in Chapter 3.

Traffic and transport are discussed in Chapter 13 of this PECR. As outlined in Chapter 13 (Traffic and Transport), traffic associated with the operation and maintenance of the Proposed Development is expected to be limited and infrequent, with an estimated three vehicles accessing and departing the site per week.

A construction phase Resource and Waste Management Plan (RWMP) is included as Appendix A of the Construction Environment Management Plan (CEMP) submitted as part of this planning application.

14.2 Policy and Guidance

The Chapter 2 Planning Policy and Land Use Context chapter of this report describes the wider policy and legislative context applicable to the Proposed Development. Policies and guidance documents of potential relevance to the material assets and waste management are set out in this section.

14.2.1 Policies

This chapter has been prepared having regard to the following policies.

- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (The Waste Framework Directive)
- Environmental Protection Agency Act 1992 (as amended)
- Protection of the Environment Act 2003 (as amended)
- Environmental (Miscellaneous Provisions) Acts 2011 and 2015
- Waste Management Act 1996 (as amended)
- Waste Management (Facility Permit and Registration) Regulations 2007 (as amended)
- Waste Management (Collection) Regulations 2007 (as amended)
- European Communities (Waste Directive) Regulations 2011
- National Waste Management Plan for a Circular Economy 2024-2030 (Regional Waste Management Planning Offices, 2024)
- A Waste Action Plan for a Circular Economy 2020-2025 (Department of Communications, Climate Action and Environment, 2020)
- National Hazardous Waste Management Plan 2021-2027 (EPA, 2021)
- Meath County Development Plan 2021-2027 (MCDP) (Meath County Council, 2021)

14.2.2 Guidelines

This chapter has been prepared having regard to the following guidelines.

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022)
- Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects (EPA, 2021)

- Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-hazardous (EPA, 2019)
- Design Out Waste: A Design Team Guide to Waste Reduction in Construction and Demolition Projects (EPA, 2015)
- IEMA guide to: Materials and Waste in Environmental Impact Assessment (ISEP (former name IEMA), 2020)⁹²

14.3 Methodology

14.3.1 Approach to Data Collection

The following information and data sources (Table 14.1) have been considered during the production of this PECR chapter.

Table 14.1: Data Sources used to inform the Material Assets and Waste Management

Data Source	Date Published	Data Contents
Environmental Protection Agency	2025	Licensed waste facilities
	2025	Construction & Demolition Waste Statistics for Ireland
	2025	EPA Licence Portal

14.3.2 Approach to Assessment of Effects

The EU Waste Framework Directive (Directive 2008/98/EC) sets the basic concepts and definitions related to waste management, such as definitions of waste, recycling and recovery. It also includes definitions for when waste ceases to be waste and becomes a secondary raw material (end-of-waste criteria) and how to distinguish between waste and by-product. The Directive was enacted in Ireland under the European Union (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011).

The revised legislative framework on waste (Directive 2018/851) entered into force in July 2018 and sets clear targets for reduction of waste and establishes an ambitious and credible long-term path for waste prevention and waste treatment. This Directive has been transposed into Irish legislation through the European Union (Waste Directive) Regulations 2020 (S.I. No. 323 of 2020).

In Ireland, the primary waste legislation is the Waste Management Act 1996, as amended, and Section 32 of the Act places a general obligation on the holder of waste to comply with legislation and ensure all wastes are managed within the requirements of the Act.

The primary legislative instruments that govern waste management in Ireland relevant to the Proposed Development are as follows:

- Waste Management Act 1996 (S.I. No. 10 of 1996), as amended. Sub-ordinate legislation to this Act includes:
 - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended 2011 (S.I. No. 323 of 2011);
 - Waste Management (Collection Permit) Regulations S.I. No. 820 of 2007 as amended 2008 (S.I. No 87 of 2008);
 - Waste Management (Facility Permit and Registration) Regulations, S.I. No. 821 of 2007 as amended 2008 (S.I. No. 86 of 2008);

⁹² Hereafter “the ISEP Guidance 2020” [iema-materials-and-waste-in-eia-march-2020.pdf](#)

- Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004), 2010 and (S.I. No. 350 of 2010);
- Waste Management (Packaging) Regulations 2003 (S.I. No. 61 of 2003) as amended 2004 (S.I. No. 871 of 2004), 2006 (S.I. No. 308 of 2006) and 2007 (S.I. No. 798 of 2007);
- Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997);
- Waste Management (Landfill Levy) (Amendment) Regulations 2012 (S.I. No. 221 of 2012), as amended 2015 (S.I. No. 189 of 2015);
- European Communities (Waste Electrical and Electronic Equipment) Regulations 2011
- Waste Management (Registration of Brokers and Dealers) Regulations 2008 (S.I. 113 of 2008); and
- Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009), as amended 2015 (S.I. 190 of 2015).
- Protection of the Environment Act 2003 (S.I. No. 413 of 2003); and
- Litter Pollution Act 1997 (S.I. No. 12 of 1997).

A construction phase Resource and Waste Management Plan (RWMP) is included with the CEMP submitted as part of this planning application. The RWMP is prepared having regard to waste management guidance and principles as outlined in *Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects* (EPA, 2021) and *Design Out Waste: A design team guide to waste reduction in construction and demolition projects* (EPA, 2015). This RWMP will remain a 'live' document which will be implemented at a minimum. The RWMP can be provided to the Local Authority upon request.

The construction, operation and maintenance, and decommissioning of any infrastructure can result in environmental effects associated with the consumption and use of materials assets, and the management of waste that is generated. The assessment methodology is with regards to the requirements set out in the EPA Guidelines 2022 and the ISEP Guidance 2020.

The utility services included in this chapter were identified based on publicly available datasets and mapping. It is possible that some utility services located in proximity to the works may not have been identified, however the mitigation detailed and proposed as part of this PECR will be implemented when dealing with any such features.

According to the ISEP Guidance 2020, for waste generation, the assessment for the effect of magnitude, for the Proposed Development will be based on the 'Landfill Diversion' method as the guidance suggests this method is appropriate for smaller and less-complex developments and is likely to be utilised only for non-statutory EIA.

Table 14.2: ISEP Guidance for Magnitude of Impact for Material Assets Use and Waste Management

Significance	Description
No change	Material assets: no materials required Waste generation: ● based on landfill diversion in construction and/or operation, a development is expected to achieve 100% landfill diversion.
Negligible	Material assets: no individual material type is equal to or greater than 1% by volume of the regional or where justified national baseline availability Waste generation: ● based on landfill diversion in construction and/or operation, a development is expected to achieve 90-99% landfill diversion.
Minor	Material assets: ● one or more materials is between 1-5% by volume of the regional or where justified national baseline availability; and/or

	- the development has the potential to adversely and substantially* impact access to one or more allocated mineral site (in their entirety), placing their future use at risk. Waste generation: - based on landfill diversion in construction and/or operation, a development is expected to achieve 60-89% landfill diversion.
Moderate	Material assets: - one or more materials is between 6-10% by volume of the regional or where justified national baseline availability; and/or - the allocated mineral site is substantially* sterilised by the development rendering it inaccessible for future use. Waste generation: - based on landfill diversion in construction and/or operation, a development is expected to achieve 30-59% landfill diversion.
Major	Material assets: - one or more materials is >10% by volume of the regional or where justified, national baseline availability; and/or - more than one allocated mineral site is substantially* sterilised by the development rendering it inaccessible for future use. Waste generation: - based on landfill diversion in construction and/or operation, a development is expected to achieve <30% landfill diversion.

Source: ISEP, 2020.

The assessment of effects on material assets and waste generation will encompass effects arising during construction and operation phases of the Proposed Development.

14.3.3 Study Area

The study area is based on the area of the works for the Proposed Development, within the application site boundary, as this constitutes the area within which construction materials would be consumed (used, reused and recycled) and construction and operational waste would be generated.

The Proposed Development is located in the townland of Walterstown, within the administrative area of Meath County Council.

14.4 Receiving Environment

14.4.1 Built Assets and Utilities

The following types of utilities are reviewed:

- Power and electrical supply lines
- Foul drainage infrastructure
- Water supply

A review of ESB datasets identified the southern boundary of the site is crossed by two OHL as shown in the table below.

Table 14.3: ESB Infrastructure

ESB Infrastructure	Location
Medium Voltage Overhead Line	Existing Medium Voltage OHL transverses the southern boundary of the site.
High Voltage Overhead Line	Existing 110 kV OHL to the south of the application site boundary

The existing service includes the 110 kV OHL and Medium Voltage OHL which crosses the site to its southwestern boundary as shown in planning drawing 229101684-MMD-00-XX-DR-C-0120.

The existing 110 kV OHL will be diverted to the new substation by diverting the circuit through the proposed two new LCIMs.

A new potable water supply is required for proposed welfare facilities (toilet and hand wash basin) within the GIS building. The potable water demand will be relatively low as the proposed substation will normally be unmanned and operated remotely.

Potable water supply for the GIS building is proposed to be sourced via a new connection from the existing public watermain located within Jarretstown Lane, subject to connection request application to Uisce Éireann (UE).

The water supply network follows the existing road network to the north of the proposed site. The proposed site does not cross any UE foul water lines.

There are no Gas Networks Ireland (GNI) assets within the study area.

14.4.2 Regional Material Assets

Aggregate materials (such as sand, gravel, sandstone and crushed rock) are the main raw material assets used to make construction products. Three main sources to obtain these aggregates are:

- Land-won (often referred to as natural or primary aggregates) – these are extracted directly from the ground in quarries or pits.
- Marine-dredged – these comprise of sand and gravel dredged from the sea floor.
- Secondary/recycled – secondary aggregates are a by-product from mineral operations or industrial processes, and recycled aggregates are materials produced by treatment of construction and demolition waste.

14.4.3 Regional Waste Management

EPA records the composition of C&D waste arising in Ireland. The EPA waste data release⁹³ published in August 2025 shows that the quantity of C&D waste generated and collected in Ireland increased to nine million tonnes in 2023 from 8.3 million tonnes in 2022. The C&D waste comprised the following proportions:

- Soil, stones and dredging spoil – 81%
- Concrete, brick, tile and gypsum – 7%
- Metal – 2%
- Mixed C&D waste – 7%
- Bituminous mixtures – 1.0%
- Segregated wood, glass and plastic – 1%

The EPA notes that most of the C&D waste finally treated in Ireland was reused as backfill (75%) in 2023, while 12% went for disposal and only 11% of all C&D waste was recycled. The dominance of backfilling as a treatment operation reflects the large proportion of soil and stones in C&D waste.⁹³

⁹³ Construction & Demolition Waste Statistics for Ireland (Environmental Protection Agency, August 2025)
(accessed September 2025)

The Waste Framework Directive requires each Member State of the European Union to achieve 70% material recovery of non-hazardous C&D waste (excluding soil and stones) by 2020. This target is confirmed to be applicable to Ireland through the Waste Action Plan for a Circular Economy. The EPA determined that Ireland achieved 73% material recovery of such waste in 2023 surpassing the 70% target.⁹³

The National Waste Management Plan for a Circular Economy states that in 2021 there were total 474 soil recovery facilities in Ireland (16 licenced, 230 permitted, 228 registered). The total remaining available treatment capacity for soil waste from 2022 was calculated to be approximately 32.8Mt.⁹⁴

There are four facilities in Ireland accepting inert waste. There is only one landfill in Ireland that currently accepts non-hazardous soil and stone, Corranure Landfill (W0077-04), located in County Cavan.⁹⁴

Information on the permitted capacity of waste management facilities has been used in the assessment, based on current publicly available information at the time of submission. However, it should be noted that the capacity information obtained from the EPA for the sites and regions identified does not necessarily mean that the capacity detailed would be available for use by the Proposed Development.

C&D waste is recovered at EPA licensed landfills in County Meath and those relevant to the study area are listed in Table 14.3.

Table 14.4: EPA Waste Management Licensed Facilities in County Meath

Active Licence No.	Facility Type	Name of the Facility	County	Location
W0010-02	Landfill	Basketstown Landfill Facility	Co. Meath	Basketstown, Summerhill, Meath.
W0028-03	Landfill	Ballydonagh Landfill	Co. Meath	Ballydonagh, Dublin Road, Athlone, Westmeath.
W0071-02	Landfill	Marlinstown Landfill	Co. Meath	Marlinstown Bog, Mullingar, Westmeath.
W0131-02	Waste Transfer Station	Bord Na Móna Recycling Limited	Co. Meath	Clonmagaddan, Proudstown, Navan, Meath.
W0140-05	Integrated Waste Management Facility	Starrus Eco Holdings Limited	Co. Meath	Rathdrinagh, Beauparc, Navan, Meath.
W0146-04	Landfill	Knockharley Landfill Limited	Co. Meath	Knockharley, Navan, (Includes Townlands of Tuiterath & Flemingstown), Meath.
W0151-01	Landfill	Murphy Concrete Manufacturing Limited	Co. Meath	Sarsfieldtown, Gormanstown, Meath.
W0167-04	Integrated Waste Management Facility	Indaver Ireland Limited	Co. Meath	Carranstown, Duleek, Meath, Meath.
W0195-02	Composting/Aerobic Digestion	Padraig Thornton Waste Disposal Limited	Co. Meath	Ballynalurgan, Kilmainhamwood, Kells, Meath.

⁹⁴ National Waste Management Plan for a Circular Economy - Volume I: Current Situation and Challenges (Regional Waste Management Planning Offices, 2024) (accessed September 2025)

Active Licence No.	Facility Type	Name of the Facility	County	Location
W0197-02	Waste Transfer Station	Mulleady's Limited	Co. Meath	Units 16-17 Mullingar Business Park, Mullingar, Westmeath.
W0206-01	Waste Transfer Station and Waste Reclamation	Padraig Thornton Waste Disposal Limited	Co. Meath	Dunboyne Industrial Estate, Dunboyne, Meath.
W0262-01	Soil Recovery Facility	Kiernan Sand & Gravel Limited	Co. Meath	Foxtown, Summerhill, Co. Meath, Meath.
W0265-01	Soil Recovery Facility	Clashford Recovery Facilities LTD	Co. Meath	Naul Townland, Naul, Meath.
W0278-01	Soil Recovery Facility	Roadstone Limited (Mullaghcrone Quarry)	Co. Meath	Mullaghcrone Quarry, Platin and Cruicerath Townlands, Donore, County Meath, Meath.
W0296-01	Materials Recovery Facility	Kilsaran Concrete Unlimited Company	Co. Meath	Tullykane, Kilmessan, Meath.

*Waste Licence now deemed Industrial Emissions Licence

Source: EPA Licence portal (2025)⁹⁵ accessed in September 2025

Landfill as the disposal method is considered the last resort for waste management. Currently there are three operational landfill sites in Ireland which accept C&D wastes. They are listed in Table 14.5.

Table 14.5: EPA Licensed Landfills

Active Licence No.	Facility Type	Name of the Facility	Location	Capacity of C&D waste for disposal/recovery (Maximum tonnes per annum)	Additional Notes
W0146-04	Landfill	Knockharley Landfill Limited	Knockharley Landfill, Knockharley, Navan, (Includes Townlands of Tuiterrath & Flemingstown), Meath.	285,000 ⁹⁶	Capacity for 25,000 tonnes per annum of C&D waste for recovery ⁹⁷
W0165-02	Landfill	Ballynagran Residual Landfill Co. Wicklow	Ballymurtagh Landfill Facility, Ballymurtagh, Ballygahan Upper, Ballygahan Lower, Tinnahinch, Wicklow.	112,500 ^{98**}	Capacity of 28,000 tonnes per annum of C&D waste for recovery ⁹⁷

⁹⁵ EPA Licence Portal (Environmental Protection Agency, 2025) (accessed August 2025).

⁹⁶ Industrial Emission Licence – Knockharley Landfill Limited (Environmental Protection Agency, 2025) (accessed September 2025)

⁹⁷ Waste Infrastructure in Ireland (Environmental Protection Agency, 2022) (accessed September 2025)

⁹⁸ Environmental Protection Agency (2013) Industrial Emission Licence – Ballynagran Residual Landfill [online]. Available at: <https://epawebapp.epa.ie/terminalfour/ipcc/ipcc-view.jsp?regno=W0165-02>. Accessed September 2025.

Active Licence No.	Facility Type	Name of the Facility	Location	Capacity of C&D waste for disposal/recovery (Maximum tonnes per annum)	Additional Notes
W0201-03	Landfill	Drehid Waste Management Facility Co. Kildare	Killinagh Upper, Naas, Kildare.	109,000 ^{99**}	As per the granted planning application for extension of the waste facility (PA Reference: PA09.317292) ^{94,99}

Source: EPA 2023⁹⁶, 2022⁹⁷, 2013⁹⁸ and ABP 2024^{94,99}

Note: *Waste Licence now deemed Industrial Emissions Licence

**Figure does not include household waste capacity

It is noted that any future changes to the permitted capacity of the landfill sites are uncertain, as there is potential for change to permitted capacities, opening of additional waste management facilities and closure of existing facilities. However, it is not currently possible to predict the timeframes for when these waste management facilities will be available/unavailable and, therefore, how many of these sites would be available to accommodate waste arisings from the Proposed Development.

14.4.4 Estimate of Quantities for Proposed Development

The Proposed Development is expected to require approximately 8,000m³ stone fill and result in approximately 2,000m³ of excavation material.

14.5 Construction Phase Considerations

14.5.1 Built Assets and Utilities

Temporary welfare facilities will be provided at compounds and any discharges will be connected to a sealed holding tank to be emptied and disposed of off-site by a licenced contractor to an approved licenced facility. Water will be tankered onto site as required. No effects are anticipated on water and foul water network in the area.

A temporary power supply will be provided in the construction compounds. As part of the proposed construction, the existing 110 kV OHL timber poleset will be dismantled/removed and the existing Dunfirth-Kinnegad-Rinawade 110 kV circuit will be connected to the new substation by diverting the circuit through two new LCIMs to the southern site boundary.

Therefore, there is potential for disruption to services during construction works, however these works will be localised and transient in nature.

All reasonable measures will be taken to avoid unplanned disruptions to any services during the proposed works. Service disruptions impacting the surrounding facilities will be kept to a minimum, only occurring where unavoidable.

14.5.2 Material Assets

Material assets required for the construction phase of the Proposed Development include raw materials such as aggregate and minerals from primary, secondary and recycled sources, and manufactured construction products.

⁹⁹ An Bord Pleanála Case reference: PA09.317292 (2024). Available at: <https://www.pleanala.ie/en-ie/case/317292>. Accessed September 2025.

It is anticipated that the Proposed Development will require small quantities of primary raw materials and larger quantities of manufactured construction products. Many material assets may originate off-site, purchased as construction products. However, some materials may arise on site, for example excavated soils and sub-strata, C&D waste (such as stones).

Some materials required for the Proposed Development are aggregate-based materials and steel. Aggregates materials are considered to be abundant and with high reserves across Ireland (Section 11.4.2).

Foundations will be concrete with ground levels made up with aggregates.

Transformers will also be transported to site as complete functional units ready for installation and connection on site.

Where possible substation will be constructed using prefabricated building units to minimise on-site works. The 110 kV GIS building will comprise an industrial form, with a portalised structural steel frame clad with lightweight insulated cladding to the walls and roof.

The impacts on material assets due to construction of Proposed Development are anticipated to be negligible.

14.5.3 Waste Management

The principal waste stream produced during construction will be construction and demolition waste (C&D waste), associated with the construction of the proposed substation and dismantling of the existing 110 kV timber poleset.

As discussed in Section 3.4.3.6, a cut & fill analysis estimates a quantity of approximately 2,000m³ of excavation material and a quantity of 8,000m³ of stone fill. Subject to the suitability of the material, it will be used onsite for landscaping.

The construction phase will generate the following waste streams:

- Concrete
- Wood / timber (Intermediate Poleset, vegetation clearance)
- Metal
- Electrical and electronic components
- Paper (e.g. canteen / office waste, packaging)
- Plastics and packaging (e.g. canteen / office waste, packaging)
- PVC (e.g. drainage pipes)
- Construction and demolition waste (e.g. soil and stone, bricks, during site enabling works)
- Other waste (e.g. soiled paper, cardboard, plastics, food waste).

Timber waste will be segregated in order to prevent contamination by other wastes and will be stored so as to limit the potential for this material to rot. All metal waste will be stored in a dedicated container within a secure part of the construction compound due to the significant scrap value. Regular collections from construction compound to the waste recycling facility will limit the potential for unauthorised entry and theft.

All timber and metal waste will be transported offsite for recycling at a waste disposal / recovery facility in accordance with the Waste Management Act 1996 (as amended) and all associated regulations.

Waste packaging (paper / cardboard / plastic / general waste) will be stored in dedicated containers in the waste storage area within the construction compound / laydown area for collection. It will be transported offsite for subsequent offsite separation and disposal at a waste

disposal / recovery facility in accordance with the Waste Management Act 1996 (as amended) and all associated regulations.

Any soil and stone generated as a result of excavation works will be reused to infill where appropriate, ensuring that any residual soil waste is kept to a minimum. Any surplus soil will be characterised and removed offsite in accordance with the Waste Management Act 1996 (as amended) and all associated regulations.

Following segregation, any residual mixed C&D waste will be collected in containers specifically for mixed C&D waste. This will be transported offsite for subsequent offsite separation and recycled at a waste disposal / recovery facility in accordance with the Waste Management Act 1996 (as amended) and all associated regulations.

General food and packaging waste generated from staff canteens / offices at the construction compound / laydown area will be stored in dedicated containers provided at each canteen within each site compound to permit easy segregation of these wastes. Brown bins will be provided for compostable food waste, green bins will be provided for dry recyclables (packaging, hard plastic, paper, cardboard, tetrapak etc.) and black bins will be provided for any residual waste.

Any residual waste comprising non-recycling waste such as soiled paper / cardboard / plastics will be stored separately to all other waste streams in order to prevent cross contamination.

With regards to Table 14.2, the magnitude of impact for waste generation will be minor as the Contractor will achieve an overall recycling rate of 70% of construction and demolition waste in accordance with EU targets under the Waste Framework Directive (2008/98/EC).

14.6 Operation and Maintenance Phase Considerations

During operations, the Proposed Development will be operated 24-hours per day, seven days per week. The substation will be mostly unmanned. For operation and maintenance purposes, it is anticipated that a two-person crew will be visiting the substation three days in a week, at a maximum.

During operations, the Proposed Development will be monitored and operated remotely and will be visited regularly by security and/or maintenance personnel.

Once the substation is operational, domestic type wastewater will be produced by the onsite welfare facilities (toilet, wash hand basin and mess room sink) within the GIS building.

During operation phase, there will be negligible amounts of waste generated during maintenance.

14.7 Mitigation and Monitoring Measures

14.7.1 Built Assets and Utilities

Works in vicinity of electrical services and water/foul water network will be carried out in consultation with ESB Networks and Uisce Éireann, respectively, to ensure the risk of impacts on existing users is minimised.

14.7.2 Waste Management

The following mitigation measures will be implemented for waste generated during construction works.

- The portable chemical toilets will be provided for the duration of construction works. The wastewater will be collected in a proposed holding tank and all waste material will be

removed from site and disposed of to an appropriately licensed facility in accordance with the Waste Management Act, 1996 as amended and associated regulations.

- Excavated material from ground preparation works will be either reused onsite if suitable or otherwise disposed of offsite at a suitably licenced facility.
- Any excess spoil material will be removed from site by a dumper or suitable lorry and will be treated if required before being disposed of appropriately in a licensed facility.
- All waste oil (vehicle fuel), empty oil containers and other hazardous wastes will be disposed of in conjunction with the requirements of the Waste Management Acts 1996, as amended, and associated regulations.
- The appointed Contractor will implement the construction phase RWMP included in the CEMP. The RWMP and the CEMP will remain a 'live' document which will be reviewed regularly and revised as necessary. The RWMP can be provided to the Local Authority upon request.
- Waste will be managed in accordance with the Waste Management Hierarchy and *Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities* (EPA, 2020) and the Waste Management Act 1996, as amended and associated regulations. Further detail on waste management is provided in the RWMP.
- Wastes sent offsite for recovery or disposal will only be conveyed by an authorised waste contractor and transported from the Proposed Development site to an authorised site of recovery/disposal in a manner which will not adversely affect the environment.
- The Contractor will be obliged to aim for an overall recycling rate of 70% of construction and demolition waste, in accordance with EU targets under the Waste Framework Directive (2008/98/EC).
- All employees will be made aware of their obligations under the CEMP. The CEMP will be available for inspection at all reasonable times by the Local Authority.

The review indicated no developments that could potentially result in cumulative effects in-combination with the Proposed Development due to the location, scale, nature and characteristics of granted/approved developments in the area.

14.8 Residual Effects

No likely significant residual impacts are anticipated.

15 Summary Conclusion

In conclusion, it is demonstrated Proposed Development fully accords with the overall policy context and hierarchy, as set out in the relevant planning policy documents reviewed and highlighted, and is in full compliance with the existing land use context of the application site.

Having regard to the following:

- The proposed substation site is located underneath the route of an existing overhead line within a rural area. As such, it minimises the impact to surrounding nearby land uses, whilst providing optimal access and connection to existing transmission/ distribution assets.
- The need for the Proposed Development arises from a lack of capacity at existing transmission substations and circuits to supply the increased demand that ESBN have forecasted across Ireland; as such, the proposed substation is designed to meet specific load, voltage and power flow requirements, supported by robust power system studies and sound engineering design.
- The proposed substation will enhance the reliability and capacity of power supply for the area, supporting the integration of renewable energy sources and the transition to a lower-carbon electricity grid, whilst also supporting economic activity, growth and development.
- The proposed substation design includes measures to mitigate environmental/ecological impact. The proposed biodiversity enhancement measures will increase the extent of woodland habitat in the local area and with grassland management will create a habitat of greater ecological value than the baseline which is intensively managed farmland.
- The Proposed Development design includes embedded mitigation measures to reduce the impact on the environment. The PECR presents information on environmental topics and further mitigation and monitoring measures are proposed, where required.
- The Proposed Development accords with national, regional, and local policy and objectives requirements.
- The Proposed Development adheres to and is compliant with relevant policies and objectives as identified in the Meath County Development Plan.
- The Proposed Development falls within the definition of “utility” which is a class of development which is “permitted in principle” under the ‘RA-Rural Areas’ land use zoning objective; accordingly, the Proposed Development is consistent and compatible with the ‘Rural’ land use zoning on the site.

The Proposed Development is, accordingly, considered to be in accordance with the proper planning and sustainable development of the area.

15.1 Summary of Environmental Commitments

Table 15.1 includes a summary of mitigation and monitoring measures.

Table 15.1: Summary of Environmental Commitments

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
Chapter 4 Population and Human Health				
4.1	Section 4.7	Construction	A Construction Environmental Management Plan (CEMP) has been prepared and will be implemented during the construction phase. The CEMP will remain a 'live' document which will be reviewed regularly and revised as necessary in consultation and agreement with the local authority to ensure that the measures implemented are effective.	Contractor
4.2	Section 4.7	Construction	ESB will appoint a designated point of contact to deal with community queries and complaints during the construction period.	ESB
4.3	Section 4.7	Construction	Monitoring Measures: At all times, the mitigation measures will be strictly monitored and assessed by the EnCoW. Site inspections will be carried out and an inspection log will be made available to the local authority when asked.	EnCoW
Chapter 5 Air Quality				
5.1	Section 5.6	Construction	Best practice mitigation measures from the IAQM ¹⁰⁰ guidance are presented below, in line with 'Medium' risks and will be incorporated into the Proposed Development's CEMP. ● Communication and Site Management – Develop and implement a stakeholder communications plan before work commences on site. – Display the name and contact details of person(s) accountable for air quality and dust issues on the application site boundary. This will be the Environmental Manager. – Display the head or regional office contact information. – Develop and implement a dust management plan (DMP), which will include measures to control other emissions. – Record all dust and air quality complaints, identify causes and take appropriate measures to reduce emissions in a timely manner and record the measures taken. – Make a complaint log available to the planning authority, when requested. – Record any exceptional incidents that cause dust and or air emissions, either on or off site, and the action taken to resolve the situation in the log book. ● Monitoring – Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, and record inspection results. This will include regular dust	Contractor

¹⁰⁰ Institute of Air Quality Management (January 2024 (Version 2.2)). 'Guidance on the assessment of dust from demolition and construction.'

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			soiling checks of surfaces such as street furniture, cars and windowsills within 100m of the application site boundary, with actions taken to reduce dust further if necessary. – Carry out regular site inspections, record inspection results and make an inspection log available to the planning authority, when requested. – Increase frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. ● Preparing and maintaining the site – Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible. – Erect solid screens or barriers around dusty activities or the application site boundary that are at least as high as any stockpiles on site. – Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period – Avoid site runoff of water or mud. – Keep site fencing and barriers 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. – Cover, seed or fence stockpiles to prevent wind whipping. ● Operations vehicles / machinery and sustainable travel: – 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 a maximum-speed-limit of 15mph (24k/hr) on surfaced and 10mph (16km/hr) on unsurfaced haul roads and work areas ● Operations – Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction. – Ensure an adequate water supply on the site for effective dust/ particulate matter suppression/ mitigation using non-potable water, where possible and appropriate. – 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 wherever appropriate.	

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			– Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. ● Waste Management – No bonfires and burning of waste materials. Measures specific to earthworks – Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. – Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. – Only remove the cover in small areas during work and not all at once. ● Measures specific to construction – 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, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. ● Measures specific to trackout – Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. – Avoid dry sweeping of large areas. – Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. – Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. – Record all inspections of haul routes and any subsequent action in a site log book. – Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. – Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). – Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. – Access gates to be located at least 10m from receptors where possible.	
5.2	Section 5.6	Construction	At all times, these mitigation measures will be strictly monitored and assessed by the Environmental Manager. Site inspections will be carried out, and an inspection log will be made available to the local authority on request.	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
Chapter 6 Climate				
6.1	Section 6.8	Construction	The following measures to reduce carbon emissions during design and construction are proposed which are also articulated within the Construction Environmental Management Plan ((CEMP), submitted as part of this planning application): ● Design: – Use low-carbon materials where practicable such as low carbon concrete and/or steel with high recycled content where structurally appropriate; and – Consider maintenance processes within the design, for example choosing materials with longer durability or reduced maintenance requirements. ● Construction: – Use of renewable electricity where practical, such as solar-power, for construction lighting or construction cabins; – Minimise construction waste and set targets to divert waste from landfill; – Use of vehicles and plant with low exhaust emissions; – Substitute fuels for plant and equipment using electricity or low-carbon fuels where possible (for example use of alternative fuels such as Hydrotreated Vegetable Oil (HVO) for construction equipment); – Implement regular maintenance of construction equipment to ensure it is running efficiently; – Plant and equipment to be monitored (e.g. through telemetry) to ensure they are not left running unnecessarily; – Optimising transport of materials to site e.g. choosing local suppliers or more sustainable transport options; – Engaging the supply chain to reduce the number of vehicle movements relating to site material; – Minimise transport and travel demand of staff during construction by having a travel management plan for site personnel to encourage car-sharing, active travel, use of buses, and prioritise electric vehicles; and – Use of more efficient construction cabins (with insulation, renewable energy generation, low-energy lighting etc.).	Contractor / ESB
6.2	Section 6.8	Operation and Maintenance	The following measures to reduce carbon emissions during operation are proposed which: ● Incorporate energy efficiency into the operation of the Proposed Development (using motion-activated low-energy lighting, building management systems where appropriate).	ESB
Chapter 7 Noise and Vibration				

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
7.1	Section 7.7	Construction	The following specific mitigation measures will be implemented during the construction phase: ● phasing of the construction works to reduce the impact due to simultaneous activities ● use of quieter equipment and enhanced noise reduction kit (e.g. exhaust silencers) ● use of a temporary acoustic barrier (2.4m height) during site preparation to provide screening of activities affecting NSL1 and NSL2. The barrier material will have a mass per unit area exceeding 7kg/m² in accordance with the recommendations of BS 5228 Part 1:2009+A1:2014 (for example, plywood panels with a minimum thickness of 13mm). ESB will appoint a designated point of contact to deal with community queries and complaints during the construction period.	Contractor / ESB
7.2	Section 7.7	Construction	Additionally, noise and vibration will be minimised by the following. ● Construction works will reduce after 12:00 on a Saturday to avoid the sensitivity of the afternoon period ● Due to the short distance between site entrance area and the NSL1 and NSL2 it is important to engage with the residents before site preparation, even if this phase is very short (considering it is programmed over eight weeks for the entire site)	Contractor
7.3	Section 7.7	Construction	The CEMP will be implemented during the construction phase to minimise any construction noise and vibration impacts and in consultation with local councils. The Contractor is obliged to comply with Local Authority controls on noise and vibration during construction. This will include (but will not be limited to): ● setting limits for the control of noise and vibration from construction activities ● the provision of mitigation measures required whilst adopting best practicable means ● noise or vibration monitoring where disturbance is reported as required.	
7.4	Section 7.7	Construction	A comprehensive noise and vibration monitoring protocol will also be implemented. As part of the CEMP, the Contractor will also develop and implement a stakeholder communications plan.	Contractor
7.5	Section 7.8	Operation and Maintenance	Complaints from local resident will be investigated, corrective action taken (if need be) and logged accordingly.	Contractor / ESB
Chapter 8 Biodiversity				
8.1	Section 8.7	Construction	The following mitigation measures will be implemented prior to commencement and throughout the duration of the proposed works. ● An Environmental Clerk of Works (EnCoW) will be appointed prior to commencement of works to ensure adherence to the outlined mitigation.	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			- This will include monitoring and auditing the works and Contractor programmes and works method statements, to ensure mitigation is correctly implemented and impacts to IEFs are minimised and avoided where practical. - The construction programmes for projects in the vicinity of the Proposed Development will be reviewed and considered regarding the final construction programme for the project. This is to ensure temporary disturbance is minimised to biodiversity and appropriate water pollution prevention measures to protect off site water courses.	
8.2	Section 8.7	Construction	Pre-Construction Confirmatory Surveys In advance of enabling works, the Contractor will commission pre-construction confirmatory surveys of IEFs outlined in the PECR. These surveys will update the findings of the surveys completed in July 2025. Surveys will specifically confirm updated distribution of, and inform any revisions to proposed mitigation for: - Badger setts within the Zol of the Proposed Development. - Frog spawn within the drainage ditches in the Zol of the Proposed Development if construction works take place during breeding season between February and end of July. Confirmatory badger surveys will be carried out having regard to <i>Surveying Badgers</i> (Harris et al.1989) and record signs of badgers including tracks, hair, latrines and setts.	Contractor
8.3	Section 8.7	Construction	Habitat Removal of c. 27m (54m²) of hedgerow habitat will be monitored by the site EnCoW to ensure adjacent areas of hedgerow habitat are demarcated and avoided. Chapter 12 includes a proposal for extensive replanting (landscaping) with native woodland species. An area of approximately 5000m² (0.5Ha) will be planted with a native woodland mix of tree species. This replanting greatly exceeds woodland (hedgerow) loss (approximately 54m²) due to impacts from the Proposed Development. In addition to woodland planting an extensive area of grassland will be set out within the site during the final construction phase, refer to commitment reference 8.11.	Contractor
8.4	Section 8.7	Construction	Invasive species Prior to works commencing a full confirmatory invasive species survey will be carried out by an ecologist, appointed by the Contractor, in accordance with Guidance of Transport Infrastructure Ireland¹⁰¹. All other surveys will be carried out having regard to guidance of NRA (2009). The pre-construction invasive species surveys will be carried out within the works	Contractor

¹⁰¹ TII (2020) The Management of Invasive Alien Plant Species on National Roads – Technical Guidance. Available online: <https://cdn.tii.ie/publications/GE-ENV-01105-01.pdf> [Accessed 11 September 2025]

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			areas, including compound locations and laydown areas, and along proposed access tracks to identify the presence of all invasive species within and adjacent to works areas. Any additional findings of this invasive species survey will be incorporated into the final CEMP for the works. The measures relating to the Invasive Species will be identified prior to any works commencing. These measures will be regularly reviewed and updated throughout the works to include for any additional invasive species encountered. An Invasive Species Management Plan in appropriate as a precautionary measure. This will set out site-specific and species-specific measures to manage invasive species for example if new invasives have established since baseline surveys. It will incorporate the following measures as a minimum: ● All machinery will be steam-cleaned prior to entering site ● Any stands of invasive species that are recorded within the site will be clearly marked out as restricted areas. No works will be carried out within the exclusion zones unless fully supervised by the EnCoW. ● The EnCoW will carry out a toolbox talk for all construction personnel which will provide information on how to identify and manage invasive species. ● A Check, Clean, Dry protocol will be undertaken with all equipment, machinery and vehicles entering and leaving the application site boundary. ● Any fill that is required will be from a licensed facility identified by the Contractor	
8.5	Section 8.7	Construction	Badgers Prior to any works commencing, a pre-construction badger survey will be carried out. Surveys will be conducted having regard to <i>Surveying Badgers</i> (Harris et al.1989) and record signs of badgers, including tracks, hair, latrines and setts. The extent of survey area will be defined as 150m beyond all works areas within suitable habitat as set out in <i>Guidelines for the Treatment of Badgers during the Construction of National Road Schemes</i> (NRA, 2006) to determine if there has been any change in badger and sett activity or expansion to the current sett. A description of setts, i.e., main sett, annex sett, or outlier sett will be provided by an ecologist, appointed by the Contractor, along with the level of activity at each. This will allow for an understanding of the importance of setts in the wider context of the local badger population. As per the <i>Guidelines for the Treatment of Badgers during the Construction of National Road Schemes</i>, where setts have been confirmed, no heavy machinery will be used within 30m. Lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance and light work, such as digging by hand or scrub clearance will not take place within 10m of sett entrances. Unless otherwise agreed in writing with the competent authority, during the breeding season (December to June inclusive), none of the above works will be undertaken within 50m of active	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			setts, neither will blasting or pile driving within 150m of active setts. An assumption that a sett is active will apply unless proven otherwise during the course of investigation. All identified exclusion zones, as outlined above, will be clearly marked out on site and communicated to all site staff prior to works commencing. Where works may interfere with a badger sett directly, exclusion will take place as per NRA guidelines. During the construction phase management and protection measures should also include: ● No excavations are to be left uncovered or without a means of egress (a sloped plank for example) overnight, as badgers may fall in or enter in search of food and become trapped ● No buildings or storage units are to be left open overnight, as badgers may enter and become trapped ● No poisonous or potentially harmful substances or materials are to be left unsecured overnight ● No vehicles or machinery are to be used installing exclusion fencing or gates If a badger is discovered or any activity suggesting badgers have been disturbed during construction, all work must cease immediately, and the EnCoW should be notified as soon as possible to detail how best to proceed.	
8.6	Section 8.7	Construction	Bats Temporary lighting may be required during the construction phase of the works. Any temporary lighting associated with the construction works will be placed strategically by the Contractor following consultation with the ecologist appointed by the contractor such that illumination beyond the works area is controlled and kept to a minimum. Lighting will be cowed and directional, to reduce significant light splay. Lighting will be directed away from potential roosts and foraging habitats such as hedgerows and watercourses.	Contractor
8.7	Section 8.7	Construction	Breeding Birds The removal of vegetation which may be used as nesting sites by breeding birds, will be cleared where possible outside of the birds nesting season (1st March to 31st August inclusive). Where vegetation clearance is proposed within the nesting season, an ecologist appointed by the contractor will conduct pre-construction surveys to assess risk of disturbance to nesting birds to inform vegetation clearance activity. In the event where pre-construction surveys confirm or presume nesting birds are present, an exclusion zone will be established around the nesting bird (to include the risk of abandonment due to indirect disturbance), and no vegetation clearance may proceed until young have fledged, or nesting has failed. Pre-construction	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			confirmatory surveys will be undertaken no more than 72 hours before clearance, after which repeat surveys will be required if vegetation has not been cleared.	
8.8	Section 8.7	Construction	Frogs Where construction works are proposed between the frog breeding season (1st February to 31st July inclusive), a site ecologist appointed by the contractor will conduct pre-construction surveys to check for frog spawn within drainage ditches before works commence. The site ecologist will monitor the presence of frog spawn and relocate frog spawn if present.	Contractor
8.9	Section 8.7	Construction	Watercourses (onsite and offsite) setback distance for works of at least 90m will be retained to the Oranstown Stream (EPA Code 09O10). Detail on water pollution controls during the construction and operation phase are outlined in commitment reference 9.1 to 9.9. Surface water management including attenuation pond to control runoff during operational phase are additionally outlined in Section 3.3.5 of the PECR to ensure water quality downstream is protected	Contractor
8.10	Section 8.7	Operation and Maintenance	No permanent lighting is proposed at the substation. Lighting will be automatic and triggered only when required for human access and health and safety requirements. Lighting will be cowed and directional, to reduce significant light splay. Lighting will be directed away from possible roost feature and foraging habitats (woodland) used by bats. Final lighting plans will be consistent with recommendations in Collins (2023) and reviewed by an ecologist.	Contractor / ESB
8.11	Section 8.7	Operation and Maintenance	In addition to woodland planting an extensive area of grassland will be set out within the site during the final construction phase. This grassland will be managed in a pollinator friendly manner consistent with recommendations in the All-Ireland Pollinator Plan. This will include minimal grass mowing to allow development of flowering native plant / grass species with cuttings to be removed from grassland areas. No wildflower seed mixes are proposed as they can do more harm than good.	Contractor / ESB
Chapter 9 Surface Water Resources and Flooding				
9.1	Section 9.7	Construction	The following mitigation measures will be implemented prior to commencement and throughout the duration of the proposed works. These measures are included in the CEMP, which will remain a 'live' document which will be reviewed regularly and revised as necessary in consultation and agreement with the Local Authority to ensure that the measures implemented are effective. ● An Environmental Clerk of Works (EnCoW) will be appointed prior to commencement of works. ● Works will not be carried out during extreme rainfall or high flows events. Met Éireann provides 5-day weather forecasts on its website (www.met.ie) and works will not take	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			place at least during yellow, amber, and red weather warnings as monitored by the onsite EnCoW. In the case of a warning of a flood event, plant and materials vulnerable to flooding in areas of the construction compound will be relocated to parts of the compound that are considered to be not at risk of flooding.	
9.2	Section 9.7	Construction	All pollution control measures will be designed, installed, and maintained in accordance with CIRIA guidance for '<i>Environmental Good Practice on Site</i>' (C741) and '<i>Control of water pollution from linear construction projects. Technical guidance</i>' (C648) to minimise impacts to the Oranstown Stream. The following will be implemented. - A Resource and Waste Management Plan will be developed to ensure that waste generated during the project will be managed in a way that ensures the relevant provisions of the Waste Management Act 1996 and associated amendments and regulations are met, particularly with regard to the use of appropriately permitted Waste Contractors and destinations for waste materials. - Sediment erosion and pollution control measures will be included in the CEMP and will be implemented for all construction works. This includes measures to manage soil and silt-laden water on site, accidental leaks/spills to ground and water quality monitoring to ensure compliance with environmental quality standards specified in the relevant legislation. The plan for erosion and sediment control will also specifically deal with the potential impacts of material deposition areas during the construction phase for Proposed Development. - All construction staff will be properly trained to respond to accidental discharge or leaks and appropriate spill management kits will be in place to allow rapid response on site. An Incident Response Plan will be in place detailing the procedures to be undertaken in the event of spillage of chemical, fuel or other hazardous substances or wastes, logging of non-compliance incidents and any such risks that could lead to a pollution incident at any point over the proposed working areas. - Prior to commencement of construction, the Contractor will prepare method statements for discharge of water from construction activities. ESB will apply for any permit licence agreements, if required, to permit the discharge of water during the construction phase. - Water from construction activities will not be directly discharged into Oranstown Stream. Any such water will be treated and it will be ensured that the respective water quality statutory limits are met as set under the relevant EU environmental objectives for surface water.	Contractor
9.3	Section 9.7	Construction	The following mitigation measures will be implemented prior to commencement and throughout the duration of the works:	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			● Temporary gravel road with terram underneath will be provided where higher traffic volumes are anticipated to minimise tracking. ● Tracking beside drainage ditches linked to the Oranstown Stream (approximately 90m west of proposed construction works at the closest point) will be avoided, to avoid damage to the bankside. ● A buffer zone of 10m will be maintained, between storage and working areas and drainage ditches potentially linked to the Oranstown Stream, taking account of the minimum working area required to facilitate the works. ● Oil or fuel stored within the construction site, will be kept in a bunded area, at least 10m from drainage ditches. Vehicle maintenance will not occur within 10m of drainage ditches. All machinery will be in good working order, free from any leakage of fuel, oil or hydraulic fluid ● The time period over which areas of digging are left open will be reduced insofar as is reasonably practicable. ● Re-instatement method statements will be subject to approval by the EnCoW. ● Concrete will be brought to site by covered truck. Wet concrete operations adjacent to watercourses will be avoided. ● The Contractor will ensure that all concrete truck wash watering / cleaning is undertaken offsite where possible and remote from drains and watercourses. ● To reduce the risk of contamination arising as a result of spills or leakages, measures including, but not limited to, the following will be employed. – All collected waste will be managed in accordance with the Waste Management Act 1996, and associated Regulations; – Fuels, chemicals, liquid and solid waste will be stored on impermeable surfaces; – Refuelling of plant, equipment and vehicles will be carried out on impermeable surfaces; – All tanks and drums will be bunded in accordance with established best practice guidelines; and – Spill kits will be provided and carried by all crews during underground cable installation works. ● Temporary works will be designed so as not to increase flood risk elsewhere from overland flow, by limiting excavated lengths and providing suitable drainage provision. ● Silt fences (to Hy-Tex Premium specification or similar) and silt traps will be installed prior to commencement of works and will be inspected daily to inform adaptive management as required. The locations of same will be determined by the EnCoW.	

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			- The Emergency Response Plan and environmental control and mitigation measures described in the CEMP will be agreed prior to construction with the Local Authority if requested by means of condition. - The temporary construction compound will be secured with hoarding/fencing around the compound perimeter as appropriate. - Temporary facilities will be provided at the construction compound including construction phase car parking and welfare facilities and temporary material storage areas as necessary. Any discharges from temporary welfare facilities will be connected to a sealed holding tank to be emptied and disposed of off-site by a licensed contractor to an approved licenced facility. - Storage of fuel and refuelling will be undertaken within bunded hardstanding areas. Water will be brought to site via tankers until a connection to the mains water supply is established.	
9.4	Section 9.7	Construction	Silt Control Measures - Silt control measures will be used to control silt generated from activities on site, and if dewatering is required, and prevent it gaining access to surface drainage which could convey silt to larger streams and watercourses including Oranstown Stream close to the site. - Silt control measures include silt traps which can be located in small drains where flow is small and silt fences where runoff from large areas needs to be controlled. - Silt fences must be installed in the working areas and not at the watercourse. - Access routes will be delineated such that an appropriate set back distance from watercourses is maintained. Where works are to be undertaken in vicinity of watercourses (including ditches), a 10m setback distance will be delineated by the EnCoW on site. - Where distances between the works and watercourse allow, a minimum setback distance of 10m from the watercourse will be maintained. - Where the site is constrained, the best available set back distance will be employed taking account of the minimum working area required to facilitate the works.	Contractor
9.5	Section 9.7	Construction	Silt Fences - Silt fences will be installed downslope of the area where silt is being generated on disturbed ground. - To be effective the silt fence must contain the area where silt is generated and must terminate on high ground (i.e. an elevated area not in the watercourse).	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			- Silt fences will be constructed using a permeable filter fabric (e.g. Hy Tex Terrastop Premium silt fence or similar) and not a mesh. - The base of the silt fence will be bedded at least 15-30cm into the ground at 2 metre intervals. - Once installed the silt fence will be inspected regularly, daily during the proposed works, weekly on completion of the works for at least one month, but more frequently after heavy rains. - Any failures in the integrity of the silt fence will be rectified immediately. - Two lines of silt curtain / fence will be installed, where considered necessary, by the EnCoW. - Any build-up of sediment along the fence boundary will be removed daily. - Silt fences will be maintained until vegetation on the disturbed ground has re-established. Re-instatement method statements will be subject to approval by the EnCoW. - The silt fencing must be left in place until the works are completed (which includes removal of any temporary ground treatment). - Silt fences will not be removed during heavy rainfall. - The silt fence will not be pulled from the ground but cutaway at ground level and posts removed. - A record of when it was installed, inspected and removed will be maintained.	
9.6	Section 9.7	Construction	Silt Traps The purpose of the trap is to reduce the level of solids in the slowly flowing water including drainage ditches on the site. The silt trap works by allowing a build-up of water behind it slowing flow and allowing solids to settle out. The following requirements will apply: - Silt traps will only be placed in drains downstream of working areas where the volume of water flow is expected to be low. - Silt traps will be made of terram or similar material, not mesh. - The trap will be staked into the banks of the drain / watercourse such that no water can flow around the sides. - The material will be bedded into the drain bed/watercourse to prevent water flowing beneath it. - The height of the trap will be lower than the bank heights. The upper edge will be fixed to a timber cross piece. This will allow water to overtop the silt trap and not burst through or around it.	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			- Inspections will be carried out daily; during the proposed works, weekly on completion of the works for at least one month, and after heavy rains, and monthly thereafter until bare areas have developed new growth. - Any build-up of solids will be carefully removed without removing any vegetation growing on the bottom. - In sensitive areas a series of silt traps will be placed in the drain. - The silt trap will not be pulled from the ground but cutaway at ground level and posts removed. - A record of when it was installed, inspected and removed will be maintained.	
9.7	Section 9.7	Operation and Maintenance	The proposed surface water drainage system will incorporate the following features to reduce the risk of pollution and improve the quality of surface water which will be discharged from the site: - The silt traps in the manholes will reduce the risk of silt buildup (blockage) in the surface water drains. - Emergency shut-off valve chambers located upstream and downstream of the attenuation basin to prevent discharge from the drainage network in an emergency event and during periodic maintenance. - The transformer and ASC areas will be bunded and fitted with an in-bund interceptor to prevent any oil entering the drainage system. - To prevent the silt-up in the proposed attenuation basin the surface water runoff is managed via source control. The proposed site drainage will have gentle slope that prevents soil erosion via heavy runoff.	
9.8	Section 9.7	Operation and Maintenance	To prevent risk of blockage, filter drains will be covered using a grate or screen to prevent waste (like leaves, twigs) or debris to enter the drains.	
9.9	Section 9.7	Construction and Operation and Maintenance	Throughout the works, regular visual checks for evidence of turbidity or floating oil in the watercourse adjacent to the proposed works area both upstream and downstream will take place.	Contractor / ESB
Chapter 10 Land, Soil, Geology and Hydrogeology				
10.1	Section 10.7	Construction	- All works will be undertaken in accordance with the CEMP. - Any contaminated soils, sediment or groundwater that is encountered will be managed in accordance with best practice guidelines (Environmental Protection Agency, 2013). Any contamination discovered during the construction will be assessed using a Contaminated Land Risk Assessment (CLRA). Where a significant risk to human health or controlled	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			waters is identified the contamination will be remediated on-site or excavated and disposed of as classified waste in accordance with the Waste Management Act, 1996, as amended, and all associated regulations. Contamination management will comply with all relevant legislation and be undertaken in consultation with the EPA and any other relevant authorities as outlined in the CEMP. ● Storage of contaminated material, if encountered on-site, will be avoided where possible. If storage on site is necessary, contaminated material will be strictly segregated into designated bunded areas where contaminants cannot leach into the underlying ground. Contaminated materials will be covered with impermeable sheeting to minimise the generation of leachate. ● Handling and stockpiling of soils will be undertaken in accordance with a Soil Management Plan that incorporates good practice guidance including, but not limited to, the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra 2009, 2009). ● Excavated soil material for reuse will be stored at least 15m from drains and watercourses. ● Refuelling will only occur in designated refuelling areas with sealed drainage systems and spillage control. ● The risk to construction and maintenance workers from dermal contact, inhalation, or ingestion of contaminated soil will be prevented by following standard good practice measures, including use of appropriate PPE and following good practice hygiene measures. ● Machinery will be managed to ensure that the number of trips is limited to the minimum required at each location. ● The proposed generator will be sealed and bunded so will not generate contaminated drainage/runoff. ● The transformers will be placed on bunded concrete plinths with a sealed drainage system to capture any leaks and spills from these units. Water collected in these bunds will be pumped via oil/water separator pumps (e.g. Entexol Bund-Sep or similar) and discharged to the attenuation pond directly (bypassing the filter drain system). ● The attenuation pond will be lined to limit infiltration of any contaminated water that enters the pond. ● An emergency shut-off valve chamber will be installed on all discharge pipes upstream of the attenuation pond and filter drain to allow discharge from the drainage network to be controlled in an emergency.	

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			- A penstock will be installed at the attenuation pond outlet headwall to prevent discharge of flows to the outfall in the event of an emergency event. - Protocols for dealing with fires, leaks and chemical spills will be included in the Emergency Incident Response Plan.	
10.2	Section 10.7	Construction	Monitoring Measures: Routine monitoring of equipment will be carried out to minimise the likelihood of leaks/spills occurring and ensure that any leaks are quickly detected and controlled.	Contractor
Chapter 11 Architecture, Archaeology and Cultural Heritage				
11.1	Section 11.7	Construction	The following mitigation will be implemented during pre-construction Ground Investigation (GI) works. Monitoring of Ground Investigation (GI) works will be performed under licence from the NMS. The GI works will take the form of Geobore S soil and rock boreholes, soil and rock boreholes, trial pits, soakaway infiltration tests, and ground profiling geophysics in the form of electrical resistance tomography and seismic refraction. Topsoil will be stripped as part of the work of the trial pits and will encompass individual areas 1 m x 2–3 m in plan.	GI Contractor
11.2	Section 11.7	Construction	To mitigate the impact of the construction of the proposed substation, the following mitigation strategy will be implemented during the construction phase of the development: - As part of the programme of advance archaeological works prior to construction of the proposed substation, a combination of advance archaeological geophysical survey and advance archaeological test trenching will be undertaken ahead of construction under license to the National Monuments Service Section of the Department of Housing, Local Government and Heritage by a suitably qualified archaeologist in areas not previously disturbed by services, roads or other modern construction, and where such works are practicably feasible. A detailed methodology will be agreed in advance with the National Monuments Service. - During construction, archaeological monitoring will be undertaken on groundworks associated with the proposed cable route and access road where such works are practicably feasible. This will be under license to the National Monuments Service Section of the Department of Housing, Local Government and Heritage by a suitably qualified archaeologist. A detailed methodology will be agreed in advance with the National Monuments Service. - The cable trench will be kept to a minimum width. - Should archaeological features or deposits be discovered during archaeological testing or monitoring, the extent of such features/deposits will be determined, a GPS location of the site will be established and works at this location will cease. A strategy will be proposed to	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			the County Archaeologist and National Monuments Service to preserve the site <i>in situ</i>, where possible. Where preservation <i>in situ</i> cannot be achieved, either in whole or in part, then a programme of full archaeological excavation will be proposed, to ensure the preservation by record of the portion of the site that will be directly impacted upon. This work will be carried out by a suitably qualified archaeologist under license and in accordance with the provisions of the National Monuments Acts 1930-2014. The results of any archaeological test testing, surveys and/or excavation will be submitted in a report to the local authority, the Heritage and Planning Division, Department of Housing, Local Government and Heritage and the National Museum of Ireland. • A report on the above archaeological works will be compiled on completion of the works and sent to the local authority and National Monuments Service (Department of Housing, Local Government and Heritage) and the National Museum of Ireland.	
Chapter 12 The Landscape				
12.1	Section 12.6	Construction	In addition to retaining the existing hedgerows within around the site, it is also proposed to bolster existing perimeter and internal hedgerows with under-planting and inter-planting of whip transplants (i.e. Hedgerow Type 1 - see Figure 12.10 of the PECR in order to ensure dense and consistent screening of the site in perpetuity. This will be undertaken where required to thicken and fill gaps in the existing hedgerow network prior to the construction phase, thus allowing for any growth in the period between a grant of planning permission and construction of the development. Advanced nursery stock in the form of 8-10cm girth trees will be used to fill any noticeable gaps and plant species will be selected to complement the existing broadleaf hedgerow species mix around the site and will be of local provenance. Where not already exceeded by existing vegetation, it is intended to manage hedgerows up to 3-4m in height. This height will be achieved by a combination of allowing lower sections of existing hedgerows to mature, filling obvious gaps with advanced nursery stock and providing an additional line of whip planting to selected hedgerows that require densification. Refer to Appendix 12.2 for Landscape and Ecological Mitigation Plan. It is also proposed to plant a dense woodland thicket around the eastern and northern sides of the site in the directions of the nearest road and residential receptors. This is particularly effective mitigation at VP3 (refer to Figure 12.9 of the PECR), which represents local residents and road users immediately to the north of the site.	Contractor
Chapter 13 Traffic and Transport				
13.1	Section 13.7	Construction	In line with established good practice, a development and location specific construction TMP has been developed for the purposes of this assessment and will be further developed as necessary, in consultation with MCC and the Gardaí, prior to construction commencement. This will include (but will not be limited to) such measures as:	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			- Details of wheel washing facilities on site to minimise the effect of dust and debris - Details of temporary traffic signage to be installed to warn road and recreational route users to the presence of the works access and the associated likely presence of large or slow-moving construction traffic	
13.2	Section 13.7	Construction	Specific traffic management requirements and localised arrangements for the delivery of abnormal loads will be identified through the completion of an Abnormal Load Assessment; to be undertaken by the appointed Contractor(s) and agreed with in advance of construction with the appropriate reviewing authorities.	Contractor
13.3	Section 13.7	Construction	The implementation and monitoring of the construction TMP will be the responsibility of the appointed Contractor. The construction TMP, as a 'live document', will be reviewed on a regular basis by the appointed Contractor prior to and during the construction phase of the Proposed Development and will be developed accordingly within the parameters assessed in the PECR. The construction TMP will be subject to change during the Proposed Development's evolution which will confirm the efficacy and implementation of all relevant mitigation measures and commitments identified in the application documentation.	Contractor
Chapter 14 Material Assets and Waste Management				
14.1	Section 14.7	Construction	Built Assets and Utilities Works in vicinity of electrical services and water/foul water network will be carried out in consultation with ESB Networks and Uisce Éireann, respectively, to ensure the risk of impacts on existing users is minimised	Contractor / ESB
14.2	Section 14.7	Construction	The following mitigation measures will be implemented for waste generated during construction works. - The portable chemical toilets will be provided for the duration of construction works. The wastewater will be collected in a proposed holding tank and all waste material will be removed from site and disposed of to an appropriately licensed facility in accordance with the Waste Management Act, 1996 as amended and associated regulations. - Excavated material from ground preparation works will be either reused onsite if suitable or otherwise disposed of offsite at a suitably licenced facility. - Any excess spoil material will be removed from site by a dumper or suitable lorry and will be treated if required before being disposed of appropriately in a licensed facility. - All waste oil (vehicle fuel), empty oil containers and other hazardous wastes will be disposed of in conjunction with the requirements of the Waste Management Acts 1996, as amended, and associated regulations.	Contractor

Discipline and Commitment Reference	PECR Section Reference	Phase	Mitigation and Monitoring Measure	Responsibility
			- The appointed Contractor will implement the construction phase RWMP included in the CEMP. The RWMP and the CEMP will remain a 'live' document which will be reviewed regularly and revised as necessary. The RWMP can be provided to the Local Authority on request. - Waste will be managed in accordance with the Waste Management Hierarchy and <i>Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities</i> (EPA, 2020) and the Waste Management Act 1996, as amended and associated regulations. Further detail on waste management is provided in the RWMP. - Wastes sent offsite for recovery or disposal will only be conveyed by an authorised waste contractor and transported from the Proposed Development site to an authorised site of recovery/disposal in a manner which will not adversely affect the environment. - The Contractor will be obliged to aim for an overall recycling rate of 70% of construction and demolition waste, in accordance with EU targets under the Waste Framework Directive (2008/98/EC). - All employees will be made aware of their obligations under the CEMP. The CEMP will be available for inspection at all reasonable times by the Local Authority.	

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