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EIRGRID

Step 4 Development Options and Evaluation Report

Lanesboro 110 kV Substation Redevelopment

30 July 2019

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Contents

1 Introduction

1.1 Background

Mott MacDonald Ireland has been appointed by EirGrid plc as lead consultants for the Lanesboro 110 kV Substation Redevelopment project. The Project is developed in accordance with EirGrid's Framework for Grid Development. The report relates to Step 4 of the Framework. which is to identify the technology and location options for the substation redevelopment and to identify a best performing option which is then progressed into Step 5 which is the planning process.

1.2 Step 4 Report Structure

The purpose of this Step 4 Report is to identify the technology and location options for the substation redevelopment and to identify a best performing option to be progressed into Step 5 of the Framework for Grid Development which is the planning process. Different technology types are being considered in Step 4 because of the constraints identified and the flexibility in locating the equipment due its reduced footprint that GIS technology allows. The report is structured as follows:

- **Section 1** sets out EirGrid's Framework for Grid Development and overall aim of Step 4. In the context of this Framework, the Project is introduced with regard to background history, the present requirements for substation redevelopment and the primary outcomes achieved thus far in Steps 1 to 3 of the Project.
- **Section 2** sets out the methodology for completing this Step 4 report including study area identification, data sourcing and information gathering, mapping and a summary of site surveys and investigations undertaken.
- **Section 3** summarises consultations undertaken under three headings – Community Consultations, Planning Consultations and Technical Consultations.
- **Section 4** assesses the principle of a substation redevelopment in the context of relevant national, regional and local planning policies and objectives.
- **Section 5** identifies the land use and environmental baseline conditions in the study area and its zone of influence which are relevant for determining the constraints associated with the substation redevelopment.
- **Section 6** identifies the design, utility and construction considerations associated with the substation redevelopment within the study area.
- **Section 7** identifies preliminary technology and location options for the substation redevelopment and methodology used to identify these options.
- **Section 8** provides an overview of the engineering design requirements for the substation redevelopment and the study area constraints directly and indirectly affecting each of the preliminary project options. Options are then evaluated in accordance with EirGrid's Performance Matrix. The output from the application of this matrix is the identification of the best performing option and location which is then progressed in Step 5.
- **Section 9** provides a more detailed description on the best performing option identified in the previous section.

1.3 About EirGrid

EirGrid PLC (EirGrid) is the state owned independent Transmission System Operator (TSO) and developer of Ireland's national high voltage electricity grid (also called the "Transmission System"). The European Communities Regulations 2000 (SI 445 of 2000) sets out the role and responsibilities of the TSO; in particular, Article 8(1) (a) gives EirGrid, as TSO, the exclusive function:

"To operate and ensure the maintenance of and, if necessary, develop a safe, secure, reliable, economical, and efficient electricity transmission system, and to explore and develop opportunities for interconnection of its system with other systems, in all cases with a view to ensuring that all reasonable demands for electricity are met having due regard for the development."

1.4 Grid Development Strategy

EirGrid's Grid Development Strategy acknowledges the need to achieve a balance between social, environmental and economic factors. On the basis of this need the Grid Development Strategy is underpinned by three Statements as follows:

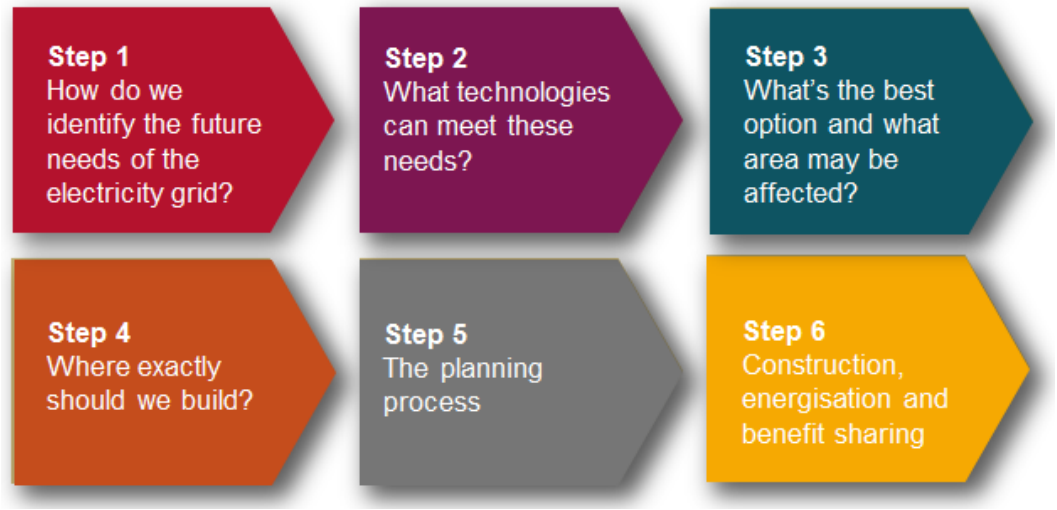
- Inclusive consultation with local communities and stakeholders will be central to EirGrid's approach;
- EirGrid will consider all practical technology options; and
- EirGrid will optimise the existing grid to minimise the need for new infrastructure.

To ensure transmission system reliability and security, the performance of the network is compared with the requirements of the Transmission System Security and Planning Standards (TSSPS) which are available at www.eirgridgroup.com. EirGrid's license specifically requires it to ensure the maintenance of the transmission system and, if necessary, to develop it. The transmission system is required to remain stable and secure for a variety of critical contingencies including outages as a result of faults or maintenance. The network is assessed for a wide variety of network conditions, such as: diverse demand levels and generation dispatches, different interconnection power transfers, generation closures, network stability and asset condition. Projects are regularly reviewed as part of the on-going process of project development and delivery.

The drivers for network investment result in a series of projects to reinforce the system. The need for these projects can result from inter-regional power flow, local constraints such as thermal and voltage issues, connection of demand or generation, interconnection, and asset condition. Historically the primary grid reinforcement needs were the need to handle rising demand for electricity and to facilitate generation connections to the transmission grid or the aggregate effect of multiple connections to the distribution system. In the past Ireland has been particularly successful in attracting many high-tech industries centred around our larger cities. As our economy returns to growth it is essential that transmission grid investment continues to support economic growth and job creation, and to encourage more balanced regional development. As well as the larger urban areas on the eastern seaboard, our development plans cover all areas of the country. This grid investment is essential if broader regional economic growth is to be enjoyed throughout Ireland. The Grid Development Strategy is consistent with the Government White Paper on Energy. It is also set in the context of other Government Policy, in particular the Department of Business, Enterprise and Innovations (2017) Action Plan for Jobs 2017 and the Irish Development Authority's (IDA) (2015) strategy, Winning: Foreign Direct Investment 2015-2019.

EirGrid's (2017) *Grid Development Strategy - Your Grid, Your Tomorrow* can be accessed online.

Figure 1: EirGrid's Six-step Framework for Grid Development



1.5 Project Description

1.5.1 Background

Lanesboro 110 kV substation is an Air Insulated Switchgear (AIS) transmission substation located in the town of Lanesborough on the boundaries of County Roscommon and County Longford. It is situated to the west of Lough Ree Power Station on an adjoining, but separate, site adjacent to the River Shannon, as shown on Figure 2 overleaf.

The existing substation at Lanesboro is a critical point on the transmission system interconnecting numerous 110 kV lines, connecting Lough Ree Power Station to the network and providing Roscommon and Longford with an electricity supply. The substation facilitates the movement of power, enabling any surplus power generated in the west to be moved eastwards and vice versa. There are also two circuits to Richmond which supply Roscommon town.

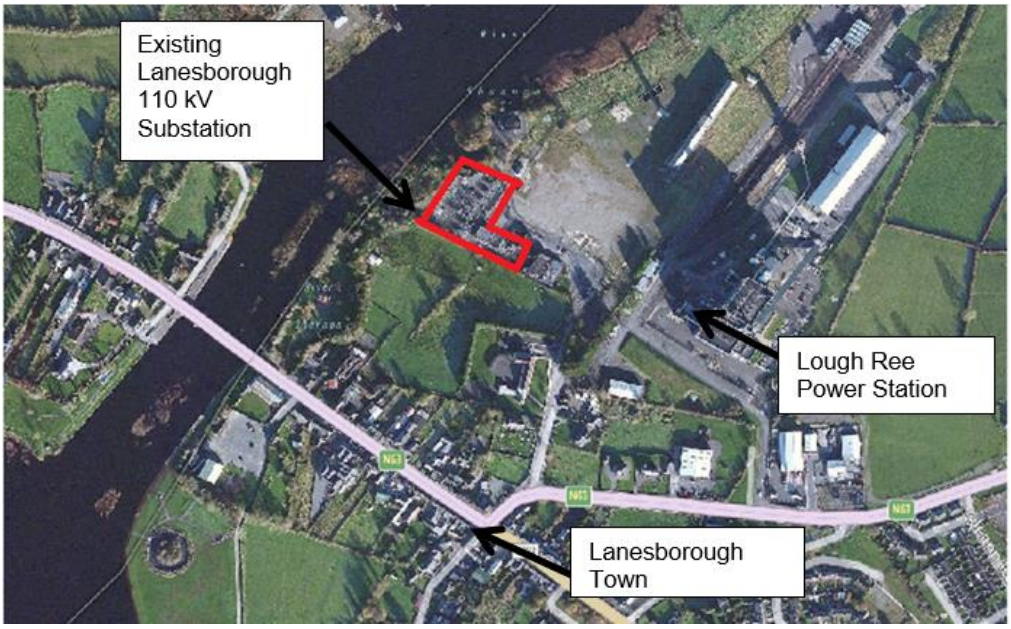
1.5.2 Requirement for Substation Redevelopment

Redevelopment of the existing Lanesboro 110 kV substation is needed because the existing substation design is inadequate for the future. Power flows driven by increasing levels of wind generation are predicted to increase beyond the thermal rating of the existing busbar by 2020. These overloads are non-compliant with Transmission System Security and Planning Standards (TSSPS) providing a statutory requirement for the project.

Redevelopment is also needed for security of supply. The substation dates back to the 1950s and is not fit for purpose going forward. Substations are normally designed with some level of redundancy to facilitate new connections and enable crucial maintenance activities. These include spare bays and a reserve busbar. Lanesboro 110 kV substation has no reserve busbar or space for new connections into spare bays within the existing site. Finally, there is only one

sectionalising circuit breaker which upon failure results in the loss of the entire station and there are no spare bays for new connections.

Figure 2: Location of the Existing Lanesboro 110 kV AIS Substation



1.5.3 Best Preferred Options – Key Outcomes of Steps 1 - 3

As part of EirGrid's Framework for Grid Development, a 'Best Preferred Options Report', hereafter referred to as BPOR, was published in 2017 as a key deliverable for Step 3. The BPOR assessed 3 no. short listed option concepts which were identified based on the above infrastructural needs (Section 1.4.2) and from surveys of the existing site and surrounding area.

- Option 1 – Extension of Existing Busbar
- Option 2 – Development of a new AIS
- Option 3 – Development of a new GIS

The option concepts were evaluated using a multi-criteria assessment against 5 no. principal criteria: Economic Assessment; Technical Performance; Deliverability; Environmental; and Socioeconomics.

Based on the aggregate scoring generated from the multi-criteria assessment, the BPOR noted that Option 2 and Option 3 were the best performing options in comparison to Option 1. Specifically, the redevelopment of Lanesboro 110 kV Substation ensures that the new substation, either AIS or GIS, is designed in accordance with all current EirGrid substation policies which facilitate improved security of supply and long-term reliability. Additional benefits associated with these two options include decreased environmental and socioeconomic impacts as a result of developing a vacant industrial brownfield site zoned for 'industrial / alternative energy' and easier project deliverability due to the flexibility of off-line construction.

With a similar overall evaluation of Options 1 and 2, the BPOR concluded that Option 2 (Rebuild with AIS Technology) was the preferred option for progression to Step 4. On balance, the

decision was made to proceed with Option 2 over Option 3 because of lower capital costs resulting in better economic performance.

Following the commencement of Step 4, additional site constraints were identified; in particular, flood risk associated with a larger footprint for the AIS. The extension of the AIS footprint was the result of changes to mitigate, as far as possible, the unnecessary proximity outages when extending, maintaining, repairing or replacing AIS equipment. In addition, the discovery of existing underground services including a cooling water intake and outflow culvert traversing the study area as part of the Lough Ree Power Station. As the project developed in the early stages of Step 4, it was therefore determined that the AIS and GIS technology options should be reassessed against the above criteria in order to ensure an accurate evaluation of option solutions.

2 Methodology

2.1 Introduction

The Step 4 assessment was primarily a desktop study, supported by consultation and site visits of the project study area. The assessment consists of the following principle steps:

- Stakeholder consultation;
- Information gathering;
- Site Surveys;
- Data mapping;
- Identification of preliminary options;
- Evaluation of feasible options;
- Identification of best performing option.

Each of these steps were undertaken in order to ensure that the most accurate and up to date constraints drawings for the project study area were compiled, prepared and reported. The tasks undertaken to complete each of the principal steps are detailed in the following sections.

In addition, the requirements of the following key documentation were considered during the preparation of the constraint assessment

- EirGrid Framework for Grid Development;
- EirGrid Ecology Guidelines for Electricity Transmission Projects; and
- EirGrid Cultural Heritage Guidelines.

2.2 Study Area Identification

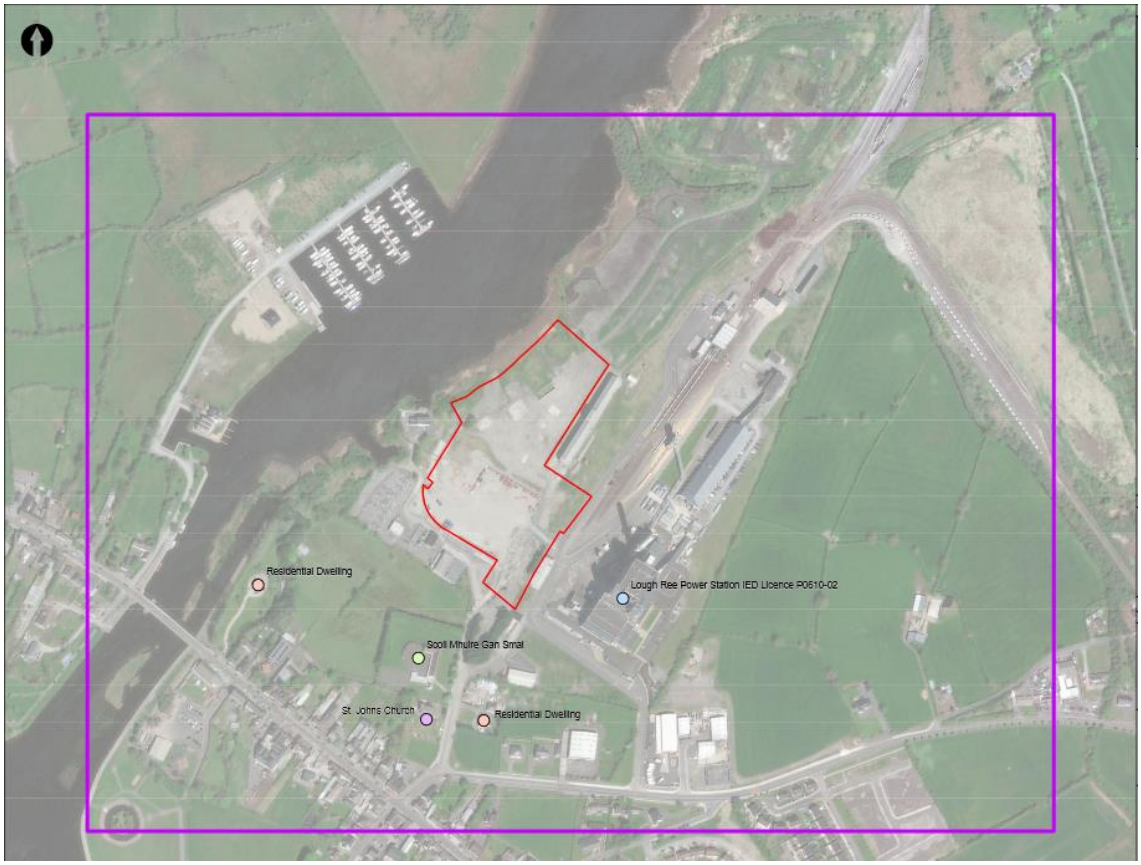
A project study area for the redeveloped substation was defined by EirGrid having regard to available land for purchase within the immediate vicinity of the existing substation. This study area comprises the brownfield lands located to the immediate east and north east of the existing substation. Part of the study area was once the site of the now demolished Lough Ree Power Station.

It should be noted that existing circuits into the existing AIS substation will need to be diverted to the new substation.

For the purposes of this Report, a 2km^2 zone of influence centred on the study area has also been identified. The zone of influence includes the town of Lanesborough-Ballyleague, the River Shannon and upper extent of Lough Ree, Lough Ree Power Station and the N63.

The project study area within the red line boundary and its zone of influence (purple) is shown in Figure 3.

Figure 3: Lanesboro 110 kV Substation Redevelopment – Study Area



2.3 Data Sourcing and Information Gathering

A preliminary list of potentially relevant constraints data required for the purposes of the assessment was collated based on the methodology outlined above. The relevant datasets required were determined by the project team in co-ordination with the environmental and technical specialists. It was considered that these identified datasets were critical to the development of the constraint drawings. The list of potentially relevant constraints datasets will be further modified on the basis of consultation undertaken with the Statutory and Environmental Consultees.

A hierarchical step by step approach was used to the sourcing of data, based on the ease of the availability of data.

- Identify if dataset is required;
- If dataset is required, download from websites of data suppliers;
- If dataset is not available to download, request from data supplier;
- If dataset is not available from data supplier, digitise data.

Where possible, all data was sourced in GIS format, compatible with ArcGIS v 10.6.1 software. Where digital data was not available in this format, it was accessed in available formats and translated to the format compatible with ArcGIS v 10.6.1. In all cases, where data was digitised, it was done so using ArcGIS 10.2 software.

2.4 Data Mapping

A number of constraints drawing were prepared using ArcGIS v 10.6.1 GIS software. A number of subject specific constraints drawings were prepared to allow multiple data layers to be displayed concurrently. The drawings were prepared by experienced GIS technical specialists to ensure that all relevant data is displayed clearly and concisely with legends indicating all the data contained on each constraint drawing. Each drawing was prepared on standard A3 landscape map layout sheets. For this assessment an overall environmental constraints drawing was then collated to illustrate the key environmental sensitivities within the project study area. Each constraint map contains standard background mapping layers to allow viewers to identify locations of constraints.

2.5 Site Surveys

2.5.1 Site Walkover Survey

A site walkover survey was conducted on the 6th December 2018 by EirGrid Project Manager accompanied by Mott MacDonald's Project Manager and Senior Planner in order to establish the presence and location of existing land use constraints associated with the substation redevelopment.

2.5.2 Preliminary Ecology Site Survey

A Preliminary Ecological Appraisal (PEA) of the proposed Project was carried out to identify areas of ecological significance within the project study area which may form constraints to the proposed development and identify where further surveys may be required. The PEA was carried out in accordance with 'Guidelines for Preliminary Ecological Appraisal' (CIEEM, 2017). The PEA included a detailed desktop assessment and a preliminary field survey. Further information on the findings of this survey are provided in Section 5.6.

2.5.3 Topographical Survey

A topographical survey was carried out between the 14th and 19th February 2019. The purpose of the survey was to map ground levels, changes of terrain and location of structures that occur within the study area. The data gathered is incorporated into the engineering drawings developed for the project.

2.5.4 GPR Survey

A ground penetrating radar survey was carried out between the 19th and 20th February 2019. The purpose of the survey was to identify and map underground utilities and services that occur within the study area. The data gathered is incorporated into the engineering drawings.

2.5.5 Soil Resistivity Measurements

Soil resistivity measurements were taken on 15th February 2019 using the Wenner four probe method. The purpose of the measurements is to develop a multi-layer soil model to aid the preliminary earthing design and study. The earthing design within a substation is developed to ensure the safety of personnel and the general public in the vicinity of the substation in the event of an electrical fault at the substation.

2.6 Site Investigations

Ground investigation works, including trial pits and boring, will be carried out following the public consultation meetings. The purpose of these investigations is to establish the ground conditions for the substation design and will form part of the planning application documentation.

An Environmental Exit Audit was undertaken by URS at the former ESB Power Generating Station at Lanesboro, Co. Longford in order to assist in the surrender of IED Licence No. 627-01. The Audit's study area included land which currently comprises the proposed development area; specifically, land within the vicinity of the former station buildings (South-West Area) and the existing 110 kV AIS substation (Networks Area).

Environmental site investigations were carried out across the study area in November 2007 and May 2008 with additional groundwater and surface water monitoring completed in February 2009. The scope of works which comprised the environmental investigations is summarised below:

- Surface Inspection in order to identify disturbed ground / fill material that could indicate waste disposal or suspected asbestos containing materials (ACM);
- Excavation and collection of soil and sediment samples from trial pits, trenches and hand-augered (HA) boreholes in order to test for Diesel Range organics (DRO) and Mineral Oil, Heavy Metals[1], Speciated Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), Chlorine, fluoride and sulphate, Total Phenols and Total Cyanide;
- Collection of any suspected asbestos containing materials; and
- Collection of groundwater samples from pre-existing groundwater monitoring wells, surface water samples from the River Shannon and groundwater samples from the Longford County Council abstraction well in order to test for General Suite[2], DRO and Mineral Oil, Heavy Metals[2], PAHs, Phenols, Total Cyanide, PCBs and VOCs.

Relevant conclusions from the Environmental Exit Audit are discussed in Sections 5.3 and 5.10.

[1] Antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, vanadium and zinc

[2] General Suite includes: aluminium, boron, calcium, chloride, iron, potassium, magnesium, manganese, sodium, BOD, COD, ammoniacal nitrogen, nitrate, nitrite, phosphate, sulphate, alkalinity, total hardness, TDS, TOC, total coliforms and faecal coliforms

3 Consultations

3.1 Introduction

This section summarises community and planning consultations undertaken as part of the Step 4 process.

3.2 Community Consultations

A stakeholder engagement plan was initially formulated at the outset of Step 3 in order to identify the relevant stakeholders for the project. As part of this plan, a programme for stakeholder engagement was created in order to reflect key issues and observations received. The final programme of stakeholder engagement and the key issues identified during the Step 3 consultation process is summarised below in Table 1.

Table 1: Record of Community Stakeholder Consultation

No.	Stakeholder Name	Summary of Key Issues
1	Landowner 1 – SSE	• SSE have no current plans for the land under consideration; • SSE do have plans for an adjoining site further to the north east along the Shannon; and • SSE raised concerns on potential impacts on the adjoining site (access routes, environmental effects and etc.)
2	Landowner 2 – Irish Wheelchair Association (IWA)	• The greenfield site owned by IWA extends from the south of the Lanesboro 110 kV Substation to the N63. Lough Ree Co-op (community group) is currently occupying a building located on this land, adjacent to the N63. • IWA have no plans for the site themselves and are happy to sell. • Lough Ree Co-op is interested in a partnership with Longford County Council to purchase the entire site. They are preparing a planning application including social housing (4 houses), sports grounds/football pitches and an upgrade to the building.
3	Lanesborough Primary School	• School principal noted that the school has always operated within proximity to industrial infrastructure without any significantly negative effects; • The principal noted that the proposed development site is located at a reasonable distance from the school with a lot of screen mature vegetation in between. • The principal has no issue in principal with the proposed development.
4	Longford County Council (LCC)	• LCC noted that the Lanesborough community is well-informed and active in local issues; • LCC stated that although the area is an ESB/Bord na Mona legacy area, community will likely expect some community gain (e.g. ESB riverbank lands) as part of the substation redevelopment irrespective of option chosen; • LCC advised that certain individuals in the community are seeking the redevelopment of the former power station lands for new industrial or community use, i.e. football pitches; • LCC no longer want to proceed with the purchase of the IWA land after examining proposal more closely as the area is unlikely suitable for housing due to flood risk; and • LCC noted that the proposed Bord na Móna windfarm on the bog surrounding Lanesborough is controversial in the community. It could therefore be concluded by the community that preventing the expansion of the substation would prevent the windfarm.
5	Ballymahon Municipal District Meeting	• Local councillors did not object in principal to the options; however, they want to ensure that the development does not infringe on other potential local development proposals;

No.	Stakeholder Name	Summary of Key Issues
		• Councillors raised concerns regarding the land intake required for the AIS technology option; • Councillors noted that the local community have interest in the redevelopment of the proposed development sites for new industrial or community use, i.e. football pitches; and • Councillors suggested that in order to mitigate concerns for the loss of the larger site, the provision of a community fund to develop other local initiatives could be provided which still avoids the higher costs of the GIS option.
6	Combined Community Groups Meeting	• Groups noted that the two potential sites, the greenfield and brownfield sites, are of interest to the Lanesborough community as areas for sport / recreational development in addition to potential commercial regeneration; • Groups stated that Option 3 (AIS extension on IWA land) was the preferred option, if EirGrid were to buy the entire field and ”gift” the unused portion back to Lanesborough. This option preserves the brownfield site for industrial development as it represents the area’s best chance for potential future development; • Groups queried whether there would be direct employment opportunities from this development. It was identified that the substation redevelopment may increase potential commercial developments; however, minimum direct employment from the proposed works is anticipated; • Groups raised concerns on the impacts of construction on the tidy towns competitions as the influx of traffic would cause issues with dust, detritus etc; • Groups queried whether the redevelopment of the substation would provide any community benefit. It was re-iterated that a proposal for ‘giving back to the community’ will be pursued by working closely with EirGrid; • Groups stated that there was an identified flood risk area adjacent to the option 3 site; however, it was noted that the OPW were potentially looking at reclassifying this area as ‘no longer a flood risk’. The land is currently zoned for recreational use.

As indicated above, general themes within stakeholder feedback consisted of information on current and proposed land uses and plans within the surrounding areas, the incorporation of an adjacent community project as part of the development and the identification of preferential options. This information was used to determine the availability of land to EirGrid, and furthermore, the viability of the proposed options in the context of local government and community interest.

Based on the conclusions derived from the Step 3 optional appraisal and consultation process, Step 4 stakeholder engagement has presented the AIS and GIS technology options to prescribed and community stakeholders as the preferred options for the redevelopment of the Lanesboro 110 kV Substation.

3.3 Planning Consultations

Mott MacDonald identified the relevant prescribed bodies to be consulted as part of a future planning application. The relevancy of the prescribed bodies was based on the assumption that the replacement substation will not require an Environmental Impact Assessment and that the planning application will be submitted to Longford County Council. It was also assumed that consultation to be undertaken should be representative of the scale and significance of likely impacts associated with the substation having regard to existing transmission infrastructure. As such, in identifying the relevant bodies, regard was had to Article 28 of the Planning and Development Regulations 2001, as amended. Article 28 identifies the various bodies which a Planning Authority may consult with following receipt of an application.

Table 2 below identifies those bodies which were considered relevant to the substation redevelopment. These bodies were consulted via email and written correspondence between the 15th and 20th February 2019 with information on the proposed development and requesting what additional information they would like to see addressed as part of the planning application process. A response to the consultation was requested within a 3-week period, and at the time of writing, 2 no. bodies had responded as described in Table 2.

Table 2: Record of Public Planning Stakeholder Consultation

No.	Stakeholder Name	Summary of Key Issues
1	Roscommon County Council	At date of report issue, no response had been received to consultation.
2	Longford County Council	At date of report issue, no formal response had been received to consultation however a pre-application meeting was held on the 12 March 2019. At this meeting a number of issues were discussed relating to site history, technology options, community engagement, EIA screening, flooding, drainage, health and safety etc. These issues will all be addressed in a future planning application.
3	Minister for Culture, Heritage & the Gaeltacht (ecology)	The Development Applications Unit (DAU) of the Department for Culture, Heritage and the Gaeltacht noted that thermal water pollution will need to be given careful consideration in respect of any new development within sensitive areas adjacent to Lough Ree
4	Minister of Culture, Heritage and the Gaeltacht (archaeology and cultural heritage)	At date of report issue, no response had been received to consultation.
5	Transport Infrastructure Ireland	Transport Infrastructure Ireland advised that the following guidance and recommendations should be considered as part of the planning application, where applicable: • Methods/techniques should be proposed for any works traversing / in proximity of the nation road network in order to safeguard the capacity, safety and efficiency of the network; • Consultations should be had with the relevant Local Authority with regard to potential interactions with the nation road network and future road nation road schemes; • In relation to cabling and connection routing, the scheme promoter should note locations of existing and future national road schemes and develop proposals to safeguard the same; • Assessment should clearly identify haul routes proposed during the construction and operational stages and fully assess the network to be traversed including duration of likely impacts. All structures on the haul route should be checked to confirm their capacity to accommodate any abnormal load proposed; • Advised that separate motorway crossing, structure approvals / permits and other licenses may be required in connection with proposed haul routes; • Where appropriate, a Traffic and Transport Assessment should be carried out in accordance with relevant guidelines (i.e. Traffic and Transport Assessment Guidelines, 2014) noting traffic volumes and traffic routes to/from the sire with reference to impacts on the national road network and junctions of lower category roads; • Advised that designers should consult TII publications to determine wither a Road Safety Audit is required; • Noted that the assessment of design, construction and maintenance standards and guidance is available at TII Publications; and • In conducting an EIA, regard should be had to TII Environmental Guidelines which detail assessment and mitigation measures for environmental factors, prior EIS/EIARs

No.	Stakeholder Name	Summary of Key Issues
		and conditions / modifications imposed by An Bord Pleanála
6	Inland Fisheries Ireland	At date of report issue, no response had been received to consultation.
7	Commission for Regulation of Utilities, Water and Energy	At date of report issue, no response had been received to consultation.
8	Irish Water	Irish Water advised that the following should be considered as part of the planning application, where relevant: • Impacts of the development on the capacity of water services (do existing water services have the capacity to cater for the new development if required). • Any up-grading of water services infrastructure that would be required to accommodate the development. • In relation to a development that would discharge trade effluent – any upstream treatment or attenuation of discharges required prior to discharging to an IW collection network • In relation to the management of surface water; the potential impact of surface water discharges to combined sewer networks & potential measures to minimise/stop surface waters from combined sewers. (Irish Water will not normally accept new surface water discharges to combined sewer networks). • Any physical impact on IW assets –treatment works, pipes, pumping stations, discharges outfalls etc. including any relocation of assets • Any potential impacts on the assimilative capacity of receiving waters in relation to IW discharge outfalls including changes in dispersion /circulation characterises • Any potential impact on the contributing catchment of water sources either in terms of water abstraction for the development (and resultant potential impact on the capacity of the source) or the potential of the development to influence/ present a risk to the quality of the water abstracted by IW for public supply. • Where a development proposes to connect to an IW network and that network either abstracts water from or discharges waste water to a “protected”/sensitive area, consideration as to whether the integrity of the site/conservation objectives of the site would be compromised. • Mitigation measures in relation to any of the above

All consultation responses received by planning stakeholders will be addressed comprehensively in the Planning and Environmental Considerations Report to be submitted as part of the planning application to Longford County Council.

It should be noted that in addition to the above consultations, EirGrid also consulted with An Bord Pleanála to determine whether or not the proposed substation redevelopment would be considered Strategic Infrastructure Development (SID) having regard to the provisions of Section 182A of the Planning and Development Act 2000, as amended. On 21st March 2019, the Board wrote to EirGrid to confirm that the substation redevelopment would not be strategic infrastructure (Appendix A), and as such, any future planning application, should be submitted to Longford County Council.

4 Strategic Planning Overview

4.1 Introduction

This section of the report assesses the substation redevelopment in the context of relevant key European, national, regional and local planning policies and objectives. Through the identification of key spatial, economic and social policies, subsequent analysis will demonstrate how the substation redevelopment is consistent with, and will contribute towards, the achievement of planning policies and objectives.

4.2 European Planning Policy

4.2.1 Europe 2020 Climate and Energy Framework

The climate and energy framework is a set of binding legislation which aims to ensure the European Union meets its climate and energy targets for 2020. The targets were set by EU leaders in March 2007, when they committed Europe to become a highly energy-efficient, low carbon economy, and were enacted through the climate and energy package in 2009.

These targets, known as the "20-20-20" targets, set three key objectives for 2020:

- A 20% reduction in EU greenhouse gas emissions from 1990 levels;
- Raising the share of EU energy consumption produced from renewable resources to 20%; and
- A 20% improvement in the EU's energy efficiency.

These targets represent an important first step towards building a low-carbon economy. They are also headline targets of the Europe 2020 strategy for smart, sustainable and inclusive growth. This recognises that tackling climate and energy challenge contributes to the creation of jobs, the generation of "green" growth and a strengthening of Europe's competitiveness.

4.2.2 Renewable Energy Directive 2009/28/EC

Directive 2009/28/EC on the promotion of the use of energy from renewable sources, known as the “Renewable Energy Directive”, implements one of the 20-20-20 targets from the EU’s 2020 climate and energy framework, which is:

“*Raising the share of EU energy consumption produced from renewable resources to 20%*”

The Directive sets national binding targets for all EU countries with the overall aim of making renewable energy sources account by 2020 for 20% of EU energy and for 10% of energy specifically in the transport sector (both measured in terms of gross final energy consumption, i.e. total energy consumed from all sources, including renewables). Some of the key points from the Directive include:

- Each EU country is to make a national action plan for 2020, setting out how to achieve the national target for renewables in gross final energy consumption as well as the 10% target for renewable energy sources in transport;
- To help achieve targets in a cost-effective way, EU countries can exchange energy from renewable sources. To count towards their action plans, EU countries can also receive renewable energy from countries outside the EU, provided that energy is consumed in the EU and that it is produced by modern/efficient installations;

- Each EU country must be able to guarantee the origin of electricity, heating and cooling produced from renewable energy sources; and
- EU countries should build the necessary infrastructure for using renewable energy sources in the transport sector.

The Directive makes the following references to the development and augmentation of transmission infrastructure which, as discussed in Section 1.5, will facilitate the increased connection of renewable energy generation, in particular wind energy, into the electricity grid:

"Member States shall take the appropriate steps to develop transmission and distribution grid infrastructure, intelligent networks, storage facilities and the electricity system, in order to allow the secure operation of the electricity system as it accommodates the further development of electricity production from renewable energy sources, including interconnection between Member States and between Member States and third countries. Member States shall also take appropriate steps to accelerate authorisation procedures for grid infrastructure and to coordinate approval of grid infrastructure with administrative and planning procedures".

"There is a need to support the integration of energy from renewable sources into the transmission and distribution grid".

Under the Renewable Energy Directive, Ireland has a binding national overall target for renewable energy consumption of 16% in 2020. In order to achieve this target, the Irish Government has decided that 40% of electricity consumed in 2020 will be generated using renewable energy sources with targets of 10% and 12% in transport and heat, respectively.

On 30th November 2016, the Commission published a proposal for a revised Renewable Energy Directive to make the EU a global leader in renewable energy and ensure that the target of at least 27% renewables in the final energy consumption in the EU by 2030 is met. As of June 2018, the EU has increased its target of 27% of energy from renewable sources by 2030 to 32% which also includes a clause to allow for a further increase in the target by 2023. This amended target is a clear indication that increased renewable energy and related faciliatory infrastructure will remain at the forefront of both EU and national energy policy.

One of the requirements of the Renewable Energy Directive is that individual EU Member States are obliged to submit national action plans to the European Commission which indicate how they intend to achieve their legally binding 2020 targets for renewable energy consumption. Ireland submitted its first National Renewable Energy Action Plan (NREAP) to the European Commission in 2010 and submitted progress reports in relation to the action plan in 2012, 2014, 2016, and 2018. The NREAP has resulted in a wide range of programmes and measures. At present, based on GHG (Green House Gas) Emissions Projecting undertaken by the Environmental Protection Agency[3], Ireland is expected to fall short of its 16% energy consumption target from renewable sources and is projected to achieve between 13.2% and 15.4% by 2020 based on current progress. It should be noted that this is a 'live' target in the absence of future national targets extending beyond this timeframe. In addition, progress towards its other targets are presently anticipated as follows:

- 37.3% renewable electricity (target is 40%);
- 9% renewable heat (target is 12%); and
- 8% renewable transport (target is 10%).

[3] http://www.epa.ie/pubs/reports/air/airemissions/ghgprojections/EPA_2017_GHG_Emission_Projections_Summary_Report.pdf

Biofuels, hydro and solar energy will make an important contribution to these targets; however, it is assumed that the 20-20-20 renewable targets will be achieved largely through the deployment of additional wind powered generation[4]. As of December 2018, there was 3,610 megawatts (MW) of wind energy capacity installed and exporting to the national electricity grid with a planned capacity of 2,103MW (if all projects are connected). EirGrid estimates that a total of 4,200MW of onshore wind generation capacity will be required to allow Ireland to achieve 40% renewable electricity by 2020. This would imply an average build-out of about 300 MW per year until the end of 2020.

4.2.3 Europe 2030 Climate and Energy Framework

EU leaders agreed in October 2014 on new climate and energy objectives for 2030 following a proposal put forward by the European Commission. The 2030 framework aims to make the EU's economy and energy system more competitive, secure and sustainable.

A centrepiece of the 2030 framework is the binding domestic target to reduce greenhouse gas emissions by 40% below 1990 levels by 2030. This will put the EU on the most cost-effective path towards its agreed objective of an 80-95% reduction by 2050. EU leaders also agreed on raising the share of renewable energy to at least 27%.

The proposed framework will bring multiple benefits: reduced dependency on imported energy, a lower bill for imported energy, greater innovation, economic growth and job creation, increased competitiveness and better health through reduced air pollution.

4.2.4 Energy Roadmap 2050

The Energy Roadmap 2050 was published by the European Commission in 2011 and explores the transition of the energy system in ways that would be compatible with the greenhouse gas reductions targets set out in the Renewable Energy Directive while also increasing competitiveness and security of supply. To achieve these goals, the Roadmap states that significant investments need to be made in new low-carbon technologies, renewable energy, energy efficiency, and grid infrastructure. Four main routes are identified to achieving a more sustainable, competitive and secure energy system in 2050:

- Energy efficiency;
- Renewable energy,
- Nuclear energy; and
- Carbon capture and storage.

The Roadmap combined these routes in different ways to create and analyse seven possible scenarios for 2050. The analysis found that decarbonising the energy system is technically and economically feasible. Each of the scenarios assumes in the analysis assumed that increasing the share of renewable energy and using energy more efficiently are crucial, irrespective of the particular energy mix chosen. An important component of this energy mix is grid infrastructure, with the Roadmap stating:

With electricity trade and renewables' penetration growing under almost any scenario up to 2050, and particularly in the high renewables scenario, adequate infrastructure at distribution, interconnection and long-distance transmission becomes a matter of urgency. By 2020 interconnection capacity needs to expand at least in line with current development plans. An

[4] All-Island Generation Capacity Statement 2018-2027, EirGrid (2018)

overall increase of interconnection capacity by 40% up to 2020 will be needed, with further integration after this point.

The extension of current planning methods to a fully integrated network planning for transmission (onshore and offshore), distribution, storage and electricity highways for a potentially longer timeframe will be needed.

With more decentralised generation, smart grids, new network users (e.g. electric vehicles) and demand response, there is a greater need for a more integrated view on transmission, distribution and storage.

4.3 National Planning Policy

4.3.1 Ireland 2040 - Our Plan (National Planning Framework) [2018]

Ireland 2040 - National Planning Framework, hereafter referred to as the NPF, published by the Government in February 2018, is a 20-year planning framework designed to guide public and private investment, to create and promote opportunities for Irish citizens, and to protect and enhance Ireland's built and natural environment.

The NPF states that Ireland's National Energy Policy is focused on three pillars: *Sustainability*; *Security of Supply*; and *Competitiveness*. In line with these principles, the **National Strategic Outcome 8** (Transition to Sustainable Energy), notes that in creating Ireland's future energy landscape, new energy systems and transmission grids will be necessary to enable a more distributed energy generation which connects established and emerging energy sources, i.e. renewables, to the major sources of demand. To facilitate this, NPF acknowledges the need to:

'*Reinforce the distribution and transmission grid to facilitate planned growth and distribution of a more renewables focused source of energy across the major demand centres*.'

The implementation of the substation redevelopment will strengthen energy provision to the eastern region, especially in the context of ensuring grid capacity to meet growing commercial demand.

4.3.2 National Development Plan 2018-2027

The National Development Plan 2018-2027, hereafter referred to as the NDP, sets out the investment priorities at national, regional and local planning levels that will facilitate the implementation of the NPF. In the context of the energy sector, the principle objective of the NDP is to assist in ensuring a '*long-term, sustainable and competitive energy future for Ireland'*. The NDP notes that State Owned Enterprises (SOEs), such as EirGrid, are predicted to invest over €13 billion in energy related investments within this time frame; specifically, works will primarily focus on regulated energy network infrastructure to provide smart reliable electricity networks to support security of electricity supply, SMART metering and enable increased renewable generation. Targeted investment within regulated network infrastructure ensures that Ireland's power grid is:

- Maintained to the highest international safety standards;
- Fit for purpose in the medium to longer-term in order to meet projected demand levels; and
- Has the infrastructural capacity to integrate the required levels of renewable energy.

Similar to the precedent set out in the NPF, the NDP states that investments within grid infrastructure, including improvements to transmission grids, are an important enabler of economic growth and as such, the energy sector will play critical role to play in meeting priority

infrastructural needs at both national and local levels. Specifically, the increased provision of energy/power capacity to support new investment and jobs ensures that Ireland remains competitive from an energy cost perspective.

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

The Government White Paper sets out a framework to guide Ireland's energy policy development. The White Paper acknowledges the need for the 'development and renewal' of energy networks to meet economic and social goals. It notes that the development and implementation of the electricity transmission system to 2025 and further will in part be based on EirGrid's *Grid25*, a strategic overview based on the objective of delivering a robust, cost efficient transmission system which aids in achieving regional economic goals in addition to national renewable energy targets.

4.3.4 National Mitigation Plan 2017

The first National Mitigation Plan represents an initial step for Ireland on a pathway to achieve decarbonisation. The strategic aims of the National Mitigation Plan are:

- Policy will contribute to reductions in Ireland's greenhouse gas emissions and enhancement of sinks in a manner that achieves the optimum benefits at least cost;
- A stable and predictable policy and regulatory framework will be underpinned by rigorous analysis and appraisal, supported by strong research and analytical capacity;
- The Government will pursue investment, innovation and enterprise opportunities towards building a competitive, low carbon, climate-resilient and environmentally sustainable economy; and
- The citizen and communities will be at the centre of the transition.

The Plan states the following of relevance to the proposed substation redevelopment:

"Between now and 2050 we will move from a centralised fossil fuel-based electricity system to a low carbon power system. Smart operation of the power system at both transmission and distribution level and energy efficiency will enable maximisation of the existing grid."

"Increasing the share of renewables coming on to our electricity network requires both expansion and upgrading of the grid. While considerable enhancement of Ireland's electricity grid has already taken place, further investment will be required. EirGrid's new Grid Development Strategy and its DS3 Programme will be central to this effort. Led by EirGrid and involving Distribution System Operators, Regulatory Authorities and conventional and renewable generators on the island of Ireland, implementation of this multi-annual Grid Development Strategy will facilitate management of a more secure power system with increasing volumes of variable electricity."

"As greater volumes of renewable electricity are connected to the grid, new measures and systems will be required at distribution system level to provide for the integration of distributed generation, energy storage and demand response".

4.3.5 Strategy for Renewable Energy 2012 – 2020

The Department of Communications, Energy and Natural Resources publication, *Strategy for Renewable Energy 2012 – 2020*, outlines the strategic goals which underpin the Government's energy and policy objectives. The Strategy articulates the key actions to be undertaken to support the development of each of the renewable energy sectors to deliver on Ireland's binding

2020 targets under the Renewable Energy Directive. These include the following five strategic goals:

- **Strategic Goal 1**: Progressively more renewable electricity from onshore and offshore wind power for the domestic and export markets;
- **Strategic Goal 2**: A sustainable bioenergy sector supporting renewable heat, transport and power generation;
- **Strategic Goal 3**: Green growth through research and development of renewable technologies including the preparation for market of ocean technologies;
- **Strategic Goal 4**: Increase sustainable energy use in the Transport sector through biofuels and electrification; and
- **Strategic Goal 5**: An intelligent, robust and cost-efficient energy networks system.

The Strategy highlights several inherent challenges involved in progressing Ireland's renewable energy system in line with the five goals; specifically, '*the impact of large scale penetration of renewable technologies on the overall energy system with regard to overall cost efficiency and system reliability*'. Further considerations which fall under this specific challenge include:

- The need for cost effective timely investment in electricity transmission and distribution; and
- Ensuring best practice planning and permitting procedures and coherence between environmental and renewable energy objectives;

Strategic Goal 5 notes that, '*Ireland, in common with many Member States, is undertaking significant investment in the transmission system in support of renewable energy as well as in support of regional economic development'*, which will require on-going delivery by EirGrid and ESB Networks of their investment programmes in transmission and distribution networks. Strategic Goal 5 also contains several policy considerations which are of direct relevance to both this particular challenge and the proposed 110 kV substation. The following should be noted in this regard:

"*The growth of renewable energy and wind, in particular, requires the modernisation and expansion of the electricity grid."*

"*The requirement to integrate high levels of renewable energy onto the grid is a major objective for many countries and requires advanced smart grid technologies. Ireland has all the ingredients to realise first mover advantage in the development of exportable technologies related to smarter transmission and distribution of electricity."*

4.4 Regional Planning Policy

4.4.1 Regional Planning Guidelines for the Midland Region 2010-2020

The strategic objectives of the NPF are implemented at a regional level in Regional Planning Guidelines (RPGs). These RPGs are due to be revised in the form of Regional Spatial and Economic Strategies (RSES) in 2019; notwithstanding this, the current regional planning strategy remains relevant.

The Midland Regional Authority [MRA] (now restructured as the Eastern and Midland Regional Assembly) published its RPGs for the period 2010-2022 in 2010. The Strategic Vision of the RPG's are as follows:

By 2022, the Midland Region will be a successful, sustainable and equitable region full of opportunities for its expanded population…

In order to realise this vision, regional goals have been developed, as summarised below, which are relevant to substation redevelopment:

- **Goal 5**: To upgrade and augment strategic physical and social infrastructure in the region to attract the target population and sustain critical mass and regional competitiveness;
- **Goal 6**: To promote the economic development of the region through the sustainable development of the social, economic and physical infrastructure demanded by foreign and indigenous industry. Regional education provision and research and development capability should be aligned with industry needs;
- **Goal 8**: To promote the delivery of renewable energy particularly in the context of the existing energy infrastructure in the Midland Region;

The upgrading of the transmission grid will facilitate power flows from both renewable and conventional sources to maximise the use of existing power corridors. As such, the RPG also promote the improvement and expansion of the transmission grid throughout the Midland Region and sets out energy infrastructure policies and objectives for the sustainable provision of energy networks:

- **Policy TIP32**: Support and promote the sustainable improvement and expansion of the electricity transmission and distribution network that supply the Midland Region;
- **Policy TIP33**: Support the sustainable development of the infrastructure required to assist the Midland Region in the delivery of renewable energy particularly in the context of the existing energy infrastructure in the region and the need to make a transition from peat44 to renewable energy;
- **Policy TIP36**: Subsidiary Plans will seek to promote the implementation of the Government's Energy White Paper "*Delivering a Sustainable Energy Future for Ireland*" The Energy Policy Framework 2007-2020 (DCMNR, 2007); and
- **Objective TLO11**: Promote and support the sustainable provision of the following electricity transmission infrastructure: Support the proposals to reinforce all 110 KV circuits to Lanesboro and Portlaoise.

4.4.2 Draft Regional Spatial and Economic Strategy for the Eastern and Midland Region

The Midlands Region is now amalgamated within the Eastern and Midland Regional Assembly as of January 2015. One of the principal functions of the Assembly is to deliver a Regional, Spatial and Economic Strategy (RSES) which considers both spatial and economic factors within the regional planning framework. Published for consultation in November 2018, the principal statutory purpose of the (Draft) RSES for the Eastern and Midland Region is to support the implementation of the Project Ireland 2040 NPF / NDP and the economic policies and objectives of the Government. These policies and objectives are captured in the RSES's strategic vision as replicated below:

To create a sustainable and competitive region that supports the health and wellbeing of our people and places, from urban to rural, with access to quality housing, travel and employment opportunities for all

This Strategic Vision is underpinned by three key crosscutting planning principles that reflect the pillars of sustainability; Social, Environmental and Economic.

- **Healthy Placemaking**: To promote people's quality of life through the creation of healthy and attractive places to live, work, visit and study in;

- **Climate Action**: The need to enhance climate resilience and to accelerate a transition to a low carbon economy recognising the role of natural capital and ecosystem services in achieving this; and
- **Economic Opportunity**: To create the right conditions and opportunities for the Region to realise sustained economic growth and employment that ensures good living standards for all.

The RSES sets out sixteen regional strategic outcomes (RSOs) which have been selected in line with the above principles. The proposed 110 kV substation and associated transmission infrastructure will be directly beneficial to the achievement of the following RSOs:

- **Support the Transition to Low Carbon and Clean Energy**: Pursue climate mitigation in line with global and national targets and harness the potential for a more distributed renewables-focussed energy system to support the transition to a low carbon economy by 2050; and
- **A Strong Economy supported by Enterprise and Innovation**: To build a resilient economic base and promote innovation and entrepreneurship ecosystems that support smart specialisation, cluster development and sustained economic growth.

The RSES and its strategic goals, policies and outcomes will be implemented at a local level by Local Authorities through which development plans and local economic and community plans will be developed and/or amended in line with the policy ethos set out in this regional framework.

The Draft RSES contextualises the Eastern and Midland Region as the '*economic engine of the State*' due to its linkages to the trans-European network via Liverpool across the Irish Sea and to Belfast along the M1 Corridor and to the international market through Dublin Airport and Dublin Port. A highly skilled labour force within the wider region has helped facilitate FDI and multi-national enterprises (MNEs). Consequently, the region contains some of the fastest growing communities in the country which has increased demand for housing, infrastructure and services in those areas.

With regard to the region's present and projected population and economic growth, the Dublin and Eastern Regions are a major load centre on the Irish electricity transmission system; specifically, approx. one third of total demand is located here. The development of the regional grid will enable the transmission system to safely accommodate more diverse power flows from renewable generation in order to respond to future growth in electricity demand. These developments, such as the proposed 110 kV substation and associated transmission infrastructure, will strengthen the grid for all electricity users which will subsequently improve energy security and quality of supply.

Relevant to the type and nature of the proposed development, the RSES concludes that:

The development of a safe, secure and reliable supply of electricity and the development of enhanced electricity networks as well as new transmission infrastructure projects that might be brought forward in the lifetime of this plan under EirGrid's (2017) Grid Development Strategy will serve the existing and future needs of the Region and strengthen all-island energy infrastructure and interconnection capacity.

The RSES sets out specific guiding principles and considerations, reproduced below in Table 3, for Local Authorities when analysing the provision of energy network infrastructure in principle:

Table 3: RSES's Guiding Principles on the Provision of Energy Networks in Principle

In considering facilities of this nature that traverse a number of counties or that traverse one county in order to serve another, Planning Authorities should consider the proposal in light of the criteria outlined below. It is important that planning authorities are engaged in early consultation and discussion with the relevant Transmission System Operator
The development is required in order to facilitate the provision or retention of significant economic or social infrastructure
The route proposed has been identified with due consideration for social, environmental and cultural impacts
Where impacts are inevitable mitigation features have been included
Where it can be shown that the proposed development is consistent with international best practice with regard to materials and technologies and that it will ensure a safe, secure, reliable, economic and efficient high-quality network
Corridors for energy transmission or pipelines should avoid creating sterile lands proximate to key public transport corridors, particularly rail routes, and in built up urban areas.

Source: Draft RSES (2018)

The following Regional Policy Objectives outlined below ensure that the development of the energy network is undertaken in a safe and secure way which meets the projected demand levels, Government Policy and the need to achieve a long-term, sustainable and competitive energy future for Ireland.

- **RPO 10.15**: Support and facilitate the development of enhanced electricity and gas supplies, and associated networks, to serve the existing and future needs of the Region and facilitate new transmission infrastructure projects that might be brought forward in the lifetime of this Strategy including the delivery of the necessary integration of transmission grid requirements to facilitate linkages of renewable energy proposals to the electricity transmission grid in a sustainable and timely manner;
- **RPO 10.17**: 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; and
- **RPO 10.18**: Support EirGrid's *Implementation Plan 2017-2022* and *Transmission Development Plan (TDP)* 2016 and any subsequent plans prepared during the lifetime of the RSES that facilitate the timely delivery of major investment projects subject to appropriate environmental assessment and the outcome of the planning process.

4.4.3 Regional Planning Guidelines for the West Region 2010-2020

By virtue of County Roscommon's proximity to the project study area (c. 100m) and its inclusion within the project's zone of influence, a review of the Regional Planning Guidelines (RPGs) for the West Region was undertaken to identify any relevant policies to the redevelopment of the Lanesboro 110kV substation. In 2010, the West Regional Authority (now restructured as the Northern and Western Regional Assembly) published its RPGs) for the period 2010-2022. The strategic vision of the RPG's are as follows:

"*By 2022 the West Region will be an innovative and highly competitive region with sustainable settlements located in an outstanding environment with excellent opportunities and quality of life for its citizens*."

The RPG sets out a number of policies designed to ensure that the region's infrastructural requirements are met, including those specific to the transmission grid. The redeveloped 110 kV GIS Substation will in part assist in securing 'available, reliable, cost competitive, and sustainable' transmission services. The RPG acknowledges that the emerging renewable

energy sector will be an influential factor within the development of a more secure and sustainable network; specifically, it will not be possible for the West Region to utilise Ireland's natural resources of renewable energy without significant infrastructural upgrades. Grid investment within the West Region should therefore be guided by the need to solve immediate deficiencies in addition to accommodating expected long-term growth in population and economic development. Energy policies relevant to the redeveloped 110 kV GIS Substation are set out below:

- **SG3**: To ensure that a framework is devised to meet the service infrastructural requirements of the Region for both now and into the future. This will be achieved through proper planning and sustainable development, ensuring minimal environmental impact and subject to the requirements of the Habitats Directive through the process of Appropriate Assessment (where relevant); as follows: Improving and addressing the present deficits that exist in the energy sector;
- **EDP21**: Support the development of the electricity grid network to facilitate the roll out of renewable energy infrastructure;
- **IP41**: Support the investment required to facilitate renewable energy projects;
- **IP42**: Support investment to upgrade the existing transmission and distribution network and to build new circuits as required; and
- **IO53**: Support the use of the existing and necessary upgrades of the electricity grid to facilitate the production of electricity in the region from renewable sources. In particular the grid extending to the areas with high potential for wind energy, should be sufficient to cater for consumer demand and the supply of renewable energy to the national grid.

4.4.4 Draft Regional Spatial and Economic Strategy for the Northern and Western Region

The Border, Midland and Western Regional Assembly Region was amalgamated within the Northern & Western Regional Assembly (NWRA) on the 1st of January 2015. The NWRA has a recognised leadership role in setting out regional policies and coordinating initiatives which support the delivery and implementation of the National Planning Framework (NPF). The primary vehicle for this is the preparation and implementation of Regional Spatial and Economic Strategy (RSES). Published for consultation in November 2018, this strategy aims to provide a long-term strategic planning and economic framework for the development of the region.

Due to historically low levels of urbanisation in comparison to other regions and a rise in regional disparity in terms of economic performance and national investment in enabling infrastructure, i.e. utilities, the RSES notes that regional level strategic planning and economic policy is critical in facilitating the growth of the region.

The cross-cutting principles captured in the RSES's Strategic Vision are replicated below:

'*Play a leading role in the transformation of this region into a vibrant, connected, natural, smart and a great place to live*'

The Strategic Vision is underpinned by the RSES's Growth Framework which aims to align existing regional initiatives, identify future priorities and actions, and assess the resources and partnerships required for implementation. In the context of the Strategic Vision, the RSES sets out 5no. Growth Ambitions as summarised below:

- **Vibrant**: The NWRA believes that strong economic growth, which creates permanent, sustainable jobs, is best achieved by building a competitive and productive economy.

- **Natural**: It has been identified that more strategic actions are required to prepare the region for what is to come and highlights the need to create a combined long term vision for the future of both energy supply and our ability to generate renewable energy.
- **Connected**: Accessibility and mobility within the region have a direct effect on the region's economic competitiveness.
- **Inclusive**: One of the strongest foundations and emerging propositions this region has to build on is its 'liveability'.
- **Infrastructure**: Provision and maintenance of economic infrastructure, such as energy, water, and wastewater, are key to delivering compact growth and a connected, vibrant, inclusive, resilient and smart region.

With regard to the above growth ambitions, the redeveloped 110 kV GIS Substation will directly benefit, and in relation to *Vibrant* and *Infrastructure*, facilitate regional progression towards, the achievement of these overarching ambitions.

Vibrant Region – Economy and Employment

Energy is needed for economic growth, and access to affordable, reliable energy is an essential development objective. The RSES acknowledges that energy will have to be low-carbon and zero- carbon in the future to become a Low Carbon economy by 2050 with regard to Ireland's National Policy Position on Climate Action and Low Carbon Development (2014) and binding EU requirements. As such, the RSES notes that the investment in clean technology is not only an environmental strategy but an economic growth strategy.

The region has significant renewable energy resources and supply exceeds demand which results in an excess of generation in the area. As such, there is a need for reinforcement of the grid in the region. Operating as part of the transmission grid, the redeveloped 110 kV GIS Substation will assist in facilitating greater integration of renewable energy generated from within the region into the grid in order to meet growing national demand, particularly within the eastern seaboard. The RSES sets out Regional Policy Objectives which are directly relevant to the operation of the redeveloped substation:

- **Policy Objective 40**: To position the region to avail of the emerging global market in renewable energy by stimulating the development and deployment of the most advantageous renewable energy systems;
- **Policy Objective 41**: Encourage the development of the transmission and distribution grids to facilitate the development of renewable energy projects and the effective utilization of energy generated from renewable sources having regard to the future potential of the region over the lifetime of the Strategy and beyond; and
- **Policy Objective 42**: Support the development of secure, reliable and safe supplies of renewable energy, in order to maximise their value, maintain inward investment, support indigenous industry and create jobs.

Enabling our Region – Infrastructure

The RSES states that provision of enabling infrastructure is key to delivering a '*connected, vibrant, inclusive, resilient and smart region*' , and alternatively, the lack of access to the benefits that infrastructure provides, electric power, clean water, modern telecommunications, and safe and reliable transportation, are an impediment to higher living standards, and a significant obstacle to economic development.

The RSES notes that the NWRA aims to encourage stakeholders to facilitate new opportunities and concentrate on the possibilities to further advance renewable energy generation and use.

The RSES demonstrates that this region is open to renewable energy generation and facilitatory infrastructure through the following Regional Policy Objectives:

- **Policy Objective 187**: The Assembly support the development of a safe, secure and reliable electricity network, and the transition towards a low carbon economy centred on energy efficiency and the growth projects outlined and described in this strategy;
- **Policy Objective 189**: The Assembly supports the necessary integration of the transmission network requirements to allow linkages with renewable energy proposals at all levels to the electricity transmission grid in a sustainable and timely manner; and
- **Policy Objective 190**: Reinforcements and new electricity transmission infrastructure are put in place and their provision is supported, to ensure the energy needs of future population and economic expansion within designated growth areas and across the Region can be delivered in a sustainable and timely manner and that capacity is available at local and regional scale to meet future needs.

4.5 Local Planning Policy

4.5.1 Longford County Development Plan 2015-2021

The Longford County Development Plan 2015-2021 (as varied), hereafter referred to as the LCDP, sets out an overall strategy for the proper planning and sustainable development of the area through cross-cutting policies and strategies designed to *strengthen and develop the economic, social and cultural life of the county in a way that can be sustained to safeguard the quality of life for future generations.*

Central to the achievement of the LCDP Strategy is the Development Plan Goal, as stated in Section 5.5.1, "*the work of ESB Networks in enhancing the capacity, reliability and efficiency of supply to the county is acknowledged. Longford County Council will support and encourage further measures in this regard in line with the government Policy Statement on Strategic Importance of transmission and other energy Infrastructure*". Adequate electricity supply is therefore essential to ensuring the socio-economic growth of the County and ensuring adequate opportunity for investment that may be dependent on bulk energy use. This need for established utility infrastructure to secure and drive potential economic growth is captured in Policy **ECON4:**

It is the policy of the Council to zone sufficient and appropriate land for the facilitation of business, commercial and industrial purposes that stimulates the economic growth, viability and vibrancy of the county, without compromising the environmental, residential or amenity potential of the area.

This ethos reflects higher governance policy which state that energy infrastructure will be critical for economic development, regional development and the secure provision of energy for the proper functioning of the markets. As such, the LCPD notes that Longford County Council will support and encourage further measures to enhance the capacity, reliability and efficiency of electricity supply to the county through the following policy:

- **EC1**: To facilitate the provision, upgrading and maintenance of electricity infrastructure within the County subject to meeting the relevant development management standards and subject to demonstration of the following:
  - The development is required in order to facilitate the provision or retention of significant economic or social infrastructure.
  - The route proposed has been identified with due consideration for the social, economic, environmental and cultural impacts.

- Where impacts are inevitable mitigation features have been included subject to Appropriate Assessment.
- Where it can be shown that the proposed development is consistent with international best practice.

Spatial Zoning

As part of the Core Strategy and Strategic Aims, the LCDP has developed 'evidence-based' zoning maps which indicate the quantum and locations of future development for the plan period for County Longford's settlements. These zonings are intended to be flexible, provided that the basic concepts of proper planning, residential amenity and good design practice are adhered to.

Lanesborough, a Tier 4 – Local Service Town, is identified as having an important role in the provision of local level retailing, social and leisure functions and local services to wider rural hinterland. Zoning within the settlement will therefore '*emphasis the maintenance and consolidation of growth…in a manner that enhances their strong visual character and built fabric, natural heritage assets and amenities including the development of Lough Ree'*.

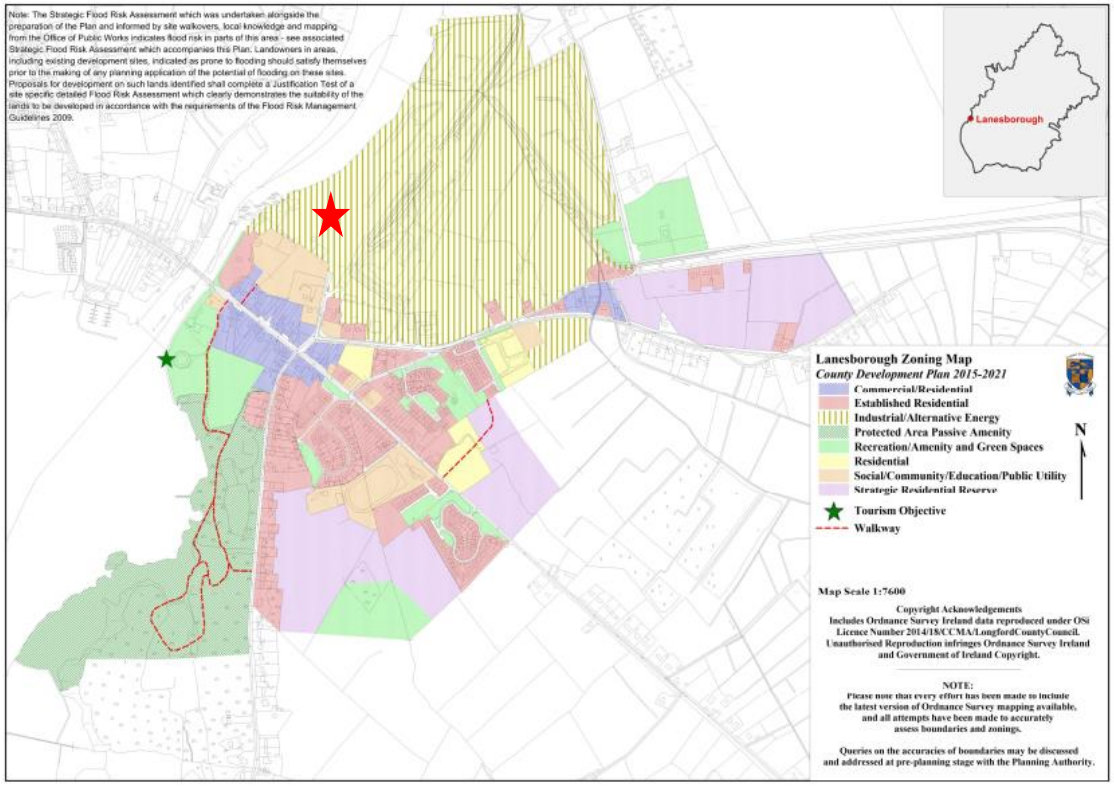
- The town, a regionally important bridging point on the River Shannon, is laid out in a linear pattern, running in an east-west direction across the river. In the town centre, residential units make up most of the built fabric along the Main Street, including those located above commercial or retail units (*Commercial / Residential*).
- To the north-east of the town centre, the built environment predominantly consists of Lough Ree Power Station, Bord Na Móna infrastructure and national transmission plant (*Industrial/Alternative Energy*). Community facilities are also located within this north-eastern section of Lanesborough (*Social/Community/Education/Public Utility*).
- Residential massing consisting of Curraghrua housing estate and one-off housing (*Established Residential / Residential*) characterise the south-eastern extent of the zone of influence while one-off residential housing has also been developed adjacent to the eastern bank of the River Shannon.
- Zoned as both *Recreational/Amenity and Green Space* and *Industrial/Alternative Energy*, the banks of River Shannon are extensively used at present by locals and visitors alike for passive and active recreational purposes such as angling.

As indicated by the Lanesborough Zoning Map (Figure 4), the substation redevelopment study area is located within land zoned for *Industrial/Alternative Energy* which is characterised as:

To primarily provide for industrial/workshop, warehouse and commercial or business development including compatible uses such as offices and distribution and to allow for the expansion of existing energy infrastructure.

The LCDP states that zonings of industrial nature are indicative and are adaptable to the nature, size and requirements of future employment/industrial development. In the context of the above zoning considerations, the substation redevelopment is consistent in principle with the primary objective and permitted uses of *Industrial/Alternative Energy,* i.e. the development and operation of energy infrastructure. It should also be noted that in the immediate setting of the study area, this area has historically accommodated Lanesboro and Lough Ree Power Stations, Bord Na Móna operations and the existing Lanesboro 110 kV substation. As such, the precedence for the acceptance of the proposed development in zoning terms is considered established.

Figure 4: Lanesborough Zoning Map 2015-2021



Note: 'Red Star' is indicative of the project study area
Source: Longford County Development Plan 2015-2021

In addition, any proposed development within the project study area will have to have regard to the LCDP's Policy ILW8 which states:

"Development will be strictly controlled in the vicinity of the inland waterways of the County and will not normally be permitted. Application for such development shall be assessed, in addition to normal planning criteria, in terms of its potential impact on the visual, recreational, ecological and environmental integrity of the area".

4.5.2 Roscommon County Development Plan 2014-2020

The west bank of the Shannon, opposite of the project study area and included within the defined zone of influence, is governed by the provisions of the Roscommon County Development Plan 2014-2020, hereafter referred to as the RCDP.

The RCDP sets out the over-arching strategic framework for the proper planning and sustainable development of the entire functional area of County Roscommon as described within its Planning Vision:

'*facilitate the future progress of Roscommon in a measured, calculated and plan led sustainable manner across the county as a whole in a way that will maximise the beneficial effect of past and future infrastructural investments and accruing economic impacts*.'

With regard to the Planning Vision, the RCDP recognises that the transmission grid is the 'backbone' of the national power supply. The electricity demand of County Roscommon is distributed from the 110 kV Station Bulk Supply Points at Carrick-on-Shannon, Lanesboro

and Athlone. It is critical that adequate capacity, in terms of both energy and energy infrastructure, is available within this network in order to support County Roscommon's development as emphasised within **Strategic Aim 5**, to support continued capital investment over a broad range of infrastructural provisions. Specifically, the RCDP states that the entire 110kV network requires uprating to ensure that the assets are being utilised to their maximum level which includes the existing Lanesboro 110 kV Substation.

The RCDP also notes that the '*availability of clean and reliable energy is an essential requirement for the sustainable economic development of the county*' and is therefore committed to responding to governmental policy on renewable energy through future transmission development.

The key policies/objectives which are considered relevant to the redeveloped substation are identified below:

- **Policy 4.54**: Promote a move away from fossil-fuel energy production and facilitate renewable energy infrastructure provision so as to provide for the sustainable physical and economic development of County Roscommon;
- **Policy 4.59**: Facilitate the sustainable infrastructural development of energy generation and transmission networks, to ensure the security of energy supply and provide for future needs whilst also ensuring the preservation of scenic or otherwise significant landscapes from the visual intrusion of large-scale energy infrastructure; and
- **Policy 4.60**: Ensure that all plans and projects associated with the generation or supply of energy will be subject to screening for Appropriate Assessment in accordance with Article 6(3) of the Habitats Directive Assessment.

It should be noted that the RCDP does not set out any land zoning objectives for the sections of Ballyleague which fall within the project's zone of influence.

4.6 Conclusions

As demonstrated by the strategic national, regional and local planning policies and objectives set out heretofore, the proposed substation redevelopment at Lanesboro is consistent with same by virtue of the following key considerations:

European

- Under the Renewable Energy Directive, Ireland has a binding national overall target for renewable energy consumption of 16% in 2020. In order to achieve this target, the Irish Government has decided that 40% of electricity consumed in 2020 will be generated using renewable energy sources with targets of 10% and 12% in transport and heat. Ireland is expected to fall short of its targets for 2020 based on current progress.
- It is clear that Ireland will need to continue to invest in and further develop its transmission grid to ensure that the national grid has the capacity to accommodate integration of increased renewables over the next decade such that future targets cam be achieved and exceeded.

National

- The provision of a cost-efficient transmission system will aid regional economic goals in addition to national renewable energy targets and particularly the 40% renewable electricity target. The substation redevelopment will facilitate the growth of renewable energy and wind and make a positive contribution as Irelands as moves away from a centralised fossil fuel-

based electricity system to a low carbon energy future which requires smarter operation of grid networks.

- The increased provision of energy/power capacity to support new investment and jobs will ensures that Ireland remains competitive from an energy cost perspective.

Regional

- The emerging renewable energy sector within the Western region will be an influential factor within the development of a more secure and sustainable transmission grid. Grid investment within the West Region will be guided by the need to solve immediate infrastructural deficiencies in addition to accommodating expected long-term growth in population and economic development.
- Operating as part of the transmission grid, the redeveloped 110 kV GIS Substation will assist in facilitating greater integration of renewable energy generated from within the Western region in the context of ensuring grid capacity to meet growing commercial demand, particularly energy provision within the eastern seaboard.

Local

- The study area is located within land zoned for *Industrial/Alternative Energy,* by the LCDP, which has a clear present and historical precedent for the development of energy infrastructure projects.
- Longford County Council will support and encourage projects which aim to enhance the capacity, reliability and efficiency of electricity supply subject to demonstrating compliance with policies and objectives of the LCDP. EirGrid will ensure that any future application which may be progressed under '*Step 5 – The Planning Process'* is consistent with this requirement.
- The RCDP recognises that it is critical that adequate capacity, in terms of both energy and energy infrastructure, is made available within the transmission grid in order to support County Roscommon's development.

5 Land Use and Environmental Context

5.1 Introduction

The purpose of this chapter is to present the key characteristics and features of the Project study area and its zone of influence which are relevant for determining the constraints of the proposed development site. These constraints, defined as '*any physical, technical, legal, environmental, topographical or other consideration that may potentially affect, limit, restrict or confine the proposed development within the study area'* will contribute to the overall feasibility of the substation redevelopment.

The study area is comprised of land which is available to EirGrid. As noted in Section 2, a 2km^2 zone of influence centred on the study area has also been identified in order to identify social and environmental constraints. The zone of influence includes the town of Lanesborough-Ballyleague, the River Shannon and upper extent of Lough Ree, Lough Ree Power Station and the N63.

This chapter, developed in line within Step 4 guidance, builds upon data already prepared in respect of the Project; specifically, technical and environmental feasibility studies and other analysis concluded in Step 2 (*Identify Technology Options*) and Step 3 (*Identify Preferred Technology Option(s) and General Areas where project could be built*).

A high-level desk-top study was undertaken to provide an assessment of the study area and its zone of influence to identify constraints which will need to be managed during the construction and operation of the Project. Publicly available data resources which were used are listed below, unless otherwise cited within the chapter:

- Google Information Database and Mapping Service;
- Longford County Council Planning Services;
- Roscommon County Council Planning Services;
- EPA – Industrial Emission License Database and Mapping;
- Central Statistics Office (CSO) 2016 census data;
- MyPlan Spatial Database;
- Geological Survey Ireland Database;
- Heritage Mapping Database;
- National Monuments Service Database; and
- Fáilte Ireland Tourism Datasets

The identified constraints have been mapped and are considered in identifying Project design options. The project study area and its zone of influence have been characterised under the following key themes set out in Table 4. Furthermore, supporting mapping for these constraints is provided in Appendix B.

Table 4: Constraints

Section	Theme
5.2	Population & Settlement
5.3	Land Use
5.4	Access

Section	Theme
5.5	Landscape & Visual
5.6	Ecology
5.7	Archaeology, Architecture and Cultural Heritage
5.8	Surface Water Quality
5.9	Soils, Geology and Hydrogeology
5.10	Noise

5.2 Population & Settlement

5.2.1 Population

The study area's zone of influence extends over two administrative areas which include Longford County Council and Roscommon County Council.

According to the 2016 Census results, the population of County Longford was 39,000 in 2011 which increased by 1,873 to 40,873 in 2016, an increase of 4.8%. This population growth was slightly above what was forecasted by the Midland Regional Planning Guidelines 2010-2020 (MRPG) which set targets of 39,392 in 2016 and 41,392 by 2022, a 1.2% increase in respect of County Longford's 2016 demographics. County Roscommon's 2016 population was recorded at approximately 64,544 which represents an increase of 479 from 2011. This population growth was below what was forecasted by the West Regional Planning Guidelines 2010-2022 (WRPG) which set targets of 66,700 for County Roscommon in 2016 and 73,400 by 2022.

The closest settlement is Lanesborough-Ballyleague, located within the south-eastern section of the study area's zone of influence. Lanesborough is situated on the eastern bank of the River Shannon (County Longford) whilst Ballyleague is on the western bank (County Roscommon). Lanesborough-Ballyleague had a population of 1,377 in 2011. As of 2016, Lanesborough-Ballyleague had a population of 1,454, an increase of 77 since 2011 (5.5% increase). The town's present demographic growth has been in line with regional forecasting set out in the MRPG.

5.2.2 Employment

The 2016 Census data indicates that there was a total population of 147 of 1,154 surveyed individuals within Lanesborough-Ballyleague who were either looking for their first job (1.47%) or unemployed having lost or given up previous job (11.27%). In comparison to the total population on the Live Register[5] for County Longford (2,504), Lanesborough-Ballyleague accounts for 5.87% of the unemployment rate. It should be noted that these statistics are below those provided within the Longford County Development Plan 2015-2021 (LCDP) which notes that County Longford had an overall unemployment rate of 24.7% at the time of its publication. At present, the major economic activity within the Project study area and its zone of influence is the operation of ESB's Lough Ree Power, a 100MW capacity peat fired power station, located in Lanesborough (Rathclinde ED).

There are other employment and economic activities of varying scale in the study area's zone of influence as noted in Table 5. Of the persons at work, according to the 2016 census, the largest percentages of people were employed in the Professional Services, Commerce/Trade and Manufacturing industries. It should be noted that the commerce/trade and manufacturing

[5] November 2018

industries have specific requirements for transportation infrastructure regarding the movement of physical goods to their markets, and subsequently, customer access to those goods.

Table 5: ED's Industries and Population at Work or Unemployed by Occupation

	Rathcline	Cloontuskert
Industries		
• Agriculture, forestry and fishing	33 (5.87%)	32 (6.2%)
• Building and construction	35 (6.23%)	17 (3.29%)
• Manufacturing industries	90 (16.01%)	74 (14.34%)
• Commerce and trade	120 (21.35%)	114 (22.09%)
• Transport and communications	28 (4.98%)	11 (2.13%)
• Public administration	35 (6.23%)	55 (10.66%)
• Professional services	136 (24.2%)	135 (26.16%)
• Other	85 (15.12%)	78 (15.12%)
• Total	562	516

Source: Central Statistics Office (2016)
Access: 11th of December 2018

5.2.3 Community and Residential Facilities

The LCDP classifies Lanesborough as a 'Local Service Town' with the expectation that Lanesborough will perform important local level, residential, retailing, social and leisure functions and providing appropriate local services to a wider rural hinterland. In contrast, the Roscommon County Development Plan 2014-2020 (RCDP) classifies Ballyleague as a Tier 4 'Rural Settlement' which has the potential to absorb varying degrees of residential capacity and is envisaged as providing an alternative to "one off" rural housing within the local area.

Lanesborough is centred around the River Shannon with a mix of commercial infrastructure (i.e. retail, public houses and restaurants) and leisure activities (Lanesborough Playground and Hanley's Marina) adjacent to the N63. There is a small massing of linear residential development within the south-eastern extent of the zone of influence along the N63, however, the majority of residential development within Lanesborough is located south of the zone of influence along the R392 and Rathcline Road. The most proximate residential dwellings to the study area are approx. 200m south and 300m south-west. Community facilities situated within the zone of influence include a post office, educational institution (Scoil Mhuire Gan Smal), religious establishment (St. John's Church) and specialist commercial activities. Scoil Mhuire Gan Smal and St. John's Church are approx. 240m and 300m south, respectively, of the study area (as shown in Figure 5). Proximate residences and community facilities are shown collectively on constraints drawing 229100468-MMD-00-XX-GIS-N-1107.

Figure 5: Proximate Community Facilities to Proposed Development Site

Source: Mott MacDonald

It should be noted that there are other community facilities outside of the study area's zone of influence within Lanesborough including a fire station, Garda Station, community centre, health centre, bank, St. Mary's Church (Lanesborough) and Lanesborough Community College which may also be affected by the construction of the proposed development.

5.2.4 Tourism, Recreation and Amenities

Lanesborough-Ballyleague's local tourism industry is established on the cultural, historic, natural and aesthetic capital of the River Shannon and Lough Ree. At present, the River Shannon and its banks provide an all-year-round amenity of the town for both residents and holidaymakers. This area is a primary location for B&Bs and holiday rental accommodation which indicates that summer tourism is a growing economic sector within the town.

Aquatic leisure activities, including fishing / angling, boating and aquatic sport are undertaken at varying frequencies depending on peak/off peak tourist seasons. A nationally recognised angling centre, Lanesborough's Hot Water Stretch is located just north of Lough Ree on the River Shannon. With a regular release of hot water from Lough Ree Power Station, this centre provides ideal conditions for coarse fish[6]. Lanesborough also hosts a number of annual events during the summer which include Bord Na Móna's Water Festival, Lough Ree Environmental Summer School and Arts Festival, Two Provinces Aquathon and Triathlon and the International Harp Festival by Windsong Music School.

In addition to present attractions, Lanesborough-Ballyleague's tourism industry may benefit from the development of Lough Ree Distillery and Visitor Centre (Planning Ref. 16256 and 186), which is proposed to be located also within the zone of influence and is envisioned to attract more than 25,000 tourists and generate 20 new local jobs[7].

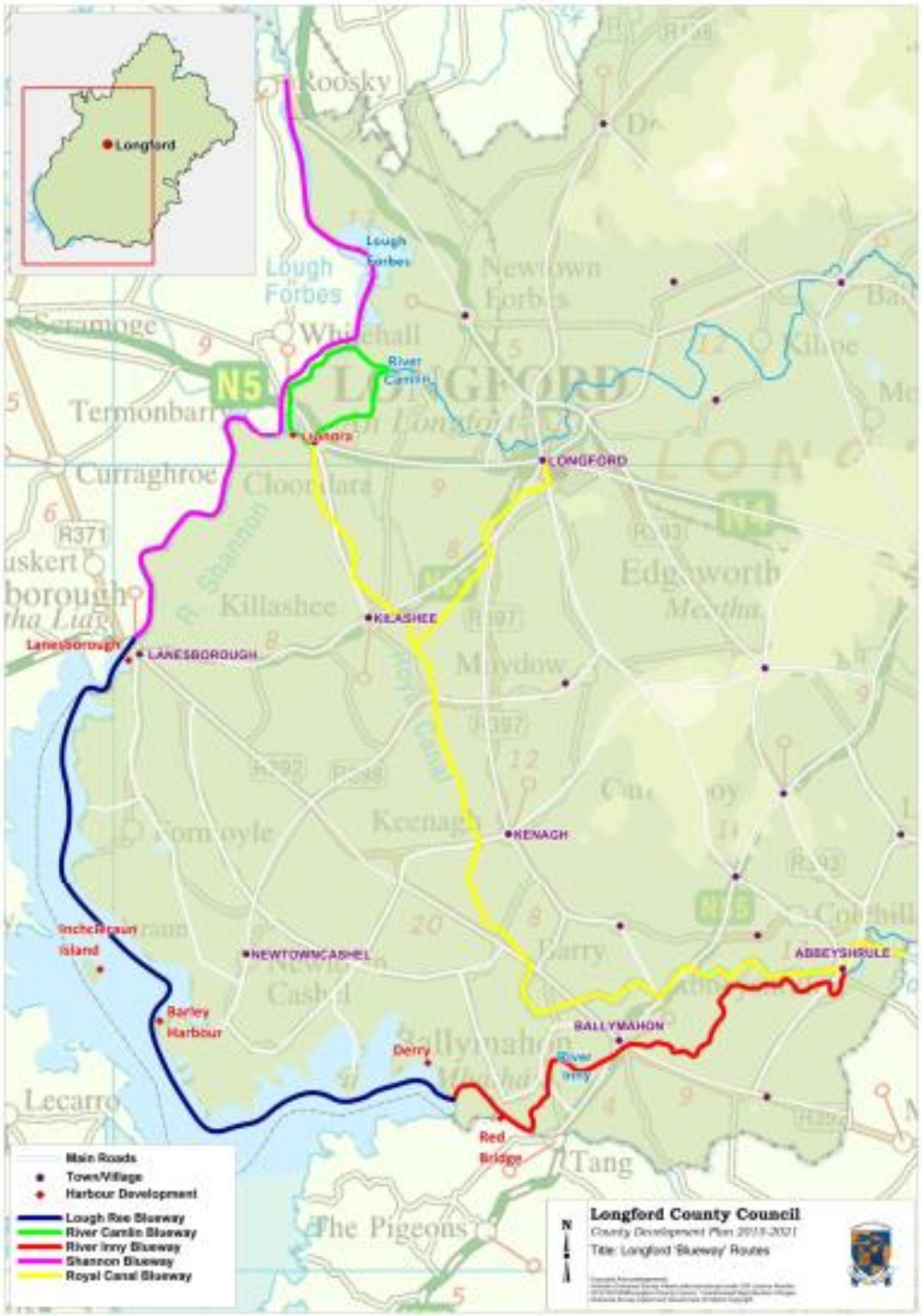
The LCDP notes that Lanesborough needs to further invest in and develop its water and lake-based activities, and as such, sets out a number of development objectives designed to

[6] http://www.fishinginireland.info/pike/shannon/lanesboro.htm

[7] https://www.irishtimes.com/business/agribusiness-and-food/distillery-in-longford-invests-5m-in-new-facilities-1.3638889

capitalise on its strategic location on the River Shannon and Lough Ree. Of relevance to the study area and its zone of influence, one objective notes the need to develop the Shannon/ Lough Ree Canoe Blueway (from River Inny to Lanesborough) in order to enhance its recreational and tourism potential (Figure 6).

Figure 6: Longford 'Blueway' Routes



Source: Longford County Development Plan 2015-2021

5.3 Land Use

5.3.1 Corine Land Cover

The study area and its zone of influence are characterised by a variety of land use and activities as identified within the Corine 2018 dataset. There are four Corine land cover types within this overall area described below in Table 6.

Table 6: Corine Land Cover (2018) within Zone of Influence

Land Cover	Constraint Analysis
511 - Water Courses	*Natural or artificial water-courses serving as water drainage channels which also includes canals.* The River Shannon runs through the western extent of the study area's zone of influence; specifically, it constitutes the northern and north-western boundary of the study area.
121 - Industrial and Commercial Units	*Buildings, other built-up structures and artificial surfaces (with concrete, asphalt, tarmacadam, or stabilised like e.g. beaten earth) occupy most of the area. It can also contain vegetation (most likely grass) or other non-sealed surfaces. This class is assigned for land units that are under industrial or commercial use or serve for public service facilities.* This land cover encompasses the study area, ESB Lough Ree Power Station, Bord Na Móna facilities and the existing Lanesboro 110 kV substation and associated transmission infrastructure.
231 - Pastures	*Permanent grassland characterized by agricultural use or strong human disturbance. Floral composition dominated by graminacea and influenced by human activity. Typically used for grazing - pastures, or mechanical harvesting of grass – meadows.* Pasture lands constitute the majority land cover within the eastern and north-western sections of the study area's zone of influence. Predominantly consisting of open undeveloped greenfield, there are a small number of residential dwellings and agricultural structures.
112 - Discontinuous Urban Fabric	*Urban structures and transport networks associated with vegetated areas and bare surfaces are present and occupy significant surfaces in a discontinuous spatial pattern. The impermeable features like buildings, roads and artificially surfaced areas range from 30 to 80 % land coverage.* The land cover is characterised as having dense residential and commercial massing within the Lanesborough town centre (southern extent of the study area's zone of influence) with sparser liner development located on the N63 within the south-eastern and south-western sections of the zone.

Source: European Environmental Agency (EEA)[8]

5.3.2 Existing Utilities

Electricity

The Electricity Supply Board (ESB) has historically generated electricity in the Midlands since the 1950s as exemplified by the Lough Ree Power Station. Adjacent to Lough Ree Power Station, Bord Na Móna facilities provide ancillary support to the operation of the power station, i.e. the transportation, preparation and intake of peat supply. Due to the national significance of the power station, the adjacent Lanesboro 110 kV substation (Figure 8) has become a critical connection point on the transmission grid.

[8] Updated CLC illustrated nomenclature guidelines, EEA (2017) [https://land.copernicus.eu/user-corner/technical-library/corine-land-cover-nomenclature-guidelines/docs/pdf/CLC2018_Nomenclature_illustrated_guide_20170930.pdf]

Figure 7: Lanesboro 110 kV Substation

Source: Mott MacDonald

Figure 8: Convergence of 110 kV OHLs within the Study Area

Source: EirGrid

Water / Sewage

The Lanesborough Public Water Supply (PWS) is supplied by three boreholes within the town and its environs; the ESB borehole which is located within the vicinity of Lanesboro 110 kV substation and two boreholes at Lisrevagh, 5km from the substation. These three boreholes collectively produce 2300 m^3/day of treated water with 1800 m^3/day from the ESB site. The 2014 Drinking Water Audit Report[9], the last known audit of the Lanesborough PWS, notes that groundwater appears to flow away from the substation site and towards the borehole such that the existing ESB operation may pose a risk of contamination to the borehole.

Notwithstanding the above, groundwater sampling and analysis as part of the Environmental Exit Audit (URS) at the former ESB Power Generating Station found that:

- Concentrations of heavy metals were considered generally representative of background concentrations in Irish soils and were not considered to indicate a potential risk to the quality of proximate controlled waters;
- All heavy metals analysed were below the respective EPA Interim Guideline Values in the ESB borehole; and
- Reported levels of (DRO) and Mineral Oil, PAHs, PCBs, Chlorine, fluoride and sulphate, phenols and cyanide in soil were detected above the respective soil parameters protective of controlled waters; however, concentrations for these substances in groundwater and surface water were below both respective EPA Interim Guideline Values and Environmental Quality Standards.

On the basis of these findings, the Audit concluded that soil and shallow groundwater are not considered to pose a risk to the bedrock aquifer underlying the site.

Road

Lanesborough is served by the N63, R392 and Rathcline Road, all of which connect to the main street. The following extracts from programmes of road improvement, as outlined in the LCDP and RCDP, are relevant to the study area:

- **Roads 11** (Longford County Council): Routes of strategic importance within the County, as outlined below, shall be protected from further access creation and intensification of existing accesses and development on national routes shall be actively discouraged.

[9] http://www.epa.ie/pubs/advice/drinkingwater/epadrinkingwaterauditreports/Lanesborough.pdf

  - R392 Lanesboro/Mullingar
- **Roads 18** (Longford County Council): Facilitate essential safety improvements on regional and local roads in order to enhance the efficiency and capacity of the regional and local road network. Carriageway improvements will be carried out in accordance with a phased programme of works (2013-2021)
  - N63 Restoration/Improvement
  - R392 Ballymahon/Lanesborough improvement
- **Planned National Secondary Road Projects** (Roscommon County Council)
  - Upgrade N63 between Ballyleague to Mount Talbot (County Boundary)
    - Continue programme of pavement strengthening for N63
    - Improve signage and markings on N63

5.3.3 Industrial Emission Licenses

Lough Ree Power Station operates in accordance with the requirements laid out in its Industrial Emissions (IE) Licence P0610-02 (as amended) which includes emission limit values (ELVs) for emissions to air, water and specified noise limits. It should also be noted that Lough Ree Power Station operates in accordance with its Greenhouse Gas (GHG) Emission Permit No. IE-GHG068-10379-02 as issued by the EPA.

5.3.4 Seveso Sites

The Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the “COMAH Regulations”), implement the Seveso III Directive (2012/18/EU) in Ireland. There are no Seveso sites within the zone of influence.

5.3.5 Planning Applications

The majority of valid (Granted) planning applications in the study area’s zone of influence within the last five years (Table 7) are related to residential and commercial development. The most recent application for residential development (Planning Ref. 18241), located approx. 230m south-east of the study area on the access road to the study area, was lodged on the 25th of October 2018 for eight semi-detached two bedroom bungalow type dwelling houses and an upgrade of access onto public road located. A Request for Further Information (RFI) was published by Longford County Council for Planning Ref. 18241 on the 17th of December 2018 in relation to a revised design for the foul sewage network and watermain and the requirement to engage the services of a suitably required archaeologist to carry out an archaeological assessment of the proposed development site including test trenches. In relation to the revised foul sewage network and watermain design, Longford County Council has noted a preference for the use of the existing public road which, at present, is the Project’s proposed access route.

The progressive growth of Lanesborough-Ballyleague’s tourism industry has generated a local market for B&Bs and holiday rental accommodation as demonstrated by the Covenant Guest House (Planning Ref.16112, 174 and 1786) and the Marina Club House Apartments (Planning Ref. 18428). Grants of permission for Lough Ree Distillery (Planning Ref. 16256 and 186) and the redevelopment of local amenity infrastructure (Planning Ref. 1368) are further indicators of the emerging tourism opportunities within the town.

In regard to utility infrastructure, the grant of permission for Planning Ref. 18139 on 21st August 2018 consists of the refurbishment of the Cloon - Lanesboro 110 kV overhead line which connects into the Lanesboro 110 kV substation. As noted under Section 5.2.2, ESB submitted a planning application for a change of fuel source from peat to biomass within Lough Ree Power

Station in February 2019 - Ref. 1938. It should be noted that Longford County Council issued a Request for Further Information (RFI) in respect of this application on the 8th April 2019.

Table 7: Local Development (within 500m of Study Area)

Planning Ref. #	Townland	Grant Date	Applicant	Description
1938	Lanesborough, County Longford	TBD	Electricity Supply Board	Electric Supply Board (ESB) submitted a Planning Application (Ref. 1938) to Longford County Council on the 13th of February 2019 seeking permission for the following development at Lough Ree Power Station: • The continued and on-going operation of the existing station and associated Ash Disposal Facility (ADF) beyond the previously permitted date of 31st December 2020; • The phased transition of the Station to firing exclusively on renewable biomass as a replacement fuel for peat; • The development of fuel management and handling facilities to facilitate the change in fuel type.
1368	Ballyleague, County Roscommon	21/02/2013	Roscommon County Council	Reconstruction of Riverside wall (150 metres approx.) and Development of existing Amenity area
1331	Lanesborough, County Longford	07/05/2013	Gerard & Laura Shanley	Change of use of ground floor plan of dwelling house to Beauty Salon and erection of sign on front elevation, and all associated works
1436	Lanesborough, County Longford	09/11/2014	Adrian Farrell	Demolish existing two storey dwelling house and to erect 2 no. two storey detached dwelling houses, and connect to public sewers, and all associated works
14326	Ballyleague, County Roscommon	18/12/2014	Colin Burke	To demolish rear single storey extension, separate outbuilding and front porch. Construct new rear single storey domestic extension and front porch structure to dwelling house
16112	Lanesborough, County Longford	16/08/2016	Christopher & Claire Webb	Retention of the change of use of the existing 9 no. bedrooms at first floor level servicing the former Mercy Convent building from their previous use to their current use as Bed & Breakfast accommodation and all ancillary works
16204	Lanesborough, County Longford	27/01/2017	Bernard Keane	Change of use of ground floor pharmacy to a café, retention for signage to front elevation and for the proposed provision of 2 additional car parking spaces
16256	Lanesborough, County Longford	31/01/2017	Blacksmith Ventures Ltd	Development of a distillery and visitor centre
174	Lanesborough, County Longford	03/04/2017	Chris and Claire Webb	A) proposed change of use of existing building previously used as an oratory into a restaurant to service existing bed & breakfast accommodation known as Convent Guest House, (B) The proposed construction of a kitchen/service area to service the above mentioned proposed restaurant C / D/ E
1786	Lanesborough, County Longford	12/06/2017	Chris & Clare Webb	The proposed change of use of existing oratory into a restaurant to service both the general public and also to service the patrons of the existing bed & breakfast accommodation
17106	Lanesborough, County Longford	10/07/2017	Bernard Keane	Construction of an extension to existing café comprising of a cleaner's store, additional sanitary accommodation to include minor alterations internally and for a covered refuse bin storage facility
186	Lanesborough, County Longford	03/04/2018	Blacksmith Ventures Ltd	For modifications to previously granted planning application reference number PL16/256 with regard to development of a distillery and visitor centre on site of the Old Post Office

Planning Ref. #	Townland	Grant Date	Applicant	Description
18139	Aghamore, County Longford	27/09/2018	EirGrid Plc.	The development will consist of the refurbishment of the Cloon - Lanesboro 110 kV overhead line which will primarily include: replacement of a large proportion of existing structures, the breaking out and reconstruction of the concrete foundation and shear blocks at the majority of end/angle mast structures, painting of mast structures, replacement of insulators, cross arms, stays and/or fittings on existing structures; and the fitting of bird flight diverters and stay guard
18428	Ballyleague, County Roscommon	05/11/2018	Michael Hanley	Planning permission for change of use of existing Marina Club House to 3 No. apartments, previously granted PD reference 07/886
18213	Lanesborough, County Longford	14/11/2018 [Decision to Grant Permission]	Paul Lindsay	Single storey extension to rear (20.7 sqm); new window to Side (South East) Elevation to stairwell and new ground floor window to Side (North West) elevation; and new access door to rear parking area
18241	Aghamore, County Longford	RFI	Adrian Farrell	Proposed construction of 8 no. semi-detached two bedroom bungalow type dwelling houses, upgrade of access onto public road, internal access road, car parking, connection to public foul sewer, surface water and watermains, provision of green open space, boundary walls/fences and all associated ancillary site works

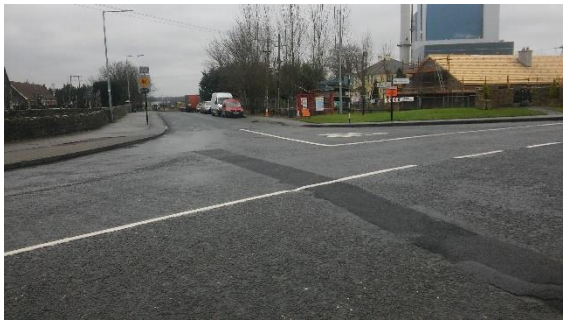
Note: Planning application search was carried out on the 19th December 2018
Source: Longford County and Roscommon County Council Planning Services

5.4 Access

5.4.1 Access Road

Vehicular access and exit movements to and from the study area will be via a local public road spurring off from the N63, approx. 200m in length (Figures 9 and 10). It should be noted that the speed limit of the N63 is 50km/h whereas a limit of 10km/h applies along the site access road. Inward and outward movements of all vehicles including HGVs, cars and light maintenance vehicles will utilise this access route during the lifetime of the proposed 110 kV substation as there are no present alternative entrances to the site. As noted previously, this access road is shared by residents, community facilities and the existing Lanesboro 110 kV substation.

Figure 9: Access Road off N63 (North Orientation)



Source: Mott MacDonald

Figure 10: Access Road (South Orientation)

Source: Mott MacDonald

Travelling north towards the study area, the width of the access road reduces on approach to the Lanesboro 110 kV substation entrance due to the presence of boundary fencing separating the vacant brownfield site from the existing substation and Lough Ree Power Station. The curved alignment of the access road in combination with the current configuration of fencing

further reduces manoeuvrability for vehicles traveling past the substation entrance to the interior site.

Figure 11: Lanesboro 110 kV Substation Entrance and Boundary Fencing

Source: Mott MacDonald

Figure 12: Internal Site Road

Source: Mott MacDonald

5.4.2 Visibility

Access to the study area via the local public road benefits from clear visibility from both eastern and western approaches via the N63 as indicated by Figure 13. Similarly, vehicular exit movements from the study area also have sufficient visibility of oncoming traffic when merging back on to the N63 (Figure 14).

Figure 13: Accessing the Proposed Development Site from N63

Source: Mott MacDonald

Figure 14: Exiting on to the N63 from the Proposed Development site

Source: Mott MacDonald

5.5 Landscape and Visual

Landscape and visual constraints were identified through a desk-top appraisal of international, national and local designated landscapes and county landscape character assessments within

the study area and its zone of influence. This study identified the key landscape features in this overall area which determine its character which include:

- Landscape Character Area and Grading;
- Scenic Routes;
- Scenic Views; and
- Sensitive Visual Receptors

These key landscape features have been collated for the purposes of this assessment, where available, and are presented on the accompanying constraints drawings 229100468-MMD-00-XX-GIS-N-1108 and 229100468-MMD-00-XX-GIS-N-1109.

5.5.1 Landscape Character Area and Grading

The majority of the study area and its zone of influence is classified as Peatlands (Landscape Unit 6) by the LCDP's Landscape Character Assessment (LCA). The Peatlands are characterised as being dominated by extensive tracts of raised bog interspersed with mixed forestry and areas of scrubby vegetation. The majority of the character area lies below the 50m contour line which, when combined with the limited vegetation cover and extensive peat land cover, results in expansive views across the wider area as illustrated in Figure 15.

Figure 15: Expansive Views within Proposed Development Site

Source: Mott MacDonald

In the context of industry and service, the LCA notes that Lough Ree Power Station dominates the landscape for a considerable distance, particularly at night. In general, the Peatlands is classified as having a generally *Low* landscape sensitivity as the area's flat, low lying topography allows development to be accommodated with minimum screening needed to achieve integration into its surrounding environment.

The eastern banks of the River Shannon are classified as part of the Shannon Basin / Lough Ree (Landscape Unit 3) character area by the LCDP's LCA. This landscape is characterised as having large amounts of water cover with inland marshes and blogland and a predominantly flat topography which provides for panoramic vistas across the River Shannon at numerous locations (Figure 16).

Figure 16: Panoramic Vista of the River Shannon from Proposed Development Site

Source: Mott MacDonald

The sensitivity of this landscape is classified as *High* along the banks of the River Shannon, adjacent to the study area, which indicates that inappropriate development could seriously damage the character or damage/eliminate irreplaceable values associated with the landscape. In accordance with this sensitivity rating, the LCA notes that concentrated ribbon development along the River Shannon and Lough Ree Power Station have had considerable visual impact on the landscape character area.

The western extent of the zone of influence is designated by RCDP's LCA as Slieve Bawn and Feorish Bogland Basin (LCA 5) to the north of the N63 and the Upper Lough Ree Bogland (LCA 6) to the south of the N63. The lower region of the Slieve Bawn and Feorish Bogland Basin is made up of low laying cutover raised bog contained between the River Shannon and a ridge of high forested ground. Elevated views from Slieve Bawn to the east are of an industrial landscape of commercial peatland and Lough Ree Power Station in the distance at Lanesborough. The Upper Lough Ree Bogland is one of the flattest areas in the county with the western boundary delineated by the zone of theoretical visibility from Lough Ree. There are no major settlements in this character area and the road network consists of only third class and smaller roads. The overall image of the area is of an isolated flat bogland bordering an extensive lake of high nature value.

The Slieve Bawn and Feorish Bogland Basin and the Upper Lough Ree Bogland are of *Very High Value* which indicates a general sensitivity to forces of change and inappropriate development. These landscapes are considered by the LCA as some of the most varied in the entire county due in part to the River Shannon and its extensive bogland.

5.5.2 Scenic Routes and Views

The LCDP's Appendix 6 (Views and Prospects, Scenic Routes) does not identify any Scenic Routes within the study area and its zone of influence. The appendix does, however, classify the River Shannon and its banks as scenic '*Broad Zones*'. The development plan sets out three policies to protect the visual amenity of these Broad Zones as listed below:

- **ILW 9**: The broad zones of the lakes, rivers, canals and deciduous woodlands shall be protected from inappropriate development, i.e. development which adversely affects high amenity and landscape quality in relation to their setting.

- **ILW 13**: Development in the broad zones of the major rivers and lakes of the County will not normally be permitted and shall be restricted to extensions of existing dwellings, which shall be sensitively designed in terms of the individual site and materials.
- **AM 3**: The Planning Authority shall control development in protected areas (scenic views and prospects, ridge lines, broad zones of the lakes, European sites etc.) which has the potential to negatively impact on the scenic, heritage and cultural assets of the County.

Similarly, the RCDP's LCA does not identify any scenic views or routes within the western extent of the zone of influence which falls under its jurisdiction.

5.5.3 Sensitive Visual Receptors

Lanesborough retains an extensive area of amenity along its western extent which consists of riverside walks, open grassland park areas and wilderness areas designated under heritage legislation. The profile of the settlement from the River Shannon's banks is low with only the rears of the properties on the Main Street, the community centre and the car park visible. As such, the landscape setting of the town is impressive with picturesque views available of the western bank (Ballyleague) complete with moored pleasure craft and barges at Hanley's Marina.

Lough Ree Power Station (Figure 17) exerts a substantial visual influence over the town in physical terms. As previously described, the predominantly flat topography of the lake and surrounding peatland has resulted in the power station being visible from approx. 10km away to the east and as far as Sliabh Ban to the north-west (approx. 8km) in the west. Lough Ree Power Station has become a local landmark, and subsequently, accepted as part of the identity of the area as indicated by previous sections.

Figure 17: Lough Ree Power Station

Source: Mott MacDonald

The study area and existing infrastructure adjacent to the Lough Ree Power station, i.e. Bord Na Móna facilities and Lanesboro 110 kV substation and associated transmission infrastructure, are effectively screened from sensitive receptors within Lanesborough-Ballyleague by the significant massing of the power station. The study area also benefits from natural vegetation (woodland) along its southern and western boundaries; however, woodland becomes significantly sparser along the study area's northern and north-western extents such that gaps

within the vegetation provide viewpoints into the area from the western and eastern banks of the River Shannon.

Figure 18: Viewpoint from Hanley's Marina into the Study Area

Source: Mott MacDonald

5.6 Ecology

A Preliminary Ecological Appraisal (PEA) of the proposed Project was carried out to identify areas of ecological significance within the project study area which may form constraints to the proposed development and identify where further surveys may be required. The PEA was carried out in accordance with 'Guidelines for Preliminary Ecological Appraisal' (CIEEM, 2017). The PEA included a detailed desktop assessment and a preliminary field survey.

The desktop assessment included a review of the following sources:

- Conservation Status Assessment Reports[10] (CSARs), Backing Documents and Maps prepared in accordance with Article 17 of the Habitats Directive;
- Published and unpublished NPWS reports on protected habitats and species including Irish Wildlife Manual reports, Species Action Plans and Conservation Management Plans;
- Existing relevant mapping and databases e.g. species and habitat distribution etc. (sourced from the Environmental Protection Agency - http://gis.epa.ie/, the National Biodiversity Data Centre - http://maps.biodiversityireland.ie and the National Parks and Wildlife Services - http://www.npws.ie/mapsanddata/);
- Published data from BirdWatch Ireland; and
- Published data from Inland Fisheries Ireland.

A preliminary ecological field survey was undertaken by a Mott MacDonald Ecologist on the 11th December 2018. Due to seasonal constraints the survey was undertaken outside the optimal survey period (Heritage Council 2011). Additional surveys within the optimal survey period will be undertaken in May in support of the Step 5 Planning Application to ensure the study area is comprehensively surveyed.

5.6.1 Designated Sites of International Importance

Lough Ree Special Area of Conservation (SAC) (000440) and Special Protection Area (SPA) (004064) are located approximately 300m south-west of the study area.

[10] Every six years, Member States of the European Union are required to report on the conservation status of all habitats and species listed on the annexes of the Habitats Directive as required under Article 17 of the Directive. Ireland submitted our conservation status report to the European Commission in June 2013. The assessment documents may be viewed on the NPWS website: http://www.npws.ie/publications/article17assessments/article172013assessmentdocuments/

Lough Ree SPA is designated for thirteen waterfowl species. The thirteen waterfowl species predominantly include wintering species with the exception of common scoter *(Melanitta nigra)* and common tern *(Sterna hirundo)* which are identified as breeding species per the site's Natura 2000 Standard Data form. Due to the close proximity of the Project to the SPA boundary there is potential for the disturbance of the waterfowl species. In addition, due to the proximity of the Project to the River Shannon there is potential for the runoff of contaminated surface water and sedimentation which may deposit within the SPA boundary if not appropriately managed.

Lough Ree SAC is designated for otter (Annex II) and eight Annex I type habitats. Again, due to the proximity of the Project site to the River Shannon there is potential for contaminated runoff and sediment which may deposit within the SAC boundary if not appropriately managed.

A source-pathway-receptor link therefore exists between the study area and Lough Ree SAC and Lough Ree SPA.

5.6.2 Flora

All habitats within the study area were identified and classified as per Fossitt (2000). An assessment of the habitats was undertaken in accordance with the NRA Guidelines (2009)[11]. A habitat map is included in Figure 19.

[11] NRA (2009), Guidelines for Assessment of Ecological Impacts of National Roads Scheme.

Figure 19: Habitat Map of the proposed development site

Recolonising bare ground (ED3)

The study area predominantly comprises recolonising bare ground (ED3). The area consists of concrete and gravel with vegetation recolonising in the area. The recolonising vegetation consists of perennial rye grass *(Lolium perenne)*, wild carrot *(Daucus carota),* sun spurge *(Euphorbia helioscopia),* butterfly-bush *(Buddleja davidii),* creeping cinquefoil *(Potentilla reptans),* and immature willow *(Salix spp.)* and alder *(Alnus glutinosa).* Bramble *(Rubus fructicosus), winter heliotrope* and ivy *(Hedera hibernica)* occur along the boundaries of the site. The habitat is assessed as having Local Importance (Low Value) due to the disturbed nature of the habitat.

Wet grassland (GS4)

An area of wet grassland occurs in the northern section of the study area. Species present include hard rush *(Juncus inflexus),* common reed *(phragmites australis),* red clover *(Trifolium pratense),* creeping buttercup *(Ranunculus repens)*, curled dock *(Rumex crispus)* and occasional immature alder and willow. The habitat is assessed as having Local Importance (high value).

Building and artificial surfaces (BL3)

Areas of hardstanding ground comprising concrete occur within the site. Three concrete water tanks occur towards the northern boundary of the study area. The existing Lanesboro 110 kV

substation and associated operational buildings are located immediately south of the study area. A large warehouse building is located along the eastern boundary of the study area. The building was assessed as having 'Low' bat roost potential. The habitat is assessed as having Local Importance (high value) due the potential for the habitat to support bats.

Depositing/lowland river (FW1)

The River Shannon (IE_SH_26S021600) runs along the western boundary of the site. Reed habitat (FS1) comprising common reed *(Phragmites australis),* approximately 40m wide occurs along the southern boundary of the river. A number of drainage ditches (FW4) occur to the north of the study area and drains into the river. The River Shannon discharges into Lough Ree approximately 400m downstream, which is designated as Lough Ree SAC and SPA. Lough Ree SPA is designated for thirteen waterfowl species which occur within Lough Ree. The waterfowl species consist of both wintering and breeding species. There is potential that the breeding species may nest in the reedbed habitat located directly opposite the proposed development site. Both the lowland river and common reed habitat were assessed as having National Importance as the habitats are likely to be important and support the special conservation interests designated within Lough Ree SPA.

Wet willow-alder-ash woodland (WN6)

Wet woodland comprising willow and alder occur along the southern bank of the river, south-west of the study area. The habitat was assessed as having Local Importance (high value).

Scrub (WS1)

Small areas of scrub habitat occur at the south-western corner of the site and at the south-eastern corner of the site. The scrub habitat comprises bramble, ivy, nettles and immature willow and alder trees. All trees within the scrub habitat were assessed as having 'Negligible' bat roost potential. The habitat was assessed as having Local Importance (low value) due to the por species diversity.

Dry meadow and grassy verges (GS2)

The lands located north of the proposed development site comprises dry meadow grassland which is dominated with false oat-grass *(Arrhenatherum elatius).* Nettles, and common knapweed *(Centaurea nigra)* also occurred occasional within the grassland. The habitat was assessed as having Local Importance (low value).

Protected and invasive plant species

A review of the Records from National Biodiversity Data Centre (NBDC) within the 2km grid square (N06E) which encompasses the Project identified the following invasive plant species as previously identified: Canadian waterweed *(Elodea canadensis),* Japanese knotweed *(Fallopia japonica),* Asian clam *(Corbicula fluminea).* No Flora Protection Order (FPO) species have previously been recorded within the 2km grid square which encompasses the Project.

During the field survey no species listed as an FPO or habitats protected under the Habitat Directive were recorded during the survey. In addition, no invasive species listed in the Third Schedule of S.I. No. 477 of 2011, European Communities (Bird and Natural Habitats) Regulations 2011 were identified during the survey. It is noted however that the ecological survey was undertaken in December which falls outside the optimal botanical survey period (Heritage Council 2011). Additional surveys will be undertaken within the optimal botanical survey period to comprehensively survey the Project site.

5.6.3 Fauna

An assessment of species protected under the Wildlife (Amendment) Act 2000 and the EU Habitat Directive within the study area was undertaken as set out below:

Mammals

The field survey was undertaken following NRA (2008) *'Ecological surveying techniques for protected flora and fauna during the planning of National Road Schemes'*.

No evidence of badgers (*Meles meles*) were identified within the study area during the survey. It is noted however that the lands located immediately south of the existing substation could not be surveyed due to access restrictions. It could therefore not be determined if badger setts occur within 150m of the study area and further surveys are required.

No evidence of otter, including otter holts were recorded within the study area during the survey. The lands located to the west of the study area, adjacent to the River Shannon could not be surveyed due to limited access. It could therefore not be determined if otter holts occur within 150m of the study area and further surveys are required.

A number of mammal tracks were recorded within the study area and within the wider surrounding environment. It is likely that the tracks were made by fox, as fox dropping were noted on a number of occasions throughout the site.

No other evidence of mammal activity was recorded within the study area.

Bats

A review of the bat 'habitat suitability' index presented on www.maps.biodiversityireland.ie was undertaken. The bat 'habitat suitability' index is the research outcome of a study by (Lundy *et al*. 2011) examining the relative importance of landscape and habitat associations across Ireland for bats. The 'habitat suitability' index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for various bat species. The habitat / landscape at the proposed development site has a 'High' bat suitability index score (37.56).

A visual assessment of all trees and structure within the Project site was carried out in line with *Bat Tree Habitat Key (Andrews, H et al., 2013)* to determine potential roost features. All trees within the study area were immature and were assessed as having 'Negligible' bat roost potential. A large warehouse occurs immediately east of the study area. The building has a number of suitable bat roost features which included a number of crevices just below the roof of the building. However, considering the lack of connectivity to linear features (treelines / hedgerows) the warehouse was assessed as having 'Low' suitability to support bats.

Birds

A data request was sent to I-WeBS on the 12th of December 2018 requesting count data at the Subsite: 0ES17 Ballyclare (Site: Lough Ree) which is located approximately 600m south-west of the proposed development site. I-WeBS reverted on the 19th of December 2018 indicating that the subsite is a swan survey site and the site was only surveyed over the 2014/15 winter season. The site is not surveyed generally for I-WeBS. The data collected during the 2014/15 survey is summarised hereunder.

Over three survey dates within the 2014/15 winter season a total of 2 moorhen *(Gallinula chloropus)*, 2 common gulls (*Larus canus),* 4 mute swans *(Cygnus olor),* 6 mallard (*Anas platyrhynchos)* and 66 whopper swans *(Cygnus cygnus)* were counted at the subsite. Mallard

and whooper swan are both special conservation interests of Lough Ree SPA (004064). Whooper swan are an Amber listed species within the Bird of conservation concern in Ireland 2014-2019.

It is noted that the preliminary ecological survey was undertaken outside the optimal survey period, further surveys will therefore be undertaken within the optimal survey period.

5.7 Archaeology, Architecture and Cultural Heritage

In accordance with EirGrid's Cultural Heritage Guidelines, the objective for this cultural heritage appraisal is to provide a high-level understanding of the key likely significant constraints within the study area and its zone of influence. Archaeology, architectural and cultural heritage features were identified through a desk-top study of archival and documentary sources which provided an account of the archaeological and historical background of the overall area. These sources included:

- The Record of Monuments and Places (RMP) and Sites and Monuments Record (SMR) are compiled by the Archaeological Survey of Ireland (ASI) and comprises lists and maps of all monuments with known locations;
- The National Inventory of Architectural Heritage (NIAH) was consulted to identify post-1700 architectural heritage of Ireland. NIAH surveys provide the basis for recommendation to planning authorities for inclusion of particular structures or features in their Record of Protected Structures (RPS);
- Primary cartographic sources consulted consisted of the first edition (1841) and second edition (1913) six-inch Ordnance Survey maps. A review and interpretation of contemporary aerial imagery (Google earth 2001–2017, Digital Globe 2017, Bing 2017) was also used in combination with this historic mapping to map potential cultural heritage assets;
- Longford County Development Plan 2015-2021 and Roscommon County Development Plan 2014 – 2020 were examined in relation to Architectural Conservation Areas (ACA) and Zones of Archaeological Potential; and
- The National Excavation Database (www.excavations.ie) was consulted to identify previous excavations that may have been carried out within the study area. This database contains summary accounts of excavations carried out in Ireland from 1970 to 2005.

These key cultural heritage features have been compiled and collated for the purposes of this assessment, where available, and are presented on the accompanying constraints drawing 229100468-MMD-00-XX-GIS-N-1102.

5.7.1 Cartographic Review

An important bridging point on the River Shannon[12], Lanesborough-Ballyleague occupies the site of the medieval borough of Beal Atha Liag, "The Ford of Stones". The first edition O.S. map 1829-41 shows the study area and its zone of influence as predominantly unoccupied peatland; specifically, there are no built structures within 50m of the study area or its immediate vicinity. The most proximate built structure is St. John's Church (NIAH Reg. No. 13310007 / RMP LF017-003004) and graveyard (RMP LF017-003008) located approx. 160m south and, as previously noted, remains in use at the time of writing this report. Of important note, St. John's Church dates back to the 5th Century and is one of the oldest buildings in Lanesborough[13]. Residential massing is predominantly confined to the present main streets of Lanesborough

[12] Lanesborough Local Area Plan 2004-2009 / Longford Tourism [http://www.longfordtourism.ie/see-do/towns-villages/lanesborough/]

[13] Longford Tourism [http://www.longfordtourism.ie/see-do/towns-villages/lanesborough/]

(N63 / R392) and Ballyleague (N63) with isolated one-off housing sparsely distributed within the study area's zone of influence. A range of preserved National Inventory of Architectural Heritage (NIAH) features were recorded during the development of this map:

- Lanesborough Bridge (Reg. No. 13310001);
- House (Reg. No. 13310003); and
- House (Reg. No. 13310004)

In conclusion, the built environment of the study area and its zone of influence, excluding Lanesborough and Ballyleague town centres, is relatively contemporary with the majority of development commencing late 19th century onwards.

5.7.2 Archaeological Investigations in Surrounding Area

Five programmes of archaeological monitoring were undertaken by suitably qualified archaeologists during site clearance (top-soil / peat stripping) and ground excavation works within the zone of influence. A burn pit (LF017-031) was discovered during the construction of Lough Ree Power Station, approx. 50m south-east of the study area (Table 8). There were no other features of archaeological significance uncovered during the course of these monitoring programmes.

Table 8: Archaeological Monitoring within the Study Area's Zone of Influence

Year	Site Location	License Number	Author	Description
2002	Lanesborough	02E0452	Niall Gregory, ADS Ltd.	Monitoring of groundworks associated with the construction of the Lough Ree Power Station took place from 2nd to 14th July 2002, after which Caroline Powell monitored the remainder of the development. An irregularly shaped pit (2.5m x 1.55m; D 0.13m) was discovered during monitoring, c. 200m N of Lanesborough, at the site of the power station [RMP LF017-031]. It was subsequently excavated in 2003 and three layers of fill were identified.

Source: Excavations.ie

5.7.3 Record of Monuments and Places (RMP) and Sites and Monuments Record (SMR)

There are no National Monuments (state owned or vested in the care of local authorities), sites with Preservation Orders or Register of Historic Monuments sites within the study area and its zone of influence.

There are fourteen recorded archaeological sites/complexes (RMP / SMR sites) located within the zone of influence as listed in Table 9. Of these recorded sites, Lanesborough has been designated as a 'Historic Town' (LF017-003) which has resulted in a Zone of Notification encompassing the majority of the town's built environment. The remaining archaeological sites/complexes are predominantly clustered around Lanesborough Bridge and St. John's Church, which as noted previously, have been established features throughout Lanesborough's history.

Table 9: RMP / SMR Sites within the Study Area

Site Type	Reference Number	Townland	Description
SMR	RO037-004	Ballyleague	Castle - Tower House
SMR	RO037-005	River Shannon, Ballyleague	Bridge
SMR	RO037-009	River Shannon, Ballyleague	Ford
SMR	LF017-003001	Lanesborough	Bridge
SMR	LF017-003003	Lanesborough	Ford
SMR	LF017-003002	Lanesborough	Castle - Anglo Norman Masonry Castle
SMR	LF017-003011	Lanesborough	Fortification
RMP	LF017-003	Aghamore	Historic Town
SMR	LF017-003010	Lanesborough	Armorial Plaque
SMR	LF017-003004	Lanesborough	Church
SMR	LF017-003008	Lanesborough	Graveyard
SMR	LF017-003006	Lanesborough	Grave slab
SMR	LF017-003007	Lanesborough	Cross
SMR	LF017-031	Aghamore	Burnt Pit

Source: National Monuments Service

The most proximate SMR to the study area is the Burnt Pit (LF017-031), approx. 50m south-east, which was discovered during the construction of Lough Ree Power Station. The Zone of Notification for the Burnt Pit does not include any land comprising the study area; however, Policy ARC 1 of the LCDP notes that '*In general, development within a 20m radius of a recorded monument will not be permitted and proposed development within 75 metres discouraged (subject to other policies contained within this Plan)*'.

5.7.4 Record of Protected Structures (RPS)

There are no protected structures listed in the Record of Protected Structures (RPS) for either County Longford or County Roscommon which are located within the study area and its zone of influence.

5.7.5 National Inventory of Architectural Heritage (NIAH) and Historic Gardens

There are sixteen National Inventory of Architectural Heritage (NIAH) buildings listed within the study area's zone of influence. It should be noted that a number of NIAH Buildings recorded as structural components of the former Lanesborough Power Station have been demolished.

Table 10: NIAH Structures within the Study Area

Reference Number	Date	Description	Original use / Present use	Rating
13310001	1835-1845	Lanesborough Bridge	Bridge	Regional
13310002	1850-1890	Lanesborough Power Station	Gates/Railings/ Walls	Regional
13310003	1800-1830	House	House	Regional
13310004	1800-1830	House	House	Regional
13310005	1890-1920	House	House	Local
13310008	1890-1910	-	Gates/Railings/ Walls	Local

Reference Number	Date	Description	Original use / Present use	Rating
13310007	1855-1865	St. John's Church of Ireland Church	Church/Chapel	Regional
13310007	1855-1865	St. John's Church of Ireland Church	Church/Chapel	Regional
13310021[1]	1955-1960	Lanesborough Power Station	Building Misc.	Regional
13310018[1]	1975-1985	Lanesborough Power Station	Workshop	Local
13310015[1]	1965-1970	Lanesborough Power Station	Chimney	Regional
13310019	1955-1965	Lanesborough Power Station	Building Misc.	Local
13310020	1955-1965	Lanesborough Power Station	Turf/Peat Fired Power Station	Local
13310014	1955-1985	Lanesborough Power Station	Turf/Peat Fired Power Station	Regional
13310016[1]	1955-1960	Lanesborough Power Station	Building Misc.	Regional
13310017	1975-1985	Lanesborough Power Station	Building Misc.	Local

Note[1]: Demolished

The most proximate NIAH Buildings to the study area are Reg. No.13310020 and Reg. No. 13310018 which are located on the south-western boundary of the area and Reg. No. 13310017 which is bounded by the study area along its southern and western sections.

Figure 20: NIAH Structure (Reg. No. 13310017)

Source: Mott MacDonald

There were no historic gardens identified as part of the NIAH Garden Survey which are located within the study area and its zone of influence.

5.7.6 Architectural Conservation Area (ACA)

There are currently no ACAs within or proximate to the study area and its zone of influence for either County Longford or County Roscommon.

5.7.7 Zone of Archaeological Potential

The River Shannon is identified by the RCDP as an area of underwater archaeological potential as set out under **Objective 6.26**:

At sites where, underwater archaeology might be encountered, especially at the three main fording points of the Shannon at Roosky, Termonbarry & Ballyleague, refer development applications to the Underwater Archaeology Unit, via the Development Applications Section of the Department of Arts, Heritage and the Gaeltacht for comment.

In comparison, Longford County Council does not explicitly identify the River Shannon as a zone of archaeological potential, however, the LCDP implements similar policies to ensure the protection of archaeological heritage:

- **ARC 6**: The Planning Authority shall seek an assessment - to be carried out by a licensed archaeologist - of developments which may impact on a national or recorded monument, the designated zone of archaeological importance surrounding any monument or other site of archaeological significance within the County

Archaeological monitoring may therefore be required in the course of carrying out the construction of the proposed substation due to the study area's proximity to the river.

5.8 Flooding

Potential flood risk within the study area for the substation redevelopment has been considered with reference to the Planning System and Flood Risk Management - Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government, [DOELG], November 2009). Flood risk from fluvial, surface water (pluvial), groundwater, and human/mechanical sources has been assessed based on publicly available information including:

- Predictive mapping from the Office of Public Works (OPW) National Preliminary Flood Risk Assessment (PFRA) project (fluvial, coastal, pluvial and groundwater sources);
- Predictive mapping from the OPW' s Shannon Catchment Flood Risk Assessment and Management Study (CFRAMS) (fluvial sources);
- Strategic Flood Risk Assessment for the Longford County Development Plan 2015- 2021; and
- Historic flood event mapping from www.floodmaps.ie

The nearest watercourses to the study area are the River Shannon Upper [IE_SH_26S021600) which comprises the area's north and north-west boundary and Lough Bannow Stream (IE_SH_26L120100), a tributary of the River Shannon, approx. 470m north-east of the study area. The Shannon's and Lough Bannow Stream's catchments draining into Lanesborough is approx. 2,800km2 and 38m2, respectively, as per OPW's Flood Studies Update portal . Natural drainage ditches along the River Shannon Upper's eastern bank (35.35 mOD), which encompasses the northern periphery of the study area, drain into the river in north-westerly direction. There is no connectivity between the area and Lough Bannow Stream due to the relative distance and the surrounding area's undulating topography which slopes westward towards the Shannon.

The Strategic Flood Risk Assessment (SFRA) for the Longford County Development Plan 2015-2021 classified Lough Ree Power Station and its environ as an Area for Further Assessment based on initial PFRAM mapping. Specifically, the SFRA notes that the River Shannon Upper in this area has historically flooded which indicates a 'significant flood risk' to the power station, the

surrounding road and infrastructure network. The SFRA acknowledges, however, that new information on potential flood risk would be further considered once available, i.e. the final CFRAM studies.

Updated predictive flood mapping generated under the CFRAM studies[14] indicates that areas of 10% annual exceedance probability (AEP) are confined to the land immediately adjacent to the eastern bank of the River Shannon Upper. 0.1% and 1% AEP flood risk areas extend along the study area's north and north-western boundary.

5.9 Surface Water Quality

A desktop appraisal was undertaken to identify the main constraints within the study area's zone of influence relating to surface water quality and hydrology of the River Shannon which flows through the zone in a north-east to south-west orientation and represents the northern and north-western boundary of the study area.

Key resources utilised for the purpose of this section were as follows:

- EPA (Water Framework Ireland Map viewer) databases for information on surface water features within the study area's zone of influence;
- River Basin Management Plan for Ireland 2018 - 2021 (Department of Housing, Planning and Local Government, 2018);
- Water Quality in Ireland 2010-2015 (EPA, 2017); and
- The Characterisation and Analysis of Irelands River Basin Districts – National Summary Report (Ireland) 2005

All major surface water features and details on the status of waterbodies were mapped on Drawing 229100468-MMD-00-XX-GIS-N-1103.

5.9.1 Water Resource

The study area and its zone of influence is located in the sub-catchment Shannon (Upper)_100 (Code: IE_SH_26S021600) river water body.

During the first cycle of river basin management plans (RBMP)[15], the River Shannon was required to reach 'Good Status' by 2015. The EPA has monitored the biological Q-Value index at Lanesborough Bridge (Site Code RS26S021600) since 2004. Q-Values have been consistently recorded as either Q3 (Poor) or Q3-4 (Moderate) with the latest Q value recorded as Q3 in 2014. The WFD status (2010-2015) for the River Shannon within the zone of influence is indicated as "Poor" with an overall classification of 'At Risk'. It should be noted that Lough Ree is also classified as 'At Risk', however, it has a 'Moderate' WFD status (2010-2015) and 'Moderate' ecological status (2009).

5.9.2 Drinking Water

Potable water is not sourced from the River Shannon within the zone of influence. The Lanesborough Public Water Supply (PWS) is supplied by three boreholes within the town and its environs including a borehole (IE_SH_G_135) located within the vicinity of the study area. It

[14] CFRAM Map Ref. S2526LAH_EXFCD_F1_01

[15] Shannon River Basin Management Plan (2009-2015)

is assumed that this borehole has some degree of hydraulic connectivity with the River Shannon[16].

5.9.3 Nutrient Sensitive Areas

Both the River Shannon (IERI_SH_2010_0002) and Lough Ree (IELK_SH_1994_0008) are designated as Urban Waste Water Treatment Directive Sensitive Areas. The Ballyleague Wastewater Treatment Plant (WWTP) services the Lanesborough-Ballyleague agglomeration and discharges to Lough Ree via its primary effluent emission point approx. 400m south-west of the study area. There are five secondary discharge points within the wastewater network agglomeration which includes SW5, located within the south-western corner of the zone of influence on the River Shannon.

5.10 Soils, Geology and Hydrogeology

A desktop appraisal was undertaken to identify the main constraints within the study area and its zone of influence relating to soils, geology and hydrogeology. A review of relevant local, regional and national geological datasets was carried out as part of the constraints study.

- The EPA, Teagasc and Geological Survey of Ireland (GSI) quaternary geological databases and maps were reviewed to identify constraints in terms of soils, geology, aquifer classification and vulnerability, including geohazards and radon;
- The LCDP's Landscape Character Assessment was referenced in regard to its data on Longford's drift geology; specifically, soil composition of the region; and
- A review of historical reports submitted to the EPA as part of Lough Ree Power Station's Industrial Emissions Licence (P0610-01) was carried out in the context of the potential for soil and groundwater contamination.

These key soil, geology and hydrogeology features have been collated for the purposes of this assessment, where available, and are presented on the accompanying constraints drawing 229100468-MMD-00-XX-GIS-N-1104, 229100468-MMD-00-XX-GIS-N-1105 and 229100468-MMD-00-XX-GIS-N-1106.

5.10.1 Drift Geology

A review of the Teagasc and EPA soil and subsoil mapping databases indicate that the study area and its zone of influence is characterised by a range of soil types:

- Lanesborough-Ballyleague settlement and the industrial core of the study area's zone of influence are classified as urban/manmade;
- The banks of the River Shannon and land immediately adjacent to the waterbody are classified as mineral alluvium (AlluvMIN);
- Land adjacent to the eastern and western fringes of Lanesborough's built environment is classified as Grey Brown Podzolics / Brown Earth Basics (BminDW); and
- The northern extent of the study area's zone of influence is classified as Raised Bog cutaway/cutover (Cut)

Within the study area, the drift geology is predominantly classified as urban/manmade with a section of mineral alluvium (AlluvMIN) along the western and north-western fringe of the study area and peat within the northern fringe.

[16] WFD Ground Water Monitoring Programme, Site Information: Lanesborough-ESB (2011)

These identified subsoils correlate with the study area's predominant Corine Land Cover; i.e. 121 - Industrial and Commercial Units. As such, the same constraint considerations are shared between these soil types and land cover.

5.10.2 Ground Contamination

An Environmental Exit Audit[17], hereafter referred to as the Audit, was undertaken by URS at the former ESB Power Generating Station at Lanesborough, Co. Longford in order to assist in the surrender of IED Licence No. 627-01. Environmental site investigations were carried out across the subject area in November 2007 and May 2008 with additional groundwater and surface water monitoring completed in February 2009. Relevant to the proposed development, the Audit's defined subject area included land which currently comprises the Project's study area; specifically, areas within the vicinity of the former station buildings (South-West Area) and the transformer compound (Networks Area).

The key conclusions derived from the Audit are set out below:

- The subject area is 'asbestos safe' and in terms of asbestos is suitable for any land use;
- Soil and shallow groundwater in the subject area are not considered to pose a risk to current or future site users assuming continued industrial or commercial use (assuming shallow groundwater would not be exploited for potable use); and
- Soil and shallow groundwater in the subject area are not considered to pose a risk to the waters of the Ricer Shannon, or the bedrock aquifer underlying the site.

5.10.3 Bedrock Geology

A review of GSI's quaternary geology databases indicated that the study area and its zone of influence is underlain by rock of the Dinantian Visean Limestones (undifferentiated) (CDVIS). The historic GI undertaken within the study area noted that rockhead was encountered between 5.4 and 9.2m below ground with a maximum limestone thickness of 7.1m.

5.10.4 Hydrogeology

Groundwater within the bedrock generally flows across the study area in an east to west orientation towards the River Shannon although there may be a component of flow which is directed to Lough Ree to the south-west. Local groundwater flow may be more complex and controlled by factors such as rockhead topography, secondary permeability features and etc.

The underlying Shallow Water Limestone (Visean Limestones (undifferentiated)) is known to contain a significant groundwater resource as indicated by the current abstraction levels of Lanesborough PWS borehole. The principal mechanism of groundwater flow within this area of bedrock is likely through fracture (secondary) flow or karst related flow rather than by pore (primary) flow. The presence or extent of karstification within the study area has not yet been established. It should be noted that groundwater within karst bedrock moves rapidly but has greater susceptibility for contamination.

Aquifer Classification

The GSI classifies all aquifers in Ireland into three categories:

[17] Environmental Exit Audit: Networks Area, Former ESB Power Generating Station, Lanesborough, Co. Longford (URS, November 2009)

- Regionally important aquifers: good (100 to 400m^3/day) to excellent (>400m^3/day) productivity;
- Locally important aquifers: moderate (40 to 100m^3/day) productivity; and
- Poor aquifers: poor (<40m^3/day) productivity.

The study area is classified by the GSI mapping database as a '*Regionally Important Aquifer - Karstified (conduit)*'.

Aquifer Vulnerability

The GSI use a matrix comprising four groundwater vulnerability categories to classify aquifer vulnerability: extreme, high, moderate and low. The categories are based on the thickness of overburden which provides some reduction for contaminants migrating toward the groundwater table from the surface or near sub-surface. Where the surface is less than 3 metres thick, the aquifer is considered extremely vulnerable as the potential for contamination to reach the aquifer is extremely high. On the other hand, where the overburden is greater than 10 metres thick and has a low permeability the vulnerability is considered low.

Based on review of the historic site investigation data and consideration of the criteria for classifying groundwater vulnerability, the study area is classified as an area of high aquifer vulnerability.

Groundwater Wells

According to the GSI groundwater well database, there are sixteen groundwater wells located within the study area and its zone of influence. Of these recorded groundwater wells, nine wells are situated within the study area.

Groundwater Monitoring

As noted previously, Lough Ree Power Station operates in accordance with the requirements laid out in its Industrial Emissions (IE) Licence P0610-02 (as amended) which includes annual groundwater monitoring at emission points PS-GW1 and PS-GW2. As PS-GW2 is located within closer proximity to the study area than PS-GW1, monitoring data from this emission point has been used as the basis of this constraint appraisal. It should be noted that there are no ELVs set out by the IED License in relation to these parameters. Table 11 details the monitoring records available at the time of writing this report.

Table 11: Groundwater Monitoring Data for PS-GW2

Year	Ammonia (N) (mg/l)	Diesel Range Organics (mg/l) / ug/l[1]	Hydrocarbons (mg/l)
2005	6	<0.01	<0.01
2006	6	<0.01	<0.01
2007	<0.2	<10	<10
2008	<0.2	<10	<10
2009	<0.2	55.3	<1
2015	0.2	<46[1]	<0.1
2016	0.2	<10[1]	<0.1
2017	0.2	<46[1]	<100

Source: EPA

As noted above, an elevated result for Diesel Range Organics (55.3 mg/l) was recorded during 2009 which resulted in the EPA requesting Lough Ree Power Station to repeat groundwater monitoring for the emission point prior to 2011. PS-GW2 was re-sampled on the 20th of October

2010 which recorded a total of 141 ug/l for Diesel Range Organics, significantly less than the 2009 sample. No further corrective actions issued by the EPA in relation to groundwater at PS-GW2 were identified.

5.10.5 Geological Heritage Areas

A Geological Heritage Area (GHA) is one which contains geological or geomorphological features considered to be of national interest and recommended for Natural Heritage Area (NHA) designation by the GSI under the Wildlife (Amendment) Act 2000.

Analysis of GSI's GHA database concluded that there are no GHAs located within the study area and its zone of influence.

5.10.6 Geohazards

Geohazards are natural earth processes that pose a risk to human life. They can range from geological hazards such as landslides, bog bursts, coastal erosion, and subsidence to hydro-metrological hazards like floods. Soft ground areas are also considered to be geo-hazards. There are no identified karst features located within the study area. A review of GSI's Landslide Susceptibility mapping has also indicated that there have been no historic landslide events recorded within the study area and its zone of influence.

5.11 Noise

A desktop appraisal was undertaken to identify noise sensitive receptors within the study area's zone of influence. Noise constraints within the study area are mapped on the accompanying constraints drawing 229100468-MMD-00-XX-GIS-N-1107, i.e. proximate residences and community facilities.

Key resources utilised for the purpose of this section were as follows:

- A review of Fáilte Ireland in relation to tourism as well as websites on local tourism organisations and enterprises within Counties Longford and Roscommon;
- A review of Local Authority Development Plans to identify any other settlement and land use characteristic and activities regarded as significant;
- A review of the EPA Corine 2018 Land use Dataset; and
- British Standard 5228 Part 1 and Part 2 Code of Practice for Noise and Vibration Control on Construction and Open Sites (2009+A1:2014) (BS 5228:2009+A1:2014)

5.11.1 Built Environment

Lanesborough is laid out in a linear pattern running in an east-west orientation along the N63 with residential and commercial massing concentrated within the town centre and along the R392. A centralised industrial core contains Lough Ree Power Station, Bord Na Móna facilities and Lanesboro 110 kV substation whilst large areas of undeveloped agricultural greenfield adjacent to the industrial core which comprise the zone of influence's north-western, northern and eastern boundaries. Structural development along the fringe of the zone takes the form of residential massing consisting of Curraghrua housing estate and one-off housing in the south-eastern extent while one-off residential housing has also been developed adjacent to the banks of the River Shannon. In total, there are approx. seventy residential dwellings located within the zone of influence.

Lough Ree Power Station operates in accordance with the requirements laid out in its Industrial Emissions (IE) Licence P0610-02 (as amended) as issued and regulated by the EPA. All noise

emissions from the plant are subject to the noise emission limit values set out within this IED licence.

Existing noise levels within the study area and its zone of influence are therefore likely to be typical of a peri-urban environment in regard to traffic, industry, commercial and community noise emissions.

5.11.2 Sensitive Residential and Community Receptors

The most proximate residential dwellings to the study area are approx. 200m south and 300m south-west. Scoil Mhuire Gan Smal and St. John's Church, which share the same access road with the study area, are the most proximate community facilities to the site, approx. 240m and 200m south, respectively.

It should be noted that there are no major hospitals or health facilities located within the study area and its zone of influence.

6 Technical Context

6.1 Introduction

The existing Lanesboro 110 kV substation is an Air Insulated Switchgear (AIS) transmission substation and is a critical point on the transmission system interconnecting numerous 110 kV lines, connecting Lough Ree Power Station to the network and providing Roscommon and Longford with an electricity supply. There are also two circuits to Richmond which supply Roscommon town. The substation facilitates the movement of power, enabling any surplus power generated in the west of the country to be moved eastwards

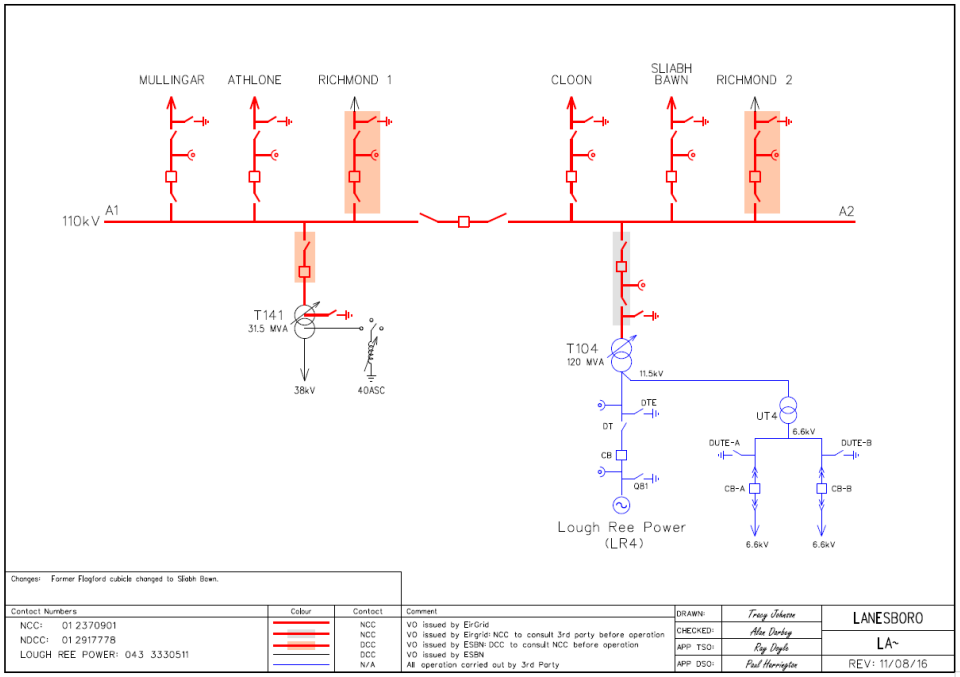
Redevelopment of Lanesboro 110 kV substation is required as the existing substation design is inadequate for the future power flows predicted as a result of increasing levels of wind generation.

Redevelopment is also required for security of supply. The substation dates back to the 1950s and is not fit for purpose going forward. Substations are normally designed with some level of redundancy to facilitate new connections and enable crucial maintenance activities. These include spare bays and a reserve busbar. Lanesboro 110 kV substation has no reserve busbar or space for new connections into spare bays within the existing site. Finally, as there is only one sectionalising circuit breaker the failure of which will result in the loss of the entire substation due to the close proximity to busbars.

6.2 Design

The existing switchgear layout is represented in Figure 21:

Figure 21: Existing Lanesboro Single Line Diagram



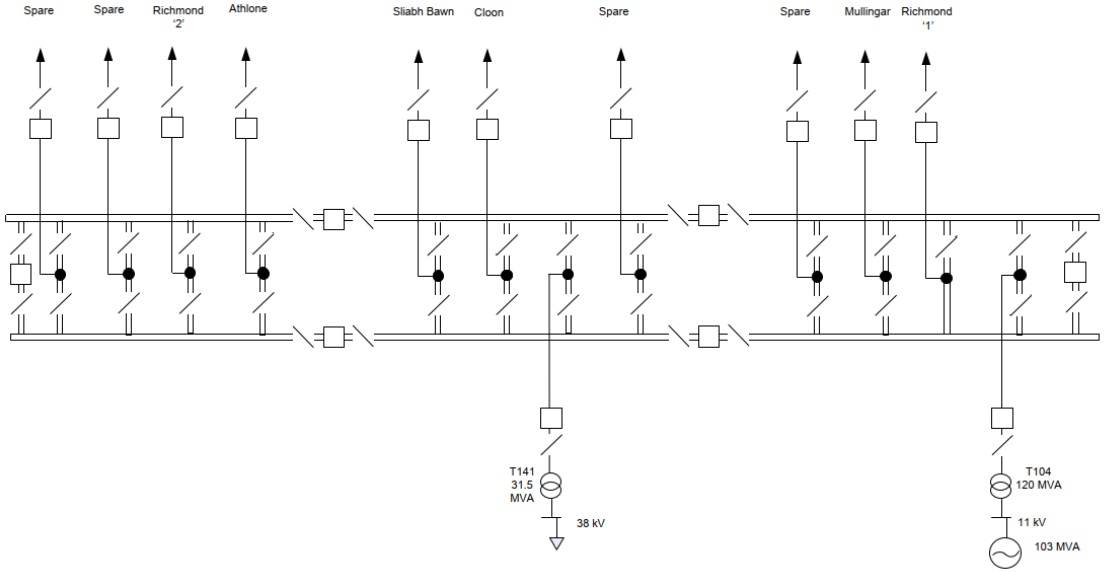
Source: EirGrid

Considering the existing 110 kV switchgear condition, EirGrid's Policies of future-proofing assets and statutory obligation to accommodate generation connections, it is necessary to redevelop the existing 110 kV Substation with an enhanced ring double busbar to include:

- Three double busbar sections;
- Four bays on each section;
- Two sectionaliser bays; and
- Two wing couplers

These requirements are represented in Figure 22 below:

Figure 22: Proposed Single Line Diagram for Lanesboro



Source: EirGrid

6.3 New 110 kV Substation

The substation acts as a node on the transmission grid.

There are two types of substation:

- Air Insulated Switchgear (AIS); and
- Gas Insulated Switchgear (GIS

6.3.1 AIS 110 kV Substation

In an AIS substation the busbars and equipment are located outdoors, and the live equipment is spaced at a sufficient distance from ground and from other equipment to maintain safe electrical and maintenance clearances.

A control building is also required to house control and protection equipment as well as 220 V DC battery systems and welfare facilities. An image of a typical AIS substation is provided in Figure 23 below.

Figure 23: Typical 110 kV AIS Substation

Source: Mott MacDonald

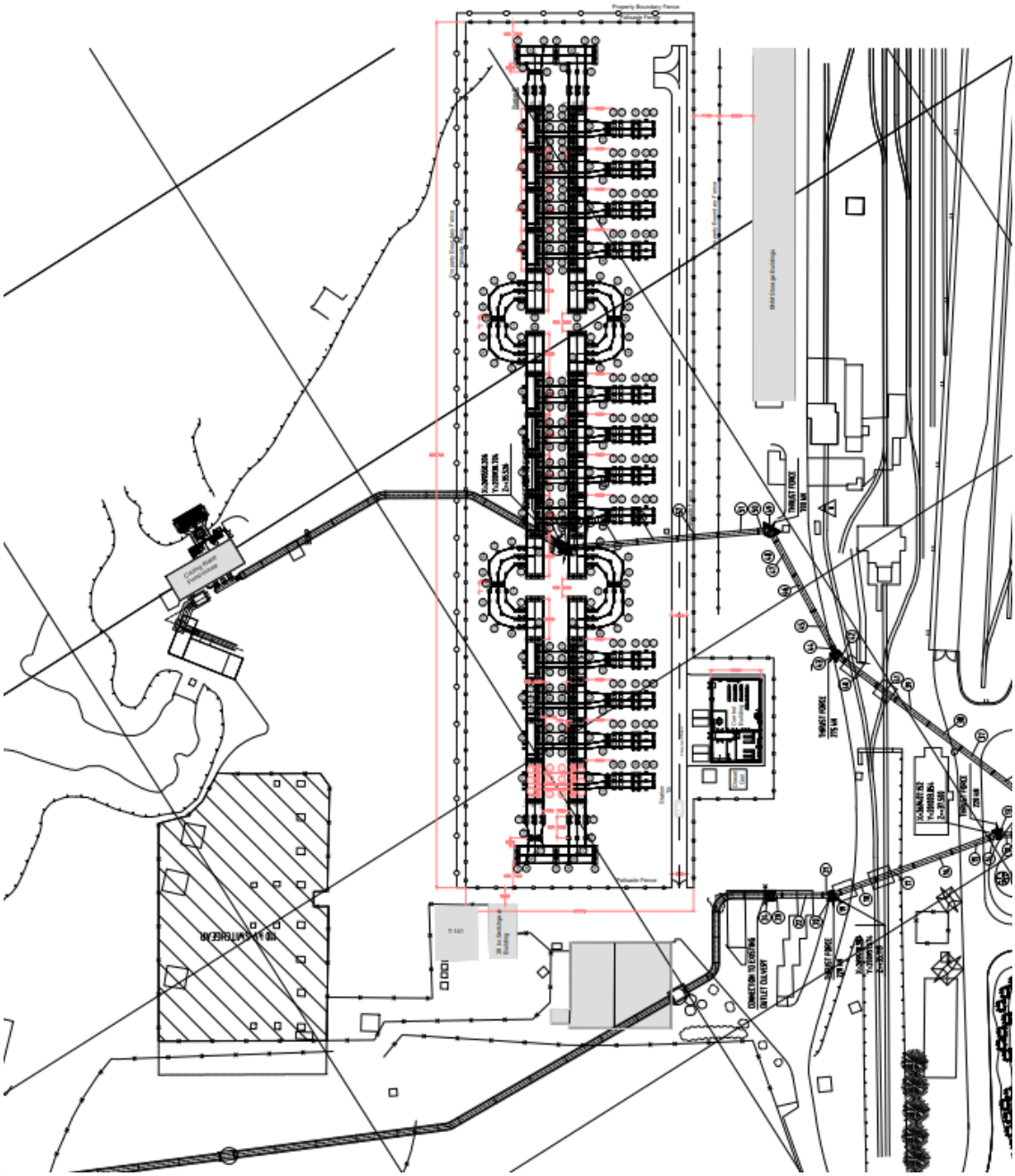
This results in a relatively large footprint compared to GIS substations however it is usually the most cost-effective way of constructing a HV substation in a non-urban environment where there is enough suitable land available at a reasonable cost.

AIS substations are exposed to weather events and to lightning strikes. A lightning protection system is usually required to reduce the risk of a direct strike that may damage equipment. The lightning protection system consists of several tall steel lattice towers or monopoles located at regular spacings around the substation yard and these could be considered visually obtrusive in certain settings.

The estimated minimum footprint for a 12 bay AIS substation is 260m x90m at its widest point as demonstrated in Figure 24. This will require a considerable amount of civil works in relation to site clearance and levelling and therefore any site with uneven or sloping terrain needs to be considered carefully when assessing its suitability as a substation location.

It should be noted that since the completion of the Step 3 report, recent changes to mitigate measures as far as possible the unnecessary proximity outages when extending, maintaining, repairing or replacing AIS equipment. These requirements have resulted in a 25% increase in the minimum AIS footprint previously preferred in the Step 3 report.

Figure 24: Extent of Replacement AIS Substation



Source: Mott MacDonald

6.3.2 110 kV GIS Substation

GIS substations comprise busbars and switchgear that are contained within metal ducts and enclosures. These ducts and enclosures are pressurised with SF6 gas and this gas acts as an insulator to prevent the busbars from arcing to the enclosure. The GIS equipment can be installed in a much more compact manner compared to an AIS equivalent.

GIS substations are normally located indoors in steel portal frame buildings (Figure 25). This allows for easier installation and maintenance. It also provides better security and allows cable circuits to be installed in a more flexible manner. The building is also used to house control and protection equipment, battery systems and welfare facilities.

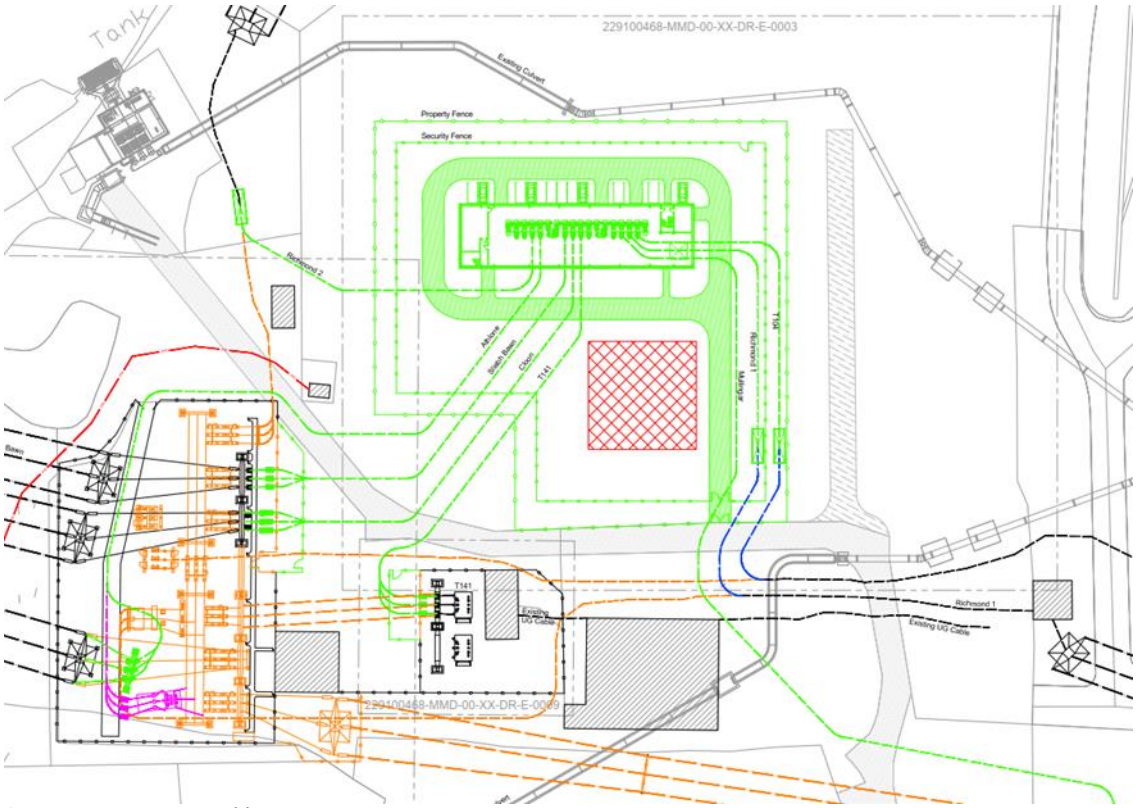
For cable connections, the outdoor cable trenches run right up to the outside wall of the GIS building and the ducts enter a cable basement located below the outdoor final ground level. OHL connections can be terminated at a cable interface mast and then brought into the cable basement as per the cable connections.

GIS substations, although often more expensive, are more compact and occupy a significantly smaller area than an AIS equivalent substation. The estimated footprint for a 12 bay GIS substation including roads and space for future transformers is 85m x 85m as demonstrated in Figure 26 and further detailed in drawing 229100468-MMD-00-XX-DR-E-002. Hence, a smaller overall footprint and land take is required for a GIS option.

Figure 25: Typical 110 kV GIS Substation building

Source: EirGrid

Figure 26: Extent of Replacement GIS Substation



Source: Mott MacDonald

6.3.3 Lightning Protection

For the purpose of lightning protection in an AIS substation, numerous Lightning Monopoles, approximately 20m high, within the boundary of the substation compound are required. Lightning Protection Rods, approximately 3m high, are also required on the apexes of the 110 kV Control Building. A photo of a typical Lightning Monopole is shown in Figure 27 below.

For the purpose of lightning protection in a GIS substation, no Lightning Monopoles are required within the boundary of the substation compound as there is no external equipment. A combination of copper tape and Lightning Protection Rods, approximately 3m high, are required on the roof of the GIS building to create an air termination system to protect the building.

Figure 27: Typical lightning monopole

Source: Mott MacDonald

6.3.4 Earth Grid

A below ground earth grid is installed in a 5m X 5m grid arrangement 600mm below the finished surface. The earth grid consists of bare stranded copper conductor with an outside diameter of 95mm^2. The purpose of the earth grid is to ensure personnel and public safety during electrical faults that may occur on the transmission grid. The earth grid extends 1m outside of the palisade security fence. The earth grid is required regardless of AIS or GIS options.

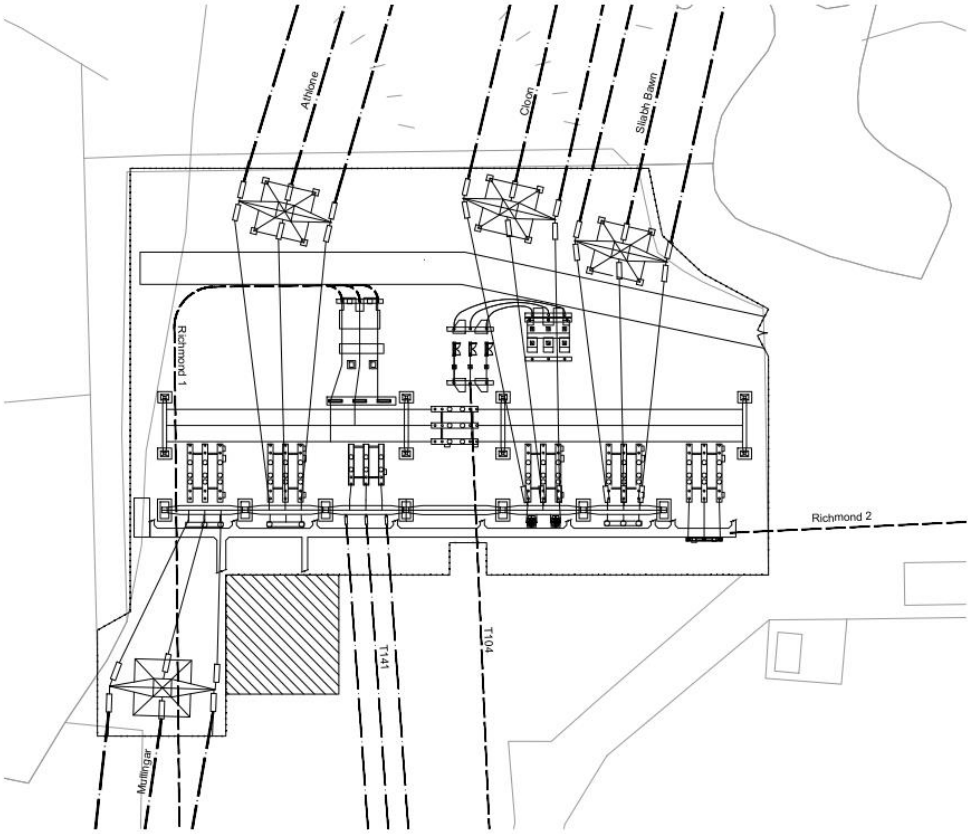
The detailed earthing design report will consider the presence of the underground steel culverts and railway tracks to ensure no transfer of potential from the new development.

6.4 110 kV Circuit Transfers

There are eight 110 kV circuits connected to the existing Lanesboro 110 kV substation, as illustrated in Figure 28, namely:

- Sliabh Bawn
- Cloon
- Athlone
- Richmond 1
- Richmond 2
- Lough Ree Power T104
- T141
- Mullingar

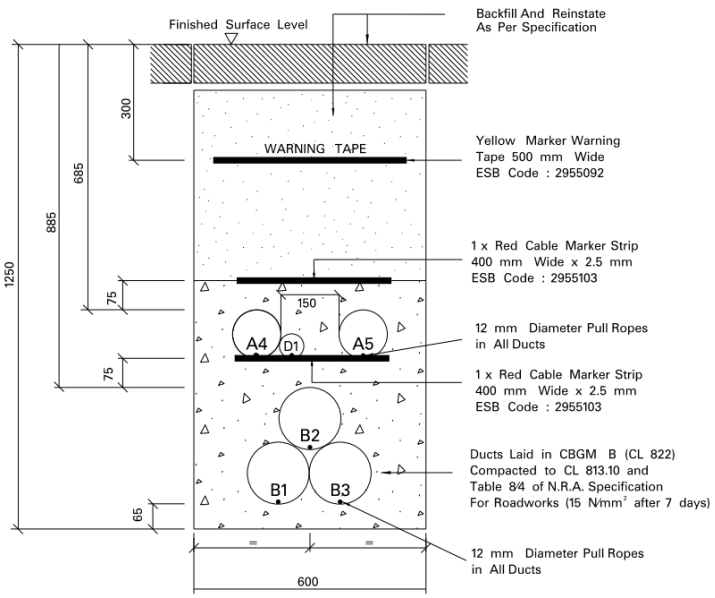
Figure 28: Existing Lanesboro 110 kV Substation with Circuit Connections



Source: Mott MacDonald

Each circuit, regardless whether the new substation is AIS or GIS, will be connected via new 110 kV cable. Each cable connection will require a separate trench for each circuit. Each trench will be approximately 600mm wide and 1250mm deep. The trench will contain three plastic ducts that will be laid in a trefoil formation at the bottom. The power cables will be pulled into these ducts following completion of the civil works. It is also common to have a further two smaller diameter ducts for communication cables that would be located above the three power ducts. A schematic of a typical 110 kV Trench Section is shown in Figure 29 below.

Figure 29: Typical 110 kV Trench Cross Section



Source: EirGrid

The method of transferring each circuit is described in the following sections.

6.4.1 Sliabh Bawn – Lanesboro

The overhead line from Sliabh Bawn terminates on a gantry in the Lanesboro 110 kV substation as shown in Figure 30. It is proposed to retain this termination arrangement and install a new cable sealing end to transition the overhead line to underground cable for onward connection to the new Lanesboro substation.

Figure 30: Sliabh Bawn – Lanesboro OHL Termination

Source: Mott MacDonald

6.4.2 Cloon – Lanesboro

The overhead line from Cloon terminates on a gantry in the Lanesboro 110 kV substation as shown in Figure 31. It is proposed to retain this termination arrangement and install a new surge arrestor and cable sealing end to transition the overhead line to underground cable for onward connection to the new Lanesboro substation.

Figure 31: Cloon – Lanesboro OHL Termination

Source: Mott MacDonald

6.4.3 Athlone – Lanesboro

The overhead line from Athlone terminates on a gantry in the Lanesboro 110 kV substation as shown Figure 32. It is proposed to construct a new gantry closer to the final tower and install a new surge arrestor and cable sealing end to transition the overhead line to underground cable for onward connection to the new Lanesboro substation.

Figure 32: Athlone – Lanesboro OHL Termination

Source: Mott MacDonald

6.4.4 Richmond 1 – Lanesboro

The overhead line from Richmond 1 terminates to a cable sealing end compound to the east of the proposed development. The cable sealing end compound is connected to the Lanesboro 110 kV substation via approximately 250m of underground cable. The cable sealing end compound is shown in Figure 33 and Figure 34. It is proposed to locate the underground cable between the cable sealing end and the Lanesboro substation and joint a new section of cable to the new substation.

Figure 33: Richmond 1 – Lanesboro Cable Sealing End Compound

Source: Mott MacDonald

Figure 34: Richmond 1 – Lanesboro Cable Sealing End Compound

Source: Mott MacDonald

6.4.5 Richmond 2 – Lanesboro

The overhead line from Richmond 1 terminates to a Line Cable Interface Mast (LCIM) to the west of the proposed development. The LCIM is connected to the Lanesboro 110 kV substation via approximately 100m of underground cable. The LCIM is shown in Figure 35. It is proposed to locate the underground cable between the LCIM and the Lanesboro substation and joint a new section of cable to the new substation.

Figure 35: Richmond 2 – Lanesboro Line Cable Interface Mast (LCIM)

Source: Mott MacDonald

6.4.6 Lough Ree Power T104 – Lanesboro

The underground cable from Lough Ree Power (transformer T104) traverses the site to the south of the proposed development. It is proposed divert this underground cable into the new substation via a new underground cable and associated joint.

6.4.7 T141 – Lanesboro

The overhead line from the existing Lanesboro substation to the 110/38kV distribution transformer known as T141 terminates at a gantry adjacent to T141 and is located to the south of the proposed development. The overhead line connection is shown in Figure 36 and Figure 37. It is proposed to retire the section of overhead line between T141 gantry and the existing Lanesboro 110 kV substation and connect T141 to the new substation via a new underground cable. A new set of cable sealing ends will be required at T141 and relocation of some of the palisade fence around the T141 compound will also be necessary.

Figure 36: Overhead Line Connection to T141

Source: Mott MacDonald

Figure 37: Overhead Line Connection to T141

Source: Mott MacDonald

6.4.8 Mullingar – Lanesboro

The overhead line from Mullingar terminates to a gantry within the existing Lanesboro substation and traverses the site to the south of the proposed development. It is proposed to construct a new Line Cable Interface Mast (LCIM) in the grounds of Lough Ree Power Station and retire the remaining section of overhead line to the existing Lanesboro 110 kV substation. A new underground cable will be installed between the LCIM and new substation. The proposed LCIM will replace the existing pole set shown in Figure 38.

Figure 38: Proposed Location for Mullingar – Lanesboro LCIM

Source: Mott MacDonald

6.5 Services and Utilities

The proposed site is on the former Lanesborough Peat Fired Generating Station. The power station was decommissioned in 2003 and subsequently demolished to finished floor level.

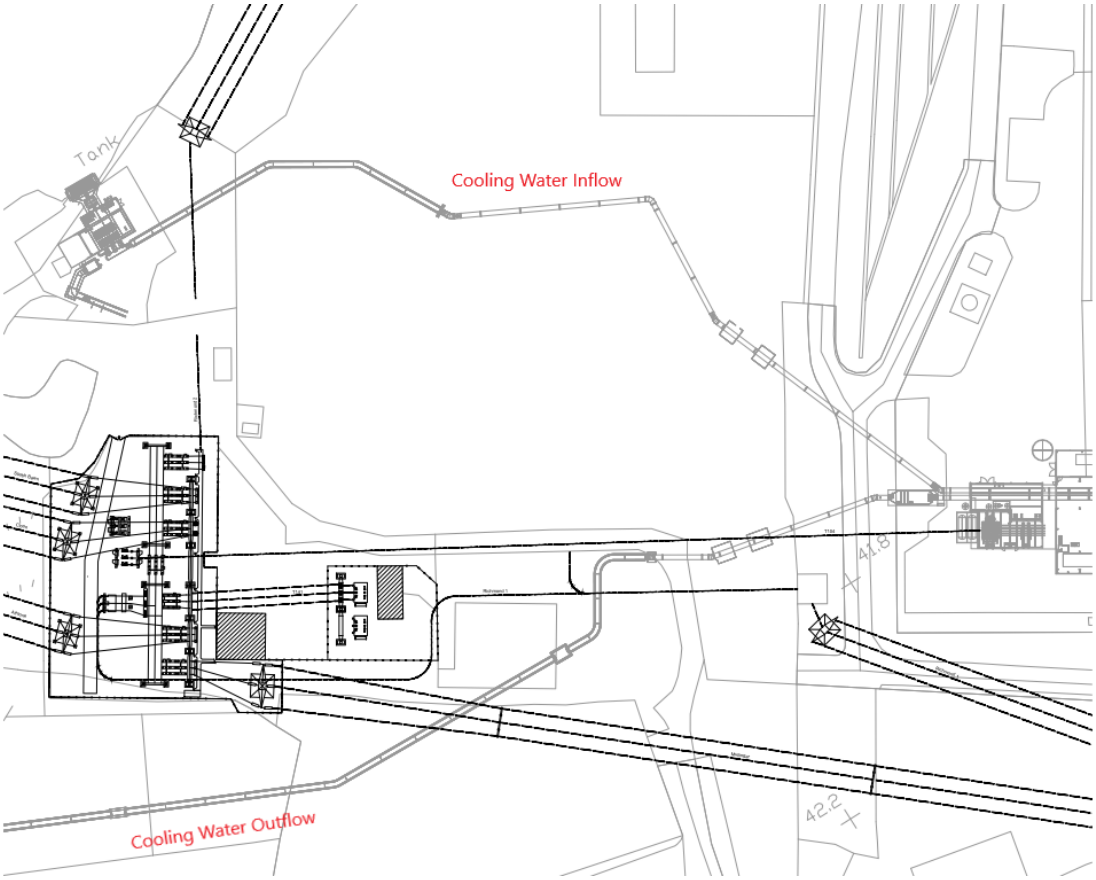
The main electrical services are the 110 kV overhead lines and underground cables, currently connected to the existing Lanesboro substation, that will be diverted using underground cables to the new substation as part of this development. The indicative location of these cable routes are shown in drawing 229100468-MMD-00-XX-DR-E-0002.

A borehole located immediately to the north east of the existing substation provides water to Longford County Council via a water pipe that is routed from the borehole to the north and west of the existing substation.

Additionally, it was discovered during the initial stages of the AIS design option for this Step 4 report that there is a cooling water intake and outflow culvert traversing the site that services the Lough Ree Power Generating Station. These steel culverts are 1.4m in diameter with the top of the culvert being approximately 1m below ground. The location of the culverts are shown in Figure 39.

On the northern side of the incoming cooling water culvert and running in parallel with it are: a 225mm diameter pressurised fire main associated with Lough Ree Power Station, 6.6 kV and control & instrumentation cables connecting the cooling water pumphouse to Lough Ree Power Station.

Figure 39: Location of Lough Ree Power Cooling Water Culverts



Source: Mott MacDonald

7 Identification of Preliminary Options

7.1 Introduction

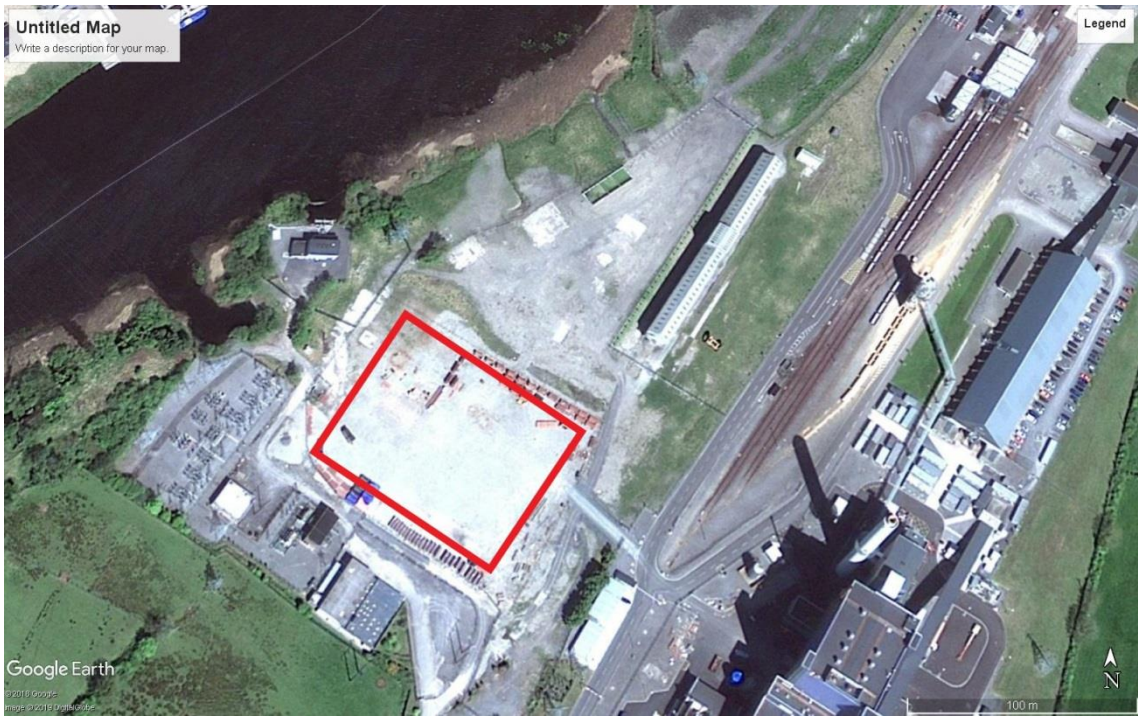
This section of the report provides a summary of the Step 4 process (identification of preliminary options) and methodology used to identify the options. The section also provides a description of the substation redevelopment options and outlines the proposed approach to be used to evaluate each option.

7.2 Identification of Preliminary Options

7.2.1 Option 1: Replacement 110 kV GIS Substation

A GIS substation, as described in Section 6 of this report, with a location as shown in Figure 40.

Figure 40: Proposed Location for a GIS Option

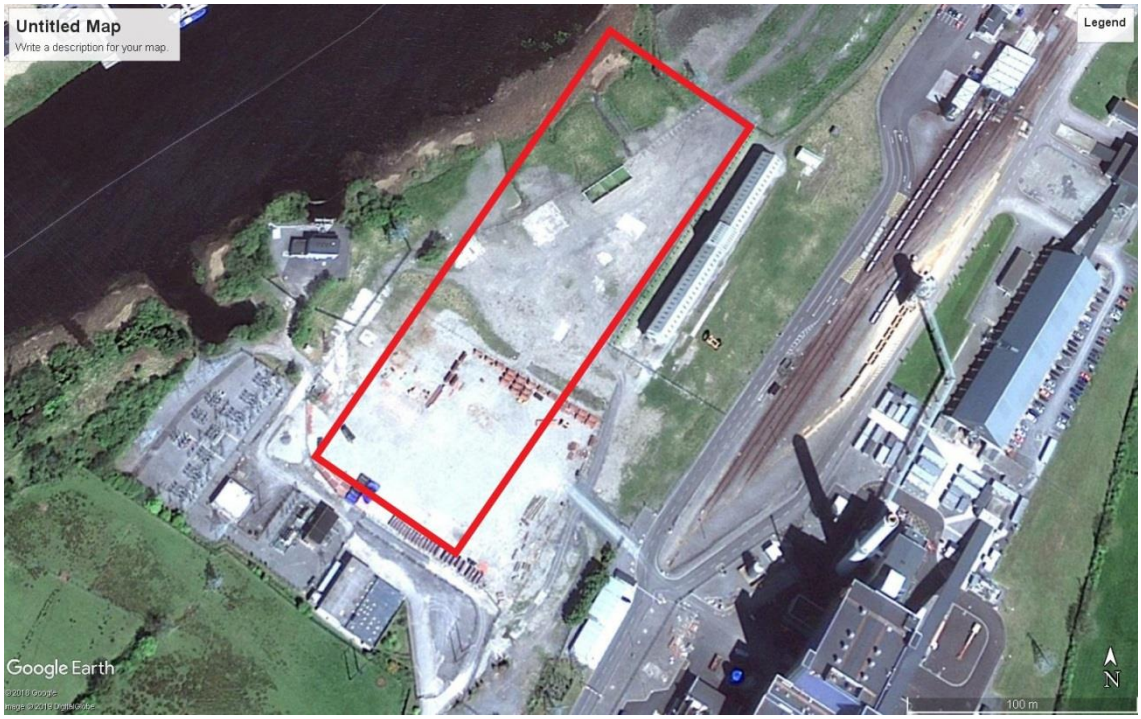


Source: Mott MacDonald

7.2.2 Option 2: Replacement 110 kV AIS Substation

An AIS substation, as described in Section 6 of this report, with a location as shown in Figure 41.

Figure 41: Proposed Location for an AIS Option



Source: Mott MacDonald

7.3 Summary of Assessment Criteria

The evaluation of the options uses a multi-criteria comparison against five main criteria:

- Technical;
- Economic;
- Environmental;
- Socio Economic; and
- Deliverability.

7.3.1 Technical Performance

Safety Standards Compliance: The project should comply with relevant safety standards such as those from the European Committee for Electrotechnical Standardisation (CENELEC). Materials should comply with IEC or CENELEC standards.

- **System Reliability**: The average failure rates can be calculated using, for example, estimated availability figures and Mean Time to Repair (MTTR); and
- **Expansion / Extendibility**: This considers the ease with which the option can be expanded

7.3.2 Economic Performance

- **Project Implementation Costs**: These are the costs associated with the procurement, installation and commissioning of the grid development and therefore includes all the transmission equipment that forms part of the project's scope.

7.3.3 Environmental

- **Biodiversity, Flora and Fauna**: Assessment of the potential for effects on protected sites for nature conservation, habitats and protected species;
- **Water and Flooding**: Assessment of the potential for effects on water (water quality of surface waters and groundwater) and increase potential for flooding;
- **Land Use**: Assessment of the potential for effects on land use (forestry, farmland, bogs/peats, horticulture);
- **Landscape and Visual**: Assessment of landscape constraints and designations and the assessment of the potential for effects on visual amenity;
- **Access**: Assessment of the potential for effects to local roads, in terms of traffic and impacts should new roads or access paths be required;
- **Archaeology, Architecture and Cultural Heritage**: Assessment of the potential for effects on the cultural heritage resources;
- **Soils, Geology and Hydrogeology**: Assessment of the potential for effects on soils (geology, Irish geological heritage sites, etc); and
- **Noise**: Assessment of the potential for vibration and operational noise effects of the development, taking into account sensitive receptors.

7.3.4 Socio-Economic

Socioeconomic performance sub-criteria are:

- **Population**: Assessment of the potential for effects of a grid development option on towns, villages and rural housing, and the way of life of their communities, residents, workers and visitors.
- **Recreation and Tourism**: Assessment of the potential for effects on recreational activities (e.g. fishing, sports) and tourism during and after construction, that are not included in the other sub criteria.

7.3.5 Deliverability

Deliverability sub-criteria are:

- **Implementation Timelines**: Relative length of time until energisation (assess significant differences) and outage requirements.
- **Project Plan Flexibility**: Does the project plan allow for some flexibility if issues arise during design and construction?
- **Planning, Permits & Wayleaves**: Various permissions and wayleaves required to proceed to construction (e.g. number or level).
- Construction related impacts:
  - *Water Impact during construction*: Ease/ difficulty of mitigation measures that may be required to prevent impacts on river crossings, lakes, and groundwater
  - *Air Quality Impact during construction*: Ease/difficulty of mitigation measures that may be required to reduce impacts from construction-related dust and traffic.
  - *Traffic & Noise Impact during construction*: Noise and traffic disturbance and impacts that may occur during the construction phase and mitigation measures to reduce impacts.

7.3.6 Scale used to assess the criteria

The effect on each criteria parameter is presented along a range from “more significant”/”more difficult”/“more risk” to “less significant”/”less difficult”/“less risk”. The following scale is used to illustrate each criteria parameter:

More significant/difficult/risk Less significant/difficult/risk

This scale is quantified by text for example low (Cream), low-moderate (Green), moderate (Dark Green), high-moderate or high (Dark Blue).

8 Evaluation of Options and Identification of Best Performing Option

8.1 Introduction

This section of the report examines the constraints affecting the GIS and AIS substation redevelopment options identified in Chapter 6 of this report. Each option is evaluated in accordance with EirGrid's Performance Matrix. A copy of the Performance Matrix including rationale and justification of respective scoring of each option is set out in Appendix C.

A recommendation for the best performing option is provided at the end of this chapter.

8.2 Enhanced Performance Matrix

8.2.1 Technical Performance

Option 1 – GIS Solution	System Reliability	Expansion / Extendibility	Combined Technical Performance
Technical Performance			
Option 2 – AIS Solution	System Reliability	Expansion / Extendibility	Combined Technical Performance
Technical Performance			

System Reliability

Option 1 – GIS Solution

GIS substations are located indoors, and therefore, are not exposed to a harsh environment. This reduces the maintenance requirements; however, GIS substations do suffer faults and component failures. These faults can result in significant outages as it may not be possible to segregate the fault to one section of the switchgear.

Option 2 – AIS Solution

There are many AIS substations installed in the transmission network and they are presently the predominant technology.

AIS substations are easily accessible for maintenance. Components can be maintained and replaced without the need for long outages compared to GIS type equivalents.

Expansion/Extendibility/Headroom

Option 1 – GIS Solution

GIS substations cannot be extended very easily unless the GIS building has been designed and constructed from the outset to accommodate the future circuits (at an increased overall cost and programme duration). The substation will be built with 4 spare bays from the start.

Option 2 – AIS Solution

When land is available AIS substations can be extended relatively easily; however, in the context of this project, there is no land available for such an extension. Specifically, the River Shannon is located to the west of the proposed development and the landowners have retained the lands to the north for their own development projects.

Combined Technical Performance

Option 1 – GIS Solution

The combined score for technical performance reflects the emphasis on reliability in the context of the substation assessment. The substation will be built out with 12 bays from the start, so extendibility is weighted lower than reliability.

Option 2 – AIS Solution

The combined score for technical performance reflects the emphasis on reliability in the context of the substation assessment. The substation will be built out with 12 bays from the start, so extendibility is weighted lower than reliability.

8.2.2 Economic Performance

Option 1 – GIS Solution	Project Implementation Costs	Economic Performance
Economic		
Option 2 – AIS Solution	Project Implementation Costs	Economic Performance
Economic		

The estimated project capital cost is the same for the GIS solution (**Option 1**) and the AIS solution (**Option 2**) as the construction of a flood defence and a diversion of the Lough Ree Power cooling water inflow culvert is required at significant additional cost for an AIS option.

8.2.3 Environmental Assessment

Option 1 – GIS Solution	Biodiversity	Landscape & Visual	Archaeology, Architecture & Cultural Heritage Water & Flooding	Water & Flooding	Soils, Geology & Hydrogeology	Noise	Combined Environmental Performance
Environmental							
Option 2 – AIS Solution	Biodiversity	Landscape & Visual	Archaeology, Architecture & Cultural Heritage Water & Flooding	Water & Flooding	Soils, Geology & Hydrogeology	Noise	Combined Environmental Performance

Environmental							

Biodiversity

Option 1 – GIS Solution

In terms of impacts to biodiversity, Option 1 was assigned an overall low-moderate impact score in that potential impacts on the biodiversity value of the site and its surrounding area are not considered to be significant. This will be verified during more detailed ecological appraisal of the site as part of the Step 5 planning process; however, the potential for significant impacts is considered to be readily mitigated.

Option 1 is predominantly a brownfield site. No protected habitats or species are known to occur within proximity to Option 1. No Flora Protection Order (FPO) plant species have previously been recorded in proximity to Option 1.

Option 1 will require the installation of a drainage outfall along the eastern bank of the River Shannon for the discharge of stormwater to the river. There is potential for runoff and dust associated impacts from the construction works, if not appropriately managed. Therefore, there is minor potential to affect the objectives of the Water Framework Directive.

Lough Ree Special Area of Conservation (SAC) (000440) and Special Protection Area (SPA) (004064) are located approximately 300m to the south-west. No works will occur within the designated sites; however, there is potential for runoff and dust associated impacts from the construction works depositing within the sites if not appropriately managed. Potential impacts on these designated sites will need to be established as part of the appropriate assessment process in support of the planning application.

No invasive species have previously been recorded either through ecological site survey or desk top review within proximity to Option 1. It should be noted however that the survey was conducted out of season.

Option 2 – AIS Solution

In terms of impacts to biodiversity Option 2 was assigned an overall moderate impact score.

Option 2 will result in a permanent loss of habitat, similar to Option 1, which is mostly building and artificial surfaces (BL3) and recolonised bare ground (ED3). Notwithstanding this, Option 2 has a larger footprint than Option 1; specifically, land intake associated with Option 2 also includes wet grasslands (GS4), depositing/lowland river (FW1) and others.

No protected habitats are known to occur within proximity to Option 2. No Flora Protection Order (FPO) plant species have previously been recorded in proximity to Option 2.

There will be works both within and adjacent to the River Shannon flood plain, including a drainage outfall along the eastern bank of the River Shannon for the stormwater discharge. Therefore, there is equal potential between the 2 no. options to affect the objectives of the Water Framework Directive.

Lough Ree Special Area of Conservation (SAC) (000440) and Special Protection Area (SPA) (004064) are located approximately 300m to the south-west. No works will occur within the designated sites; however, there is potential for runoff and dust associated impacts from the construction works depositing within the sites, if not appropriately managed. Potential impacts

on these designated sites will need to be established as part of the appropriate assessment process in support of the planning application.

No invasive species have previously been recorded either through ecological site survey or desk top review within proximity to Option 2. It should be noted, however, that the survey was conducted out of season.

Landscape and Visual

Option 1 – GIS Solution

Option 1 was assigned an overall low-moderate impact score in that potential impacts are not considered to be significant in the context of the existing brownfield nature of the site, the surrounding industrial land use and the availability of land for effective screen planting mitigation.

Option 1 is located in an area identified as Peatlands (Landscape Unit 6) in the Longford County Development Plan's Landscape Character Assessment (LCA). Peatlands are characterised as low sensitivity and are dominated by extensive tracts of raised bog interspersed with mixed forestry and areas of scrubby vegetation.

There are no historic designed landscapes or scenic views in the vicinity of this option.

There is likely to be some views of Option 1, i.e. from the River Shannon, however this would need to be established as part of the visual assessment carried out in support of the planning application. It is not considered that this visual impact, if any, will be significant, given the existing industrialised nature within the study area and the availability of localised screening on the banks of the Shannon.

Option 2 – AIS Solution

Option 2 was assigned an overall low moderate impact score.

As per Option 1, Option 2 is also characterised within the Peatlands LCA but is also partially within and adjacent to the Shannon Basin / Lough Ree (Landscape Unit 3). This landscape is characterised as having large amounts of water cover with inland marshes and bogland and a predominantly flat topography which provides for panoramic vistas across the River Shannon at numerous locations. The sensitivity of this landscape is classified as High along the banks of the River Shannon.

There are no historic designed landscapes or scenic views in the vicinity of this option.

There may be some views of Option 2; however, this will need to be established as part of the visual assessment carried out in support of the planning application. It is not considered that this visual impact, if any, will be significant. The impact of these views will be reduced given the availability of existing screening, existing industrialised nature of the surrounding landscape and its land use zoning.

Archaeology, Architecture & Cultural Heritage

Option 1 – GIS Solution

In term archaeology and cultural heritage, Option 1 was assigned an overall low impact score.

There are no National Monuments (state owned or vested in the care of local authorities), sites with Preservation Orders or Register of Historic Monuments sites in the vicinity of Option 1.

There are fourteen recorded archaeological sites/complexes (RMP / SMR sites) located within the wider Lanesborough area. Of these recorded sites, Lanesborough has been designated as a 'Historic Town' (LF017-003) which has resulted in a Zone of Notification encompassing the majority of the town's built environment. The remaining archaeological sites/complexes are predominantly clustered around Lanesborough Bridge and St. John's Church.

There are no protected structures listed in the Record of Protected Structures (RPS) for either County Longford or County Roscommon which are located in proximity to Option 1.

There are no ACAs for either County Longford or County Roscommon which are located in proximity to Option 1.

There are sixteen National Inventory of Architectural Heritage (NIAH) buildings listed within the study area's zone of influence. It should be noted that a number of NIAH Buildings recorded as structural components of the former Lanesborough Power Station have been demolished. It is also noted that these buildings themselves are/were energy related developments.

Option 2 – AIS Solution

In term archaeology and cultural heritage, Option 2 was assigned an overall low impact score.

There are no National Monuments (state owned or vested in the care of local authorities), sites with Preservation Orders or Register of Historic Monuments sites in the vicinity of Option 2.

There are fourteen recorded archaeological sites/complexes (RMP / SMR sites) located within the wider Lanesborough area. Of these recorded sites, Lanesborough has been designated as a 'Historic Town' (LF017-003) which has resulted in a Zone of Notification encompassing the majority of the town's built environment. The remaining archaeological sites/complexes are predominantly clustered around Lanesborough Bridge and St. John's Church.

There are no protected structures listed in the Record of Protected Structures (RPS) for either County Longford or County Roscommon which are located in proximity to Option 2.

There are no ACAs for either County Longford or County Roscommon which are located in proximity to Option 2.

There are sixteen National Inventory of Architectural Heritage (NIAH) buildings listed within the study area's zone of influence. It should be noted that a number of NIAH Buildings recorded as structural components of the former Lanesborough Power Station have been demolished. It is also noted that these buildings themselves are/were energy related developments.

There are no ACAs for either County Longford or County Roscommon which are located in proximity to Option 2.

Option 2 has a larger footprint encompassing both the former power plant brownfield site and a greenfield which surround both options. Notwithstanding this, the general setting has a relatively low archaeological potential.

Water and Flooding

Option 1 – GIS Solution

Option 1 was assigned a low-moderate impact score, this option is considered to have a moderate risk of impacting water resources and fisheries. The WFD status (2010-2015) for the River Shannon within the zone of influence is indicated as "Poor" with an overall classification of 'At Risk'. It should be noted that Lough Ree is also classified as 'At Risk', however, it has a

'Moderate' WFD status (2010-2015) and 'Moderate' ecological status (2009). Option 1 will require the installation of a drainage outfall along the eastern bank of the River Shannon for the discharge of stormwater. As such, there is potential for indirect impacts on the watercourse, if the works are not appropriately managed.

In addition, Option 1 occurs outside the CFRAMs Fluvial risk area.

Option 2 – AIS Solution

Option 2 was assigned a high impact score as its boundaries would contain infrastructure within or adjacent to the 1 in 100 year flood event and 1 in 10 year event of the River Shannon. This presents significant design and planning concerns. It would be necessary during the planning application process to undertake a comprehensive Flood Risk Assessment which would likely advise that in order to mitigate flood risk, either an embankment or raised site levels would be required. This could increase flood risk downstream. These impacts would need further investigation if this option is progressed into the planning phase, but presents a significant project risk, both in consenting and economic terms.

Similar to Option 1, Option 2 will also require the installation of a drainage outfall along the eastern bank of the River Shannon for the discharge of stormwater. As such, there is potential for indirect impacts on the watercourse, if the works are not appropriately managed.

Soil, Geology and Hydrogeology

Option 1 – GIS Solution

Option 1 was assigned a low-moderate impact score under the heading soil, geology and hydrogeology.

There are no known geological features or hazards located in proximity to the Option 1. Site is located within 'Regionally Important Aquifer - Karstified (conduit)'.

Option 1 is on the site of a former power station thus there is there is potential for contaminated soils or groundwater or materials on site. However, prior studies have shown that there is no evidence that contaminated soils or groundwater are adversely impacting the site's underlying bedrock aquifer. It is noted a Site Investigation is to be carried out in March/April 2019 and this risk rating may be reviewed once the findings of this SI are known.

Option 2 – AIS Solution

Option 2 was assigned a moderate score under the heading soil, geology and hydrogeology.

There are no known geological features or hazards located in proximity to the Option 2. The site is located within 'Regionally Important Aquifer - Karstified (conduit)'. The site also in part comprises the site of a former power station which, as noted above in Option 1, there is no evidence that contaminated soils or groundwater are adversely impacting the site's underlying bedrock aquifer. It is noted a Site Investigation is to be carried out in March/April 2019 and this risk rating may be reviewed once the findings of this SI are known.

Whereas Option 1 scored a low-moderate rating, Option 2 scores a moderate ranking on the basis of a larger site spatial footprint, and therefore, the potential for contaminates to be widespread (if present).

Noise and Air

Option 1 – GIS Solution

Option 1 was assigned a moderate impact score.

This option has a moderate risk potential in terms of noise and air associated impacts. The construction works will result in a temporary increase in noise and dust impacts; however, the scale and temporary nature of the works will not result in significant effects. It is noted also that the most proximate residential dwellings are approx. 200m south and 300m south-west of the site at its closest point.

Option 2 – AIS Solution

Option 2 was assigned a moderate impact score.

This option has a moderate risk potential in terms of noise and air associated impacts. The construction works will result in a temporary increase in noise and dust impacts; however, the scale and temporary nature of the works will not result in significant effects. It is noted also that the most proximate residential dwellings are approx. 200m south and 300m south-west of the site at its closest point.

Combined Environmental Performance

Option 1 – GIS Solution

Option 1 has a combined environmental performance of low-moderate impact score. The light green score was a result of the low-moderate risk assigned under the headings of Biodiversity, Landscape and Visual and Soils, Geology and Hydrogeology. Further risk could be reduced in respect of Water and Flooding and Noise depending on the agreed upon construction methodology, including the development and implementation of a Construction Environmental Management Plan (CEMP).

Option 2 – AIS Solution

Option 2 has a combined environmental performance of high impact score. This score was predominantly due to the significance of impact associated with Water and Flooding (high). Impacts identified under Biodiversity, Soils Geology and Hydrogeology and noise (moderate) were also considered under this high classification; however, further risk could be reduced in respect depending on the development and implementation of a CEMP.

8.2.4 Socio Economic

Option 1 – GIS Solution	Population, land use,& communities	Recreation & Tourism	Combined Socio-Economic Performance
Socio-Economic			
Option 2 – AIS Solution	Population, land use,& communities	Recreation & Tourism	Combined Socio-Economic Performance
Socio-Economic			

Population, Land use & Communities

Option 1 – GIS Solution

Option 1 was assigned a low-moderate impact score.

Option 1 comprises the brownfield lands located to the immediate east and north east of the existing substation on the site of the now demolished Lough Ree Power Station. The footprint of Option 1 is significantly reduced in comparison to Option 2. The most proximate residential dwellings are approx. 200m south and 300m south-west. Community facilities situated within the zone of influence include a post office, educational institution (Scoil Mhuire Gan Smal), religious establishment (St. John's Church) and specialist commercial activities. Scoil Mhuire Gan Smal and St. John's Church are approx. 240m and 300m south, respectively, of the site. Construction phase nuisance (traffic, noise, dust) will be assessed as part of the planning application.

Vehicular access and exit movements to and from Option 1 will be via a local public road spurring off from the N63, approx. 200m in length. Traffic impacts will be assessed in the planning application.

Option 2 – AIS Solution

Option 2 was assigned a moderate impact score.

The most proximate residential dwellings are approx. 200m south and 300m south-west. Community facilities situated within the zone of influence include a post office, educational institution (Scoil Mhuire Gan Smal), religious establishment (St. John's Church) and specialist commercial activities. Scoil Mhuire Gan Smal and St. John's Church are approx. 240m and 300m south, respectively, of the site. Construction phase nuisance (traffic, noise, dust) will be assessed as part of the planning application.

Vehicular access and exit movements to and from Option 2 will be via a local public road spurring off from the N63, approx. 200m in length.

Option 2 comprises a notably larger footprint than Option 1; however, it is located the same distance to other land uses. Overall, the impact is considered to be more significant given the spatial footprint and visual aesthetic of the AIS.

Recreation & Tourism

Option 1 – GIS Solution

Option 1 is assigned a low-moderate impact score.

Lanesborough-Ballyleague's local tourism industry is established on the cultural, historic, natural and aesthetic capital of the River Shannon and Lough Ree. Option 1 is not predicted to impact significantly on these resources; however, it is possible that there will be fleeting views of the substation from the River Shannon as it flows towards Lough Ree.

Option 2 – AIS Solution

Option 2 is assigned a low-moderate impact score.

Lanesborough-Ballyleague's local tourism industry is established on the cultural, historic, natural and aesthetic capital of the River Shannon and Lough Ree. Option 2 is not predicted to impact significantly on these resources. Although Option 2 has a larger spatial footprint, the impact of these views will be reduced given the availability of existing screening, existing industrialised nature of the surrounding landscape and its land use zoning. As such, fleeting views of the substation from the River Shannon as it flows towards Lough Ree will be minimised. Potential impacts will be assessed in greater detail in the planning application.

Combined Socio-Economic Performance

Option 1 – GIS Solution

Option 1 has a combined socio-economic performance of a low impact score.

Option 2 – AIS Solution

Option 2 has a combined socio-economic performance of a low moderate impact.

8.2.5 Deliverability

Option 1 – GIS Solution	Implementation Timelines	Project Plan Flexibility	Planning, Permits & Wayleaves	Construction related impacts	Combined Deliverability Performance
Deliverability					
Option 2 – AIS Solution	Implementation Timelines	Project Plan Flexibility	Planning, Permits & Wayleaves	Construction related impacts	Combined Deliverability Performance
Deliverability					

Implementation Timelines

Option 1 – GIS Solution

It is expected that the GIS substation can be constructed within 24 months. The main civil works for the building can be completed in a relative short period; however, the lead time for the switchgear could be 12 months. This is a 12-bay substation and all 12 GIS bays will need to be installed and commissioned prior to handover. As the switchgear will be installed indoors, the risk of weather delays is minimised.

Option 2 – AIS Solution

There will be significantly more enabling works associated with an AIS substation. Flood defence works and relocation of the cooling water inflow culvert, 6.6 kV cables, 225mm pressurised fire main and control and instrumentation cables are required prior to construction of the AIS option. The phasing of the culvert diversion works will also need to be agreed with Lough Ree Power Station to minimise plant downtime. It is expected that the enabling works could take 9 no. months including surveying and design of the flood defence and cooling water culvert. Once the enabling works are completed, the AIS substation could be built in 18 months. Due to the size of the AIS substation, it will be easier to allocate additional manpower without the risk of an overly congested workspace. The switchgear installation can be completed in a phased approach and the spare bays do not necessarily need to be fully equipped prior to energisation.

Project Plan Flexibility

Option 1 – GIS Solution

There is limited flexibility associated with the GIS option. There is limited flexibility associated with the GIS option. The procurement, installation and commissioning of the switchgear will all fall on the critical path. It should be noted that EirGrid will enter into an Infrastructure agreement to establish the committed project parameters and begin the procurement of equipment as early as possible.

There is ample space available to relocate the substation should there be any issue following ground investigations, surveys or planning requirements.

Option 2 – AIS Solution

There is no space to relocate the AIS substation should there be any issue with the proposed location.

There is quite a bit of flexibility in relation to the staging of the works as there are a lot of tasks and work areas that can be independently constructed.

Planning, Permits and Wayleaves

Option 1 – GIS Solution

The proposed substation will be built inside a single land folio. There is a risk that the project does not receive a final grant of permission from Longford County Council, or alternatively, delayed within the process due to Requests for Further Information (RFI) by the local council. It is also feasible that the project is appealed following the notification of decision to grant planning permission. These risks will be mitigated by a comprehensive and robust planning application submitted for the project.

Option 2 – AIS Solution

The proposed substation will be built over two land folios from the same land owner. The increased flood risk associated with Option 2 indicates a planning risk as it will be necessary during the planning application process to undertake a comprehensive Flood Risk Assessment which would likely advise, that in order to mitigate flood risk, either an embankment or raised site levels would be required. This could increase flood risk downstream.

These impacts would need further investigation (flood modelling and associated assessment) in order to ensure that there is no consequential flood risk (upstream or downstream) following the proposed works. This includes all works adjacent to the River Shannon during the construction phase and operational mitigation works.

Construction Related Impacts

Option 1 – GIS Solution

The site for the GIS station will be relatively compact. There will be a lot less construction traffic required compared to the AIS substation, especially during the enabling and site clearance works. The GIS substation will require less management in relation to protecting local watercourses and drainage systems and the site will be located further away from local receptors. However, it is expected that piling may be required due to the presence of peat.

Option 2 – AIS Solution

Considerable civil and ground works associated with this option. The flood defence works add significant risk to the project from an environmental perspective. The cooling water culvert works, and other services and utilities associated with Lough Ree Power Station also add significant risk to the project as the tie in works must be completed within short shutdown periods of Lough Ree Power Station.

Combined Deliverability Performance

Option 1 – GIS Solution

The combined deliverability score of moderate impact reflects the challenging timeframes associated with the substation build and the possible requirement for piling under the substation building.

Option 2 – AIS Solution

The combined deliverability of a high moderate impact reflects the challenging timeframes and planning consent associated with the flood defence and cooling water culvert relocation work and co-ordination with Lough Ree Power Station (for outage availability) and third parties. The construction related impacts such as dust and construction traffic contribute to the assessment of the impact.

8.2.6 Recommended Best Performing Option

Refer to the table below for a summary of the evaluation and a comparison of the two options:

Overall Ranking	Option 1- GIS Solution	Option 2- AIS Solution
Technical		
Economic		
Environmental		
Socio-Economic		
Deliverability		

From a technical perspective, both options are well established methods of delivering a substation of this nature and are assigned the same risk level.

From an economic perspective, a GIS solution such as Option 1 is usually more expensive than an AIS solution such as Option 2 as a result of the GIS equipment and building being significantly more expensive than the AIS equipment and associated foundations. Also, although an AIS solution occupies a much larger footprint, land costs in rural areas are not usually high enough to make the AIS solution more expensive than the GIS solution. However, in this development there are significant enabling works costs associated with Option 2 that are not required with Option 1 and therefore both options are assigned the same risk level.

From an environmental perspective, Option 1 scores an overall moderate impact rating and Option 2 scores a high impact rating. The works associated with both options are located in close proximity to the Lough Ree Special Area of Conservation (SAC) (000440) and Special Protection Area (SPA) (004064). No works will occur within the designated sites, however, there is potential for water runoff and dust emission associated impacts from the construction works depositing within the sites if not appropriately managed. This risk is associated more with Option 2 as it is located in closer proximity to the River Shannon being immediately upstream and connected to the designated sites. Option 2 would also contain infrastructure located partially within the 1 in 100 year flood event and 1 in 10 year flood event area of the River

Shannon. This presents significant design and planning concerns. It would be necessary during the planning application process to undertake a comprehensive Flood Risk Assessment which would likely advise that in order to mitigate flood risk, either an embankment of raised site levels would be required. This could increase flood risk downstream. These impacts would need further investigation if progressed into the planning phase but presents a significant project risk, both in consenting and economic terms. Option 2 will also have a larger spatial footprint and will result in more pronounced visual impact, particularly to an apartment complex on the opposite side of the River Shannon as well as recreational users of the River Shannon.

From a socio-economic perspective Option 2 is considered to be more highly constrained than Option 1 given its larger spatial footprint and its potential to impact on the cultural, historic, natural and aesthetic capital of the River Shannon.

From a deliverability perspective, Option 2 is assessed with a high impact risk level due to the works required for flood mitigation and also the relocation works for the Lough Ree Power Generating station cooling water culvert.

Based on the above overall assessment, Option 1 **– GIS Solution** is considered to be the best performing solution.

Appendices

A. Confirmation of Non-strategic Development

B. Mapping

C. Engineering Drawings

D. Enhanced Performance Matrix

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