



Clifton Scannell Emerson
Associates

Preliminary Design Report

Echelon Dub 30 Grid Connection

Client: CRAG WICKLOW LIMITED

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Job Number: 22_131

Civil
Engineering

Structural
Engineering

Transport
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Project
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1 Introduction

1.1 Overview

The following report is being submitted as part of the Planning Application for the provision of a new 110kV Substation with Gas Insulated Switchgear (GIS) technology and two 110kV underground transmission cables (Circuit “A” and Circuit “B”) 110kV connecting to existing 220kV overhead lines to the northwest of the proposed substation, along with associated and ancillary work. The proposed development is located within the townlands of Bogland, Kish, Cooladangan, Ballintombay, Ballyrooan, and Ballynattin, Co. Wicklow. The proposed site comprises a total area 8.68 ha.

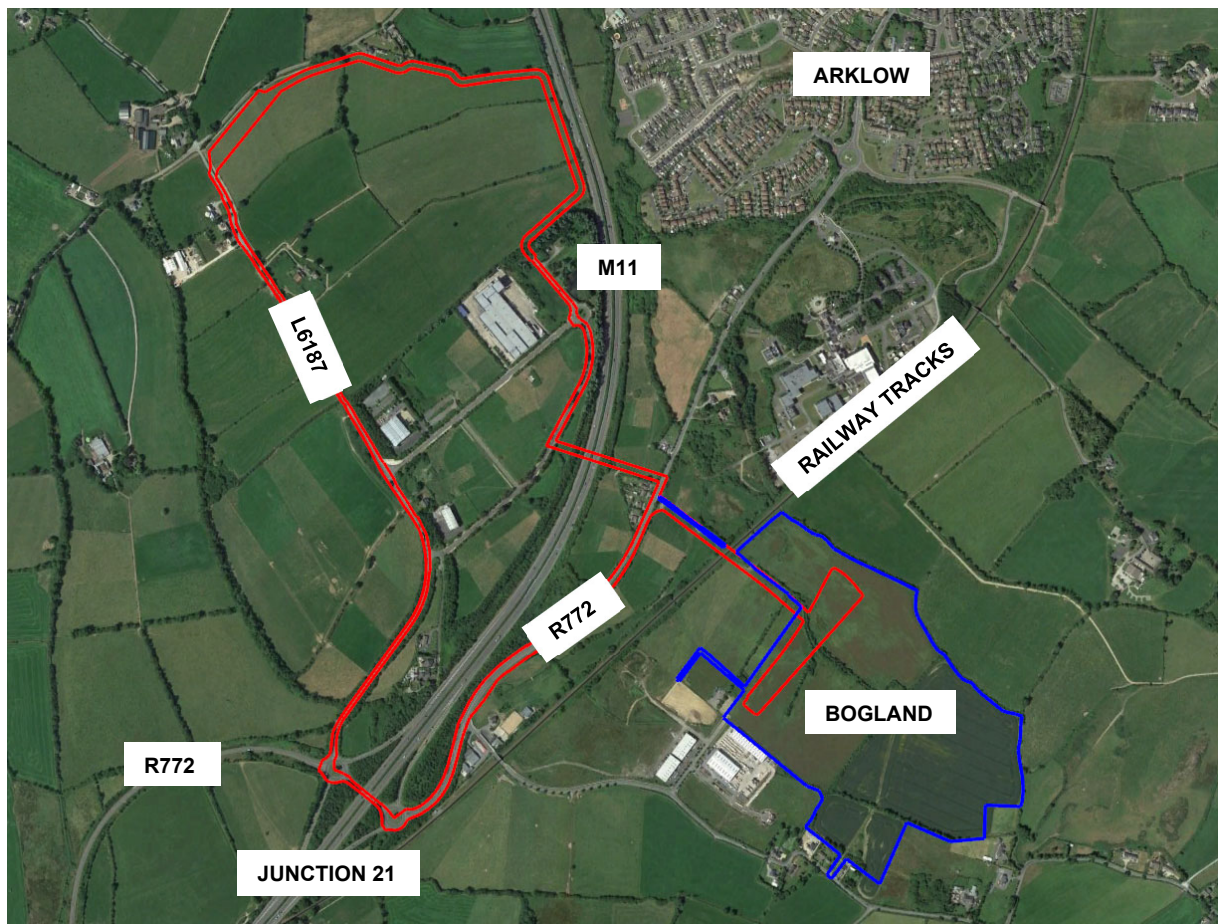


Figure 1: Site Location

1.2 Description of the Project

The proposed development primarily is described as follows:

- The proposed 110kV GIS Substation is to be located on lands to the northwest of the ICT facility development permitted under Wicklow County Council Reg. Ref.: 20/1088, within an overall landholding bound to the south / southwest by the existing Kish Business Park, to the southeast by dwellings and Kish Road, to the west by the Dublin-Rosslare railway line (beyond which is the R772 and the M11), and to the east and north by agricultural lands.

- The proposed substation compound is subdivided into two parts. The southern part of the compound will accommodate and a two storey 110kV GIS substation building (with a gross floor area of c. 1,299 sq. m). The northern part of the compound will accommodate four transformers and a single storey client control building (with a gross floor area of c. 419 sq. m) and associated underground services. Both parts of the substation compound are enclosed within c. 2.4 m high security fencing.
- The proposed dropdown 110kV transmission lines will connect the proposed 110kV GIS substation building to existing 110kV overhead transmission lines to the northwest of the proposed substation (the Arklow Banoge 110kV overhead line) and will comprise the provision of two dropdown masts (c. 17 metres in height) and associated overhead transmission line connections, transitioning to underground transmission lines set within ducts that will subsequently progress into the 110kV GIS substation building.
- The proposed 110kV transmission line will primarily run through undeveloped lands, agricultural lands, and via public roads between the proposed 110kV GIS substation and existing Arklow – Banoge overhead lines to the northwest of the site.
- The transmission lines form a loop that will be divided into two circuits, Circuits A and B. Proposed Circuit A, with a total length of 2,888m, proceeds from the site of the proposed 110kV GIS substation westwards, traversing under the existing Irish Rail railway line, then proceeds south-west along the R772 to cross the Ballyduff Stream and crosses underneath the M11 motorway at Junction 21, then proceeds along the L6187, enters agricultural lands adjacent to Knockeneahan Road, and terminates at the existing 110 kV Arklow – Banoge overhead line. Proposed Circuit B, with a total length of 2,164m, proceeds from the site of the proposed 110kV GIS substation westwards, traversing the existing Irish Rail railway line, the Ballyduff Stream, the R772, and the M11, then traverses lands within the Arklow IDA Business Park, and open agricultural lands adjacent to the M11 and Knockeneahan Road and terminates at the existing 110 kV Arklow – Banoge overhead line, as shown in **Figure 2**.
- The development includes adjacent access paths, connections to the substation and to the overhead lines, removal of redundant overhead lines, landscaping and landscape screening to the proposed GIS substation compound, security fencing, provision of internal access roads and car parking (9 no. spaces) within the substation compound, services, all associated construction works, and all ancillary works.

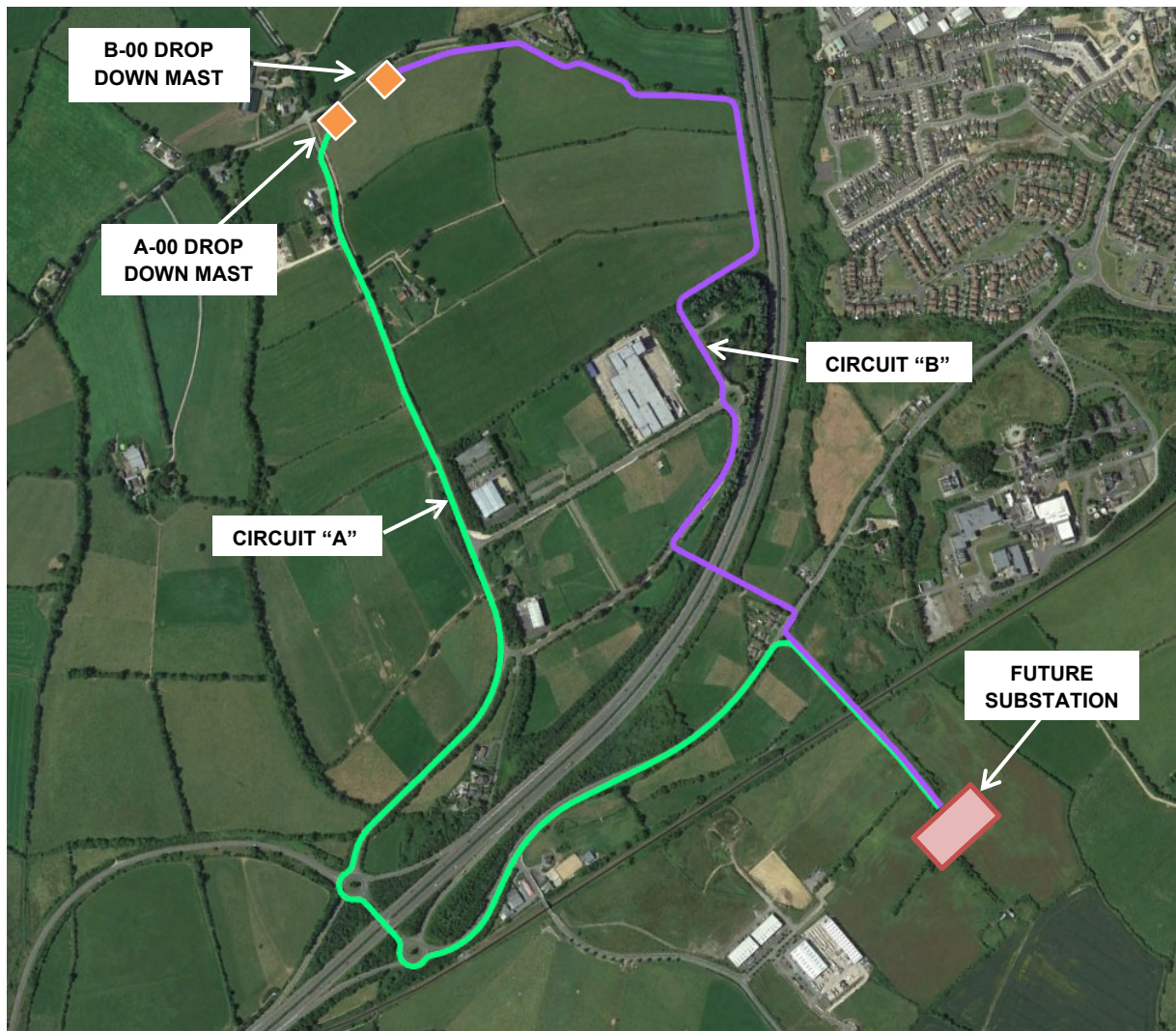


Figure 2: Proposed Routes Layout

1.3 Permitted Development on Landholding

The previously Permitted Planning Application (WCC Planning Register Reference: 20/1088) is located on lands within the blue line boundary.

The Permitted development above-mentioned consists of various works that can be summarised as follows:

- Demolition of existing outbuildings on the subject site, along with all site clearance.
- Construction of 3 no. part one storey, part two storey, Information and Communication Technology (ICT) facility buildings, each with a gross floor area (GFA) of c. 22,210 sq. (66,630 sq. GAT in total), and with a height (to parapet level) of 10,40m.
- Each of the 3 (three) no. ICT facility buildings will accommodate ICT equipment rooms, associated electrical and mechanical equipment rooms, loading bays, maintenance and storage space, office administration areas, and staff facilities; emergency generators (20 no. for each ICT facility building), flue stacks and associated plant are provided in fenced compounds adjacent to each ICT facility.



- Extension of the existing road serving Kish Business Park to access the subject site, with gated access points to the proposed ICT facility development to be provided off this roadway on its eastern site. The proposed roadway will form part of the inner relief road planned under Objective IT7 of the Arklow Town and Environs LAP 2018-2024.
- Construction of internal road network and circulation areas, footpaths, provision of 180 no. car parking spaces (60 no. spaces to serve each ICT facility) and 18 no. cycle parking spaces.
- Landscaping and planting, boundary treatments, lighting, security fencing, gatehouse (with GFA of 175 sq.), and all associated site works including underground foul and storm water drainage network, attenuation and percolation areas, and utility cables, on an application site area measuring c. 24.16 ha.

2 Surface Water Drainage

2.1 Overview

During the construction of the proposed underground Circuit “A” and Circuit “B” 110kV transmission lines, reinstatement works may be necessary to the existing surface water network, such as the reinstatement of manholes, gullies and pipes.

2.2 Existing Storm Water Infrastructure

Upon review of existing services records received from utilities providers and Local Authority, CSEA noted that there is existing surface water network traversing along the existing local road L6187, along the existing M11, along the existing Regional Road R772, along the Irish Rail railway line and through the existing Kish Business Park.

2.3 Proposed Surface Water Network

The proposed development is not deemed to have any significant impact on the existing services. Further information (ground investigation and GPR survey) may be required to assess potential conflicts between the proposed underground 110kV transmission lines and existing services.

2.4 Proposed Protection Measures

- Excavation infilling will be carried out in small progressive stages.
- Whilst no significant run off of silt laden in anticipated, given the proposed construction methodology, the site will be regularly monitored by construction staff for signs of run-off such as silt in surrounding vegetation and measures will be put in place to prevent this where necessary. This may include the erection of a silt fence. A silt fence may be constructed by attaching a sheet of geotextile membrane to a stock fence and burying the bottom of it into the ground, thus allowing water to pass through but not the heavier fraction of the sediment.
- Any excavated soil that is not re-used will be disposed of to a Local Authority approved waste disposal facility.
- In all circumstances, excavation depths and volumes will be minimised, and excavated material will be re-used where possible.

3 Foul Water Drainage

3.1 Overview

During the construction of the proposed underground Circuit “A” and Circuit “B” 110kV transmission lines, reinstatement works may be necessary to the existing foul water network, such as the reinstatement of manholes and pipes.

3.2 Existing Foul Water Network

Upon review of existing services records received from utilities providers and Local Authority, CSEA noted that there is existing sewer/ foul network traversing along the existing local road L6187, along the existing M11, along the existing Regional Road R772, along the Irish Rail railway line and through the existing Kish Business Park.

3.3 Proposed Foul Water Network

The proposed development is not deemed to have any significant impact on the existing services. Further information (ground investigation and GPR survey) may be required to assess potential conflicts between the proposed underground 110kV transmission lines and existing services.

4 Water Supply

4.1 Overview

During the construction of the proposed Circuit “A” and Circuit “B” 110kV transmission lines, reinstatement works may be necessary to the existing watermain network, such as the reinstatement of pipes. Any necessary works will be carried out in line with Irish Water Standards.

4.2 Existing Watermain Network

Upon review of existing services records received from utilities providers and Local Authority, CSEA noted that there is existing watermain network traversing along the existing Regional Road R772, M11, through the existing Arklow Business Park and Kish Business Park.

4.3 Proposed Watermain Network

The proposed development is not deemed to have any significant impact on the existing services. Further information (ground investigation and GPR survey) may be required to assess potential conflicts between the proposed underground 110kV transmission lines and existing services.

5 Accompanied Information

5.1 Planning Drawings

This report should be read in conjunction with the following planning drawings issued in support of this application:

DRAWING No.	TITLE
22_131-CSE-GEN-XX-DR-C-1500	COVER SHEET
22_131-CSE-GEN-XX-DR-C-1501	SITE LOCATION MAP
22_131-CSE-GEN-XX-DR-C-1510	PROPOSED GRID CONNECTION, OVERALL
22_131-CSE-GEN-XX-DR-C-1511	CIRCUIT 'A' PROPOSED ROUTE, SHEET 1 OF 10
22_131-CSE-GEN-XX-DR-C-1512	CIRCUIT 'A' PROPOSED ROUTE, SHEET 2 OF 10
22_131-CSE-GEN-XX-DR-C-1513	CIRCUIT 'A' PROPOSED ROUTE, SHEET 3 OF 10
22_131-CSE-GEN-XX-DR-C-1514	CIRCUIT 'A' PROPOSED ROUTE, SHEET 4 OF 10
22_131-CSE-GEN-XX-DR-C-1515	CIRCUIT 'A' PROPOSED ROUTE, SHEET 5 OF 10
22_131-CSE-GEN-XX-DR-C-1516	CIRCUIT 'A' PROPOSED ROUTE, SHEET 6 OF 10
22_131-CSE-GEN-XX-DR-C-1517	CIRCUIT 'A' PROPOSED ROUTE, SHEET 7 OF 10
22_131-CSE-GEN-XX-DR-C-1518	CIRCUIT 'A' PROPOSED ROUTE, SHEET 8 OF 10
22_131-CSE-GEN-XX-DR-C-1519	CIRCUIT 'A' PROPOSED ROUTE, SHEET 9 OF 10
22_131-CSE-GEN-XX-DR-C-1520	CIRCUIT 'A' PROPOSED ROUTE, SHEET 10 OF
22_131-CSE-GEN-XX-DR-C-1521	CIRCUIT 'B' PROPOSED ROUTE, SHEET 1 OF 7
22_131-CSE-GEN-XX-DR-C-1522	CIRCUIT 'B' PROPOSED ROUTE, SHEET 2 OF 7
22_131-CSE-GEN-XX-DR-C-1523	CIRCUIT 'B' PROPOSED ROUTE, SHEET 3 OF 7
22_131-CSE-GEN-XX-DR-C-1524	CIRCUIT 'B' PROPOSED ROUTE, SHEET 4 OF 7
22_131-CSE-GEN-XX-DR-C-1525	CIRCUIT 'B' PROPOSED ROUTE, SHEET 5 OF 7
22_131-CSE-GEN-XX-DR-C-1526	CIRCUIT 'B' PROPOSED ROUTE, SHEET 6 OF 7
22_131-CSE-GEN-XX-DR-C-1527	CIRCUIT 'B' PROPOSED ROUTE, SHEET 7 OF 7
22_131-CSE-GEN-XX-DR-C-1530	CABLE DROP DETAILS
22_131-CSE-GEN-XX-DR-C-1531	TYPICAL JOINT BAY DETAILS
22_131-CSE-GEN-XX-DR-C-1532	TYPICAL LINK AND C2 COMMS CHAMBERS
22_131-CSE-GEN-XX-DR-C-1535	HDD DETAILS
22_131-CSE-GEN-XX-DR-C-1540	TYPICAL TRENCH CROSSING OVER 3 rd PARTY – FLAT FORMATION
22_131-CSE-GEN-XX-DR-C-1541	TYPICAL TRENCH CROSSING BELOW 3 rd PARTY – FLAT FORMATION
22_131-CSE-GEN-XX-DR-C-1542	TYPICAL TRENCH CROSSING OVER 3 rd PARTY – COMMS LOWERED FORMATION
22_131-CSE-GEN-XX-DR-C-1543	TYPICAL TRENCH CROSSING BELOW 3 rd PARTY – COMMS LOWERED FORMATION
22_131-CSE-GEN-XX-DR-C-1544	TYPICAL TRENCH CROSSING OVER 3 rd PARTY – TREFOIL FORMATION
22_131-CSE-GEN-XX-DR-C-1545	TYPICAL TRENCH CROSSING BELOW 3 rd PARTY – TREFOIL FORMATION

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