Appendix 4.13
110kV Grid Substation and Transmission Line Report

THIS PAGE IS INTENTIONALLY BLANK

110kV Grid Substation and Transmission Line Report

Document: 10360452

HDR-XX-XX-RP-E-000001

Herbata Data Centre Campus

Naas, County Kildare

June 7, 2024

Issue:	P03
Status:	Issue For Planning
Prepared By:	Robert Thorogood
Edited By:	Robert Thorogood
Authorised By:	Ulrich Groenewald

Document Control

Issue	Date	Status	HDR Author	HDR Approval	Notes
P01	31/05/2023	Review	05/06/2023_RT	07/06/2023_JM	First issue for review
P02	06/09/2023	Final	06/09/2023_RT	07/09/2023_JM	Updated with comments, for submission
P03	07/06/2024	Final	07/06/2024_RT	07/06/2024_UG	Stage 2 Engineering Design

Contents

Document Control i
1 Introduction 1
2 Existing Condition 2
3 Proposed Changes 3
4 Proximity to 220kV Overhead Lines 9
5 Contestable & Non-contestable Works 10
6 Summary 12

Tables

Table 5-1. Contestable and non-Constable Works 10

Figures

Figure 2-1. Herbata Project Site – Existing Overhead Lines 2
Figure 3-1. First Floor 8-bay GIS Station 3
Figure 3-2. Ground Floor 8-bay GIS Station 3
Figure 3-3. 8-bay GIS Station Section 4
Figure 3-4. Proposed New Substation Arrangement in Principle 5
Figure 3-5. Substation and undergrounding of 110kV Overhead Line 6
Figure 3-6. Example Single Circuit L/C Interface Tower 7
Figure 3-7. High Level Single Line Diagram – Multiple Winding Transformer 8
Figure 4-1. Extract of 220kV Overhead Line Clearances Drawing 9

Appendices

Appendix A. A-1
Appendix B. B-1
Appendix C. C-1

1 Introduction

This report has been prepared by HDR on behalf of Herbata Ltd in support of an Electricity Transmission application to An Bord Pleanála (ABP) under Section 182 of the Planning and Development Act for a new 110kV GIS grid substation, transmission line connections, and associated development.

The substation development is to be made of two elements, the first being a new node on the Irish electricity grid to the West of Naas which will be handed over and be operated by EirGrid ESO as the transmission system operator (TSO), the second element will comprise the transformation to a lower voltage to enable connection of the onsite gas turbine generation at the Herbata Data Centre Campus Development.

This report defines the existing condition of the overhead 110kV line that crosses the site, and how it is proposed extend Eirgrid's transmission system to allow power connection for import or export to the Herbata Data Centre site with spare bays for future development around Naas. The report also discusses other necessary measures required including the undergrounding of the existing 110kV overhead lines that crosses the site and the removal of the resulting obsolete stretches of overhead line and associated supporting towers.

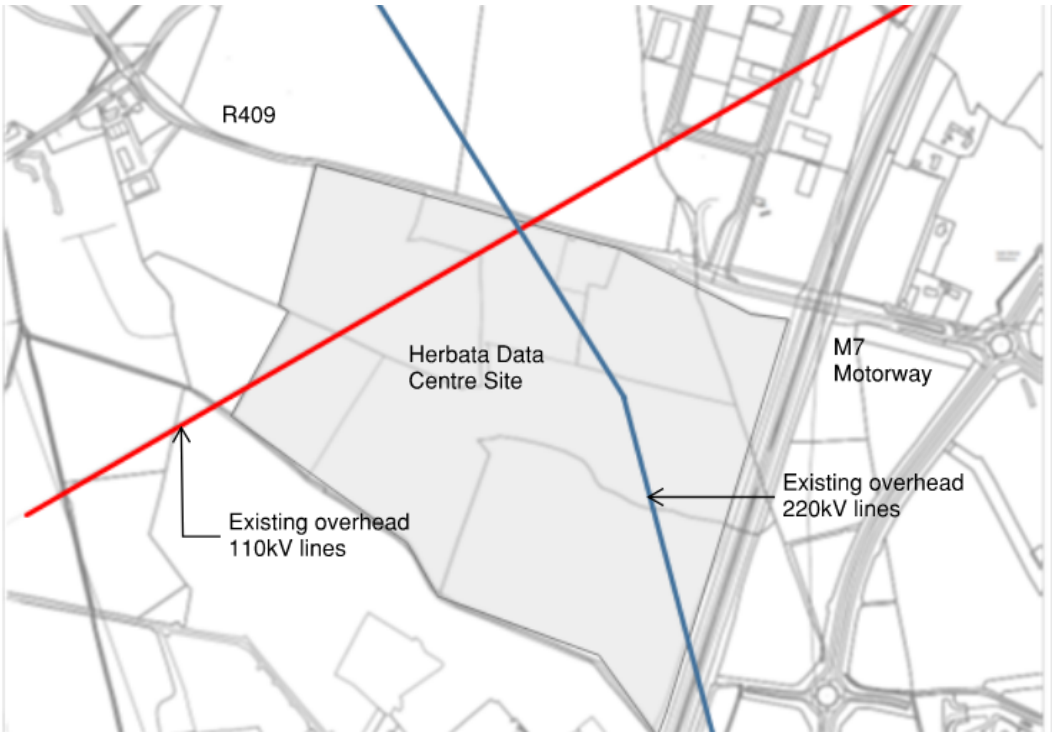
It should be noted that there is an also a 220kV overhead line that crosses the site, no works are proposed to this line, it will remain as existing. An exclusion zone of 8.5m either side of the Centre line of the 220kV overhead line has been assumed with no construction works allowed in this zone.

All the works that are intended to be handed over to Eirgrid will be specified, procured, and constructed to Eirgrid's standards and requirements for a grid substation at a node. Liaison with ESB has already commenced and reference has been made to all relevant drawings and documentation for the development of this design.

2 Existing Condition

The existing site has a single 110kV overhead line and a single 220kV overhead that crosses approximately perpendicular to each other and at different heights, see Figure 2-1. No works or changes are intended for the 220kV line.

Figure 2-1. Herbata Project Site – Existing Overhead Lines



Source: RKD / HDR

The Herbata Data Centre site is located to the west of Naas bounded to the west by the M7 Motorway and to the north by the R409 roadway. Access is provided from the R409.

3 Proposed Changes

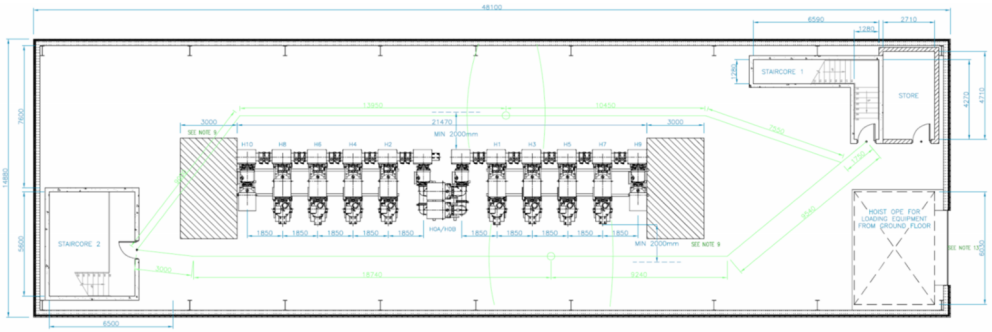
The proposed development requires a new power connection from the existing 110kV transmission line, by breaking into it and providing a new grid substation; this is in accordance with Eirgrid's policy Pol_St_18 titled "Policy Statement on Options for Connecting Customers to the Transmission Network", see link below:

https://www.eirgridgroup.com/site-files/library/EirGrid/Options-for-Connecting-Customers-to-the-Transmission-Network-(2022).pdf

The option that is proposed to be used from the above policy statement is Option 1, however instead of a 4 bay grid substation it is proposed to use Eirgrid's standard 8-bay format grid substation, where two bays will be used for the incoming and outgoing feeders to the existing transmission line, two further bays will be allocated to the Herbata Data Centre campus, leaving 4 bays as spare for future development in and around the Naas area.

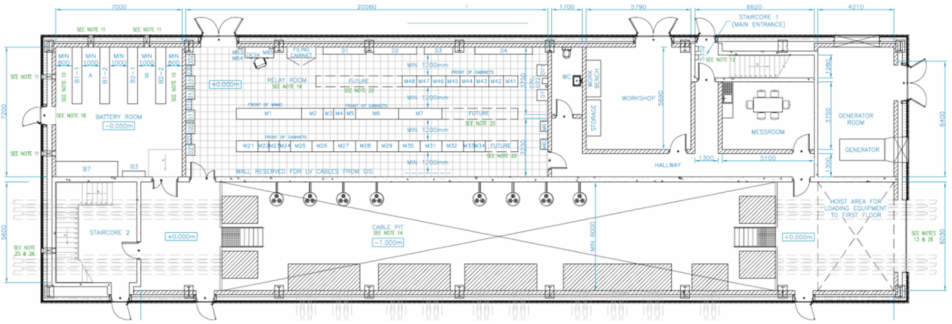
The proposed new gas insulated switchgear (GIS) grid substation is based on Eirgrid's standard arrangements for an 8-bay 110kV based switchboard. Trials were carried out to see if AIS based gear could be used but test fits showed that the area required was too great. Eirgrid also have standard arrangements for GIS (gas insulated switchgear) that they use on their network, these require the switchgear to be housed in a 2-storey building to enable safe operation and cable entry.
Figure 3-1, Figure 3-2and Figure 3-3 show the standard arrangement for an 8-bay GIS Station. Refer to 6Appendix A for the full version of the drawings.

Figure 3-1. First Floor 8-bay GIS Station



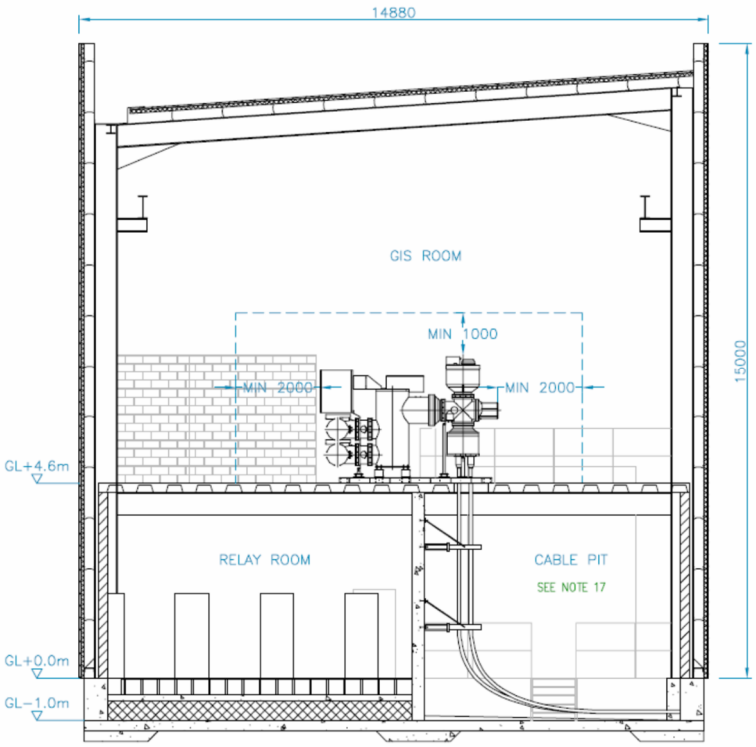
Source: Eirgrid

Figure 3-2. Ground Floor 8-bay GIS Station



Source: Eirgrid

Figure 3-3. 8-bay GIS Station Section



Source: Eirgrid

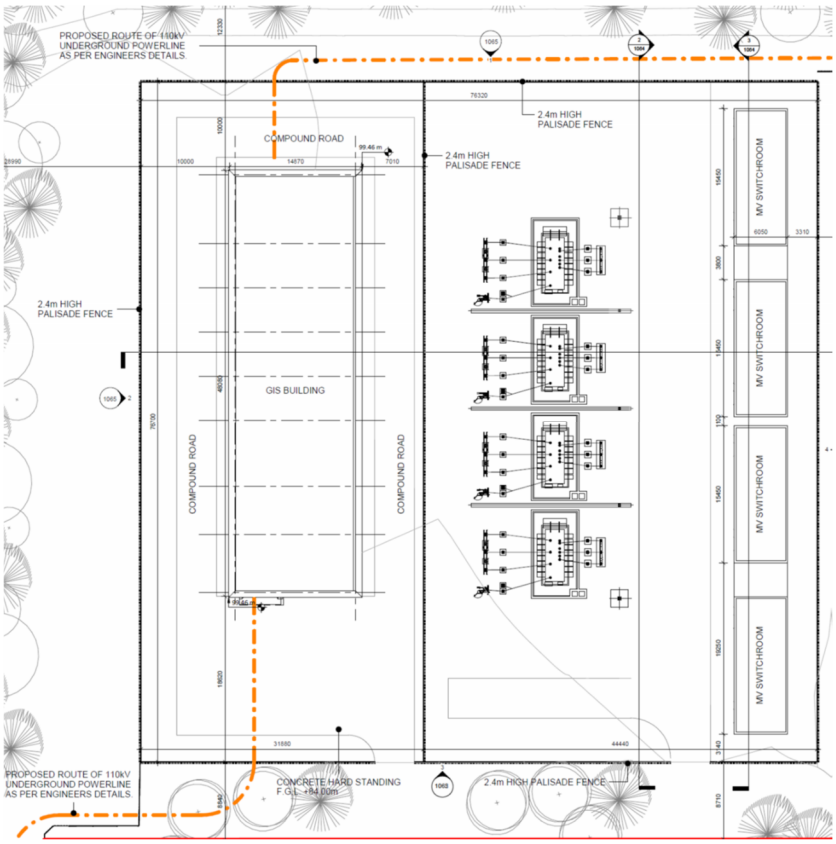
Using this standard arrangement for a GIS station, the substation for the Herbata Data Centre campus development has been arranged to have two sections, the first to fully incorporate the arrangement of the Eirgrid 8-bay GIS station and the second section to incorporate the local distribution and step-down transformers for the data Centre development itself. This proposed arrangement is shown in Figure 3-4.

Looking at Figure 3-4 below, the left-hand side shows the standard arrangement for an 8-bay GIS substation and the left-hand side shows the distribution side of the substation to serve the Herbata Data Centre campus. The right-hand side is made up of the following components:

- Ducting from the new Eirgrid GIS station.
- Set off 7m minimum from the fence line around the Eirgrid GIS station.
- Up to 4 x 110kV hybrid GIS circuit breakers, isolators, and metering equipment.
- Up to 4 x 110/10kV dual output step down transformers.
- 4 x 10kV medium voltage output switch rooms for distribution to the site and connection to the onsite gas turbines and generators in each data Centre.

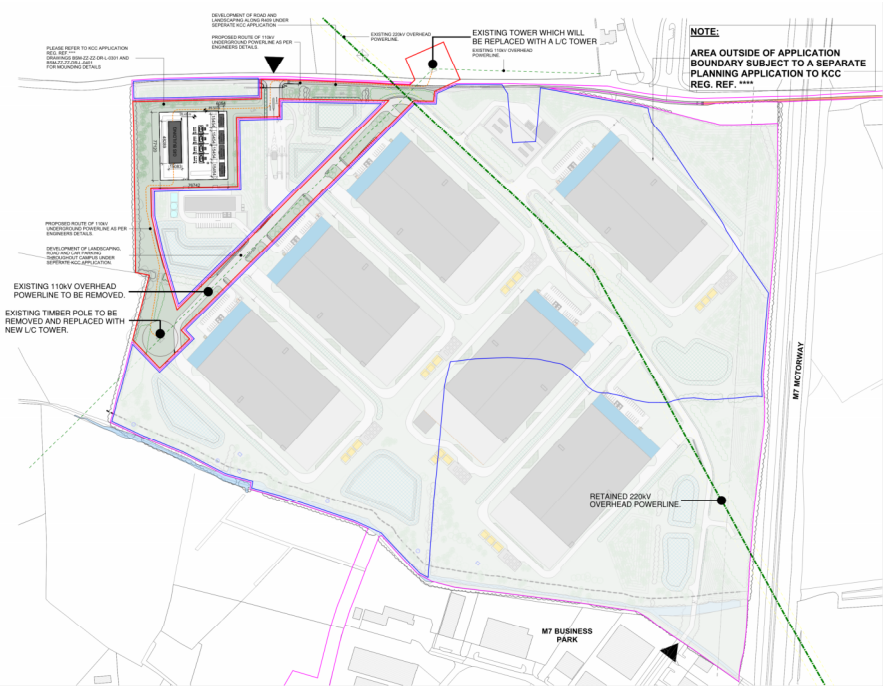
Access to these two sections is provided separately albeit via single entry, but the Eirgrid area can be fully secured and controlled by Eirgrid TSO. The location of the new substation on site is shown in Figure 3-5 below. The overall substation development will also include access paths, landscaping, security fencing, provision of internal access roads and car parking within the GIS substation compound, parts of this are subject to a separate planning application to Kildare County Council.

Figure 3-4. Proposed New Substation Arrangement in Principle



Source: RKD/HDR

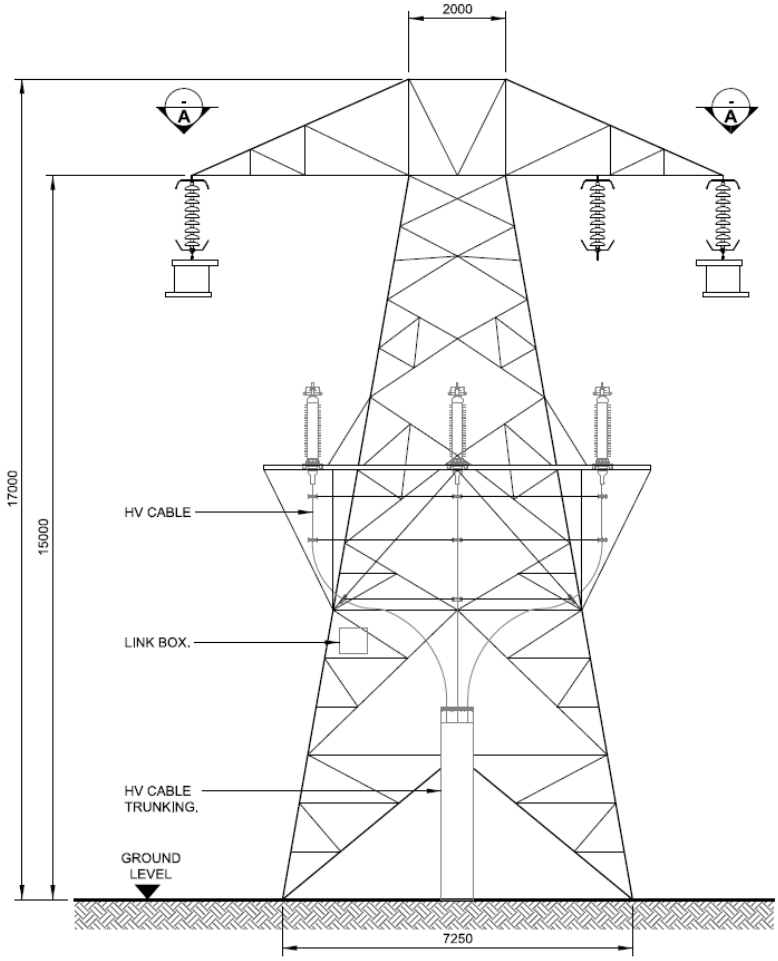
Figure 3-5. Substation and undergrounding of 110kV Overhead Line



Source: RKD / HDR

Figure 3-5 indicate two positions where the existing overhead 110kV line is proposed to be terminated at two line/cable interface towers and then diverted underground. Termination of the overhead lines will have to be by new single circuit L/C interface towers, similar to that shown in Figure 3-6. More definitive drawing is shown in 6Appendix B.

Figure 3-6. Example Single Circuit L/C Interface Tower

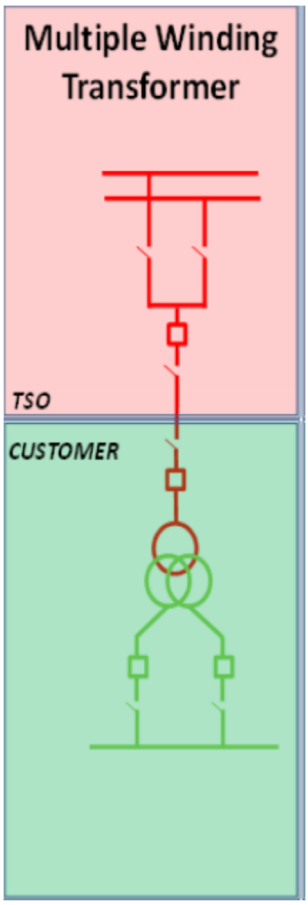


Source: ESB Networks (standard version with no Shieldwire)

The new cables are to be run in ducts, conforming with Eirgrid's standards, run in a North-east to South-west direction to the edge of the site. Once the cable is connected into the new GIS grid substation and into the existing overhead line, then electrically the transmission system will remain the same schematically. The new circuit will terminate in a cable – overhead line/cable (L/C) interface compound containing air-insulated electrical equipment mounted on concrete plinths. Adjacent to each L/C interface compound, an overhead line tower, see example in Figure 3-6 above, which will be erected to facilitate connection of the new underground cables to the existing 110 kV overhead line. Each proposed dropdown mast will be circa 17 meters in height, set on concrete foundations. The obsolete sections of the 110kV line, including the supporting poles /masts, will be removed / demolished.

Electrically, as noted earlier, it is intended to adopt Option 1 as the new customer connection method as shown below in Figure 3-7. This depicts a high-level single line diagram, extracted from Eirgrid's policy document "Pol_St_18", specifically for a multiple winding transformer (see Figure 6 in the policy document).

Figure 3-7. High Level Single Line Diagram – Multiple Winding Transformer



Source: Eirgrid

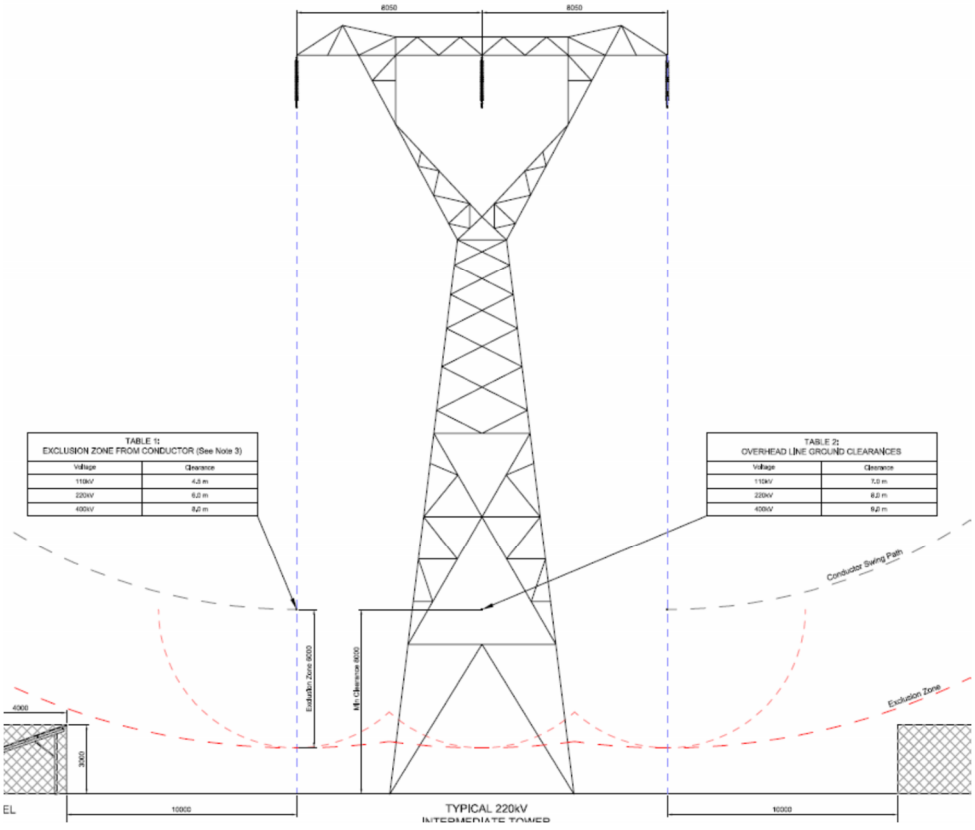
4 Proximity to 220kV Overhead Lines

The Herbata Data Centre campus has a 110kV and a 220kV overhead line crossing the site, the 110kV overhead line is proposed to be re-routed and undergrounded via the new Grid Substation as discussed earlier in Section 3. This leaves the single 220kV overhead line that crosses the site as shown in Figure 3 5. Information used to assess the clearances needed from the 220kV overhead line is shown in the link below.

https://www.eirgridgroup.com/site-files/library/EirGrid/8-Transmission-Line-and-Solar-Farm-Guideline-Clearances.pdf

The most relevant information relates to the spacing of the 220kV overhead line towers, some of this information relates to that used for spacing to solar farms, but it is also providing information to adjacencies to the 220kV lines. An extract from the tower drawing is shown below in Figure 4-1 with the full drawing included in Appendix C.

Figure 4-1. Extract of 220kV Overhead Line Clearances Drawing



Source: Eirgrid

5 Contestable & Non-contestable Works

Through the CER, now the CRU (Commission for the Regulation of Utilities) an amendment was brought into law in 2009 (SI226) amending Section 34 of the Electricity Regulation Act of 1999. This allowed for works to extend or modify electrical supply networks to be determined as contestable or non-contestable works. The assumed definition of these terms is as follows:

Non-contestable works: Works that have to be carried out by Eirgrid or ESB or their agents.

Contestable works: Works that can be carried out by an accredited contractor to the standards acceptable to Eirgrid and ESB, paid for directly by the employer.

In terms of procurement of the works, it is accepted that there will be both non-contestable and contestable works to deliver the overall works as part of this SIDS application. A listing has been identified of the proposed works to be included in each of these two categories. It is possible that the same party, e.g. ESB, could be called upon to carry out both elements of work subject to agreement by all parties.

The proposed listing is shown in Table 5-1 below:

Table 5-1. Contestable and non-Constable Works

Scope of Work Item	Contestable Works?
All and any works in existing Eirgrid substations (as required)	No
Removal of existing overhead lines	No
Disconnection of existing overhead lines	No
Foundations for the two LCIMs (Line/Cable Towers)	Yes
Supply and erect the two LCIMs (Line/Cable Towers)	Yes
Cable ducting on Herbata Data Centre campus site	Yes
Cable ducting in public roadway	Yes
Supply and install 110 kV cable in ducts	Yes
Supply and install communications cables in ducts.	Yes
Install and make HV cable joints (if any)	Yes
Termination of existing overhead lines onto new LCIMs	No
Termination of underground cables on new LCIMs	Yes
Provision and internal fit out of GIS substation building	Yes
Supply and install GIS in new building	Yes
Terminate all 110 kV cables in GIS building	Yes

Install 110 kV cables between GIS building & Herbata sub/st'n	Yes
Install PLC equipment on new LCIM	No
Terminate existing fibre wrap on new LCIM	No
Terminate fibre optic cables in new GIS station	No
Herbata Data Centre 110kV/10kV switchgear, transformers, VT/CTs, circuit breakers and isolators	Direct works by Employer

In Table 5 1 above, where noted as "No" under "Contestable Works", this is to indicate that these works would need to be carried out by Eirgrid/ESB.

6 Summary

This report considers how a new connection would be made into the existing 110kV overhead line for Herbata's new data Centre campus at Naas, Co. Kildare. This will allow electrical utility power to be imported to and exported from the data Centre project site. This report shows that Eirgrid's standard policies and technical requirements are being adhered to as far as practically possible, it is expected that the finer detail will need to be discussed and agreed with Eirgird/ESB at Stage 2 of the application for an Autoproducer connection to Eirgrid.

The proposals include the provision of space for an extension 8-bay GIS Grid substation on the Herbata Data Centre campus site. Using Eirgrid's standard arrangement for this type of substation, space has been identified both a compound and building for Eirgrid's use and operations together with a step-down transformer station to be used for distribution to the Herbata Data Centre development buildings.

The existing overhead 110 kV transmission circuits that traverses the site from north-west to south-east will be undergrounded via 2 no. dropdown masts and then connected with a 110kV underground transmission cable set to connect the proposed dropdown masts with the proposed 110kV GIS substation. The new circuit will terminate in a cable – overhead line/cable (L/C) interface compound containing air-insulated electrical equipment mounted on concrete plinths. Adjacent to each L/C interface compound, an overhead line tower will be erected to facilitate connection of the new underground cables to the existing 110 kV overhead line. Each proposed dropdown mast will be circa 17 meters in height, set on concrete foundations. The obsolete sections of the 110kV line, including the supporting poles /masts, will be removed / demolished.

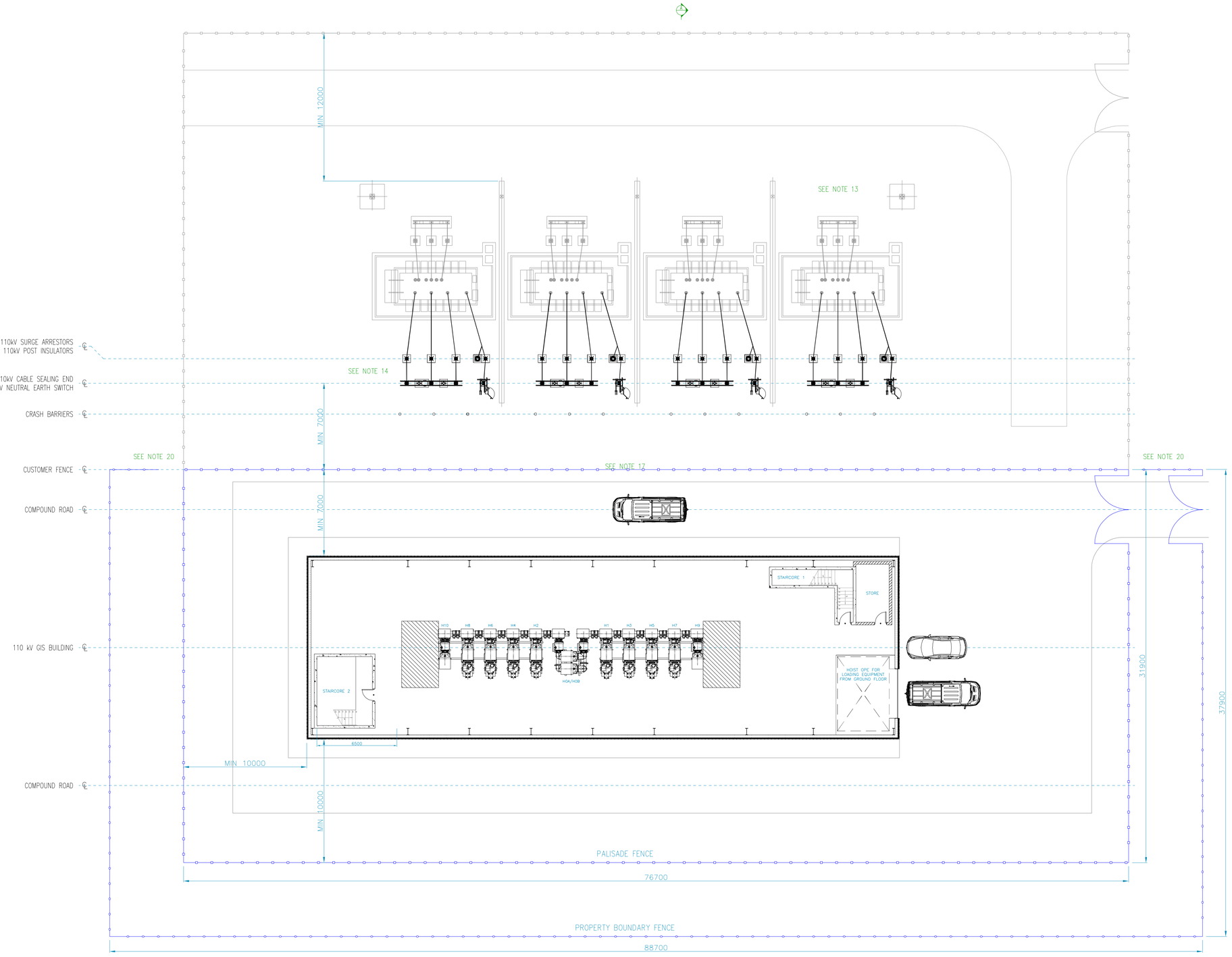
Consideration has also been given to the existing 220kV overhead line that cross the site, no works are proposed to this line. The layout of the campus and its buildings has taken into account the safe working distances around the line.

In terms of procurement of the works, it is accepted that there will be both non-contestable and contestable works to deliver the overall works as part of this SIDS application. A listing has been identified of the proposed works to be included in each of these two categories. It is possible that the same party, e.g. ESB, could be called upon to carry out both elements of work subject to agreement by all parties.

Appendix A.

This appendix includes the following drawings:

Reference	Description	Rev
XDN-LAY-ELV-STND-H-012	110kV GIS Station Layout – Plan View – 8 Bay Station Engineering Drawing – Sheet 1	00
XDN-LAY-ELV-STND-H-012	110kV GIS Station Layout – Plan View – 8 Bay Station Engineering Drawing – Sheet 2	00
XDN-LAY-ELV-STND-H-012	110kV GIS Station Layout – Plan View – 8 Bay Station Engineering Drawing – Sheet 3	00



NOTE 1:
THIS IS A CONCEPTUAL DESIGN. DETAILED DESIGN IS REQUIRED PENDING CONFIRMATION OF SPECIFIC EQUIPMENT SUPPLIER AND SITE DETAILS.

NOTE 2:
THIS DRAWING IS PRODUCED FOR INFORMATION PURPOSES ONLY. ALL DIMENSIONS, REFERENCES (EG. LIGHTNING MAST LOCATIONS ETC.) GIVEN ARE INDICATIVE AND SHOULD NOT BE USED AS PART OF A DETAILED DESIGN.

NOTE 3:
HV AND LV CABLE ROUTES ARE NOT SHOWN BUT SHOULD BE AND INCORPORATED INTO THE OVERALL SUBSTATION DESIGN.

NOTE 4:
LIGHTING DESIGN HAS NOT BEEN IDENTIFIED IN THIS LAYOUT.

NOTE 5:
110kV BUILDING HAS BEEN SPECIFICALLY DESIGNED TO ACCOMMODATE 4 No. TRANSFORMER BAYS (CABLE CONNECTION), 2 No. SECTIONALISING CIRCUIT BREAKERS, 2 No. WING COUPLERS, AND 4 No. FEEDER BAYS (CABLE CONNECTION). THE FINAL BUILDING DESIGN SHALL MATCH THE APPROPRIATE SINGLE LINE DIAGRAM.

NOTE 6:
SUFFICIENT SPACE TO BE IDENTIFIED IN THE VICINITY OF THE 110kV BUILDING TO ALLOW FOR HV CABLE INSTALLATION.

NOTE 7:
INDICATIVE LIGHTNING PROTECTION SYSTEM SHOWN. DETAILED DESIGN TO BE IN ACCORDANCE WITH EIRGRID FUNCTIONAL SPECIFICATIONS.

NOTE 8:
ELECTRICAL, SAFETY, ACCESS AND MAINTENANCE CLEARANCES TO BE INCORPORATED IN DETAILED DESIGN AS PER EIRGRID FUNCTIONAL SPECIFICATIONS.

NOTE 9:
ACCESS AND SET DOWN AREAS TO BE CONSIDERED AND PROVISION MADE FOR SITE ACTIVITIES DURING CONSTRUCTION, INSTALLATION AND FUTURE DECOMMISSIONING.

NOTE 10:
VEHICULAR PARKING TO BE IDENTIFIED AND INCORPORATED.

NOTE 11:
DETAILED ACCESS ROUTES TO ENSURE SAFE DELIVERY OF EQUIPMENT TO BE ASSESSED. PARTICULAR ATTENTION TO BE CONSIDERED FOR THE INSTALLATION OF POWER TRANSFORMER UNITS.

NOTE 12:
OVERALL COMPOUND SECURITY DESIGN TO BE IN ACCORDANCE WITH EIRGRID FUNCTIONAL SPECIFICATIONS. ENHANCED SECURITY MAY BE REQUIRED IN CERTAIN LOCATIONS.

NOTE 13 (AS ILLUSTRATED ON DRAWING):
LOCATION AND DETAIL OF CUSTOMER TRANSFORMERS IS INDICATIVE ONLY. CUSTOMER SHALL IDENTIFY A SUITABLE LOCATION, TAKING INTO ACCOUNT CABLE LAYOUT DESIGN AND INSTALLATION CONSTRAINTS. CUSTOMER SHALL DEVELOP THEIR OWN SPECIFIC LAYOUT FOR TRANSFORMERS.

NOTE 14 (AS ILLUSTRATED ON DRAWING):
LOCATION OF INTERFACE ASSETS (SEALING ENDS, SURGE ARRESTERS, ETC) TO BE AGREED BASED ON CUSTOMER COMPOUND DESIGN.

NOTE 15:
VEHICULAR ACCESS SHOULD BE PROVIDED TO ALL SIDES OF THE GIS BUILDING.

NOTE 16:
REFER TO PROJECT SPECIFIC SLD TO DETERMINE ULTIMATE SIZE OF BUILDING.

NOTE 17 (AS ILLUSTRATED ON DRAWING):
FOR CUSTOMER PROJECTS THE INTERFACE KIOSKS SHALL BE INCORPORATED INTO THE FENCE.

NOTE 18:
FOR CLEARANCE REQUIREMENTS, REFER TO THE LATEST REVISION OF EIRGRID 110/220/400kV STATION GENERAL REQUIREMENTS FUNCTIONAL SPECIFICATION XDS-GFS-00-001.

NOTE 19:
FOR GIS INFORMATION, REFER TO THE LATEST REVISION OF EIRGRID 110/220/400kV STATION GENERAL REQUIREMENTS FUNCTIONAL SPECIFICATION XDS-GFS-25-001.

NOTE 20 (AS ILLUSTRATED ON DRAWING):
A DETAILED ARRANGEMENT TO PREVENT PROPERTY BOUNDARY BEING USED AS A CLIMBING AID TO BE AGREED WITH EIRGRID.

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
00	FIRST ISSUE	CHC	NK	CF	26/09/2019

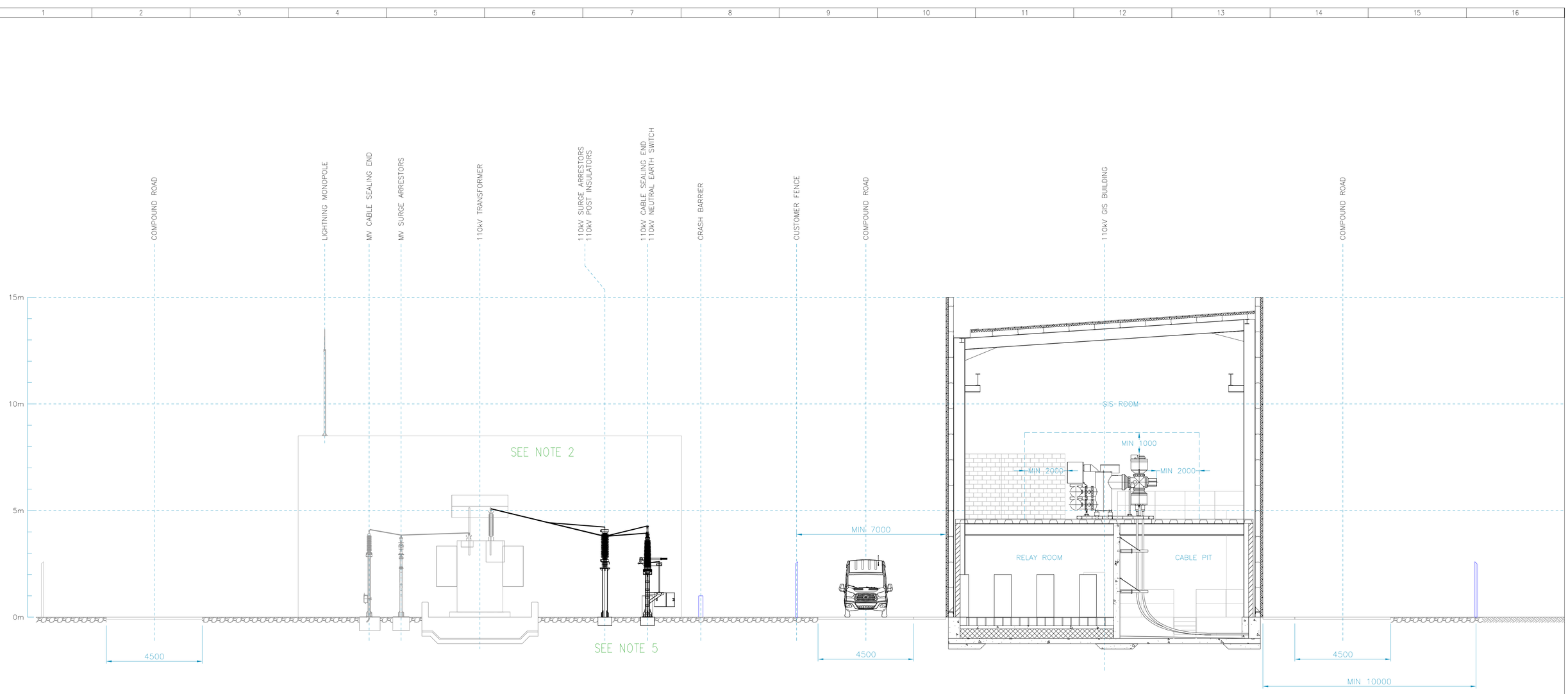
EirGrid plc
The Oval, 160 Shelbourne Road,
Ballsbridge, Dublin 4, Ireland
Telephone: +353 1 677 1700
Fax: +353 1 661 5375
Email: info@eirgrid.com
Web: www.eirgrid.com

PROJECT
STATION DESIGN STANDARD
110kV GIS STATION

DRAWING TITLE
110kV GIS STATION LAYOUT
PLAN VIEW – 8 BAY STATION
ENGINEERING DRAWING

No of Shts	SIZE	SCALE	SHEET	REV
3	A1	NTS	001	00

DRAWING NUMBER
XDN-LAY-ELV-STND-H-012



SECTION A
NTS

NOTE 1:
THIS DRAWING IS PRODUCED FOR INFORMATION PURPOSES ONLY. ALL DIMENSIONS, REFERENCES (EG. LIGHTNING MAST LOCATIONS ETC.) GIVEN ARE INDICATIVE AND SHOULD NOT BE USED AS PART OF A DETAILED DESIGN.

NOTE 2 (AS ILLUSTRATED ON DRAWING):
INDICATIVE CUSTOMER COMPOUND SHOWN. CUSTOMER SHALL DEVELOP THEIR OWN SPECIFIC LAYOUT.

NOTE 3:
FOR CLEARANCE REQUIREMENTS, REFER TO THE LATEST REVISION OF EIRGRID 110/220/400kV STATION GENERAL REQUIREMENTS FUNCTIONAL SPECIFICATION XDS-GFS-00-001.

NOTE 4:
FOR GIS INFORMATION, REFER TO THE LATEST REVISION OF EIRGRID 110/220/400kV STATION GENERAL REQUIREMENTS FUNCTIONAL SPECIFICATION XDS-GFS-25-001.

NOTE 5 (AS ILLUSTRATED ON DRAWING):
LOCATION OF INTERFACE ASSETS (SEALING ENDS, SURGE ARRESTERS, ETC) TO BE AGREED BASED ON CUSTOMER COMPOUND DESIGN.

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
00	FIRST ISSUE	CHC	NK	CF	26/09/2019

EirGrid plc
The Oval, 160 Shelbourne Road,
Ballsbridge, Dublin 4, Ireland
Telephone: +353 1 677 1700
Fax: +353 1 661 5375
Email: info@eirgrid.com
Web: www.eirgrid.com

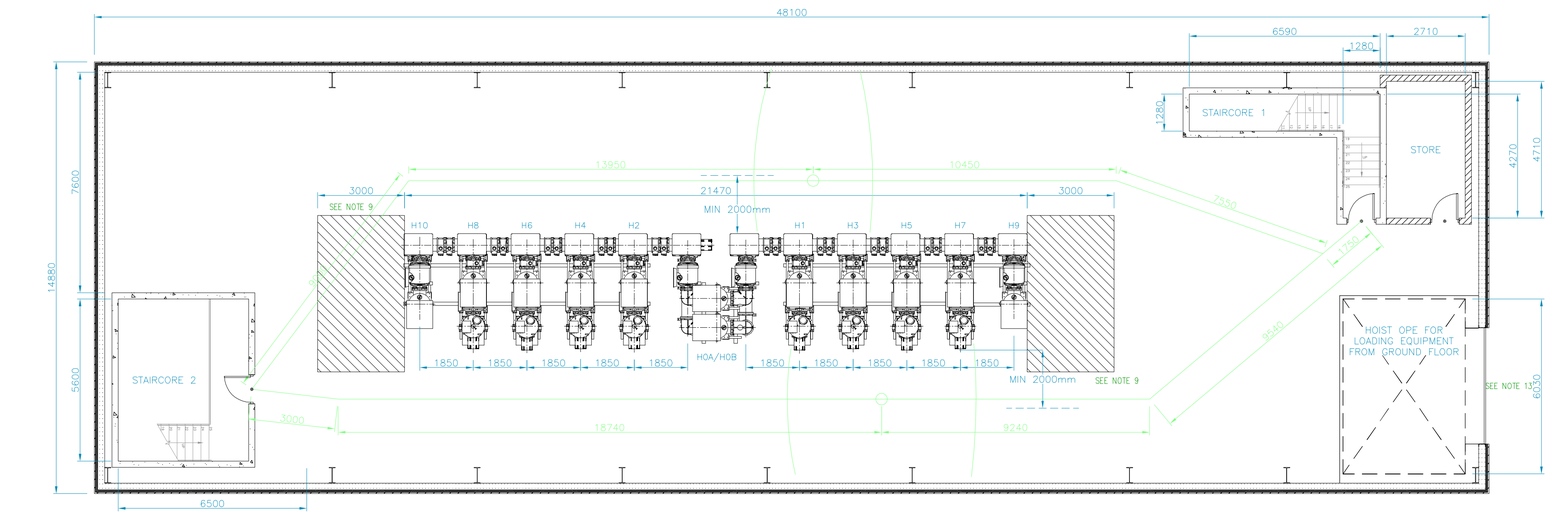
PROJECT
STATION DESIGN STANDARD
110kV GIS STATION

DRAWING TITLE
110kV GIS STATION LAYOUT
ELEVATION VIEW – 8 BAY STATION
ENGINEERING DRAWING

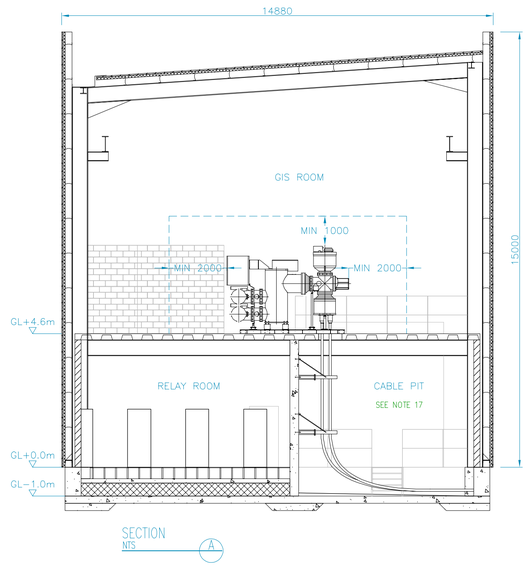
No of Shts	SIZE	SCALE
3	A1	NTS

DRAWING NUMBER	SHEET	REV
XDN-LAY-ELV-STND-H-012	002	00

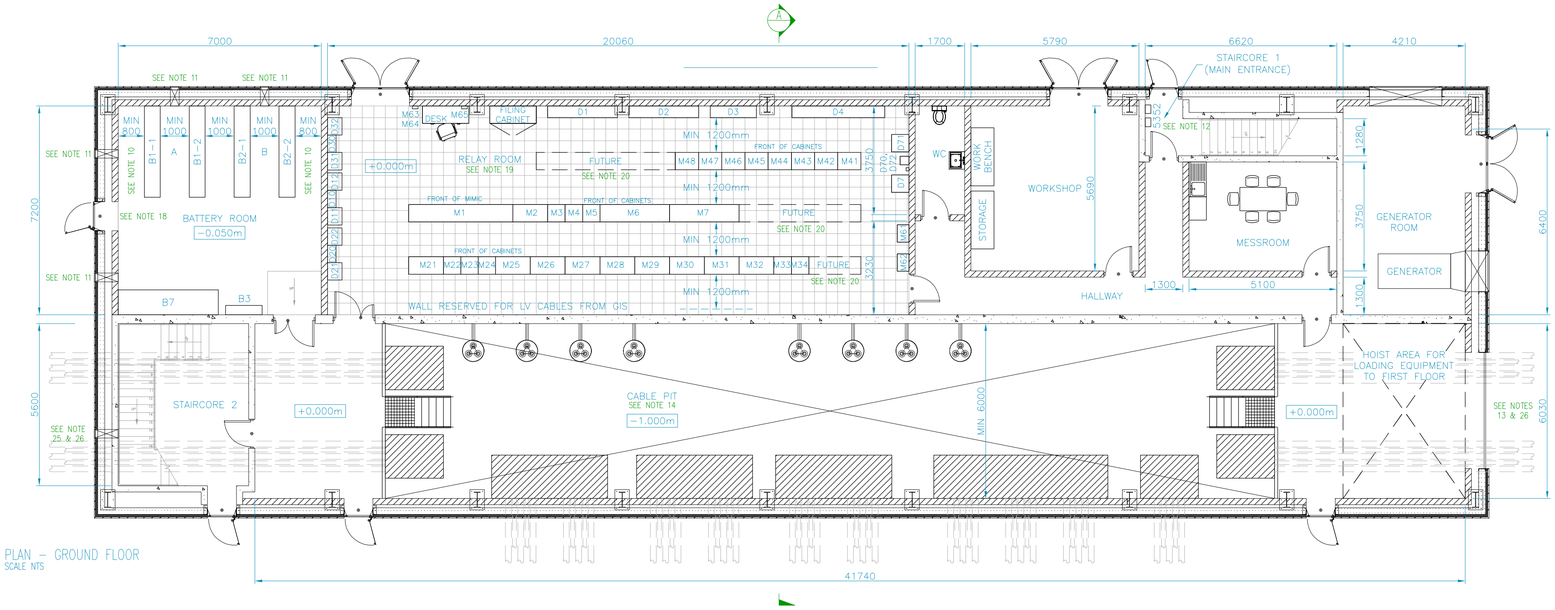
110kV GIS BUILDING LAYOUT



PLAN – FIRST FLOOR
SCALE NTS



SECTION
NTS
A



PLAN – GROUND FLOOR
SCALE NTS

LIST OF CABINETS		
CABINET DESIGNATION	DESCRIPTION	DIMENSIONS
B1–1	220V DC BATTERY 1, STAND 1	3150x550
B1–2	220V DC BATTERY 1, STAND 2	3150x550
B2–1	220V DC BATTERY 2, STAND 1	3150x550
B2–2	220V DC BATTERY 2, STAND 2	3150x550
B3	24V DC STATION BATTERY	3450x860
B7	48V DC TELECOMS BATTERY	1260x320
D1	220V DC DISTRIBUTION BOARD 1	2400x400
D2	220V DC DISTRIBUTION BOARD 2	2400x400
D3	24/48V DC DISTRIBUTION BOARD	1600x400
D4	AC DISTRIBUTION BOARD	3200x400
D7	48V (TELECOMS) DISTRIBUTION	600x600
D10	220V BATTERY No.1 CHARGER CHANGEOVER SWITCH & FUSE BOX	600x300
D11	220V BATTERY No.1: CHARGER 1 & BATTERY SUPERVISION	600x600
D12	220V BATTERY No.1: CHARGER 2 & BATTERY SUPERVISION	600x600
D20	220V BATTERY No.2 CHARGER CHANGEOVER SWITCH & FUSE BOX	600x300
D21	220V BATTERY No.2: CHARGER 1 & BATTERY SUPERVISION	600x600
D22	220V BATTERY No.2: CHARGER 2 & BATTERY SUPERVISION	600x600
D30	24/48V BATTERY: CHARGER CHANGEOVER SWITCH & FUSE BOX	600x300
D31	24/48V BATTERY: CHARGER 1 & BATTERY SUPERVISION	600x600
D32	24/48V BATTERY: CHARGER 2 & BATTERY SUPERVISION	600x600
D70	48V TELECOMS CONNECTION/FUSE BOX	
D71	48V SMPS (TELECOMS)	600x600
D72	TELECOMS ISOLATION SWITCH	100x100
M1	MIMIC	3600x600
M2	SYNCHRONISING PANEL	1200x600
M3	EVENT RECORDER/AAP	600x600
M4	BACKUP AAP	600x600
M5	BATTERY SUPERVISION	600x600
M6	SIGNAL INTERPOSING	2400x600
M7	CUSTOMER INTERFACE	2400x600
M21	BUSBAR PROTECTION	1200x600
M22	REMOTE INTERROGATION/DISTURBANCE RECORDER	600x600
M23	H10 COUPLER PROTECTION	600x600
M24	H9 COUPLER PROTECTION	600x600
M25	H8 BAY PROTECTION	1200x600
M26	H7 BAY PROTECTION	1200x600
M27	H6 BAY PROTECTION	1200x600
M28	H5 BAY PROTECTION	1200x600
M29	H4 BAY PROTECTION	1200x600
M30	H3 BAY PROTECTION	1200x600
M31	H2 BAY PROTECTION	1200x600
M32	H1 BAY PROTECTION	1200x600
M33	H0B SECTIONALISER PROTECTION	600x600
M34	H0A SECTIONALISER PROTECTION	600x600
M41	OPMUX 1	800x600
M42	OPMUX 2	800x600
M43	ODF	800x600
M44	IP SERVICES	800x600
M45	MAIN DISTRIBUTION FRAME	800x600
M46	NCC RTU (INCL. GPS CLOCK)	800x600
M47	TELEMETERING	800x600
M48	EIRGRID ENERGY METERING	800x600
M61	DCC RTU SEE NOTE 22	600x400
M62	CTE	600x400
M63	INTRUDER ALARM PANEL	
M64	FIRE ALARM PANEL	
M65	TELEPHONE POINTS (2No.)	

NOTE 1:
THIS DRAWING IS PRODUCED FOR INFORMATION PURPOSES ONLY. ALL DIMENSIONS, REFERENCES (EG. LIGHTNING MAST LOCATIONS ETC.) GIVEN ARE INDICATIVE AND SHOULD NOT BE USED AS PART OF A DETAILED DESIGN.

NOTE 2:
THIS IS A CONCEPTUAL DESIGN. DETAILED DESIGN IS REQUIRED PENDING CONFIRMATION OF SPECIFIC EQUIPMENT SUPPLIER AND SITE DETAILS.

NOTE 3:
BUILDING HAS BEEN SPECIFICALLY DESIGNED TO ACCOMMODATE 4 NO. TRANSFORMER BAYS (CABLE CONNECTION) AND 4 NO. FEEDER BAYS (CABLE CONNECTION).

NOTE 4:
SWITCHGEAR SHOWN ON THIS DRAWING IS INDICATIVE ONLY.

NOTE 5:
REQUIREMENT FOR GIS OVERPRESSURE VENTS TO BE CONFIRMED BY GIS SUPPLIER.

NOTE 6:
WHERE THERE IS MORE THAN ONE MINIMUM DISTANCE STATED FOR A SPECIFIC AREA THE LARGEST MINIMUM DISTANCE SHOULD BE ADHERED TO.

NOTE 7:
ALL OPES IN GIS ROOM FOR LV AND HV CABLES TO BE FIRE SEALED.

NOTE 8:
THE MAXIMUM LENGTH OF A CABLE THAT CAN BE PUSHED INTO THE CABLE ROOM IS 100m ROUTE LENGTH.

NOTE 9 (AS ILLUSTRATED ON DRAWING):
MINIMUM CLEAR AREA ON BOTH SIDES OF THE GIS FOR THE HV TEST EQUIPMENT IS 3000mm.

NOTE 10 (AS ILLUSTRATED ON DRAWING):
MINIMUM CLEAR DISTANCE BETWEEN 220V BATTERY STANDS AND WALLS IS 800mm.

NOTE 11 (AS ILLUSTRATED ON DRAWING):
SCREENED VENTS (2 HIGH LEVEL AND 2 LOW LEVEL) ARE TO BE INSTALLED IN THE BATTERY ROOM AS PER IEC 62485–2 ON ADJACENT EXTERNAL WALL.

NOTE 12 (AS ILLUSTRATED ON DRAWING):
FIRE AND ALARM PANELS TO BE LOCATED IN THE VICINITY OF THE MAIN ENTRANCE.

NOTE 13 (AS ILLUSTRATED ON DRAWING):
EQUIPMENT ACCESS DOOR TO BE SIZED SUCH THAT A STANDARD ESB TRUCK CAN BE REVERSED IN THE HOIST AREA (MIN 4000mm WIDTH).

NOTE 14 (AS ILLUSTRATED ON DRAWING):
THERE ARE TO BE NO OBSTRUCTIONS LOCATED 2m DIRECTLY IN FRONT OF THE CABLE DUCTS AND 300mm TO THE SIDE OF THE CABLE DUCT WHERE THE DUCT ENTERS THE CABLE ROOM.

NOTE 15:
ADEQUATE AREA TO BE PROVIDED IN THE VICINITY OF THE GIS BUILDING TO ALLOW SPACE FOR SETTING UP THE EQUIPMENT NEEDED FOR CABLE PULLING OPERATIONS. THIS AREA IS APPROX. 12m X 12m FOR EACH CABLE CIRCUIT, CABLE DESIGNER TO ADVISE.

NOTE 16:
AN OPENING MUST BE PROVIDED FOR EACH CIRCUIT TO ALLOW FOR SUITABLE CABLE PULLING DUCTS.

NOTE 17 (AS ILLUSTRATED ON DRAWING):
CABLE SUPPORT STEELWORK TO BE PROVIDED BY THE CONTRACTOR. WALL TO BE CAPABLE OF SUPPORTING HV CABLES, RING CT's etc.

NOTE 18 (AS ILLUSTRATED ON DRAWING):
ADDITIONAL EXIT DOOR IN BATTERY ROOM, REQUIREMENT TBC IN LINE WITH FIRE REGULATIONS.

NOTE 19 (AS ILLUSTRATED ON DRAWING):
RELAY ROOM MUST BE SIZED APPROPRIATELY TO ALLOW FOR ULTIMATE DEVELOPMENT OF STATION.

NOTE 20 (AS ILLUSTRATED ON DRAWING):
SPACE SHOULD BE PROVIDED FOR FUTURE TELECOMS AND PROTECTION PANELS.

NOTE 21:
INDICATIVE CABLE ACCESS SHOWN.

NOTE 22:
A TELECOMS EARTH BAR SHALL BE INSTALLED IN CLOSE PROXIMITY TO THE DCC RTU.

NOTE 23:
ONLY SINGLE ROW BATTERY STANDS MAY BE LOCATED AGAINST A WALL.

NOTE 24:
NO ELECTRICAL EQUIPMENT (INCL. BATTERIES) SHALL BE INSTALLED DIRECTLY IN FRONT OF VENTS.

NOTE 25 (AS ILLUSTRATED ON DRAWING):
AN OPENING SHALL BE PROVIDED UNDER THE STAIRS FOR CABLE PULLING.

NOTE 26 (AS ILLUSTRATED ON DRAWING):
SUITABLE ANCHOR POINTS SHALL BE INSTALLED FOR CABLE PULLING.

NOTE 27:
FIRE AND ATEX ZONES NOT SHOWN, THIS SHOULD BE CONSIDERED DURING DETAILED CUSTOMER DESIGN.

REV	DESC	DRAWN	CHECKED	APPROVED	DATE
00	FIRST ISSUE	CHC	NK	CF	26/09/2019

EirGrid plc
The Oval, 160 Shelbourne Road,
Ballsbridge, Dublin 4, Ireland
Telephone: +353 1 677 1700
Fax: +353 1 661 5375
Email: info@eirgrid.com
Web: www.eirgrid.com

PROJECT
STATION DESIGN STANDARD
110kV GIS STATION

DRAWING TITLE
110kV GIS BUILDING LAYOUT
FOR 8 BAY STATION
ENGINEERING DRAWING

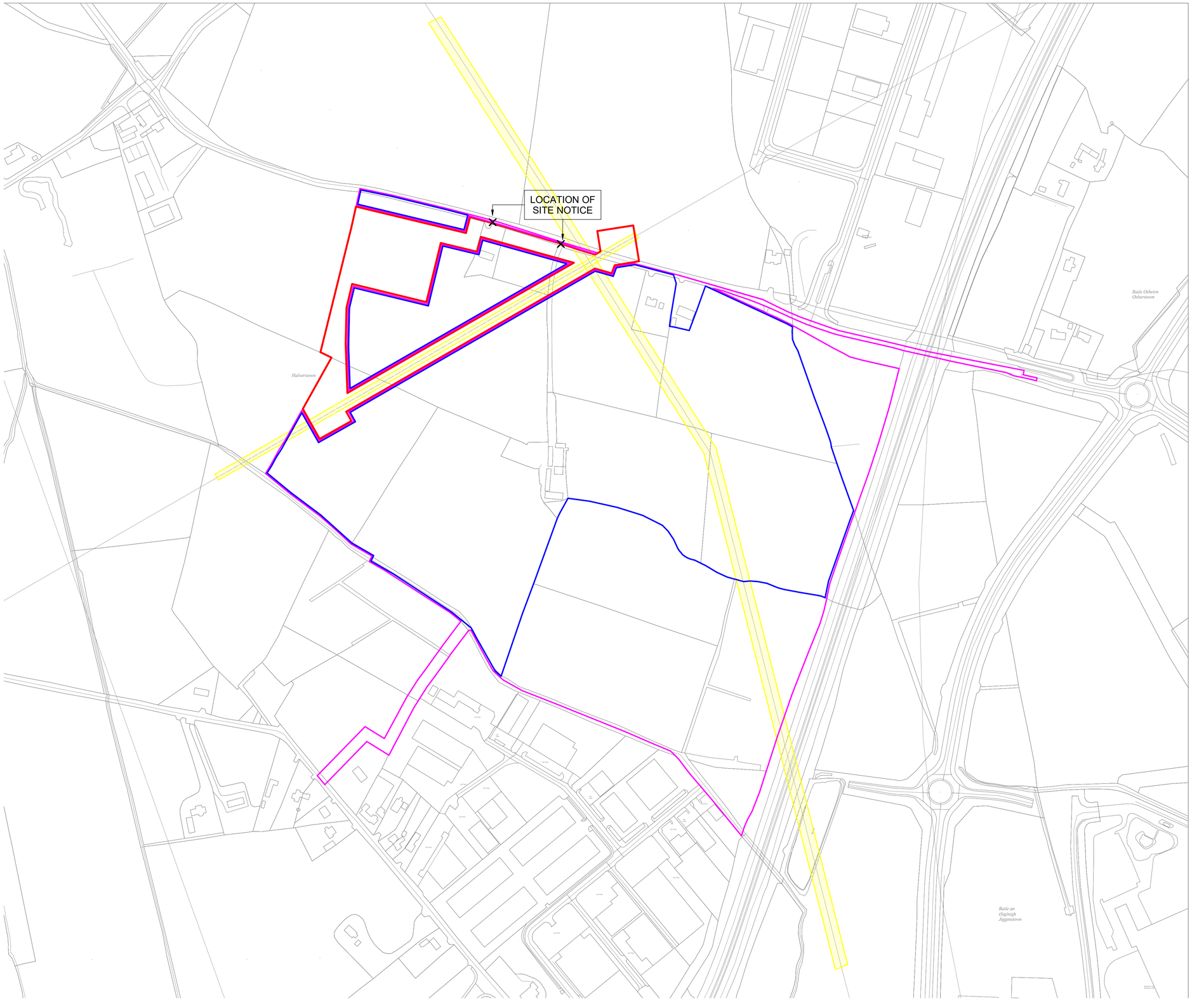
No of Shts	SIZE	SCALE
3	A1	NTS

DRAWING NUMBER: XDN–LAY–ELV–STND–H–012
SHEET: 003
REV: 00

Appendix B.

This appendix includes the following drawings:

Reference	Description	Rev
22217-RKD-ZZ-ZZ-DR-A-1050	Site Location Map	P01
22217-RKD-ZZ-ZZ-DR-A-1063	PROPOSED SUBSTATION COMPOUND PLAN	P01



Description:
==========
Digital Landscape Model (DLM)

Publisher / Source:
==========
Ordnance Survey Ireland (OSi)

Data Source / Reference:
==========
PRIME2

File Format:
==========
Autodesk AutoCAD (DWG_R2013)

File Name:
==========
v_50329935_1.dwg

Clip Extent / Area of Interest (AOI):
==========
LLX,LLY= 685201.3486,718741.6304
LRX,LRY= 687167.2067,718741.6304
ULX,ULY= 685201.3486,720252.4042
URX,URY= 687167.2067,720252.4042

Projection / Spatial Reference:
==========
Projection= IRENET95_Irish_Transverse_Mercator

Centre Point Coordinates:
==========
X,Y= 686184.27765,719497.0173

Reference Index:
==========
Map Series | Map Sheets
1:2,500 | 3558-A
1:2,500 | 3508-C
1:2,500 | 3558-B
1:2,500 | 3508-D

Data Extraction Date:
==========
Date= 20-Apr-2023

Source Data Release:
==========
DCMLS Release V1.162.115

Product Version:
==========
Version= 1.4

License / Copyright:
==========
Ordnance Survey Ireland 'Terms of Use' apply.
Please visit 'www.osi.ie/about/terms-conditions'.

DRAFT

SUBJECT TO SEPARATE SID APPLICATION

All dimensions to be checked on site. Figured dimensions take preference over scaled dimensions. Any errors or descrepancies to be reported to the Architects.This drawing may not be edited or modified by the recipient.

A1

HERBATA
GREEN ENERGY DATA

Notes:

LEGEND:

- AREA TO WHICH APPLICATION RELATES
- AREA SUBJECT OF SEPARATE KCC PLANNING APPLICATION
- OTHER LANDS UNDER CONTROL OF THE APPLICANT
- EXISTING WAYLEAVES
- LOCATION OF SITE NOTICE

KEY PLAN

TRUE NORTH

Rev.	Date	Description
P05	29/04/2024	ISSUED FOR INFORMATION
P04	15/12/2023	ISSUED FOR INFORMATION
P03	14/08/2023	UPDATED PLANNING ISSUE
P02	11/07/2023	DRAFT PLANNING ISSUE
P01	02/06/2023	DRAFT PLANNING ISSUE

STATUS: INFORMATION

PROJECT: HERBATA DATA CENTRE CAMPUS

PROJECT ADDRESS: NAAS, CO. KILDARE

DWG TITLE: SITE LOCATION MAP

DWG NO.: 22217-RKD-ZZ-ZZ-DR-A-1050

REV.	STATUS	PROJECT NO.	22217
P05	S3	SCALE	1:2500
DATE 03/11/2023	DRN AMG	CHK KOS	

RKD
59 Northumberland Rd
Ballsbridge, Dublin 4
D04 WP89, Ireland
+353 1 668 1055
mail@rkd.ie
rkd.ie

HDR
Knollys House
17 Addiscombe Road,
Croydon,
CR0 6SR, United Kingdom
D: +44 (0)20 8763 5900

BSM
Est. 1968

DONNACHADH O'BRIEN
& ASSOCIATES CONSULTING ENGINEERS

PROPOSED ROUTE OF 110kV UNDERGROUND POWERLINE AS PER ENGINEERS DETAILS

COMPOUND ROAD

2.4m HIGH PALISADE FENCE

CONCRETE HARD STANDING F.G.L. +84.00m

2.4m HIGH PALISADE FENCE

PROPOSED ROUTE OF 110kV UNDERGROUND POWERLINE AS PER ENGINEERS DETAILS

EXISTING 110kV OVERHEAD POWERLINE TO BE REROUTED AS PER ENGINEERS DETAILS

EXISTING TIMBER POLE TO BE REMOVED. CONSTRUCTION OF NEW PYLON AS PER ENGINEERS DETAILS

EXISTING 220kV OVERHEAD POWERLINE

EXISTING 110kV OVERHEAD POWERLINE

GIS BUILDING

MV SWITCHROOM

15083

48289

77120

89.50 m

99.46 m

6054

15454

76742

1065

1064

1400

NOTE:

AREA OUTSIDE OF APPLICATION BOUNDARY SUBJECT TO A SEPARATE PLANNING APPLICATION TO KCC REG. REF. **

1 **A1063 - PROPOSED SITE CONTEXT PLAN**
1 : 500

DRAFT
SUBJECT TO SEPARATE SID APPLICATION

All dimensions to be checked on site. Figured dimensions take preference over scaled dimensions. Any errors or discrepancies to be reported to the architect. This drawing may not be edited or modified by the recipient.

A0

HERBATA GREEN ENERGY DATA

Notes.

LEGEND:

- AREA TO WHICH APPLICATION RELATES
- AREA SUBJECT OF SEPARATE KCC PLANNING APPLICATION
- OTHER LANDS UNDER CONTROL OF THE APPLICANT
- EXISTING OVERHEAD 110kV POWERLINE
- EXISTING OVERHEAD 220kV POWERLINE
- PROPOSED UNDERGROUND 110kV POWERLINE

KEY PLAN

TRUE NORTH

Rev.	Date	Description
P04	29/04/2024	ISSUED FOR INFORMATION
P03	15/12/2023	ISSUED FOR INFORMATION
P02	11/07/2023	DRAFT PLANNING ISSUE
P01	02/06/2023	DRAFT PLANNING ISSUE

STATUS: INFORMATION

PROJECT: HERBATA DATA CENTRE CAMPUS

PROJECT ADDRESS: NAAS, CO. KILDARE

DWG TITLE: PROPOSED SUBSTATION COMPOUND LAYOUT

DWG NO: 22217-RKD-ZZ-ZZ-DR-A-1063

REV.	SUITABILITY	PROJECT NO.
P04		22217
	SCALE	1:500
DATE 03/11/2023	DRN AMG	CHK KOS

RKD
59 Northumberland Rd Ballsbridge, Dublin 4 D04 W7R8, Ireland
+353 1 668 1055 mail@rkd.ie rkd.ie

HDR Knoll's House 17 Addiscombe Road, Croydon CR0 6SR, United Kingdom D: +44 (0)20 8760 5500

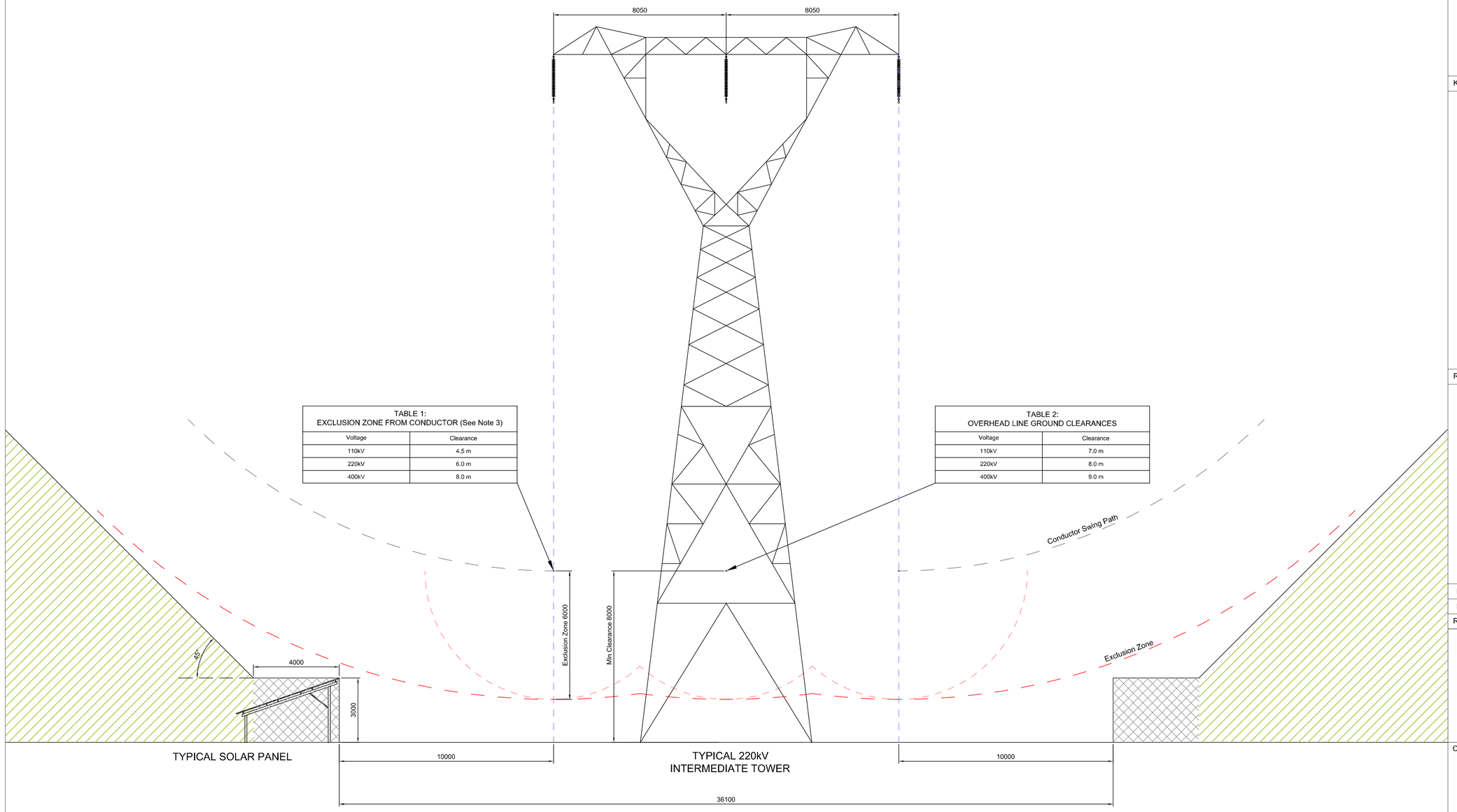
BSM Est. 1968

DONNACHADH O'BRIEN & ASSOCIATES CONSULTING ENGINEERS

Appendix C.

This appendix includes the following drawings:

Reference	Description	Rev
MMD-373966-E-SK-00-XX-0022	Transmission Line and Solar Farm Guidance Clearances Guideline 220kV Setback Distances Section Drawing - Elevation	P2



Section B-B

REPRESENTS THE MIDSPAN OF THE LINE TO BE READ IN CONJUNCTION WITH PLAN DRAWING
MMD-373966-E-SK-00-XX-0012

1:100 0 2m 5m 10m

Notes

1. All dimensions in millimetres.
2. Overhead line clearances derived from EirGrid functional specification for overhead lines LDS-EFS-00-001-R0.
3. Exclusion zone clearances derived from ESBN Code of Practice for Avoiding Danger from Overhead Electricity Lines (Document No: DOC-230910-BBA).
4. Conductor swing path based on midspan wind blow at minimum ground clearance.
5. This drawing does not specify clearances at structures. Refer to drawing MMD-373966-E-SK-00-XX-0012 for clearance at structures.
6. There is a statutory obligation for the developer to notify ESB prior to the erection of any structure within a 46 metre corridor of an overhead line. This notification shall be made in writing at least two months prior to commencement of construction works.

Key to symbols

Clear area for placement of Solar panels

3 metre height restriction on Solar panels

Reference drawings

Guideline 220kV setback distances plan view: MMD-373966-E-SK-00-XX-0012

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	21/12/2018	JD	Notes Updated	CF	BM
P1	17/11/2017	SHY	Issued for Comment	DMC	DMC

MOTT MACDONALD
South Block
Rockfield
Dundrum
Dublin, 16
Ireland
T +353 (0) 1 2916700
F +353 (0) 1 2916747
W mottmac.com

Client

EIRGRID

Title

Transmission Line and Solar Farm
Guideline Clearances
Guideline 220kV Setback Distances
Section Drawing - Elevation

Designed	E. Halpenny		Eng check	D. McCormack	
Drawn	S.Healy		Coordination	G. McCarthy	
Dwg check	D. McCormack		Approved	D. McCormack	

Scale at A1	Status	Rev	Security
1:100	PRE	P2	STD

Drawing Number
MMD-373966-E-SK-00-XX-0022

C:\Users\dooley_j\Documents\Working Folder\Solar Farm Clearance Policy (W45.11.18)\MMD-373966-E-SK-00-XX-0022 Rev 02.dwg Jan 8, 2019 - 9:59AM dooley_j