Appendix 4.11
Substation Application – Architectural Design Statement

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Herbata Data Centre Campus – ESB Substation, Naas, Co. Kildare

22217-RKD-XX-XX-RP-A-0002
Architectural Design Statement

Purpose of issue: Issued for Information
Revision: P04

April 2024

Contents

1.0 Introduction

The following report describes the architectural design rationale of the Electricity Substation of Herbata Data Centre Campus, to be constructed on lands at Halverstown, Naas, County Kildare which comprises of:

- 110kV GIS Building/Grid Substation c. 1350sqm and 15m in height.
- Undergrounding of a 110kV transmission line.
- 1 No. Dropdown towers (16m in height).
- Client Control Building.
- Internal Road Layout.
- Boundary Fences.
- Underground Services (Watermain, Surface Water, Foul, Power); and
- Ancillary Works.

The overall red line boundary comprises c3.15 ha for the Strategic Infrastructure Development (SID) application. The subject site currently consists of agricultural lands to the west of the M7 and Naas town. This does not include a proposed Data Centre Campus which forms part of a separate planning application lodged with Kildare County Council (37.5 ha).

The current site use is a greenfield site and is used as agricultural land. It is bounded to the south, west & east by agricultural lands and to the north by the R409. However, the planning application for a data centre with Kildare County Council includes adjacent lands to the south, north and east.

The proposed development comprises a new electricity grid substation compound, a medium voltage switchgear and control equipment building, a building housing indoor high voltage (HV) gas insulated switchgear (GIS) equipment, high voltage busbar connections, and step-down power transformers, and underground cables connecting the proposal to the existing 110kV overhead lines that cross the proposed development site. It also includes all landscape & boundary treatment works including berming, hedgerow protection areas and security fencing.

A request was made to An Bord Pleanála under Section 182E of the Planning and Development Act, 2000 (as amended) to enter into a pre-application consultation with the Board in relation to the provision of a new grid substation, the undergrounding of an existing 110kV transmission cable along with associated and ancillary works.

This was confirmed by An Bord Pleanála that the SID application should be made directly to ABP. ABP confirmed that the proposed grid development meets the relevant criteria and constitutes Strategic Infrastructure Development (SID) under Section 182A & 182B of the Planning and Development Act, 2000 (as amended).

The proposed Herbata Data Centre Campus development will be subject of a planning application to Kildare County Council. It does not comprise of strategic infrastructure development; either under section 37A (Seventh Schedule) or section 182A of the Act. Based on recent precedence, the appropriate application route for same is to the planning authority under section 34.

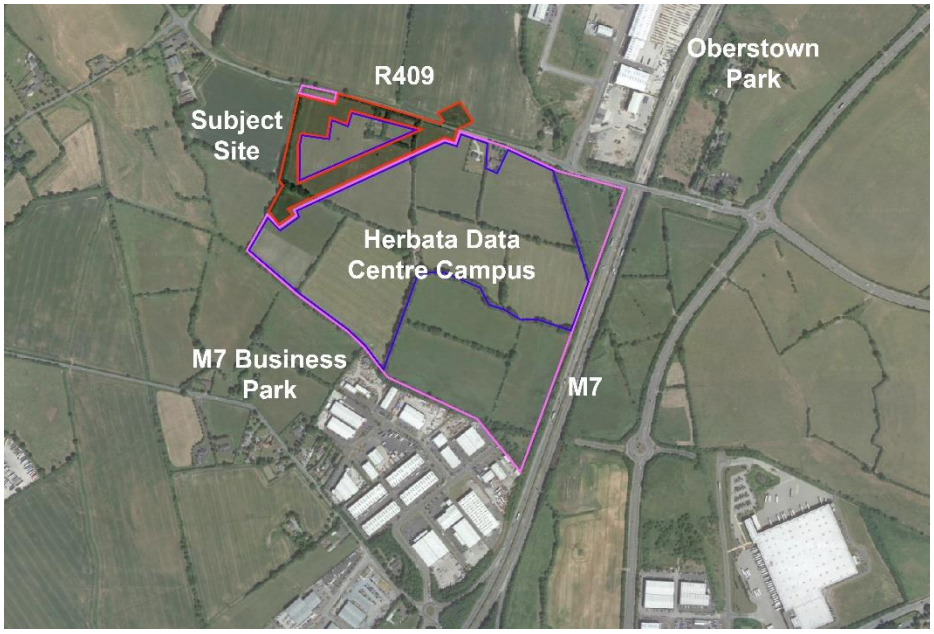
It is submitted, however, that the on-site 110KV substation and loop-in infrastructure which will facilitate export of the generated electricity to the National Grid, comprises of electricity transmission development, is Strategic Infrastructure Development and accordingly falls under the provisions of section

182A of the Act. Accordingly, a dual approach to consent for the entire development is necessary.

2.0 Site & Surrounding Areas

2.1 Existing Site Location

Picture 01 | Site Context



The site is located within Halverstown, outside of Naas, Co. Kildare.

The overall red line boundary comprises c3.15 ha for the SID application. The subject site currently consists of agricultural lands to the west of the M7 and Naas town. This does not include the Data Centre Campus which forms part of a separate planning application (37.5 ha).

The current site use is a greenfield site and is used as agricultural land. It is bounded to the south, west & east by agricultural lands and to the north by the R409.

To the north and south of the site, the lands are mainly used for commercial/industrial purposes (M7 Business Park & Oberstown Business Park) and agricultural uses. The electricity substation will form part of the Herbata Data Centre Campus.

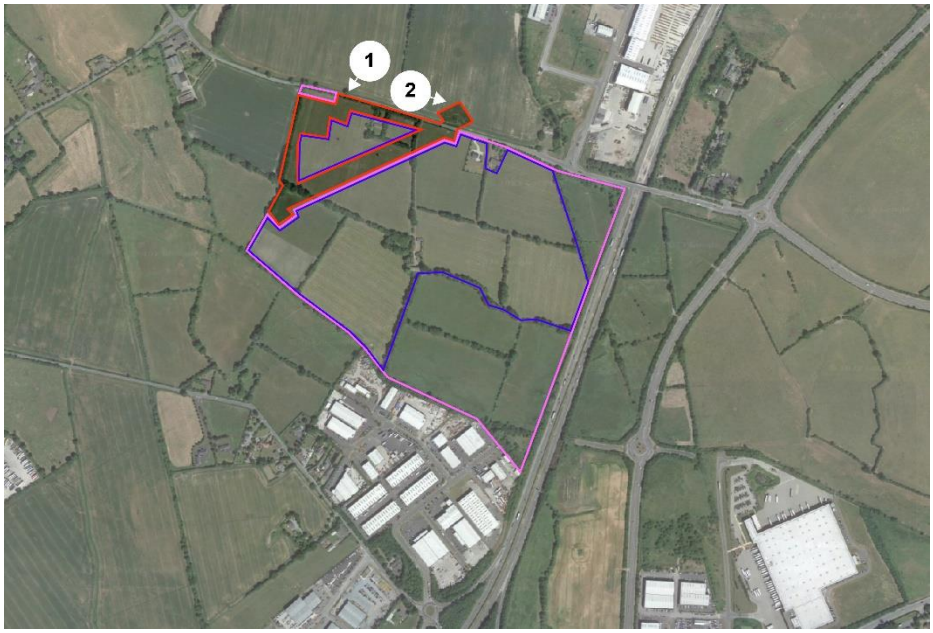
A 2-storey house and farm buildings are located approx. 200m to the west of the site (this will be demolished as part of the Data Centre Campus planning application), whilst some bungalow and 2 storey houses are located approx. 250m to the south of the site. There is a bungalow immediately to the north of the site, across the R409.

There is a 110kv overhead powerline that crosses the site. Part of this SID application is to reroute this underground as per the engineers' details.

Picture 02 | View of existing site from Google Streetview – Image 1 on Key Plan.

Picture 03 | View of existing site from Google Streetview – Image 2 on Key Plan.

Picture 04 | Key Plan of site showing location of street views.



2.2 Site Zoning

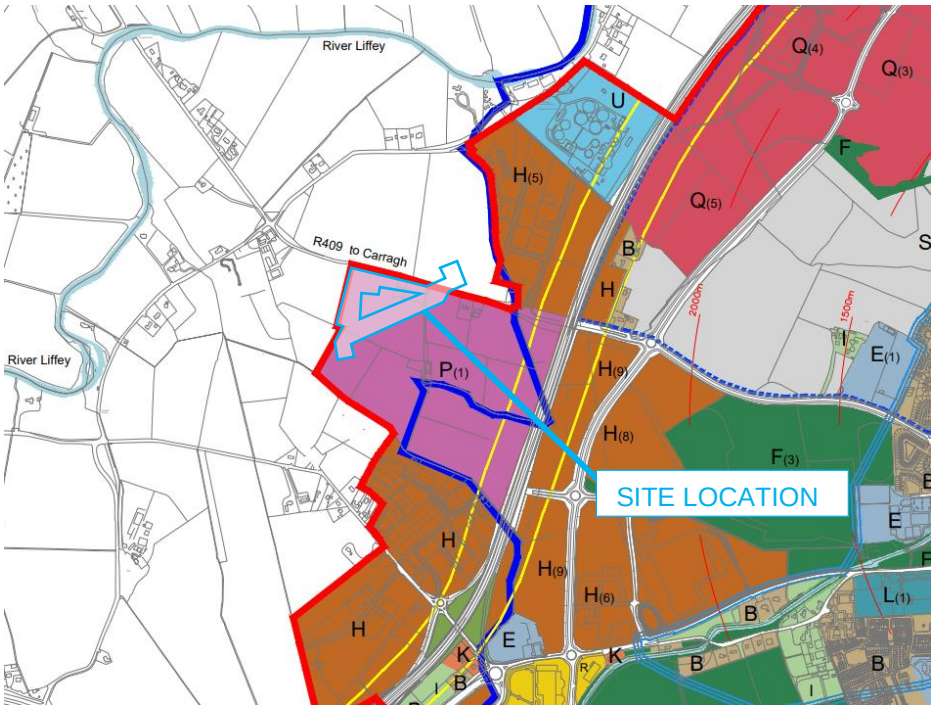
It is Government Policy as set out in the National Planning Framework and the Government Statement on "The Role of Data Centres in Ireland" to promote Ireland as a sustainable international destination for Information Communications Technology (ICT) infrastructure such as Data Centres. Within Naas, 2 sites have been designated for the development of Data Centres and *'The Council will not consider any alternative use on these lands, other than those associated with Data Centres (Objective EDO 1.12)'*. The subject site (as shown in the zoning map below) is one of these allocated sites. The proposed development of a GIS substation is to assist in the energy production on-site.

Both the Kildare County Development Plan (2023-2029) and the Naas LAP acknowledge the necessary development of Data Centres within Kildare and their importance in terms of employment and economic opportunities.

The proposed development accords with the land use zoning set out in the Naas Local Area Plan 2021 -2027 ("Naas LAP") and will deliver local employment and anchor the ICT sector more firmly within Naas and the Greater Dublin Area more generally.

Picture 05 | Extract from Naas Local Area Plan (2021 – 2027): Land Use Zoning Map.

Site location marked in red by authors of this report.



Naas Local Area Plan (2021-2027) Legend:

P: Data Centre(C7)

Picture 06 | Extract from Naas Local Area Plan (2021 – 2027): Section 11.1 – Land Use Zoning Objectives

Ref.	Land Use	Land-Use Zoning Objectives
P	Data Centre	To provide for Data Centre development and their associated infrastructure only.

Within the KCC Development Plan, Chapter 7 states *'Where data centre developments are approved in the County, the Council will expect district heating systems to be developed for adjoining residential, community and/or commercial developments.'* A portion of the site has been allocated to house any required district heating infrastructure which will connect back to the surrounding area for future energy requirements.

2.3 Site Constraints

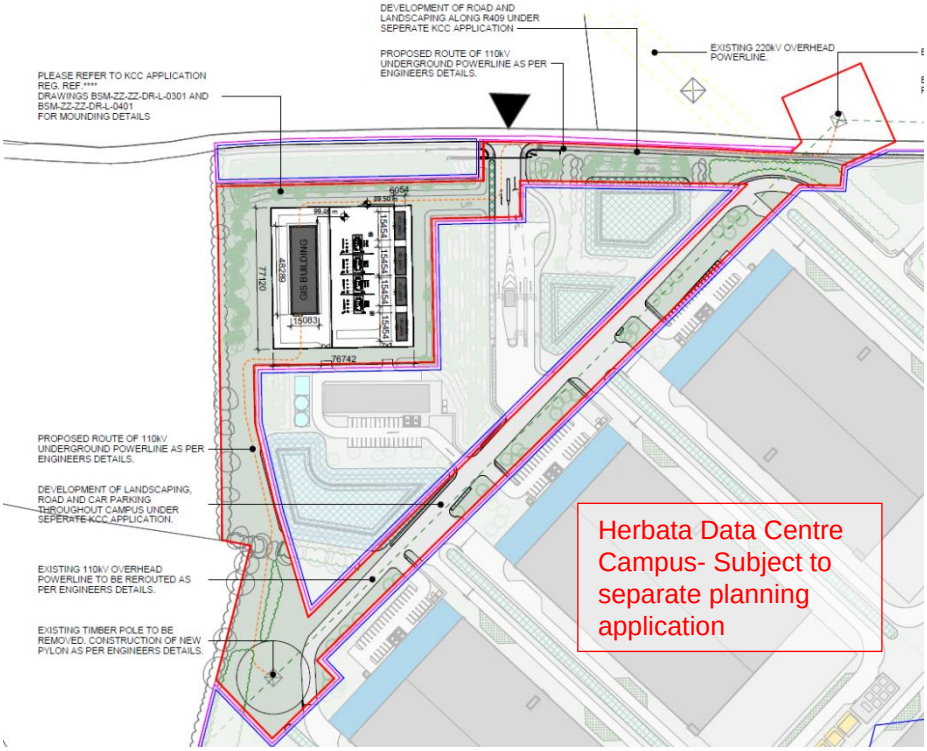
There are a number of existing conditions on-site which have been precisely analysed and that have shaped the proposed design approach.

- Existing hedgerows
  As the site has been used previously for agricultural uses, many hedgerows divide the site. These will be retained where possible, particularly on the external boundaries of the subject site to aid in screening and help promote biodiversity on-site.

- 110kv Overhead power lines
  110kv powerlines are to be rerouted underground to allow for the development of the GIS Substation on site. The proposed GIS substation and partial undergrounding of EirGrid's 110kV overhead lines are part of the Strategic Infrastructure Development (SID) planning application to An Bord Pleanála as it involves changes to electricity transmission.

3.0 Concept Ideas

3.1 Site Strategy – Masterplan



Picture 07 | Proposed Site Plan of ESB Substation

It is proposed to develop a new electricity grid substation compound, a medium voltage switchgear and control equipment building, a building housing indoor high voltage (HV), GIS equipment, high voltage busbar connections, and step-down power transformers, and underground cables connecting the proposal to the existing 110kV overhead lines that cross the proposed development site.

The proposed development consists of the following:

— 110kV GIS Building/Grid Substation c. 1350sqm and 15m in height.
— Undergrounding of a 110kV transmission line.
— 2 No. Dropdown towers (16m in height)/compound.
— Client Control Building.
— Internal Road Layout.
— Boundary Fences.
— Underground Services (Watermain, Surface Water, Foul, Power); and
— Ancillary Works.

The site area for the proposed works is 3.15ha. The development includes enabling works, services diversions, connections to the proposed grid substation, landscaping, security fencing and berms, provision of internal access arrangements within the grid substation compound. All other supporting services, associated construction works, and ancillary works will form part of the proposed Herbata Data Centre Campus planning application.

Access to the substation will be internally from the Herbata Data Centre Campus. The use of landscaping such berming and planting will help to assimilate the substation into the overall Data Centre Campus.

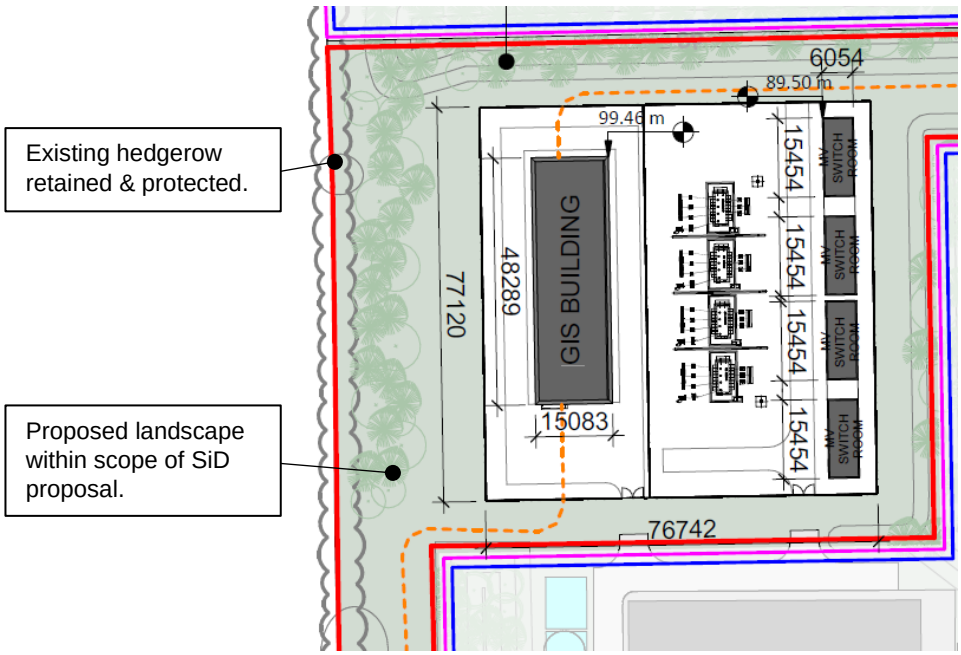
3.2 Enhancing the Public Realm

Kildare County Development Plan (2023-2029) Chapter 15.3, where a development requires a design statement, states the following details should be included:

'A demonstration of how the development adheres to the relevant provisions of the County Development Plan, including explicit reference to the Urban Design Standards Checklist, as outlined in Table 14.2.'

All planting and landscaping are proposed as part of the Herbata Data Centre Campus planning application except for additional planting to the west of the site. This will allow the substation development to assimilate within its surroundings. For full details see landscaping drawings.

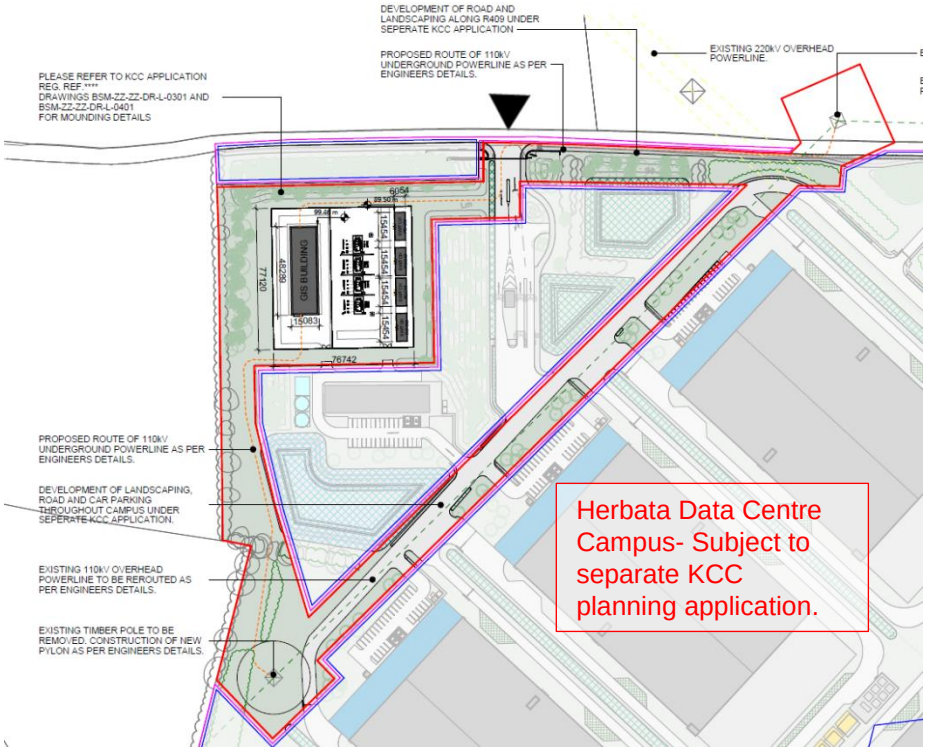
The Herbata Data Centre Campus masterplan includes a landscape strategy that create an attractive site layout using landscaping such as planting, ponds and berming. Retained vegetation within the site along with new proposed tree planting will aid in framing the proposed built form within a naturalistic setting forming a juxtaposition between the industrial forms of the data centres and their natural surroundings.



Picture 08 | For further information, see BSM drawing - BSM-ZZ-ZZ-DR-L-0301

4.0 Proposed Site Plan

Picture 09 | Overall Proposed Site Plan



There is a vehicular and pedestrian site entrance to Herbata Data Centre Campus located in the north corner of the site.

Access to the substation will be from the main internal access road within the Herbata Data Centre Campus, behind the Water Treatment Plant and Administration Workshop. Planting and berming will surround the substation to aid screening of this on site and from the R409.

All car parking and bicycle parking for the Substation will be provided at the Administration Workshop.

These developments throughout the site form part of the Herbata Data Centre Campus planning application.

4.1 Site Phasing

Given the scale of the proposal for the Herbata Data Centre Campus, site phasing is proposed for the construction of the data centres and ancillary buildings. 3 phases are proposed for all works throughout the site.

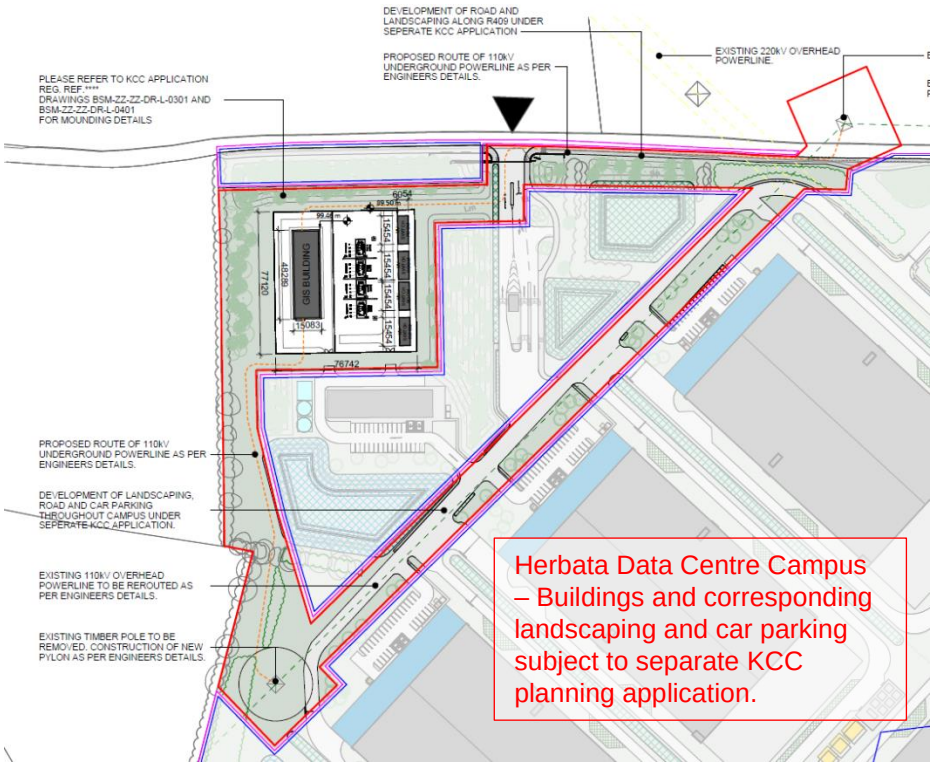
The proposed GIS substation and partial undergrounding of EirGrid's 110kV overhead lines is to be completed in Phase 1.

All other works on the Herbata Data Centre Campus will form part of a separate planning application and are to be completed in phases 1 -3.

5.0 Design & Layout

The site layout is shown below, for full details see doc. 22217-RKD-ZZ-ZZ-DR-A-1055.

Picture 10 | Proposed Site Plan of ESB Substation



An existing overhead 110 kV transmission circuit currently enters the site from the north and west sides of the Herbata Data Centre Campus site and will be taken down by line/cable (L/C) dropdown towers and undergrounded and brought to the proposed new Grid Substation. Between the L/C dropdown towers, a new underground 110kV cable circuit will run from the proposed 110 kV GIS grid substation, connecting to each of the L/C dropdown towers. The obsolete section of the overhead 110kV line from the proposed dropdown towers, including the supporting poles, will then be taken down and removed from the site.

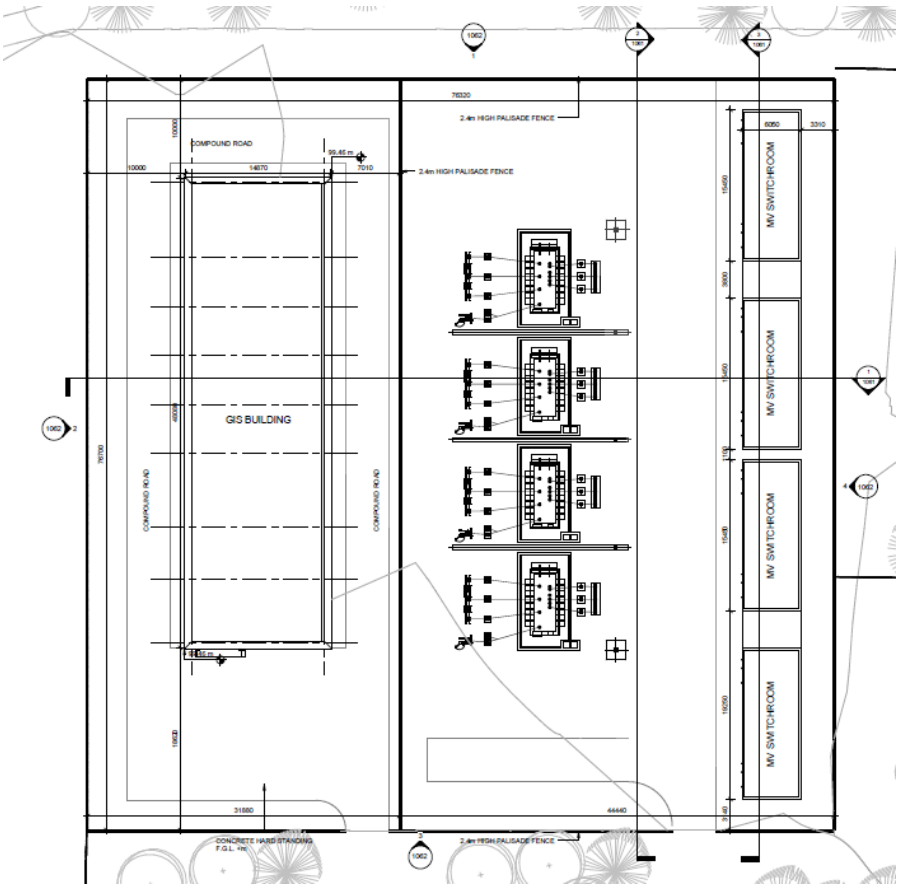
The new circuit will terminate in a cable – overhead line/cable (L/C) interface compound containing air-insulated electrical equipment mounted on concrete plinths. Adjacent to each L/C interface compound, an overhead line tower will be erected to facilitate connection of the new underground cables to the two existing 110 kV overhead lines. Each new overhead line tower will be approximately 16 metres in height, set on top of concrete foundations.

For full details, see Engineer's drawings and reports.

The development includes enabling works, services diversions, connections to the proposed grid substation, landscaping, security fencing and berms, provision of internal access arrangements within the grid substation compound. All other supporting services, associated construction works, and ancillary works will form part of the proposed data centre planning application.

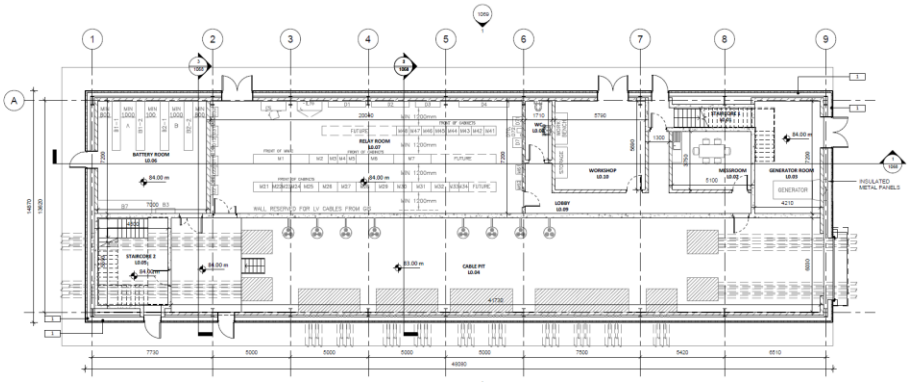
The substation development is to be made of two elements, the first being a new node on the Irish electricity grid at Naas, which will be handed over and be operated by EirGrid ESO as the transmission system operator (TSO); the second element will comprise the transformation to a lower voltage to enable distribution to the new proposed data centre development.

Picture 11 | Proposed ESB Substation Compound Plan

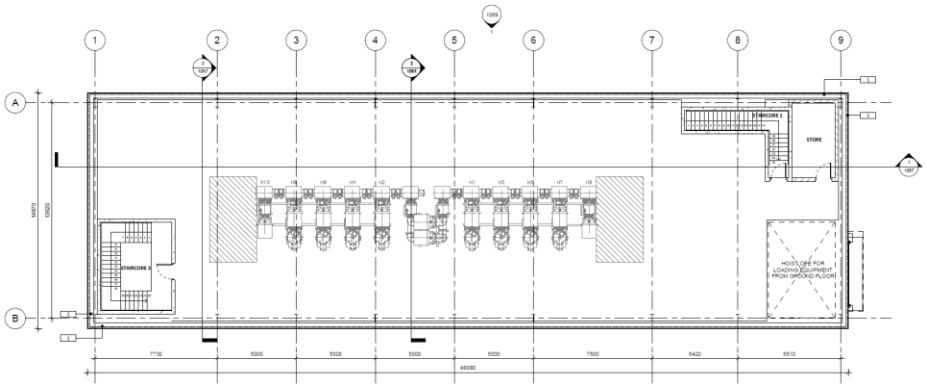


The proposed new Grid Substation is to be based on EirGrid's standard arrangements for 110kV based switchgear. EirGrid also have standard arrangements for GIS that they use on their network, these require the switchgear to be housed in a 2-storey building to enable safe operation and cable entry.

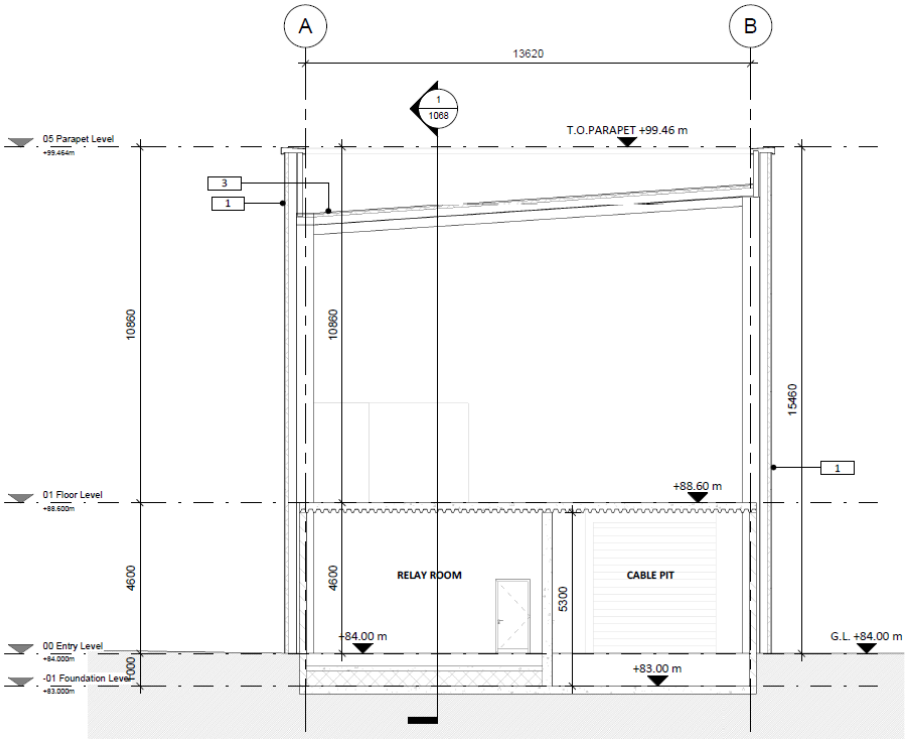
Picture 12 | Proposed ESB Substation – Ground Floor Plan



Picture 13 | Proposed ESB Substation – First Floor Plan



Picture 14 | Proposed ESB Substation – Section



Using this standard arrangement for a GIS grid station, the substation on the data centre development has been arranged to have two sections, the first to fully incorporate the arrangement of the EirGrid 8-bay GIS grid station and the second section to incorporate the local distribution and step-down transformers for the data centre development itself.

It should be noted that the development site also has a 220kV transmission line crossing the site, operated by EirGrid. No works are intended to the line, but the exclusion zone either side of the line will be observed fully.

The main stakeholders for the development are as follows:

- EirGrid, is responsible for operating and developing the national high voltage electricity transmission grid in Ireland;

- ESB Networks (Asset Owner), is responsible for carrying out maintenance, repairs and where works are not contestable, the construction of the national high voltage electricity grid in Ireland;

- Herbata Limited's role for this project is to act as the Developer/Applicant.

Picture 15 | CGI of Substation Compound

5.1 Building Height

Due to the size of the plant required within the Substation, this is a large building measuring at approx. 15m in height.

No. 4 MV Rooms are located on the site, each measuring at approx.6m in height.

There is a 2.4m high palisade fencing surrounding the site.

5.2 Elevation Design and Materials

The design of the Substation is in keeping with the main data centre building, i.e. use of flat composite panels in light grey colour.

Much of the site will be partially hidden through proposed landscaping including berming and planting. This is to hide views of the Substation site from the overall Herbata Data Centre Campus and from the R409. To the west of the site, existing hedgerows are to be maintained and augmented to further hide the views from neighbouring site.

The no. 4 MV Rooms will be finished with render in a selected colour.

Picture 16 | CGI of Substation Compound

6.0 Schedule of Areas

Refer to RKD sheets -

22217-RKD-ZZ-ZZ-SH-A-1075

Picture 17 | Area Schedules

GIS BUILDING - GROSS INTERNAL AREA

LEVEL	NAME	AREA
00 Entry Level	GIS GROUND FLOOR - GIA	626.1 m²
00 Entry Level		626.1 m²
01 Floor Level	GIS FIRST FLOOR - GIA	626.1 m²
01 Floor Level		626.1 m²
GROSS INTERNAL TOTAL AREA		1,252.2 m²

MV ROOM - GIA & NIA

LEVEL	NAME	AREA
00 Entry Level	MV ROOM 1	84.0 m²
MV ROOM 1		84.0 m²
00 Entry Level	MV ROOM 2	84.0 m²
MV ROOM 2		84.0 m²
00 Entry Level	MV ROOM 3	84.0 m²
MV ROOM 3		84.0 m²
00 Entry Level	MV ROOM 4	84.0 m²
MV ROOM 4		84.0 m²
MV ROOMS - TOTAL GIA & NIA		336.0 m²

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