CENTRAL DUBLIN SUBSTATION PROEJCT

ARCHITECTURAL DESIGN STATEMENT

July 2025 – Planning Issue

BRIGHT DESIGN ARCHITECTS

CONTENTS

BDA have been appointed by EirGrid plc to prepare this Architectural Design Statement to support a Strategic Infrastructure Development planning application under Section 182A of the Planning and Development Act 2000, as amended.

This Architectural Design Statement provides an overview of the proposed project requirements having regard for various design constraints and challenges, and provides an analysis of the site context and key factors that informed the proposed site layout, scale, massing, height, and materials and finishes.

The proposed development has been further informed by feedback received from the planning authority and the local community to ensure key issues have been fully addressed in the proposed design.

The site has been selected following an extensive evaluation process as outlined elsewhere in the Planning and Environmental Considerations Report prepared by RPS and enclosed as part of the SID planning application pack.

The proposed development is described in the planning notices as follows:

- Change of use from car park to electricity infrastructure;
- Demolition of existing single storey shed / storage structures, boundary wall to East Wall Road, and general site clearance;
- 1 no. 2-storey 220kV Gas Insulated Switchgear (GIS) substation building occupying an area of c. 51.8m x 22.2m and 20m in height to include the GIS switchgear comprising of insulated circuit breakers, disconnectors and other high voltage equipment, all necessary welfare facilities, office spaces, and monitoring and control equipment required for the operation and maintenance of the substation;
- 1 no. 2-storey 110kV GIS substation building occupying an area of c. 51m x 15.9m and 16.5m in height to include the GIS switchgear comprising of insulated circuit breakers, disconnectors and other high voltage equipment, all necessary welfare facilities, office spaces, and monitoring and control equipment required for the operation and maintenance of the substations;
- 3 no. transformers to transform electrical power from 220kV to 110kV and associated acoustic enclosures (c. 5.3m in height) and c 1m high lightning protection rods extending to a height of c. 11m above ground level;
- Electrical cables located within the site boundary;
- Site lighting within the substation compound;
- Closure of all existing entrances to the site and the provision of new vehicular and pedestrian access from East Wall Road;
- Ancillary car parking spaces including internal access roads;
- 2.6 m high palisade security fence and associated gates;
- A public-facing fence and associated gates along East Wall Road varying in height from c. 2.4m to c. 3m;
- Public realm improvements including the provision of seating areas and landscaping;
- Associated utility connections including water supply, foul drainage and surface water drainage, including the provision of an underground storm water attenuation tank; and
- All other associated ancillary above and below ground development, including works comprising or relating to construction works, roadworks and excavation.

The site itself is intended to operate unmanned once opened and operational, though personnel will periodically attend the site for routine inspections and maintenance.

Internal roads and maintenance areas have been designed using Autotrack software to ensure adequate turning space for maintenance and emergency vehicles. 9 car parking spaces are provided for maintenance visits.

The GIS buildings are both designed to meet EirGrid's specific requirements, based on the operational / technical requirements. This includes the dimensions of the plant and equipment (including necessary separation and distances).

Each building will comprise a two-storey structure which each house the SF_6 free (non SF_6 gases) gas insulated switchgear comprising of insulated circuit breakers, disconnectors and other high voltage equipment. The buildings will provide all necessary welfare facilities, office spaces, monitoring and control equipment required for the operation and maintenance of the substations. It is proposed that both buildings will be steel framed, incorporating precast concrete floors and insulated cladding system. The site is proposed to be accessed from East Wall Road.

3.1 SECURITY

Security of the substation compound from both a health and safety perspective and against trespassing is a critical design requirement of the project. The site is bounded by party walls to the North and the West. To the East Wall Road a boundary treatment has been proposed which looks to create a more considered treatment to the East Wall community. There is a secondary security palisade fence behind this outer fence. The boundary treatment and planting designs have evolved with key security considerations in mind such as avoiding the potential for people climbing trees or using hedging to gain access to the property etc.

Ensuring electrical substation safety is crucial to prevent accidents, protect personnel and ensure uninterrupted power supply and maintaining the reliability of supply. There are various technical, engineering and safety requirements which have influenced the Landscape Design.

3.2 LANDSCAPING

A Landscape Planting Design has been developed for the Proposed Development based on the following key considerations -

- Maintaining the required safety clearances around electrical infrastructure;
- Maintaining the required safety clearances to the earth grid;
- Damage to electrical infrastructure;
- Introduction of shock and fire hazards;
- Potential hazards associated with planting becoming energized;
- Interference of root structures with critical electrical infrastructure including future cable routes.
- Required maintenance associated with planting.

Due to the nature of the Proposed Development which is an unmanned electrical substation housing critical electrical infrastructure, the use of green walls on the GIS Substation buildings is not considered to be a feasible measure due to electrical safety and other technical and engineering constraints.

Standard substation reference images

3.3 STANDARD SUBSTATION DESIGN / STARTING POINT

Typical substation designs are based on functional engineering requirements as can be seen from the adjacent reference imagery.

Given the urban nature of the site and following initial public consultations, if was decided that a more bespoke and 'non-standard' approach to the two substation buildings would be commissioned.

3.4 PRE-PLANNING DESIGN ENAGEMENT

Pre-planning application meetings were held with Dublin City Council (DCC) on the 15th of May, 12th June and 25th June 2025. The purpose of these meetings was to discuss the key information of the proposed development including setting out the need for the proposed works and outlining the main elements of the proposed development.

In addition, EirGrid held three information events in the East Wall area in June 2024 to provide members of the public with information on the Central Dublin Substation Project. These drop in events offered interested people and groups an opportunity to speak with a member of the technical team and the EirGrid Community Liaison Officer. During the public consultation process, feedback was collected and evaluated.

A summary of feedback received is set out in the Planning and Environmental Considerations Report prepared by RPS and submitted as part of the SID planning application pack. All feedback relating to the architectural design, including the site layout, scale, massing, height, and materials and finishes has been taken into consideration by the design team in the development of the subject proposals.

The site is located on reclaimed land from the Tolka Estuary and has extensive south facing frontage onto East Wall Road. To the south of the site and East Wall Road is the established residential neighbourhood of East Wall. To the north of the site is the M50 Port Tunnel Toll Plaza and beyond that the East point Business Park. The site has an industrial heritage dating back to the time of reclamation and remnants of this heritage exist on the site most noticeably with the boundary wall to East Wall Road. There is no architectural or historic merit to any of these existing structures on site.

Given this location the site can be considered a transitional area between East Wall and industrial / port related uses to the north and eastwards.

Given this context, it was acknowledged at an early point in the design process that the subject proposals would need to be carefully integrated into this complex urban setting.

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Aerial View / Site Location

Fig. 1: View down East Wall Road
Significant road frontage

Fig. 3: View up East Wall Road
Significant road frontage

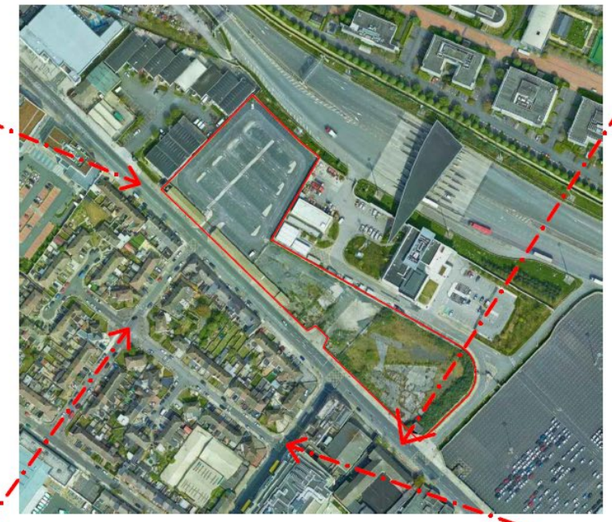


Fig. 2: View from Forth Street to site
Likely the primary focal point for situating the building

Fig. 4: View from East Street to site

Having regard to the nature of the proposed development (i.e., GIS transmission infrastructure), the overall requirements and sizing of the buildings are fixed from an operational and performance perspective.

The design opportunities could therefore be distilled down to a number of key elements

- Façade / cladding
- Landscaping
- Site Layout / Arrangement

5.1 INITIAL SITE ANALYSIS – APPROACHES / VISIBILITY

The starting point for these design opportunities was a study of both the site and the wider East Wall area.

- Site is bounded on two sides by major roadways
- Access / road frontage ;possible only from East Wall Road
- Potential for this road frontage to be more active for community – community art / seating / gathering points







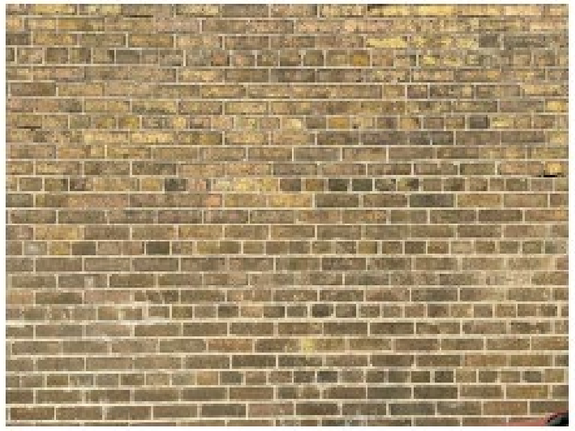




DUBLIN PORT

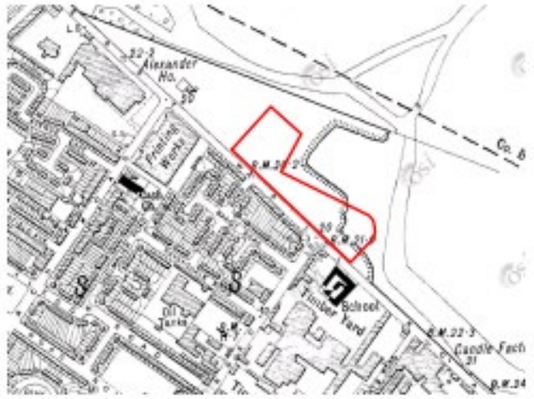




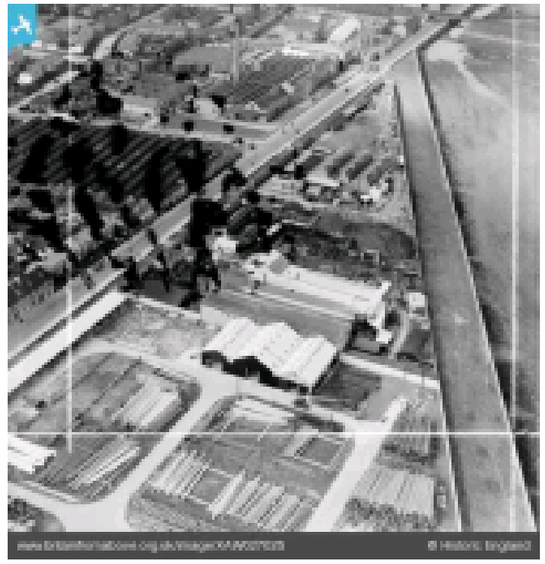


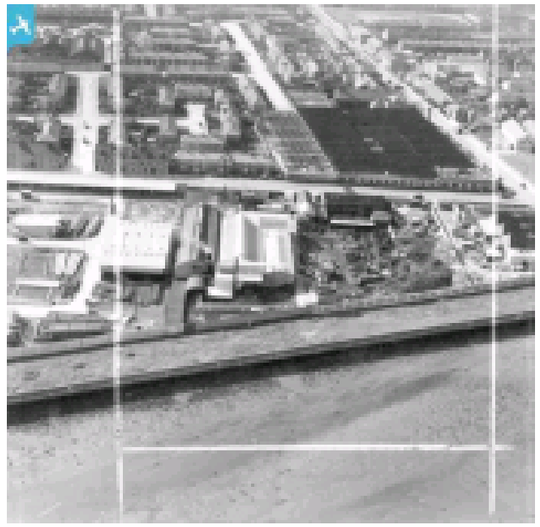




Site Study – Land reclaimed from Tolka Estuary over time

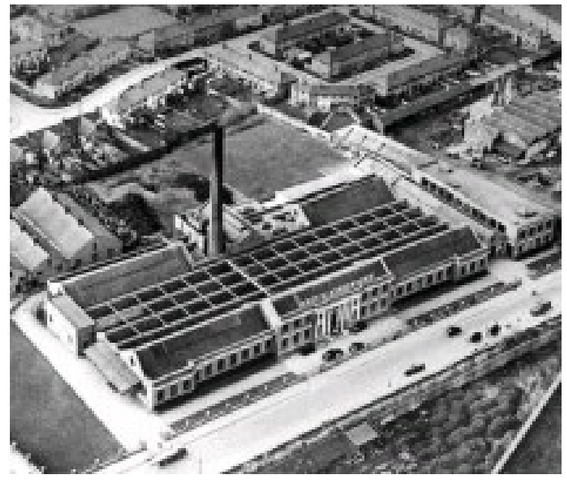
Built industrial history of site / Tonge + Taggart Iron Foundry





Hely's Textiles

Fry + Cadbury Confectionary



5.4.1 DESIGN STEP DEVELOPMENT

STEP 1 :

STARTING POINT

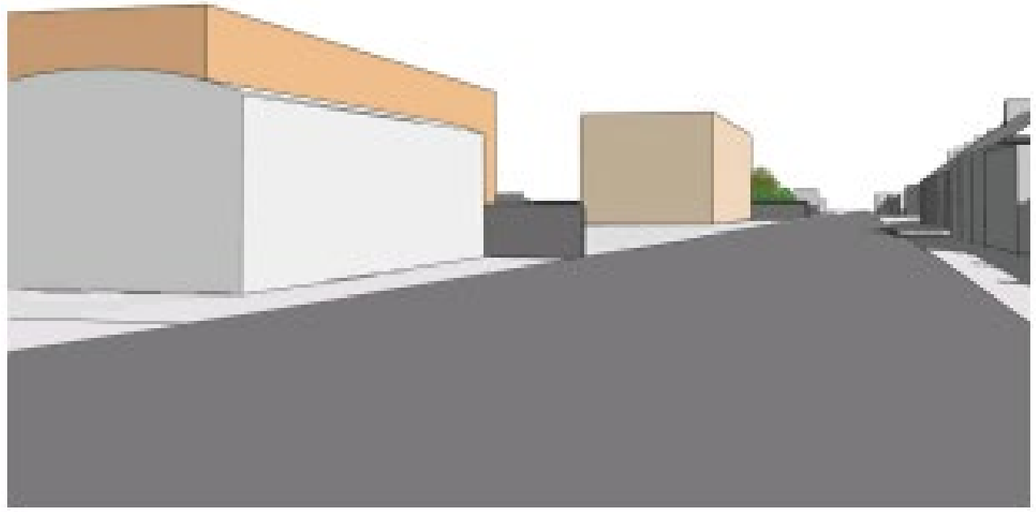
As noted, the starting point of the design was a simplistic layout option based soleLy on the technical and engineering requirements and having regard to the configuration of the site.

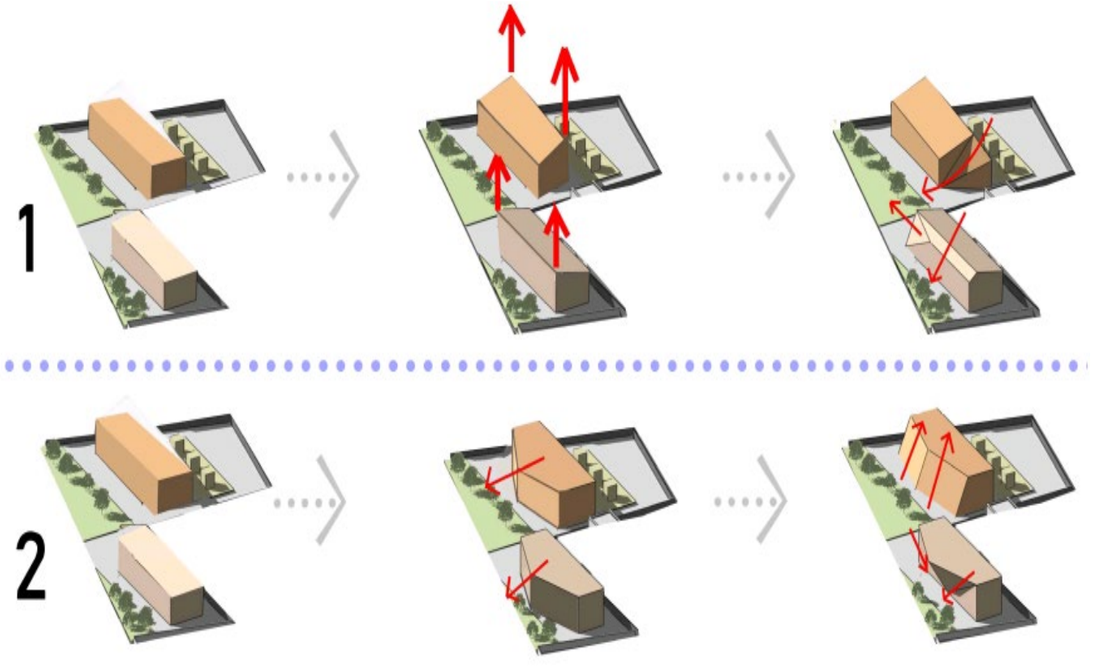
STEP 2 :

ROTATION OF 110KV BUILDING

TO BLOCK SOUND / BUILDING FRONTAGE TO PUBLIC

One of the initial design moves was to reposition the 220KV building to form a natural shield to noise from the transformers which was raised as a concern by residents, and to provide visual screening and a stronger building presence onto East Wall Road





STEP 3 :

MOULDING OF FORMS

With the adjustment of the buildings on the site the next investigation was to look at the possibility of 'moulding' the buildings around the fixed 'box' dimensions for each building to minimise the perception of their scale and form.

This however proved not to be practical as the buildings technical requirements including building size was finalised. So the design emphasis refocused on the cladding and creating a 'layering' of the buildings to break down the overall scale and perception of the scale and form of the buildings.

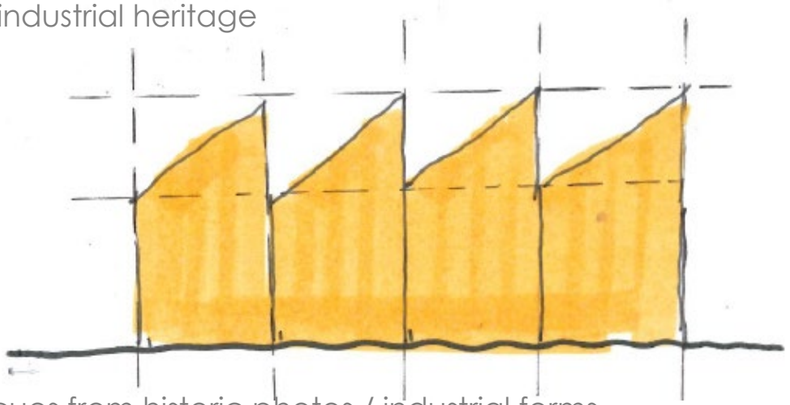
With the recognition of the scale of the buildings and the nature / shape of the site there was a design intent to create a rhythm and form to give visual interest for local residents who might be passing by the site, but more importantly for those residing in the area and adjacent to the site.

STEP 4 :

HISTORIC TOUCHPOINTS

The historic context and fabric of the surrounding area was researched during the design process to understand the context of the site and surrounding area. The design of the cladding came from a review of the historical industrial use as a metalworks foundry. Industrial forms stand out with traditional pitched or 'saw tooth' roof forms scattered thorough out the area is indicative of the context and informed the design approach to the façade geometry and choice of materials.

East Wall industrial heritage



Sketch – cues from historic photos / industrial forms

Form Reference – sawtooth roof types

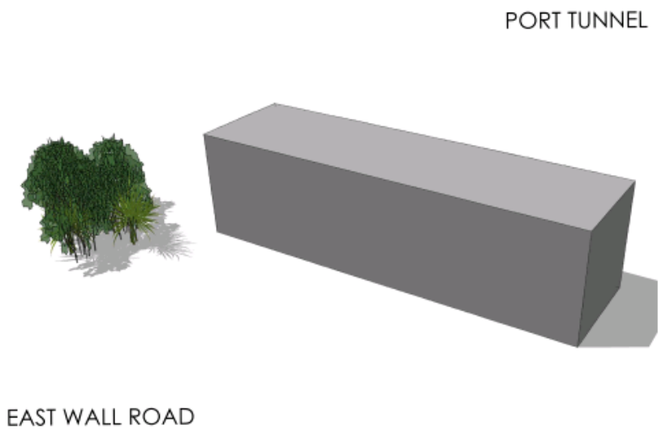
East Wall – historical aerial image

Tonge + Taggart Iron Foundary – ptiched roof forms

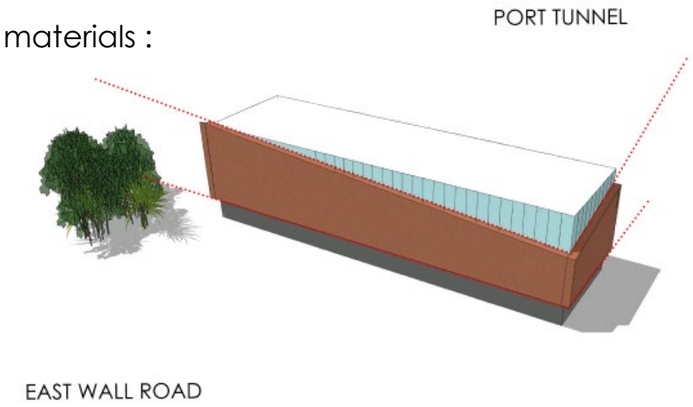
STEP 5 :

CLADDING AND WRAPPING

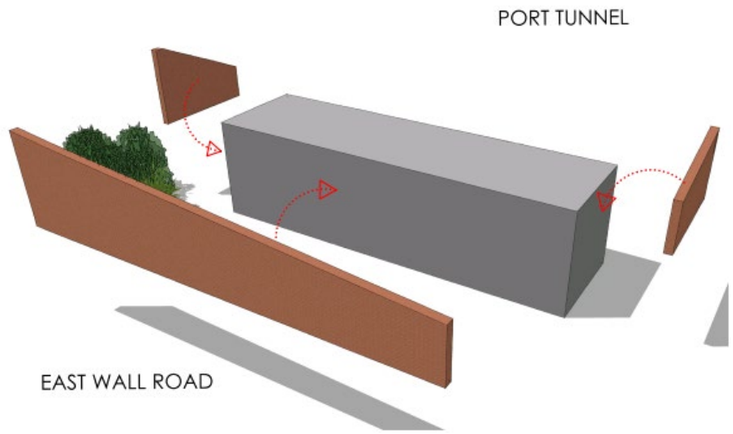
Starting Form :



Application of materials :



Application of cladding :



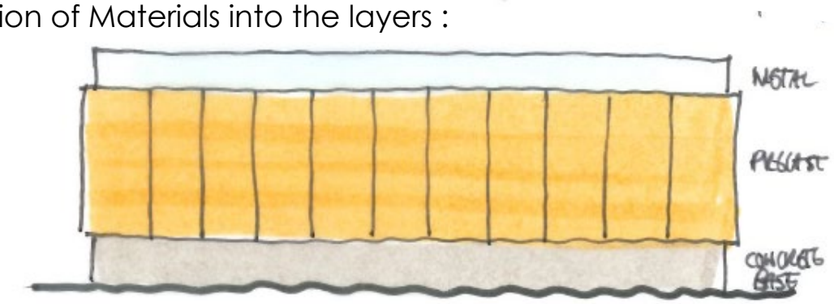
Development and detailing of cladding :

STEP 6 :

DESIGN CONCEPT / EVOLUTION

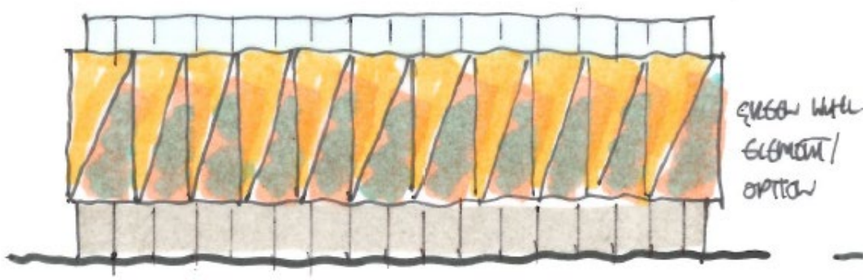
Starting Form / Volume :

Introduction of Materials into the layers :

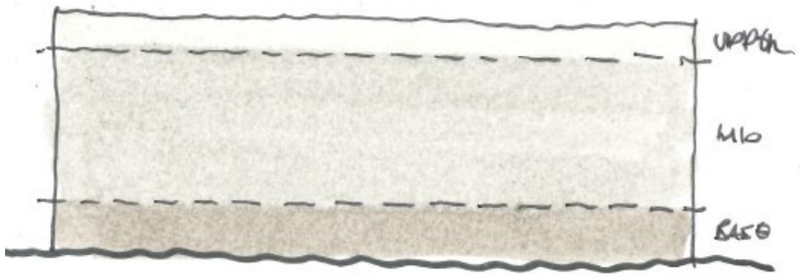


Option for Green Wall (southerly orientation) :

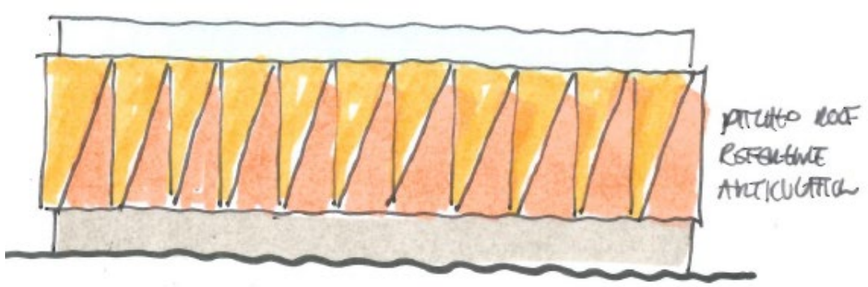
(Later ruled out due to technical and safety concerns)



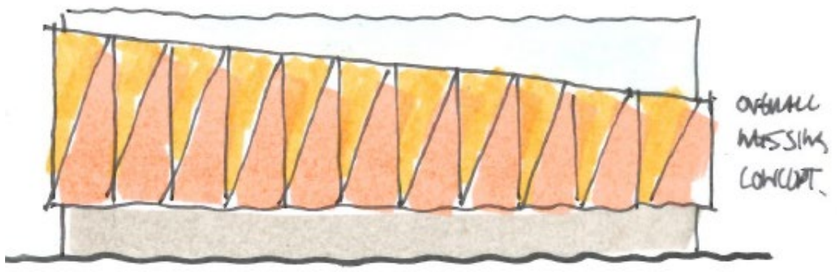
Layering of building / reduce overall sense of scale :



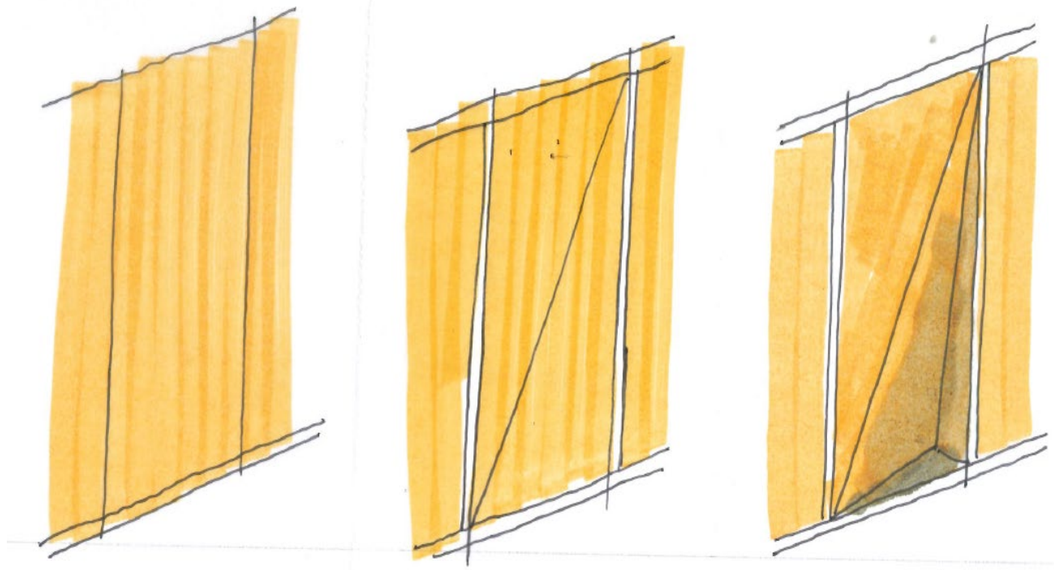
Introduction of reference forms / shapes :



Introduction of different forms based on building orientation on site :



Cladding Design Evolution :

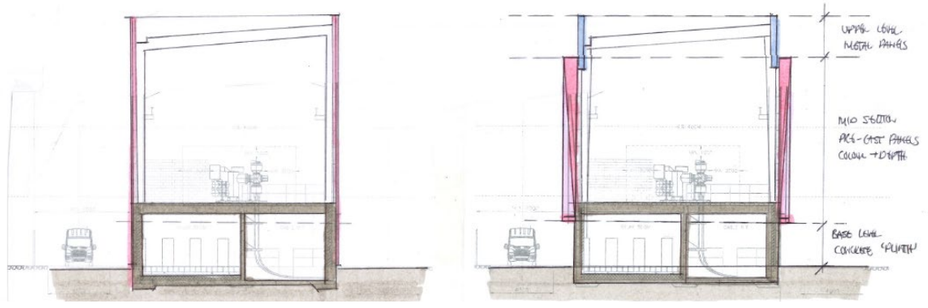


Pre-Cast Panel Design Concept / Evolution

Introduction of metal framing to panels to hide joints

Depth to panels to create rhythm and movement to façade

Cross Section Study :



'Standard' substation Cross Section

Proposed Cross Section

Early Design Concept – interim study model :

(Design development confirmed that planting within the compound boundary is not feasible due technical and safety constraints.)

MASSING. **MATERIALS.**

Reference images below (non exhaustive). **Nottingham Contemporary art centre / Top element over Google Treasury Building /Larkin Street substation Expansion**

STUDY 1 – Width of precast panels. Panels 5m wide to replicate scale and rhythm of houses on East Wall Road

STUDY 2 – Introduction of ‘Green Wall’ into the façade

Design development confirmed that planting within the compound boundary and on the building facade is not feasible due to technical and safety constraints

3D PHOTOMONTAGE VIEWS

The final design creates two distinct designs for each building which reflect the individual scale / dimensions and positions within the site and how they will be perceived.

- The 110kV building, narrower and slightly smaller in scale sits slightly skewed to the East Wall Road. The precast cladding panels slope to soften the scale of the building given that it sits closer to the street and houses across the road. The metal cladding to the upper levels is intended to partly reflect the sky but with a semi-reflective textured finish.

- The 220kV building sits parallel to the East Wall Road but further back within the site, also forming a physical noise barrier to the transformers behind. The cladding maintains the horizontal banding for the design within reflects the sloped form of the 110kV building

It is intended that both buildings read as distinct but complimentary buildings, the differences creating interest with their shared similarities ensuring that both sit comfortably beside one another on the site and within the wider area.

The selected materials and finishes have been carefully considered to address feedback from DCC and the local community while meeting ESB's technical requirements. It is accepted that there is scope for further discussion and agreement with DCC regarding specific details of finishes, without affecting the principle, nature and extent of the proposed development. EirGrid would therefore be happy to accept a condition of permission (should An Comisiún be disposed to Grant Permission) to further discuss and agree details of materials and finishes with DCC.

The main public frontage and boundary to East Wall road presents a challenge due to its length. First and foremost this boundary must fulfil a fundamental security and public safety function to prevent unauthorised access to the site.

A number of design studies were undertaken to explore and test appropriate solutions to meet the following criteria:

- Functional for security and access
- Visual Interest to extensive streetscape frontage
- Transparency balanced with screening
- Materiality, maintenance and durability

The final design provides for a primary outer fencing that defines the full site frontage to East Wall Road. This structure varies in height and planarity to create kinetic visual interest whether passing by foot or by car. At key points the boundary is punctuated by pockets of greenery, visual interest and public seating where the footpath widens to accommodate.

Behind the primary outer boundary, a buffer zone of planting* is proposed to provide natural screening and a backdrop to the street frontage. This vegetation also serves to screen a more functional inner palisade fence which provides an essential secondary line of security. One vehicular access point provides further breakage within this frontage.

While the proposed interface with the public realm has been carefully considered to address feedback from DCC while meeting ESB's technical requirements, it is accepted that there is scope for further discussion and agreement with DCC regarding specific details of finishes, without affecting the principle, nature and extent of the proposed development. EirGrid would therefore be happy to accept a condition of permission (should ACP be disposed to grant permission) to further discuss and agree these details with DCC.

Boundary Relief Studies :

** Design development confirmed that planting on the compound boundary fencing and is not feasible due to technical and safety constraints*

Boundary Materiality Studies :

Corrugated Metal

Mesh

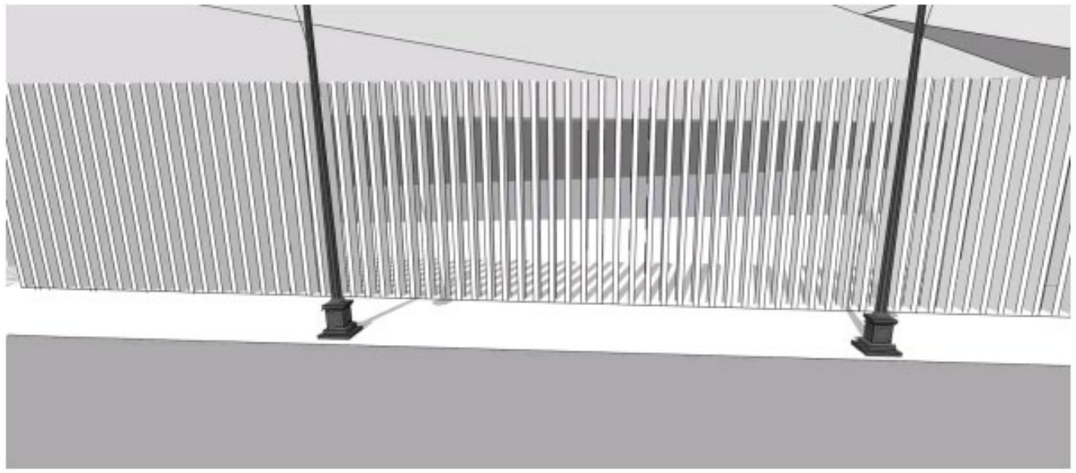
A13 Artscape, East London

Bladed Fin Fencing

Aluminium

Bocconi Universty, Milan

With Integrated Public Bench



Without Integrated Public Bench

The Central Dublin Substation Project seeks to integrate essential and critical electrical infrastructure on a prominent brownfield site in East Wall. Given the scale and the sensitive nature of the site, Bright Design Architects were engaged from an early stage to find solutions that provided a unique response to this context and which sought to mitigate visual and environmental impacts. This has required a divergence from standard substation design and has delivered a site-specific solution. Public engagement and pre-planning consultations also informed the design strategy leading to the incorporation of community-focused elements such as public art, seating and pocket spaces to punctuate the road frontage.

Particular attention has been given to local historical and contextual research which has informed design decisions at all stages. The final design seeks to balance stringent technical, security and safety requirements with a bespoke site strategy, carefully considered building forms and façade treatments. The two substation buildings differ in size but are connected visually by complimentary yet differing forms and material treatments. The geometry of these forms take inspiration from local industrial heritage and seek to create visual interest and dynamism to engage passers-by. Layered fencing and planting provide the necessary security and screening while engaging with the public realm and residential housing opposite the site.

The proposal achieves a balance between operational requirements and site responsive design through architectural innovation, ensuring that this critical substation infrastructure contributes positively within a challenging urban context.