# Phoenix Place, Mount Pleasant – Phase 1 (Block A)

## Electrical Substations

BroadwayMalyan BM

May 2019

BroadwayMalyan BM

## Purpose of Document

This document has been prepared by Broadway Malyan on behalf of Taylor Wimpey Central London / Bouygues UK to illustrate the location and design of the two Electrical Substations in Phase 1 of the development.

## Contents

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## Introduction

**Mount Pleasant (Phase 1) – Electrical Substations**

This report illustrates the location and design of the two electrical substations in Phase 1 of the development.

The marked up general arrangement plans that follow illustrate the electrical substations location and design. The Planning Condition wording is as follows:

> **Condition No. 34** - Electrical Substations
>
> Details of the electrical substations including their acoustic specifications and cladding / facing materials, where relevant, shall be submitted to and approved in writing by the Local Planning Authority prior to the commencement of superstructure works in the relevant Section first occupation of the relevant block .

This report will be used to discharge LB Camden Planning Condition no.34 for Phase 1 (Block A). A similar report for Phase 2 (Blocks B, C and D) will be submitted at a later date. Please refer to phasing plan on page 12 of this document.

# Phoenix Place, Mount Pleasant – Phase 1 (Block A)

## Electrical Substations

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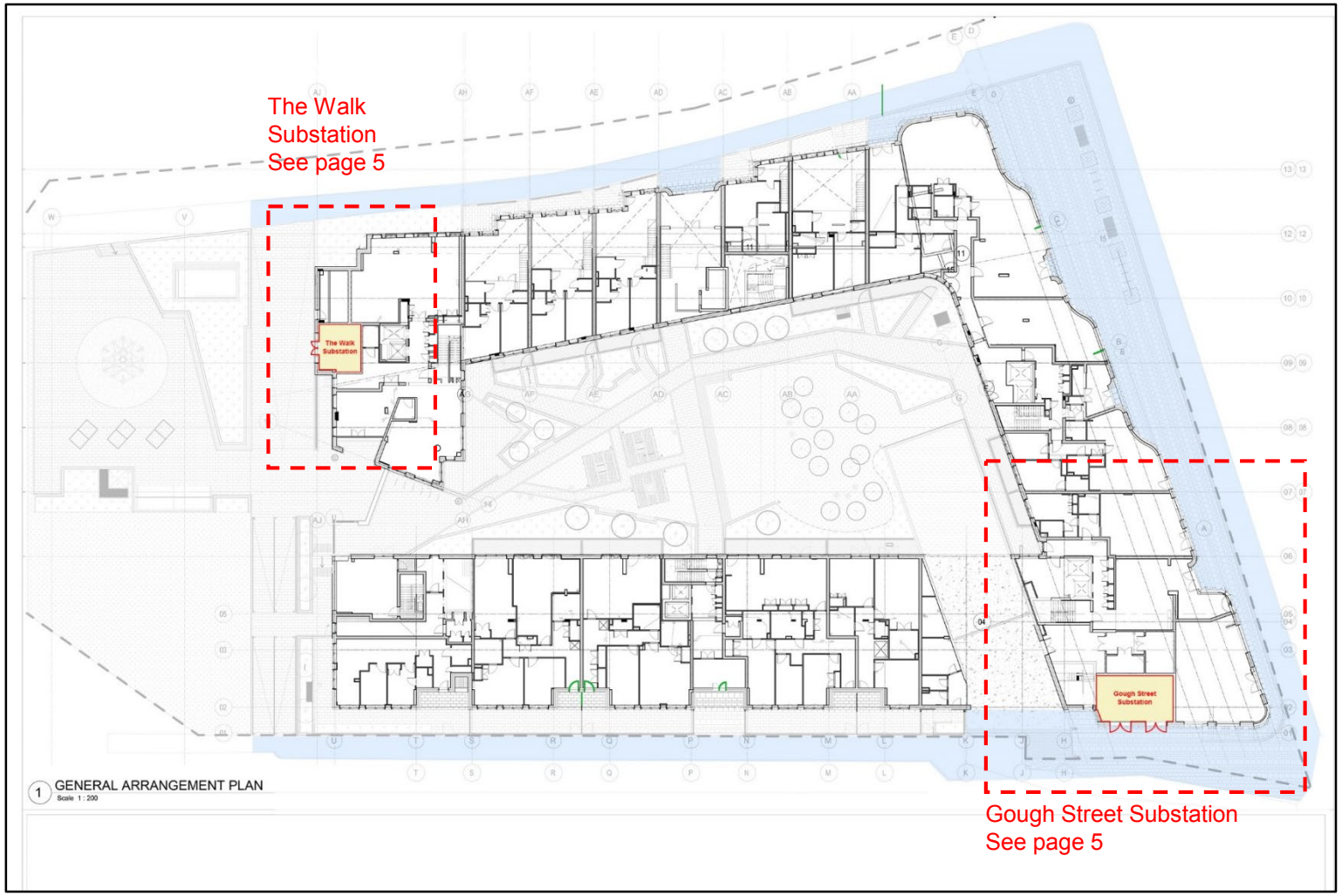
### Section 1 - GA Plans

To make the general arrangement plans more legible, the drawing has been enlarge on the following pages.

Please use the red dashed boxes to navigate the development.

The two Electrical Substations are Highlighted in yellow with a red outline.




Composite UG / LG Floor

# Phoenix Place, Mount Pleasant – Phase 1 (Block A)

## Electrical Substations

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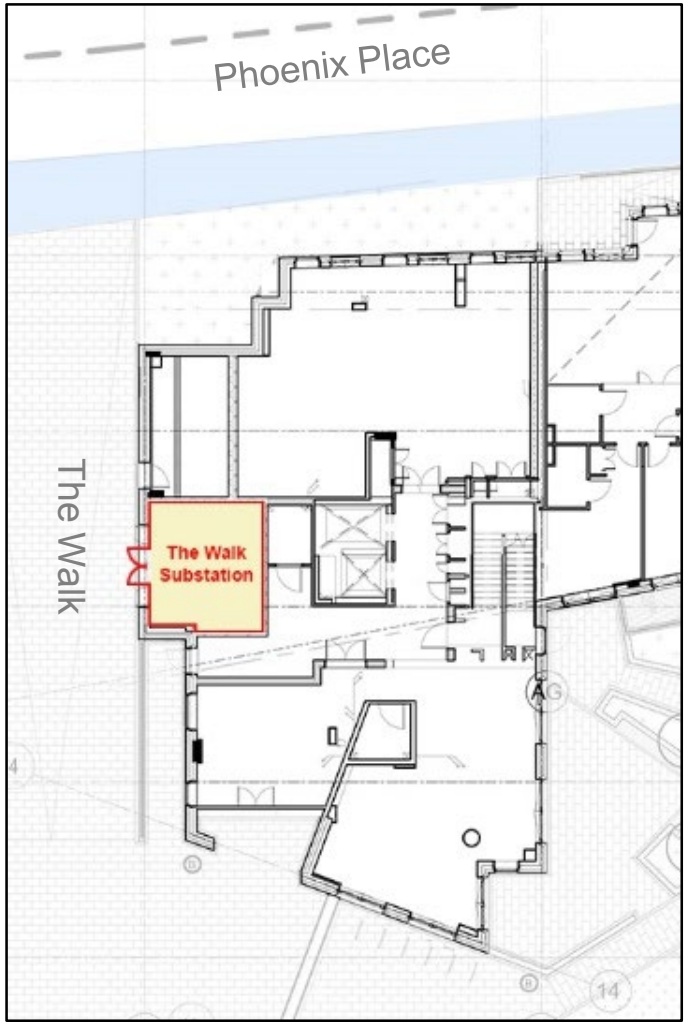
### Section 1 - GA Plans

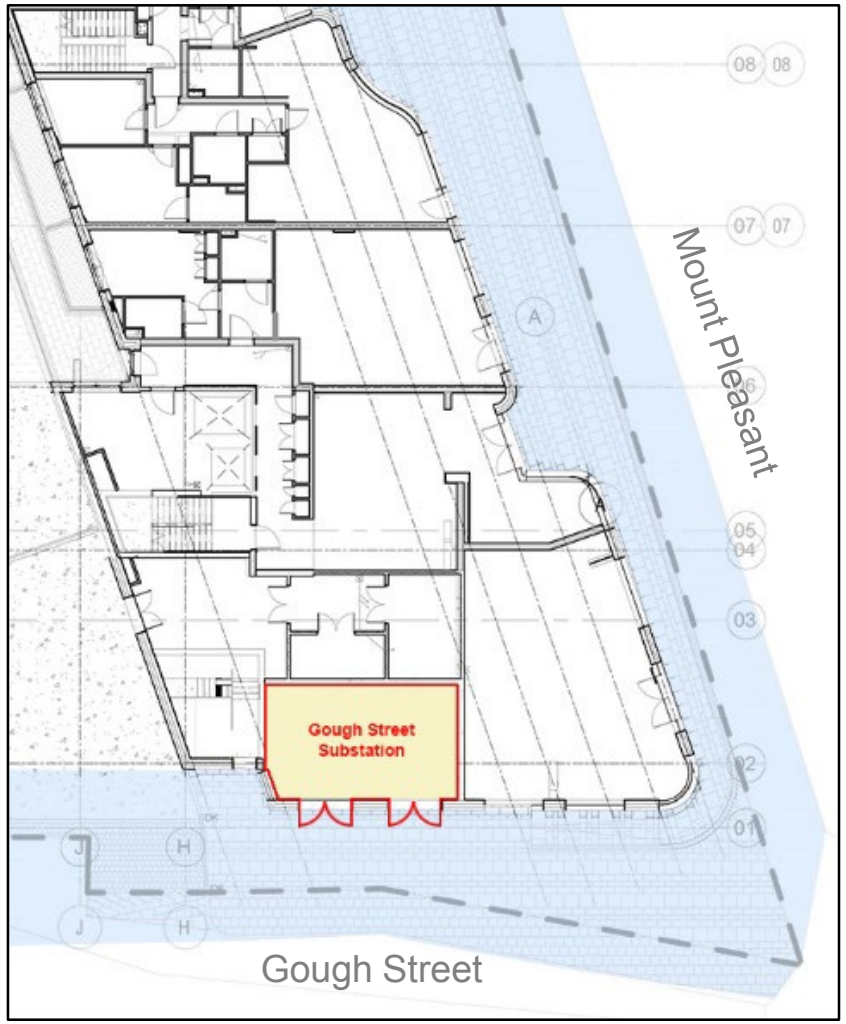
The electrical substation on ‘The Walk’ and ‘Gough Street’ are integrated into brick elevations Block A at the bases of Core A6 and Core A3 respectively.

The substation’s steel doors and louvre panels have a metallic bronze powder coated finish to complement the bronze anodised door and window frames of the development.

The external paving materials and substrate anticipate the loads of the substation service vehicles.




The Walk Substation




Gough Street Substation

# Phoenix Place, Mount Pleasant – Phase 1 (Block A)

## Electrical Substations

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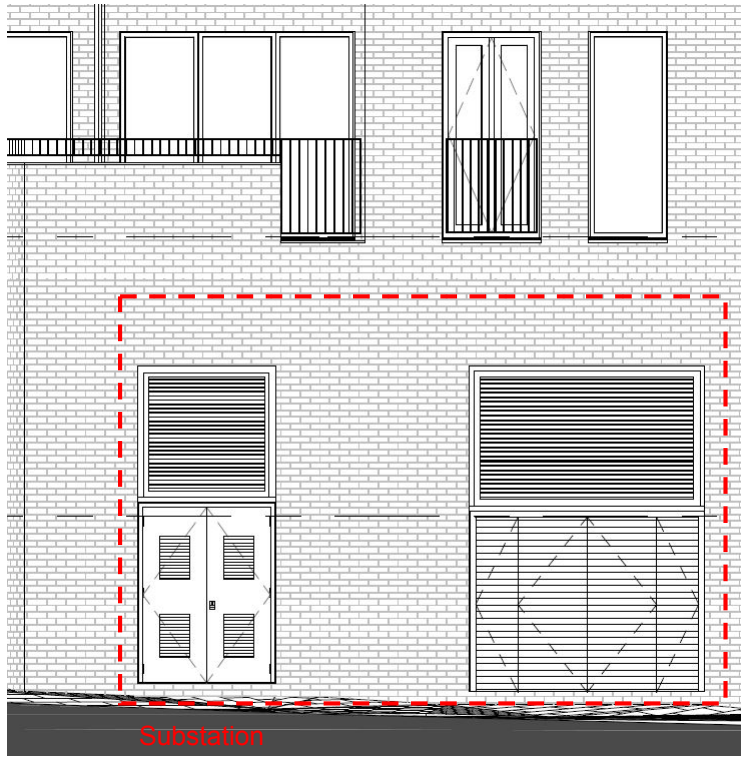
### Section 1 - GA Elevations




Gough Street (East) Detail


Gough Street (East) GA Elevation

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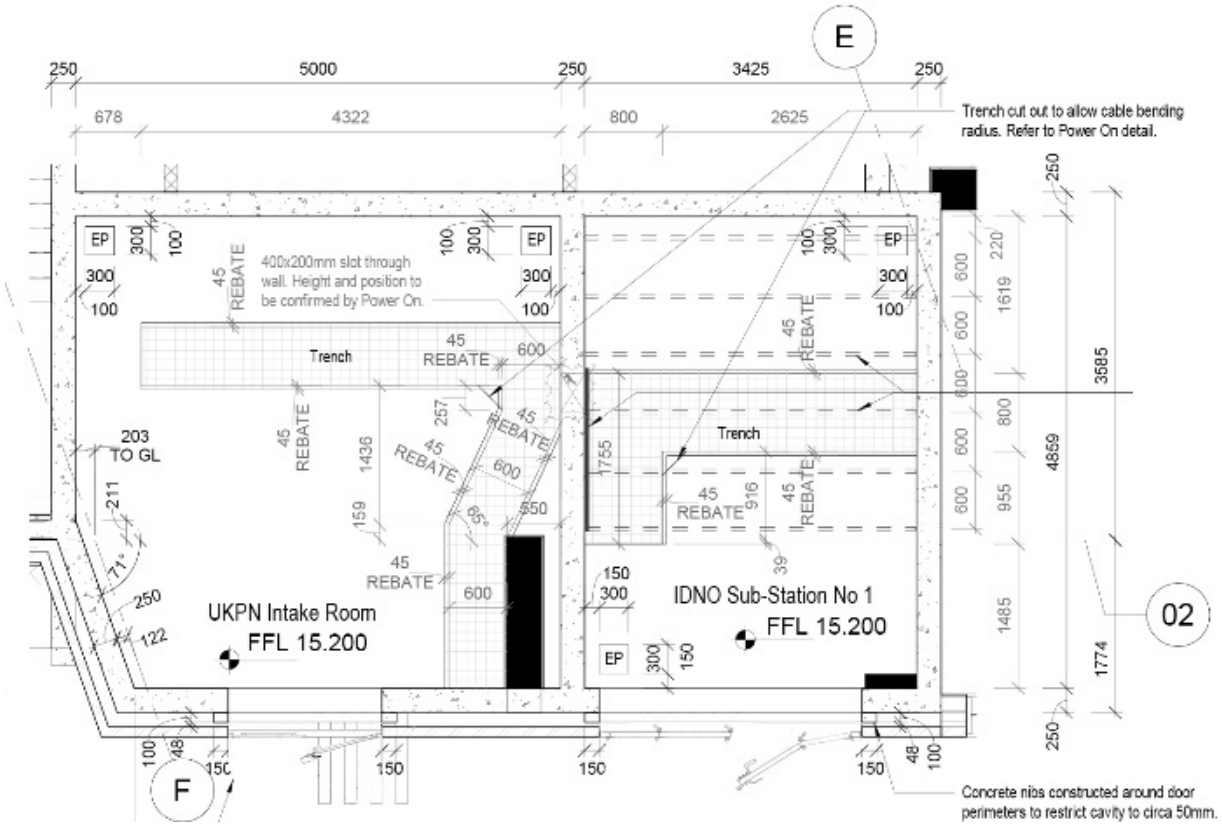
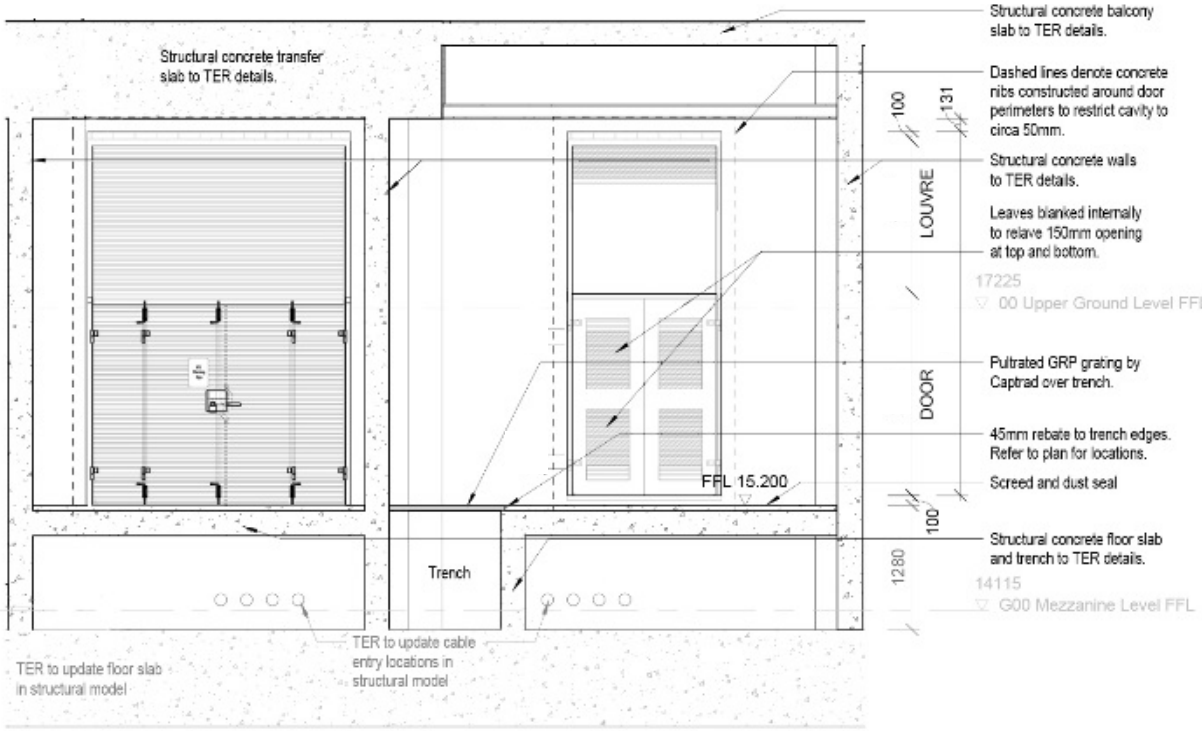
## Section 1 - GA Plans & Elevations




Gough Street Substation - GA Plan




Gough Street Substation - Internal Elevation

# Phoenix Place, Mount Pleasant – Phase 1 (Block A)

## Electrical Substations

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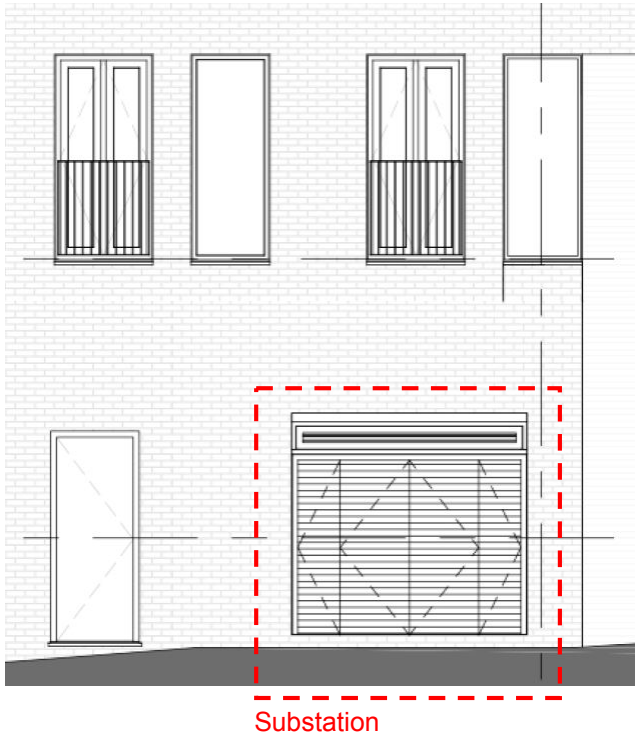
### Section 1 - Elevations




The Walk (South) Detail


The Walk (South) GA Elevation

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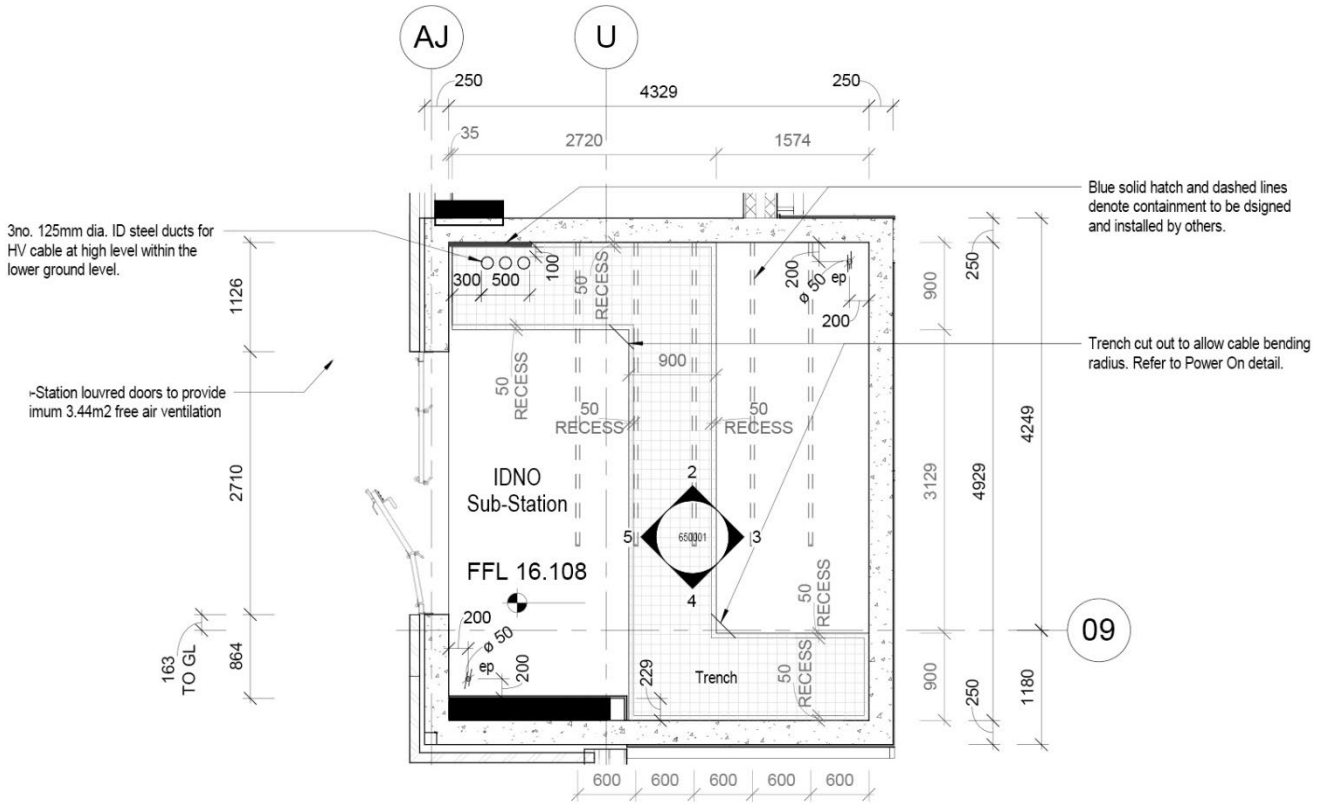
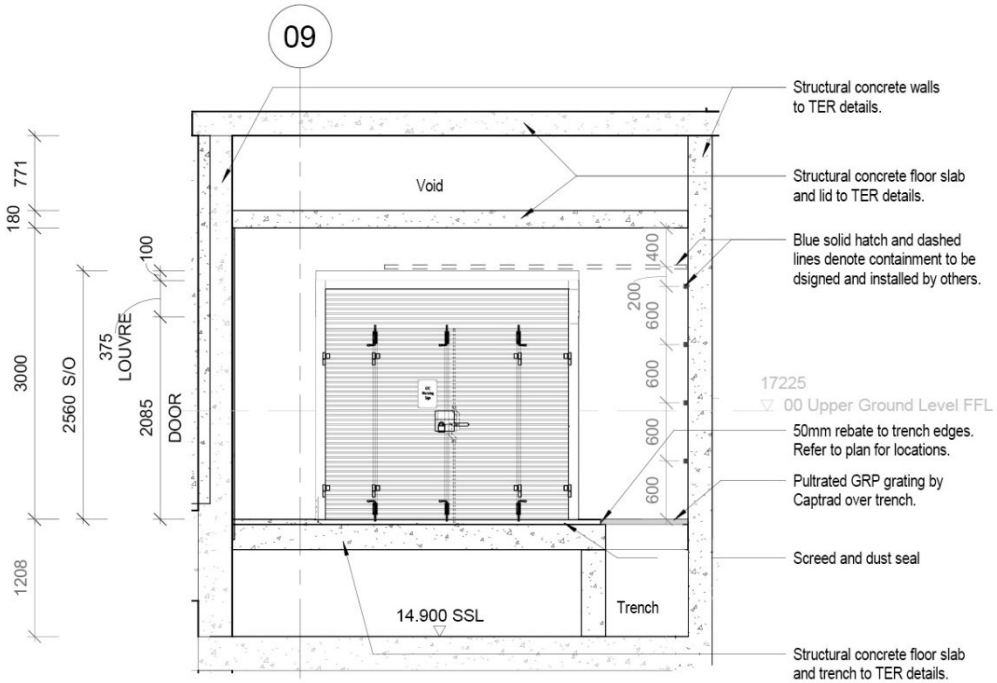
## Section 1 - GA Plans & Elevations




The Walk Substation - GA Plan




Gough Street Substation - Internal Elevation

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## Section 2 - Finishes

LBC Planning officers, Jonathan McClue and Kevin Fisher, met with TWCL, BYUK and BM on Dec 4th 2018 to discuss the brick selection process and reviewed some 1m x 1m samples. Officers subsequently provided formal feedback on 10th Jan 2019 after revisiting the site with the LBC Conservation Officer.

After a subsequent site meeting on 25th Jan 2019, officers identified the two bricks that BYUK to include in the façade mock-up. This was presented to officers on 10th April 2019 subsequently approved.

The Pagus Grey-Black brick will be used on the external face of the electrical substations. See right for material data (including mortar) and images of the mock-up and building precedent.

**Brick Data**

Supplier: Weinerberger

Ref: Pagus Grey-Black Mud Creased Multi

Size: 65 x 200mm

Mortar: Bucket handle, natural

Brick Panel in Site Mock-up


Building Precedent – Aldgate Place, London

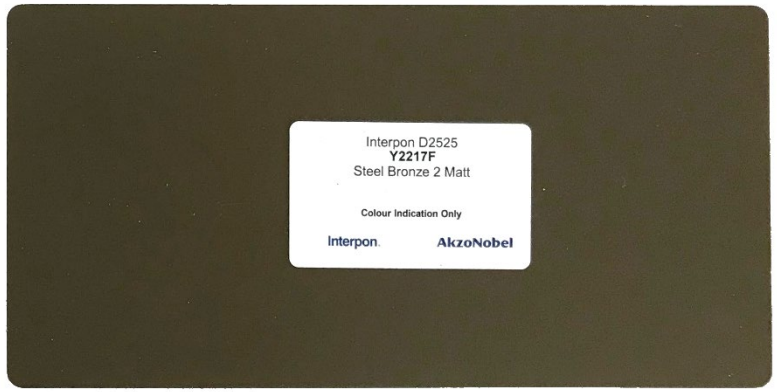
## Section 2 - Finishes

The substation doors and louvres at Mount Pleasant are manufactured using steel so they cannot anodised to match the window and door frames.

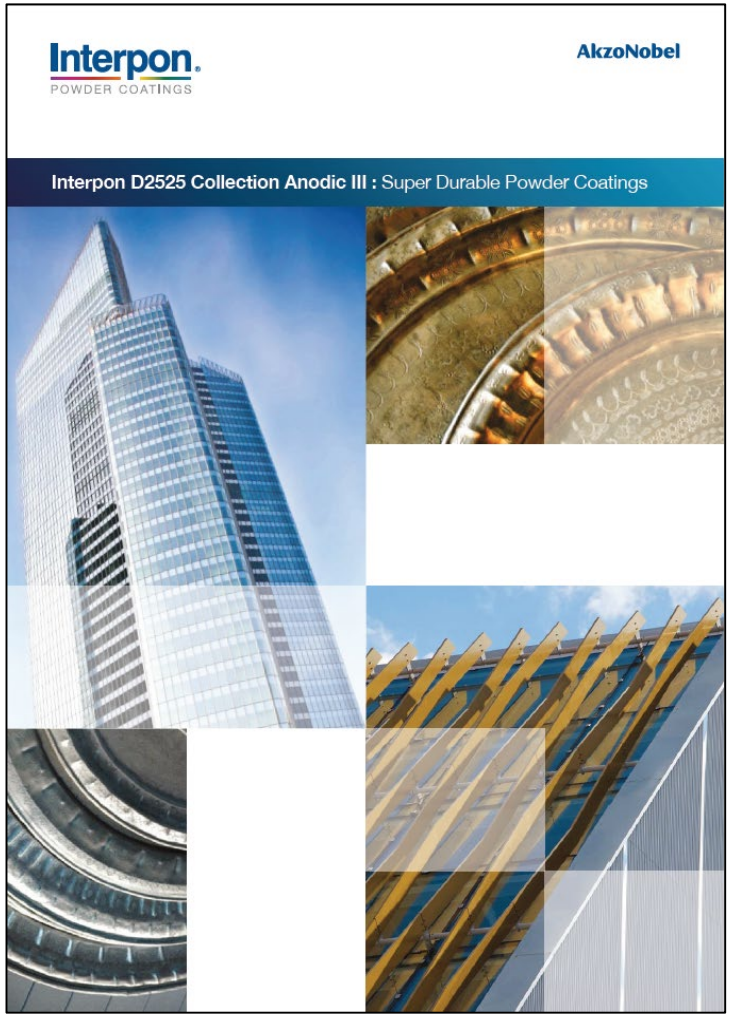
It is proposed that a metallic bronze polyester powder coating is applied to the doors by Power On / Sunray to mimic the bronze anodising (ref C33).

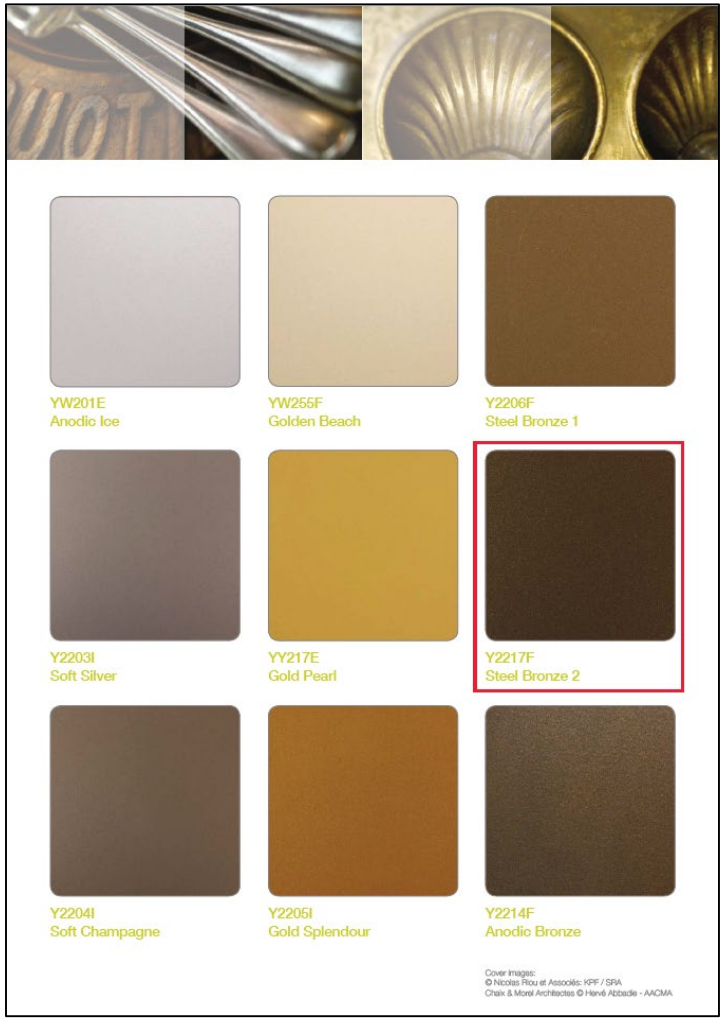
A sample of the proposed finish (ref: Akzo Nobel, Interpon D2525, Anodic III, Y2217F, Steel Bronze 2 Matt) was presented to LB Camden officers on 10th April and 1st May.

The powder coating reference has also been submitted to LB Camden under Condition 12 - Materials




Hand sample of PPC presented to LBC




Akzo Nobel, Interpon D2525, Anodic III Range with proposed colour highlighted in red

# Phoenix Place, Mount Pleasant – Phase 1 (Block A)

## Electrical Substations

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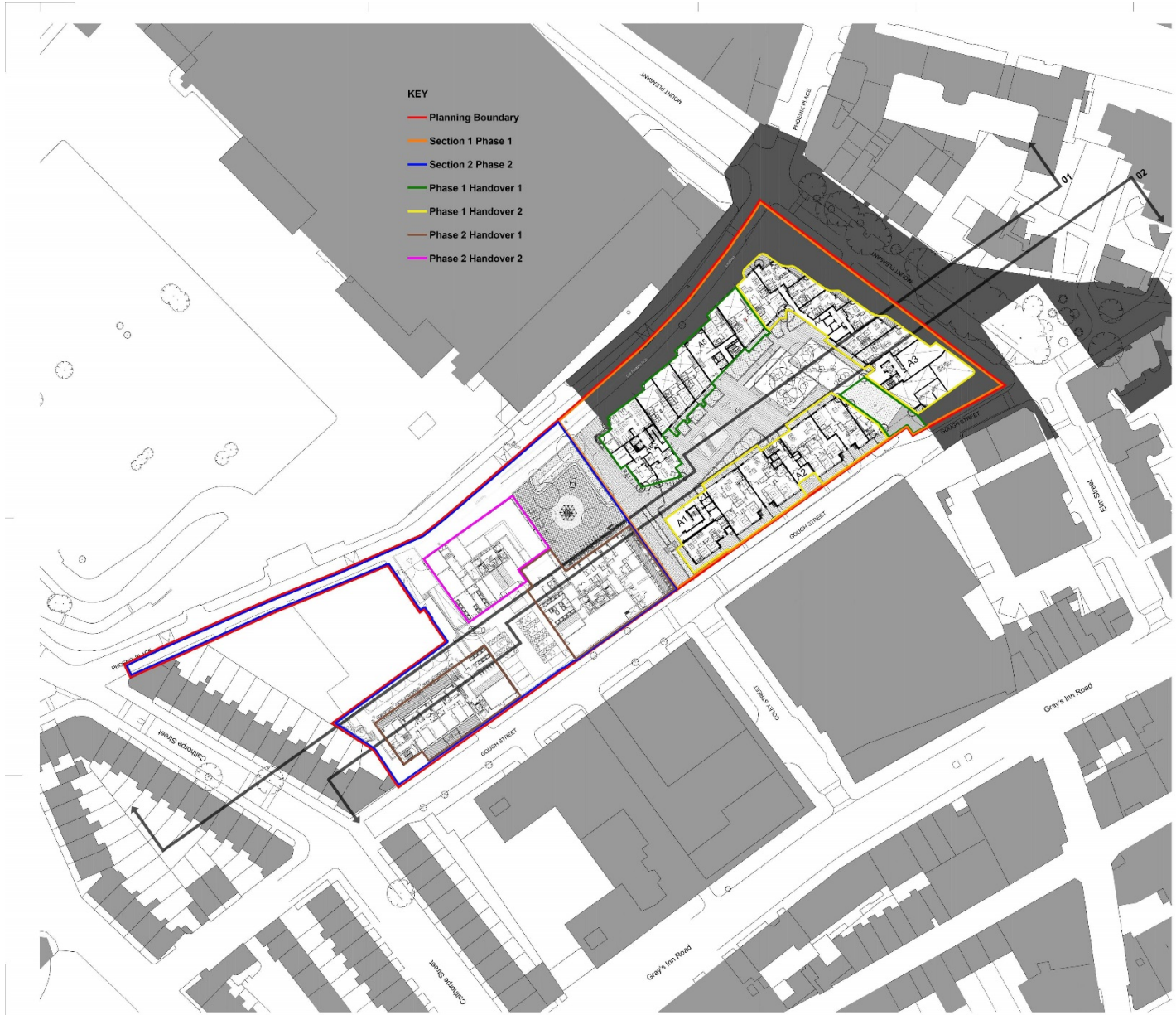
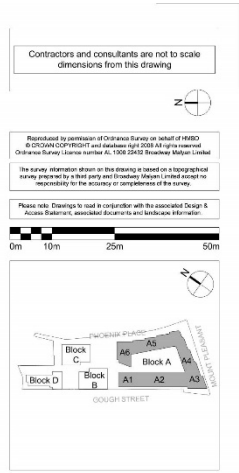
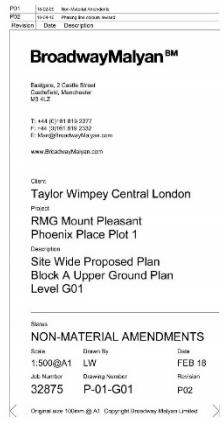
### Section 3 - Phasing Plan



## Section 4 - Acoustic Report

It is understood that both substations include a 1000kVA Schneider Electric Transformer with a sound pressure level of 50 dBA at 0.3m (data provided by GTC / Power on and is provided on page 14).

The project acoustician, Cass Allen, has confirmed that noise levels from the substation affecting nearby noise-sensitive rooms are covered in detail in a separate report prepared by Cass Allen (Ref:LR02-18743) submitted to the Local Planning Authority to discharge Planning Condition no. 28.

## SUBSTATION INSTALLATIONS

GTC designs, constructs and maintains its electrical equipment in compliance with the requirements of the Electricity, Safety, Quality and Continuity Regulations 2002. In order to satisfy these requirements and other industry recommendations, GTC's equipment is procured and installed inline with British and European Standards, Electricity Supply Industry (ESI) guidance and technical specifications produced by the Energy Networks Association (ENA).

In urban locations where substations installations are proposed, existing background noise levels of 35 to 40dB(A) are reasonably typical. Notwithstanding this, GTC endeavours not to add the overall background noise level, through the installation of its plant and equipment.

### Substation Plant

The primary piece of equipment within a substation that is responsible for the production of sound pressure (noise) is the transformer.

ENA G81 Framework for design and planning, materials specification, installation and record for low voltage housing development installations and associated new HV/LV distribution substations Part 1 (Design and Planning) Amendment 1 and Part 2 (Materials Specification) Amendment 1, dictate's the selection criteria for substations and provides guidance on the appropriate standards to be applied to substation plant.

GTC has chosen Schneider Electric as its preferred supplier for substation plant.

### Transformers

In selecting its transformer specifications, GTC looked at best industry practice and selected a challenging specification for its transfomers. Currently GTC transformers in keeping with the established Distribution Network Operators (DNO's) uses ENATS 35-1 Issue 5, which states the maximum sound pressure level requirements for distribution transformers ratings up to 1000kVA, calculated in-line with the International standard Determination of Sound Levels Application Guide document, IEC 6076-10-1 205..

- 315kVA ENATS 35-1 Issue 5 states sound pressure level at 0.3m = 54dB(A)

Schneider Electric Transformers supplied to GTC have sound pressure level at 0.3m = 47dB(A)

- 500kVA ENATS 35-1 Issue 5 states sound pressure level at 0.3m = 56dB(A)

Schneider Electric Transformers supplied to GTC have sound pressure level at 0.3m = 48dB(A)

- 800kVA ENATS 35-1 Issue 5 states sound pressure level at 0.3m = 58dB(A)

Schneider Electric Transformers supplied to GTC have sound pressure level at 0.3m = 49dB(A)

- 1000kVA ENATS 35-1 Issue 5 states sound pressure level at 0.3m = 59dB(A)

Schneider Electric Transformers supplied to GTC have sound pressure level at 0.3m = 50dB(A)

GTC transformer sound pressure levels are lower then the ENATS 35-1 Issue 5 requirements, due to the level of no load losses specified by GTC and therefore by default, are quieter.

## Building Design

In order to further reduce the impact of noise, GTC prefers to install its substation plant into brick buildings which has the effect of reducing sound pressure levels by a approximately 20dB(A).

GTC's current substation design incorporates cavity wall construction with GRP doors in low risk areas such as residential estates and steel doors in higher risk areas. These doors are ventilated to ensure the correct movement of air, and the building design also uses a ventilation panels at the rear of the building to assist with air movement. These arrangements preclude the need for forced ventilation such as fans and thereby further reduce the potential for additional noise.

The location of the substation is also a factor in reducing noise, so where possible they are situated away from residential properties. Where this is not possible, brick built substations will be sited a minimum of 3m from any residential property.

## Other Substation Installations

Where and for whatever reason the preferred brick built substation is not constructed, GTC will contain its substation equipment in a purpose built GRP housing. In such instances and in line with industry best practice, this type of substation will be constructed using the following limiting distances from the nearest adjacent properties to the transformer tank.

It should be noted that these limiting distances allow for worst case scenario installations of freestanding substation equipment, with no GRP housing and achieve acceptable attenuation of noise at these distances. Therefore the addition of a GRP housing to contain the substation equipment will further reduce the noise levels.

| **TRANSFORMER RATING (KVA)** | **315** | **500** | **800** | **1000** |
|---|---|---|---|---|
| LIMITING DISTANCE (M) Rural Locations | 11 | 14 | 17 | 19 |
| LIMITING DISTANCE (M) Urban Locations | 7 | 9 | 10 | 12 |

NB – The transformer tank will be situated between 0.5m and 0.75m inside the GRP housing.