

Project RED - Electrical Infrastructure Manchester Royal Infirmary

DESIGN & ACCESS STATEMENT
MAY 2023 (REVISION)

DAY



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This Design and Access Statement has been prepared by DAY Architectural, with input from others, on behalf of Manchester University Hospitals NHS Foundation Trust and accompanies an application for detailed planning permission at the Oxford Road Campus, Manchester.

The design has been developed in conjunction with:

Integrated Health Projects - Contractor
Manchester University Hospitals NHS Foundation Trust
- Client
MACE - Project Manager
AJP - Civil and Structural Engineers
Hoare Lea - Service Engineers
AEC - Acoustic Consultants
OFR - Fire Consultants

Version: 01
Date issued: November 2022

Version: 02
Date issued: May 2023

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1.0

INTRODUCTION



This document forms part of the full planning application for the Electrical Infrastructure Works at Manchester Royal Infirmary.

The purpose of the report is to give an overview of the project from the early concept design stages, through the history and background of the development finishing with the final scheme.

Key Abbreviations

- EIW - Electrical Infrastructure Works
- MRI - Manchester Royal Infirmary
- Project RED - The Redevelopment and Extension of the Adult's Emergency Department
- MCC - Manchester City Council (Planning Authority)
- WT - Wellcome Trust building

In parallel with the Project RED scheme, a power study of the existing infrastructure has been undertaken by Sigma RJ (Refer to Appendices - Electrical Infrastructure Feasibility Study). Further to the Sigma RJ study, it discounted the use of the existing roof mounted substation DSS170 for supplying Project RED.

This document summarises how the scope of powering the facility reduced as the project developed. This has significantly impacted the site compound contents and the architectural proposal.

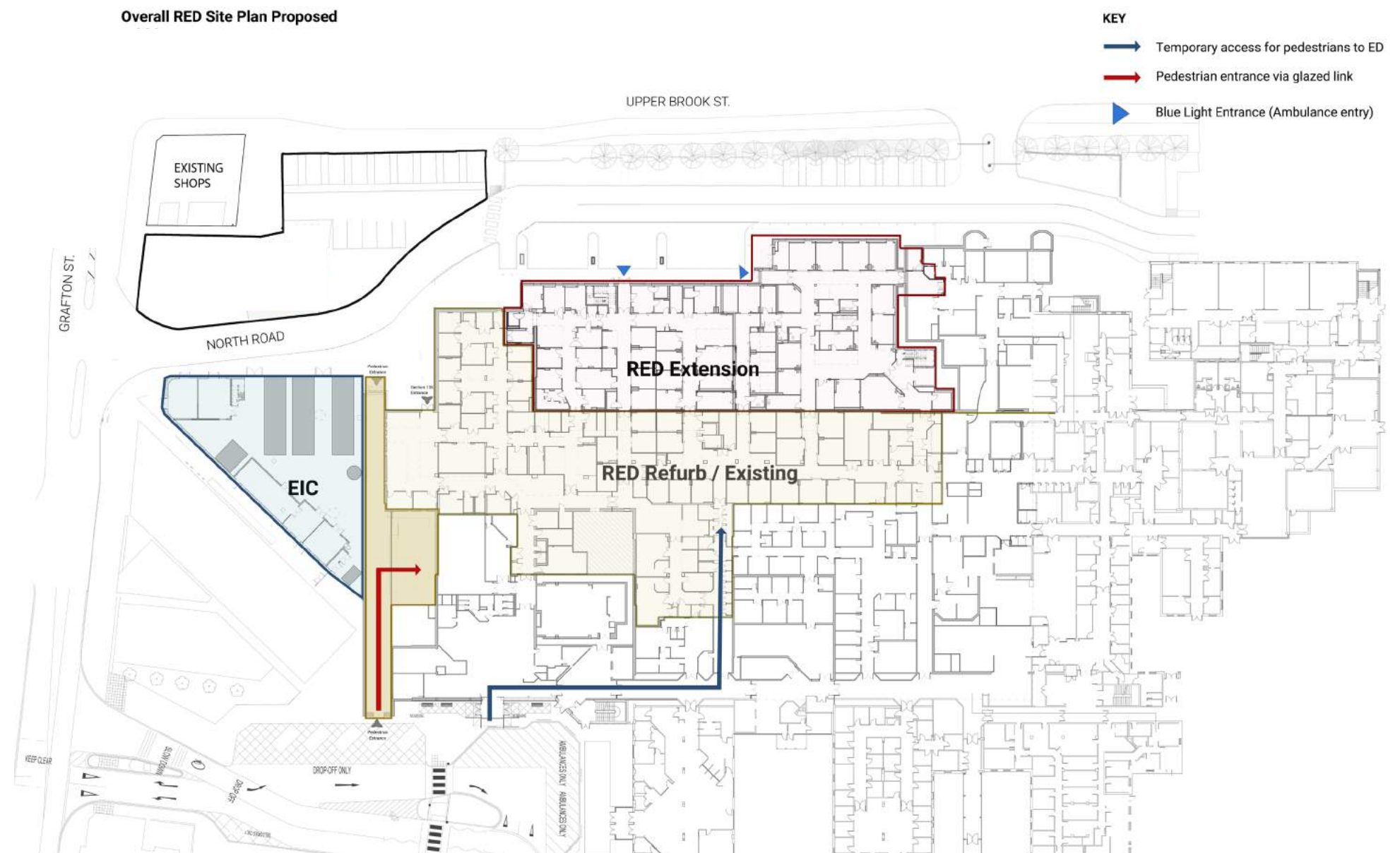
The chosen options from the feasibility study included the provision of an electrical infrastructure scheme to serve Project RED New Build, ED Refurbishment, theatres 1 – 12, including RED/ED Refurb chillers and Phase 1 and 2 chillers, plus the addition of the Wellcome Centre building.

As a series of VE exercises conducted by the Hospital Trust, the provision reduced in scope. This resulted in significantly less switch gear leading to less equipment/ smaller switchroom space in the compound.

The brief following the VE exercises between the design team were re-evaluated as:

Powering of Project RED/ED refurb + Project RED/ED refurb chillers + Phase 1 and 2 chillers + Wellcome Building.

This allows the existing Wellcome building substation DSS110 and generator to be decommissioned. In addition adjacent DSS230 substation supplying the Phase 1 and 2 Chillers is to be decommissioned.



As part of the works for Project RED, the Electrical Infrastructure compound will house the M&E plant required to serve the extension as well as some of the existing departments within the existing hospital.

2.0

SITE INTRODUCTION





1. Junction of North Road and Grafton Street - Site entry point



2.View from North Road toward the Welcome Centre



3.View looking back to North Road

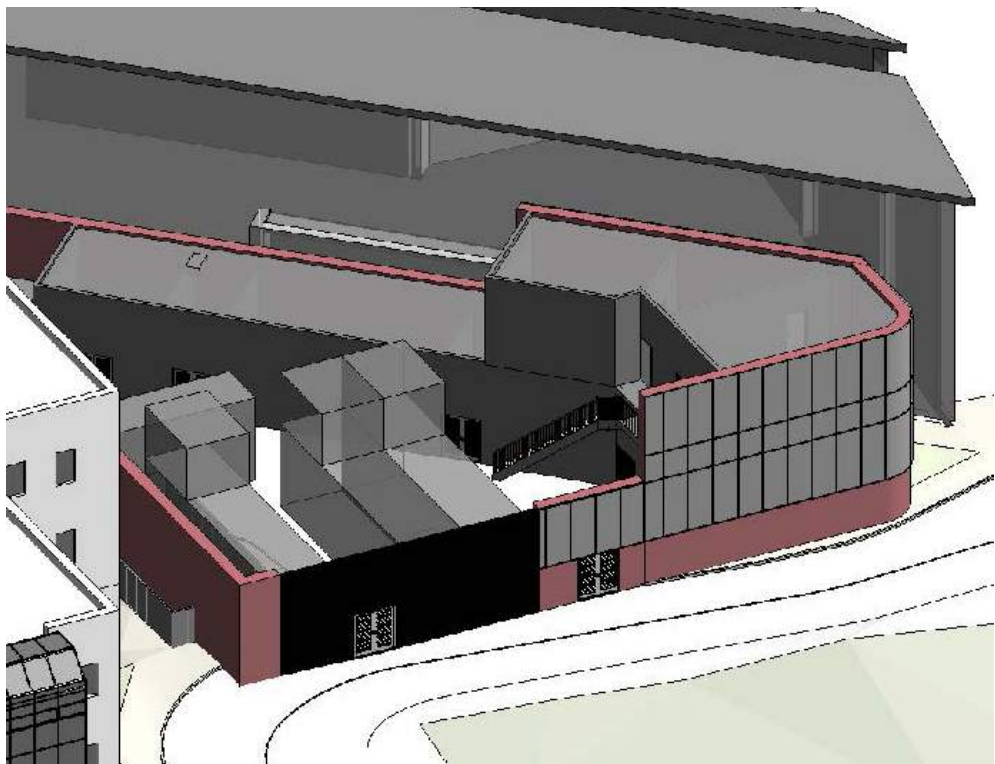
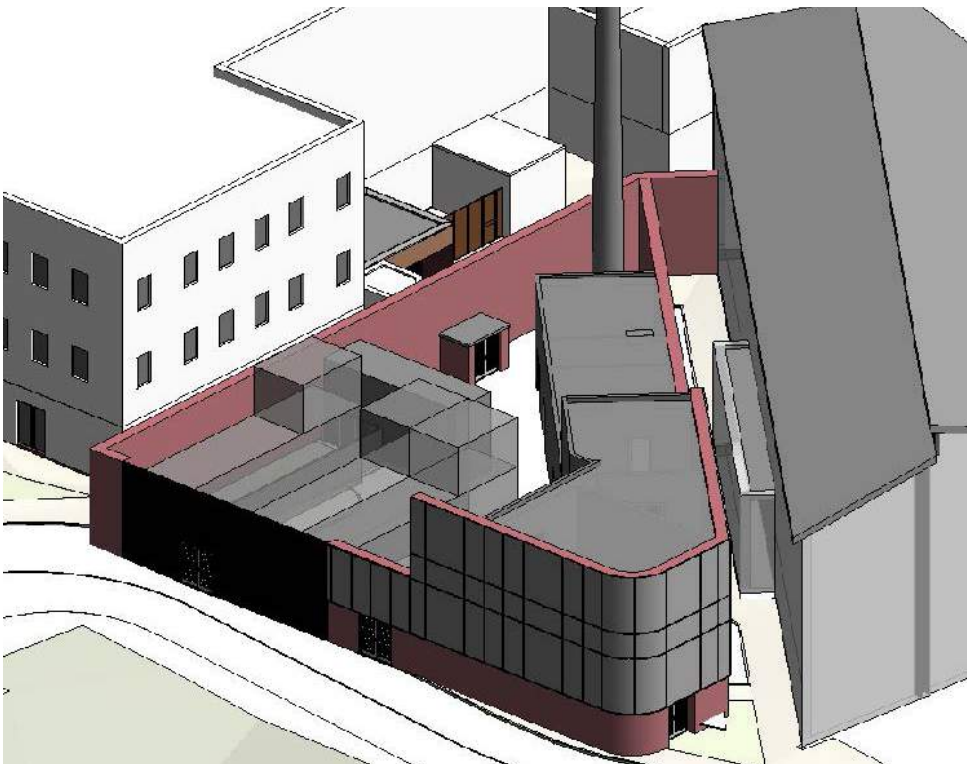
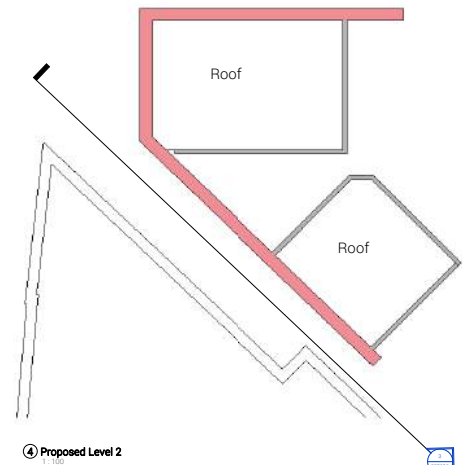
DAY



The existing site area is located towards the NW region of MRI, adjacent to sites of Project RED, Grafton street and North Road.

3.0

DESIGN PROCESS



As discussed earlier in the document, the design process has changed significantly to reflect the reduced scope of electrical services. The planning authority at MCC were previously shown the design options of the scheme when it was a two-storey building with three generators. In summary this included a greater quantity (and larger) switchroom related equipment. The flue tower has also reduced by several metres in height. The option to shroud this in a metal mesh was discussed with the planners but this was in early design development stages as the design team awaited specialist advice if the flue tower could be omitted altogether.

Architecturally this resulted in a building housing electrical equipment as well as three external generators. The building was part one-storey and part two storey, occupying the junction and shaped opposite the sharp angle of the Wellcome Trust corner. The design focused on this corner and looked at softening the approach through a series of façade studies.



These materials could tie in with the wider Project Red scheme or it could have equally sat on its own merit. The material palette explored the equitone and brickwork materials that have been selected for Project RED. The last component of the façade treatment was a fence treatment (most likely mesh) to create a buffer between the pavement and road / Electrical compound.

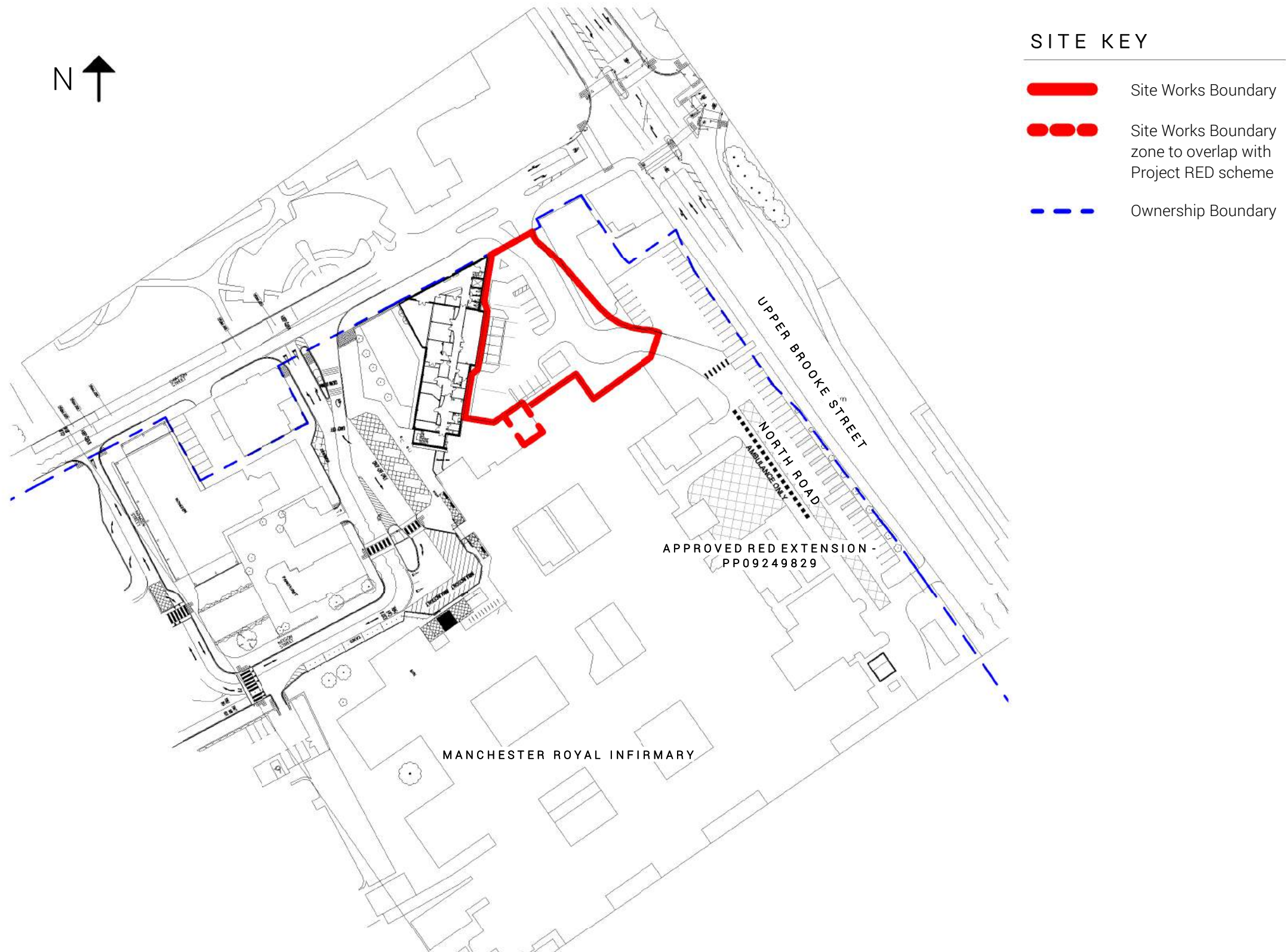
The architectural design has some constraints due to the size of electrical equipment. This can be seen by the height of the fence screen which is high enough to prevent a clear view into the site. This level and design fenestration has then been carried on to the rest of the building. The mesh screen has been designed to act not so differently from louvres allowing allow air flow through the site. This gives a partially visible view into the site.

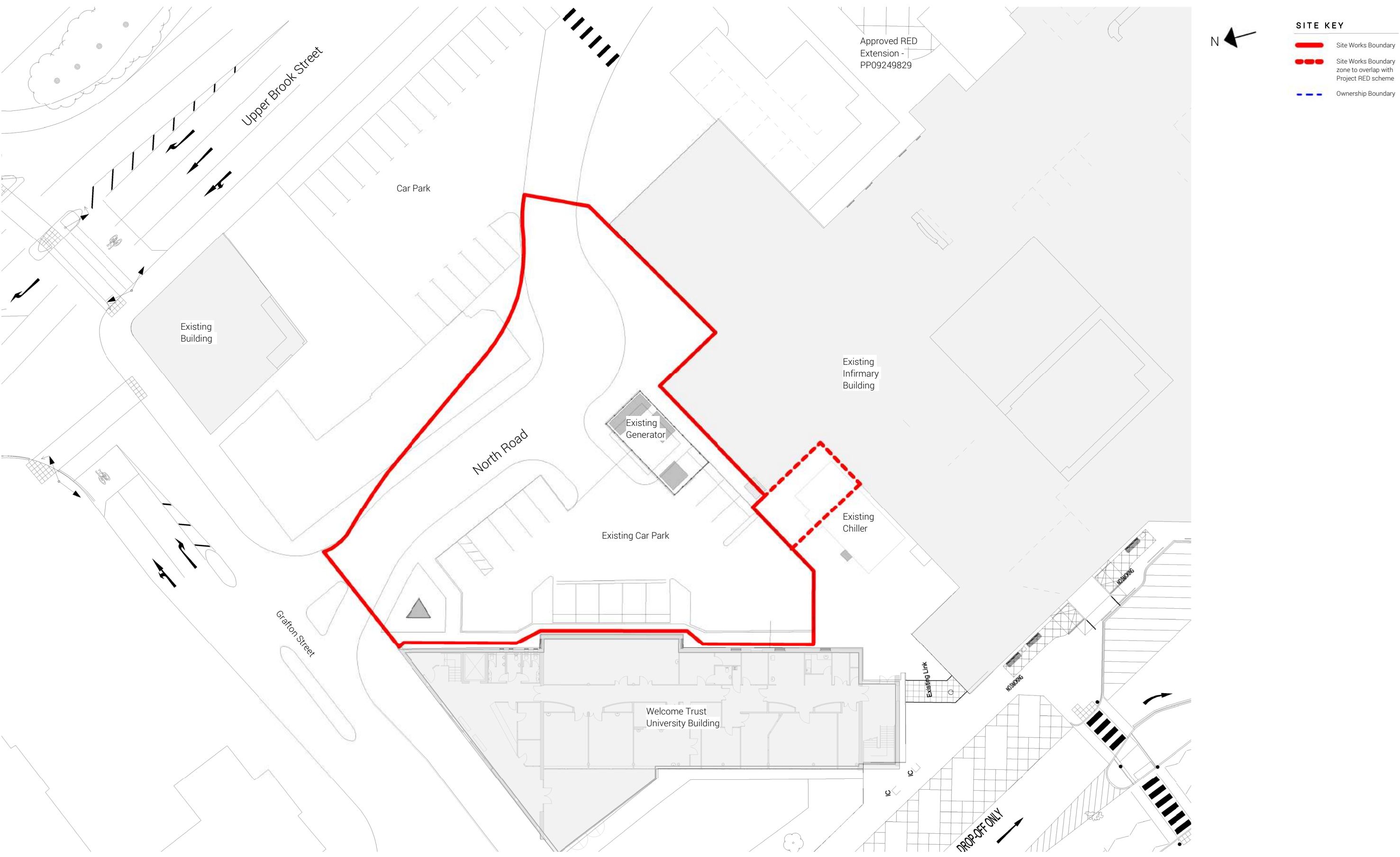


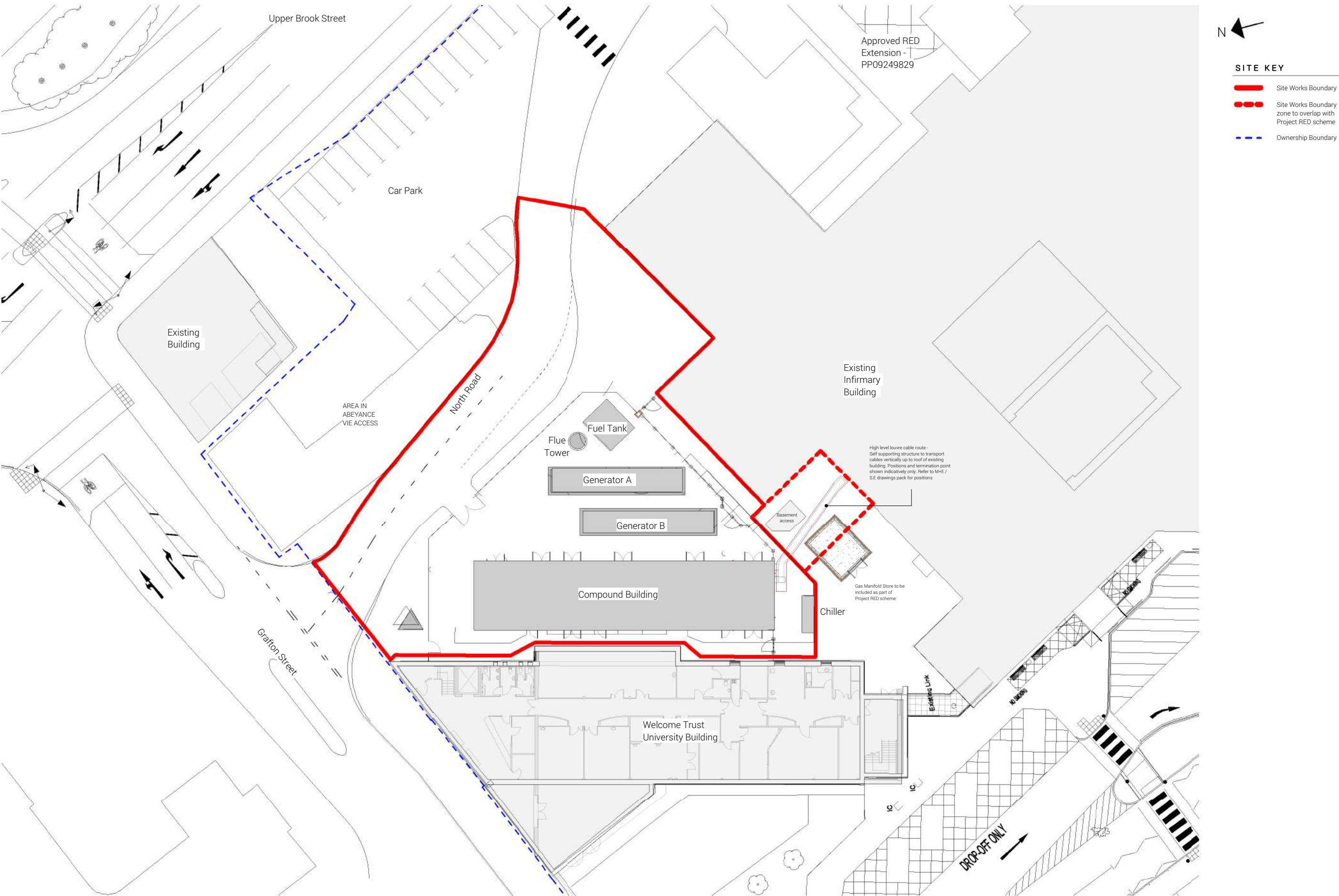
4.0

PROPOSED DESIGN

Refer to drawings included as part of the planning application



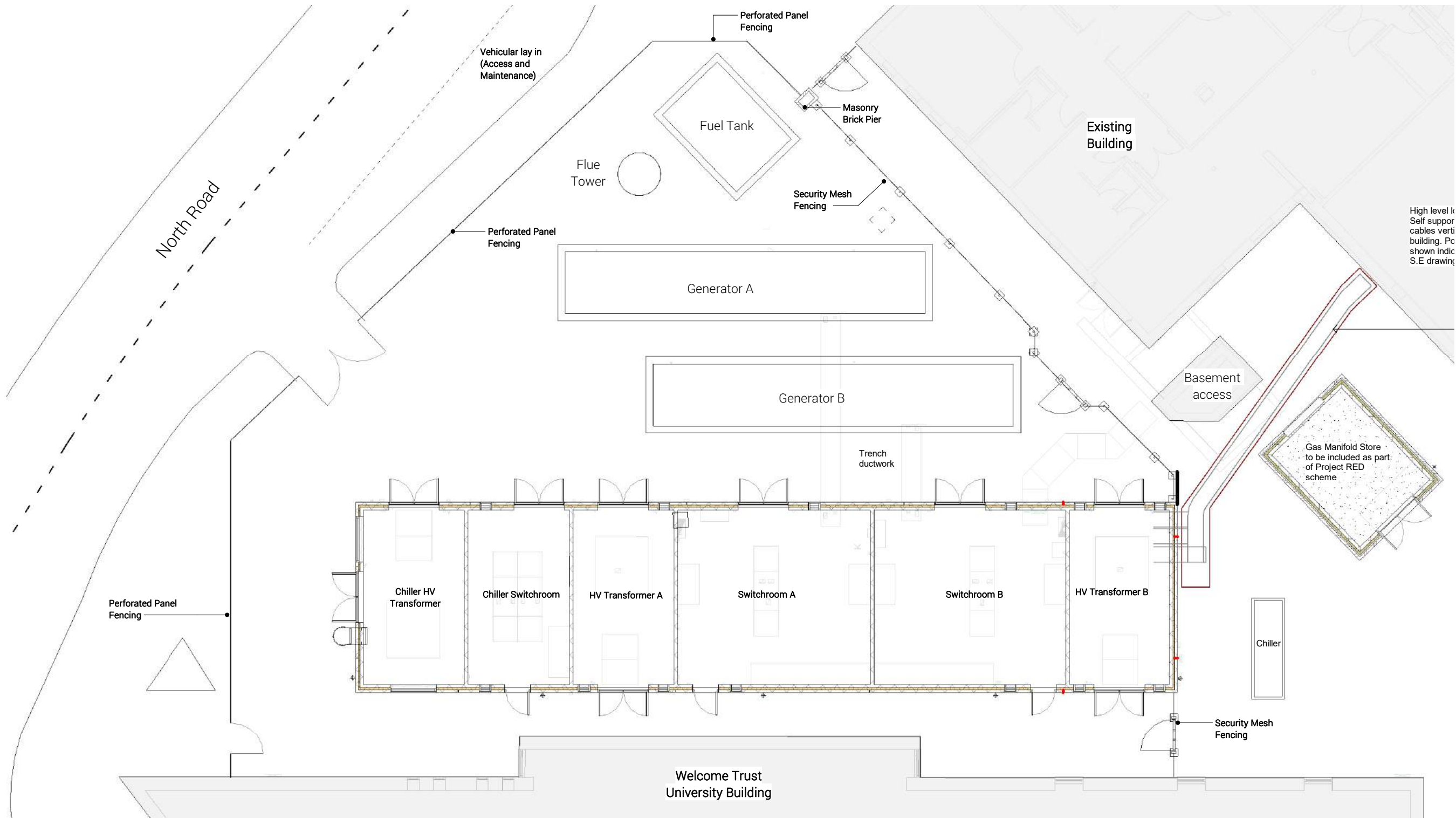


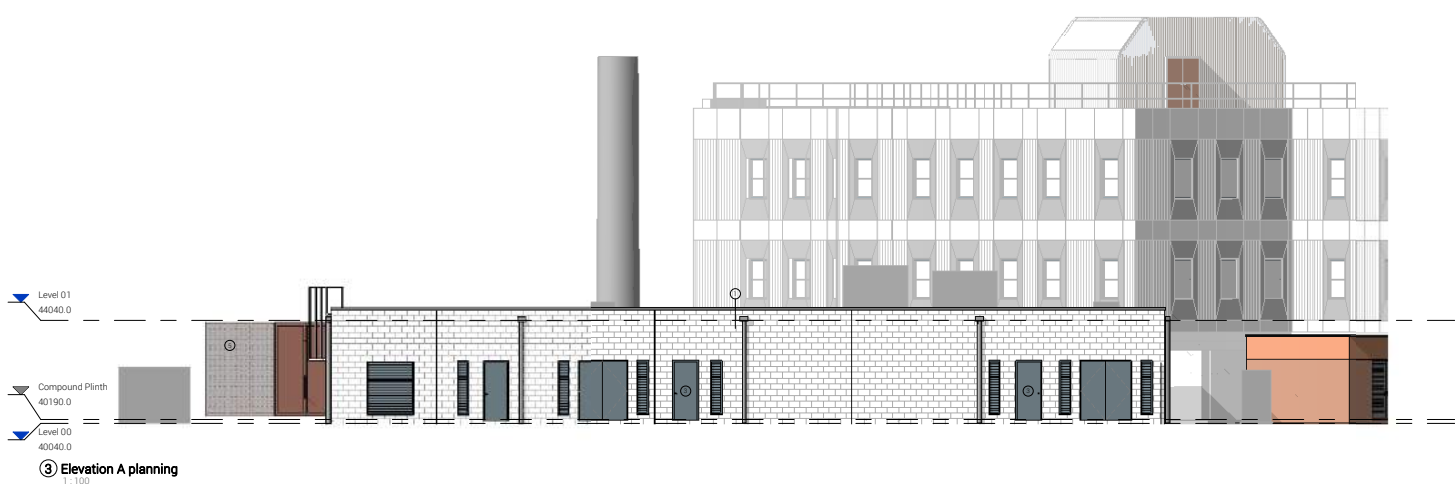


Proposed Site Compound Plan

The proposed design has adapted to the reduced brief. As an overall design, it sits more comfortable within the site context. The site compound consists of the following:

- External generators / Fuel Tank
- Single storey structure housing the switchrooms / transformers + medical gas store
- Flue Tower
- Boundary treatment – boundary treatment incorporating design element
- Boundary treatment –security fencing

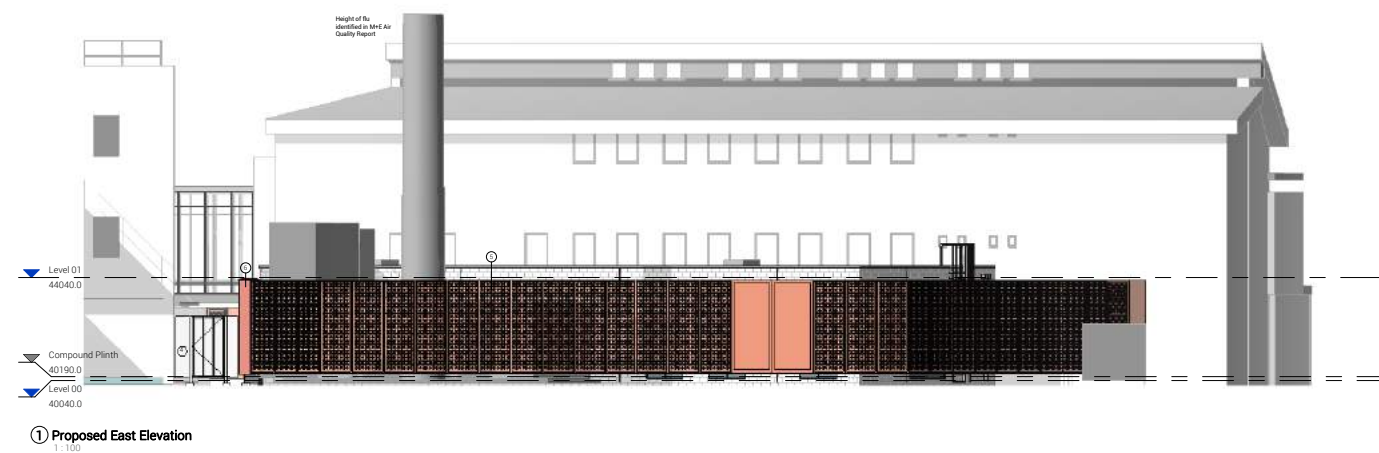




③ Elevation A planning
1:100



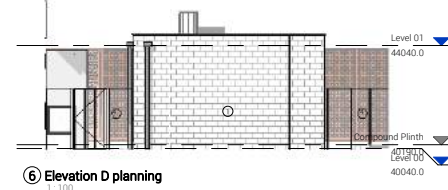
⑥ Elevation C planning
1:100



① Proposed East Elevation
1:100



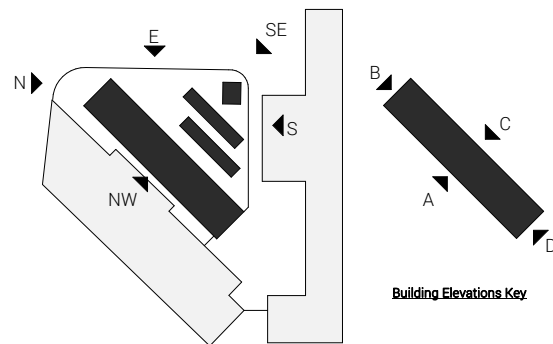
④ Elevation B planning
1:100



⑤ Elevation D planning
1:100

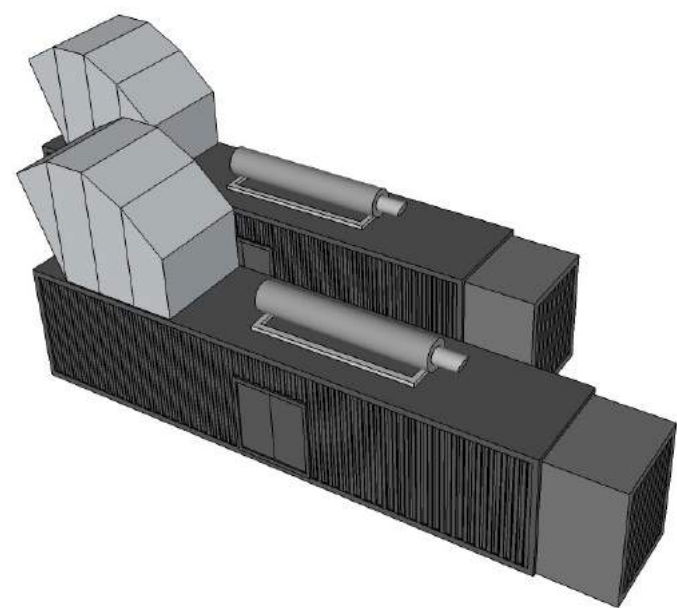


② Proposed South Elevation
1:100



NO.	Material / Colour Information
1	Dense Concrete Masonry Blocks Fair Faced Blockwork Colour: Steel Grey Specification to approval of Local Planning Authority
2	Thin Tower Mesh Shrouding
3	Doors and Louvers RAL 7016 Anthracite Grey. Refer to respective schedules (31 Series) Colour: RAL 9005 - Black
4	Welded steel mesh fencing Colour: RAL 9005 - Black
5	Perforated Aluminium Panel Fencing Colour: Tanami Sabli Interpon D2525 Sabli (Y4304). Ultra-durable powder coating with a sand-blasted aspect. To replicate product used for veil in Project RED. Perforation pattern to be confirmed. To incorporate motif / graphic (to be agreed with Trust)
6	Masonry Brick Pier Reigate Medium Multi laid in stretcher bond. To replicate brickwork and mortar to be used in Project RED
7	Thin Tower Mesh Shrouding
8	Parapet Capping / Coping To match colours of doors and louvers in the first instance (RAL 7016 Anthracite Grey).
OTHER Paint to Steelwork Support Structure hosting cable runs to match parapet capping colour.	
NOTE: All Material Specifications and Colours to be confirmed with architect. Approval required by Local Authority Planning.	

○ Material Key
1:10



External generators

These have reduced in number and size. The design of these containers is restricted and bespoke to the project – by specialist suppliers. Since the initial design, they have been sat back from the boundary treatment and orientated to offset the main compound building / WT elevation.



Flue Tower

As per the notes regarding electrical equipment. The requirement to include a flue tower has been borne out of the Air Quality Assessment. Calculations have been undertaken to ensure the flue tower is the minimum height possible.



Compound Building

This has evolved to a single storey element. It is a relatively simple, linear box with a flat warm roof. The steel grey shade of the outer fair faced brick and corresponding grey shades of doors / louvres ties in with the generators. The scheme is very much a functional requirement and the chosen colours aim to mitigate the visual impact of infrastructural equipment. Overall, it provides a cost-effective solution for a project which is tight on costs.

The compound building will only slightly oversail the decorative boundary fence. It is thus hoped that views into the site for the public are limited and instead the decorative feature boundary fence takes precedent.

Documentation included as part of the planning application:

- MEP Specification
- Air Quality Assessment
- Generator Noise Assessment

Boundary Treatment

Boundary Treatment

Due to the architectural elements of this project reducing, the focus has redirected towards the boundary treatment. This is essentially the façade for the site and is the first thing greeting people on entry to the infirmary. It was pragmatic to then tie in the design of Project RED with the EIW. Consequently, the perforated aluminium façade panels from Project RED (primarily the veil) are introduced to this site. Without any building behind the perforations create an opportunity to incorporate a motif/ graphic (to be agreed with the Local Authority).

The entry node of the site was an important factor in the previous designs. This is still the case with the proposal, with the curved outline of the road reflected in the shape and position of the boundary fencing. By celebrating this junction of the site, the curved opening welcomes site users and provides a seamless link to the parent scheme of Project RED.

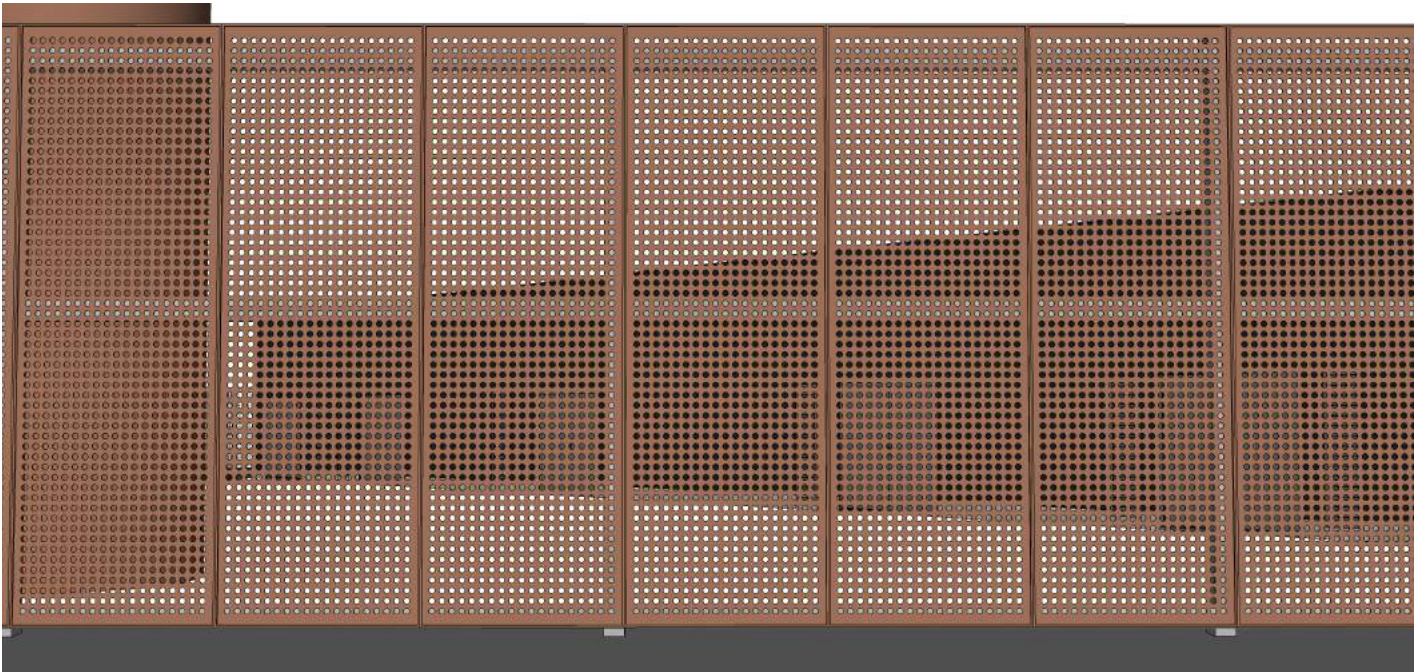
The design process for this element of the scheme is detailed within this document. The concept draws closely to the precedent (pictured) where the perforated design has been designed to create a graphic along the elevation. The product betters a typical Aluminium PPC product because aesthetically it offers more texture but is also more durable, ideal for its position at ground floor level. With the perforations in mind, it prevents the elevation from looking static and flat.



Product Properties



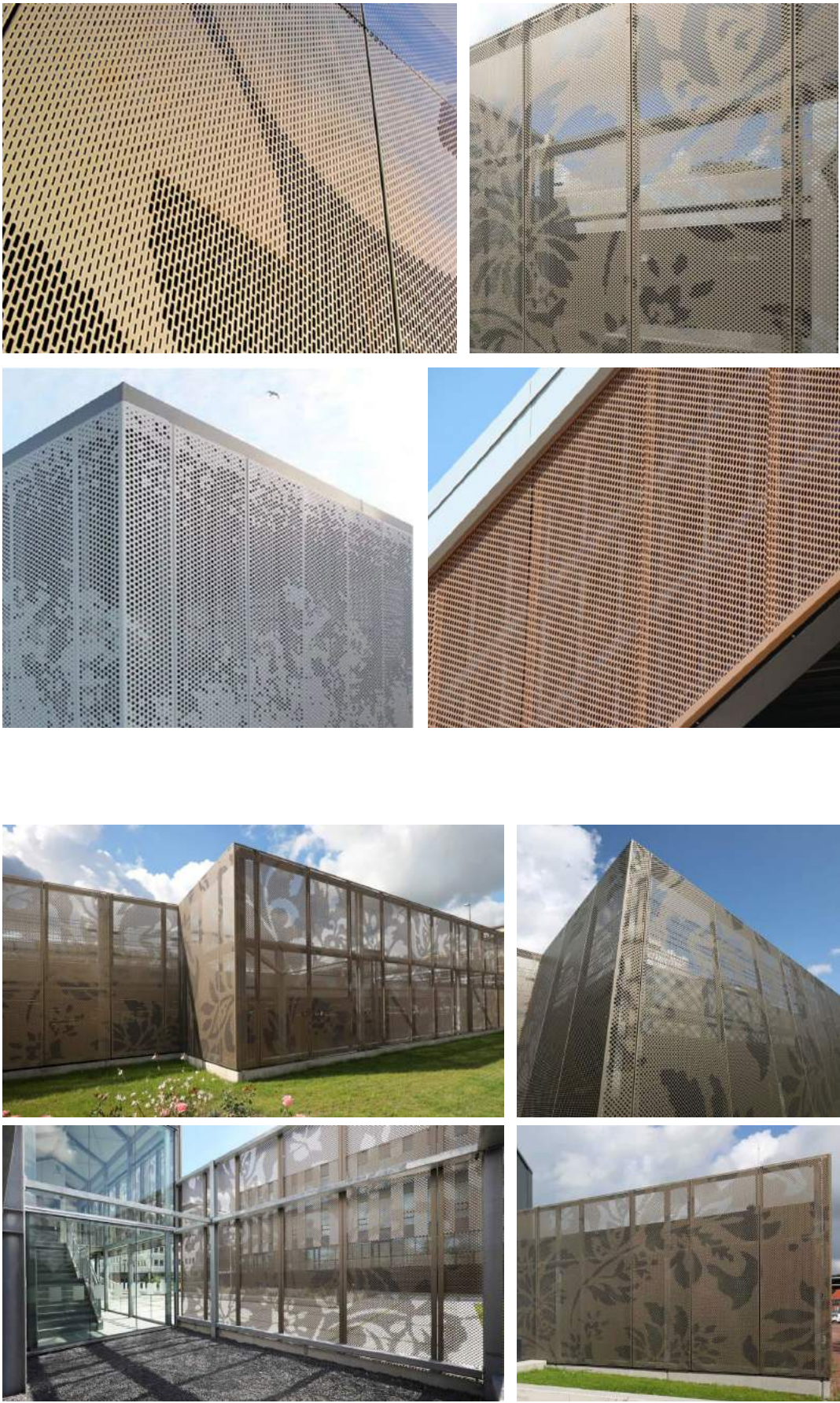
Code	Y4304I
SAP code	8225677
Pack size	20
Color collection	Futura
Gloss	Fine Texture
Finish	Mixed Effect
Product series	Interpon D2525 Sable
Environment	Exterior
Industry Type	Architecture
Chemistry	Super Durable Polyester TGIC Free



Use of the copper effect tone dually compliments the existing red brick prominence on MRI site and the grey shades of the Equitone facade / existing infirmary building

Documentation regarding the powder coating specification is included in the Appendices section of this document

Precedents



De Revius Leeuwarden parking garage, The Netherlands
Architect: TWA Architecten

Design Intent
Perforations to incorporate a design / pattern - To be agreed with Trust

4.1 PROPOSED DESIGN - ALUMINIUM FENCING BOUNDARY TREATMENT

Level 01
3750.0

1232

3600

50

Level 0
0.0

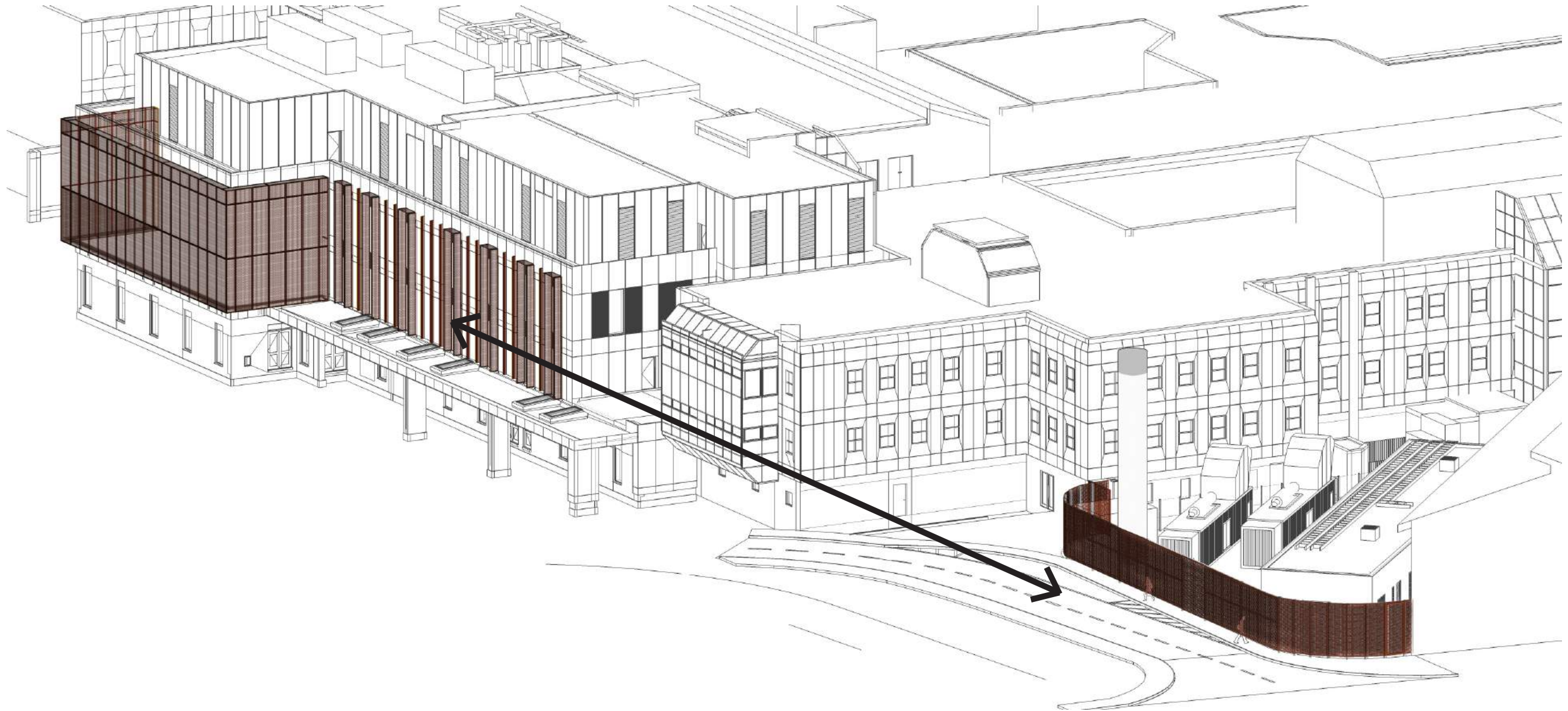
Perforated Aluminium Panel
Panel design is only indicative.
Dimensions, colour and structural supports all TBC.

Design Intent is to marry up with the Project RED veil. The panel will incorporate graphics and perforations along the boundary. Graphics to be agreed with Trust.

This is only shown as a guide and does not confirm the pattern or perforations.

Area Estimate of 1 Panel:
4.93 m2

Transparency of veil can be dictated by panel design. Perforations are to be designed to ensure sufficient air flow is met from any plant / louvred spaces.



Relationship to Project RED Facade

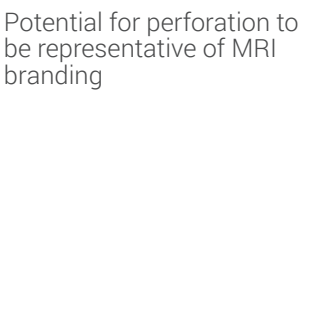
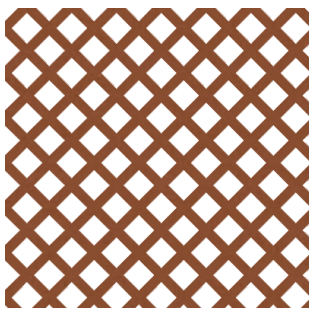
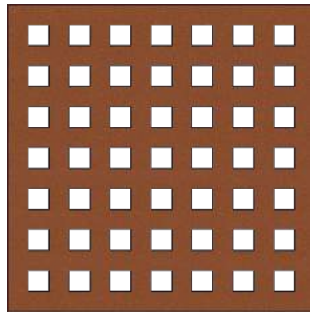
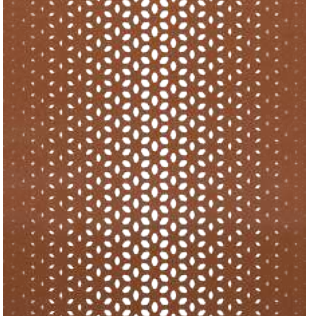
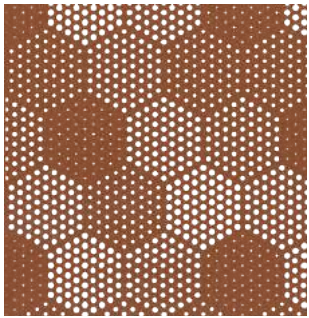
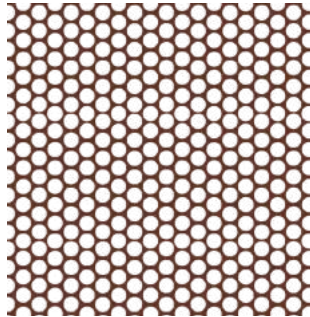
The site language is well considered with a clear and informed transition from the RED extension scheme to the Energy Infrastructure Works. By extending the materiality and colour from the Extension scheme the site elevation along Upper Brook Steet reads consistently.



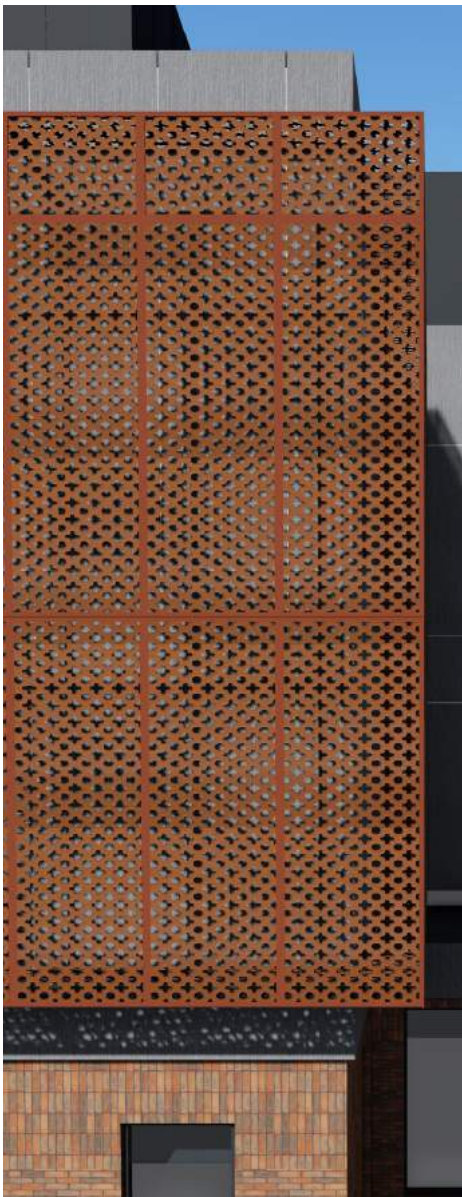
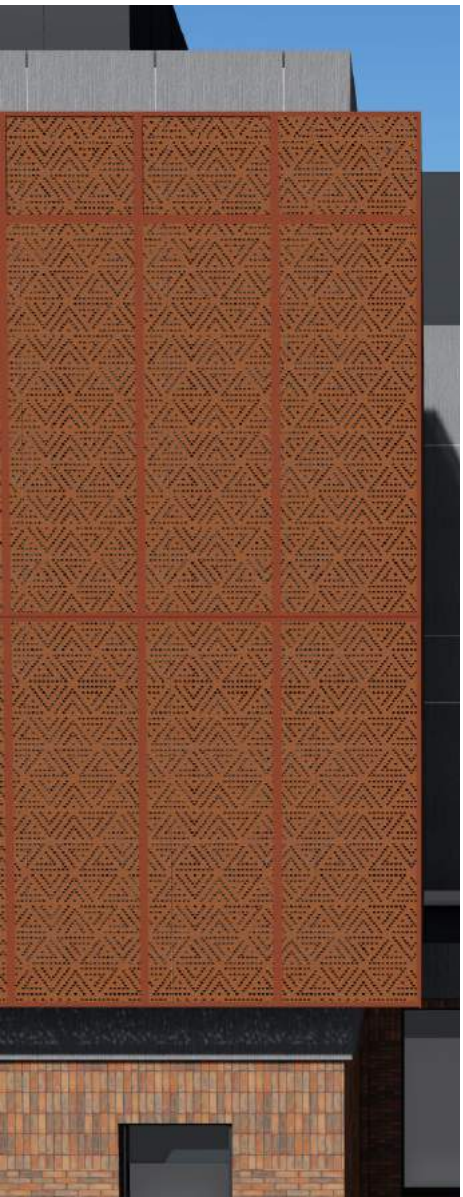
Perforated Pattern Design Development

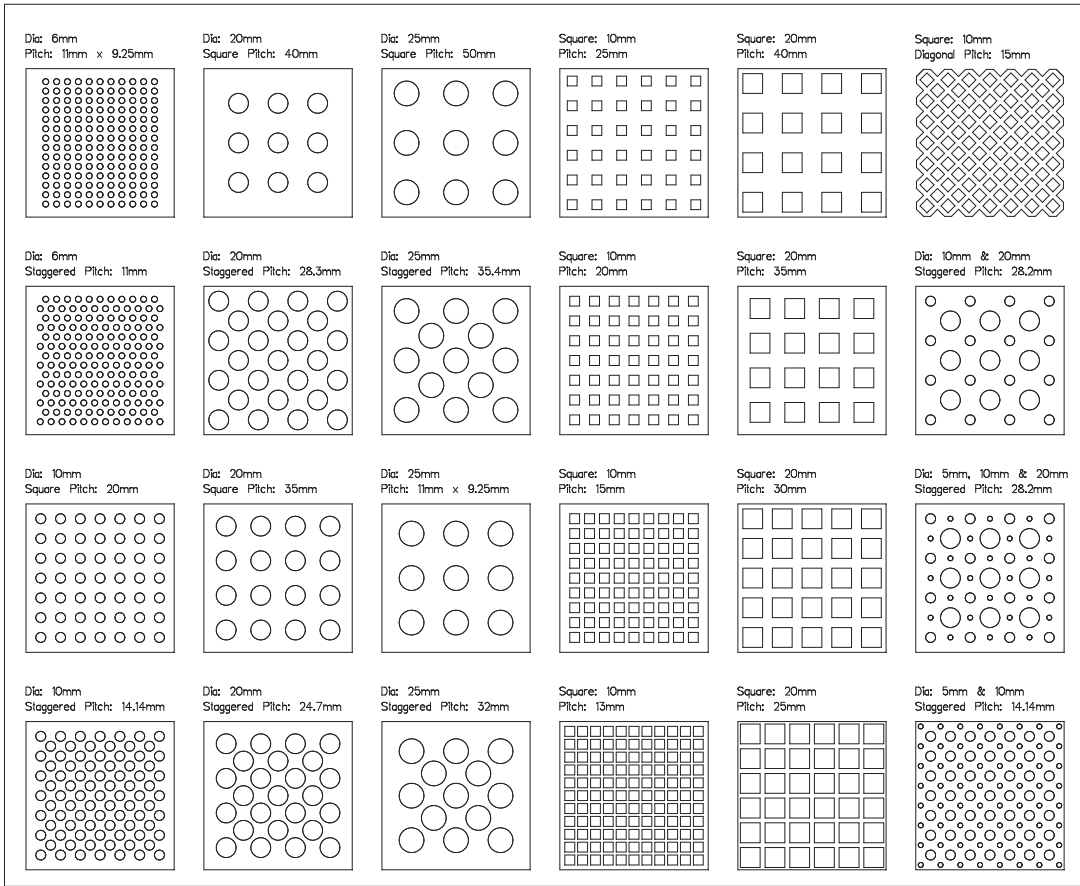
The final perforated pattern design is to be agreed with the Local Authority. This will simultaneously be concluded with the façade of Project RED (part of the planning conditions).

The visuals explore some of these sample patterns by applying them to different elements of the Project RED façade. Through design exploration there is a greater sense of connection by repeating the same product (size and material) to the EIW.

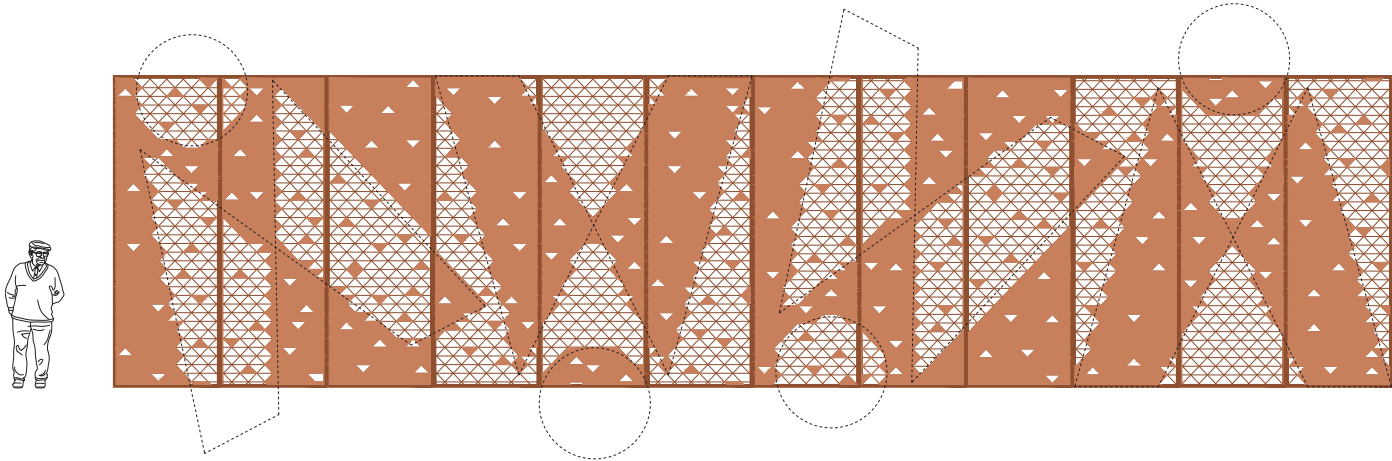
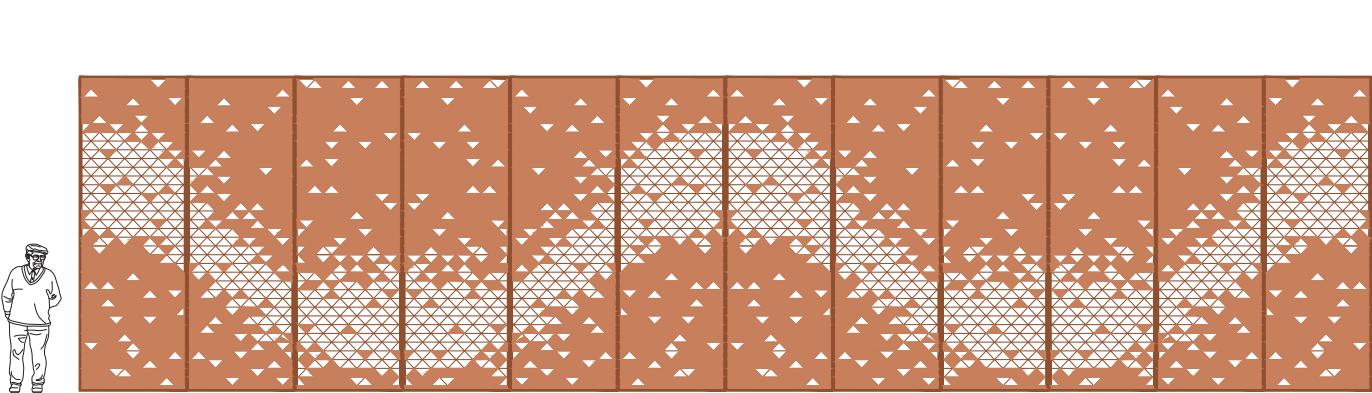
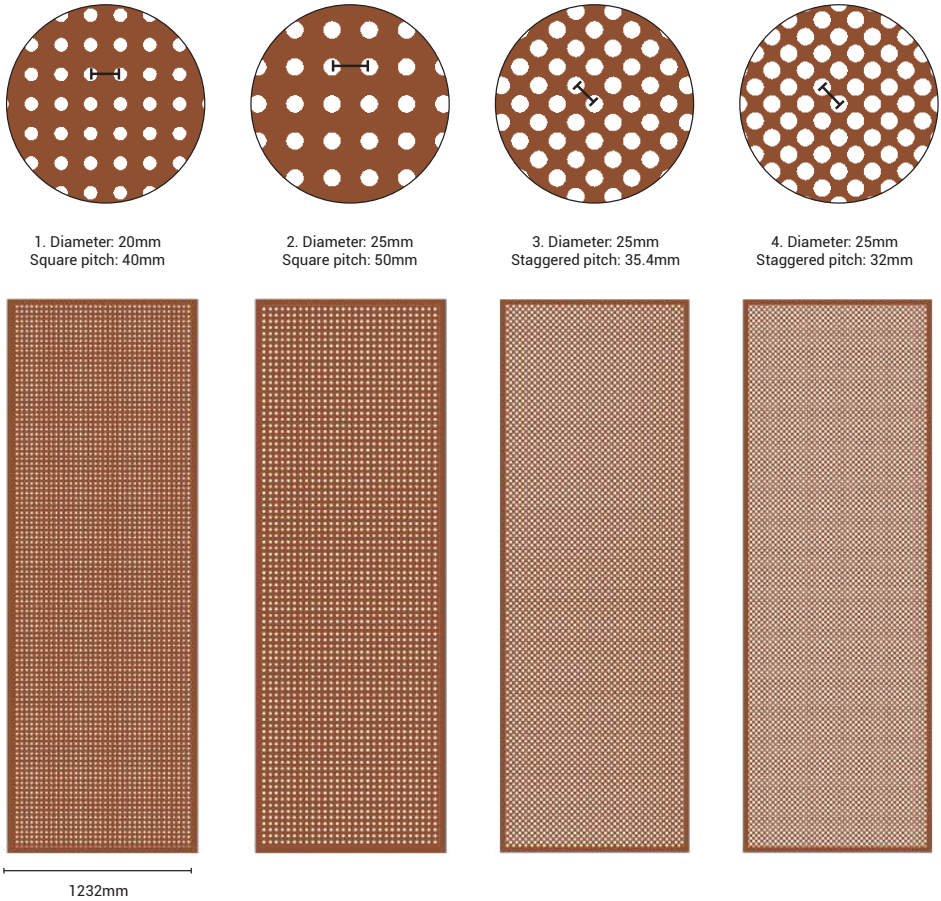


Potential for perforation to be representative of MRI branding





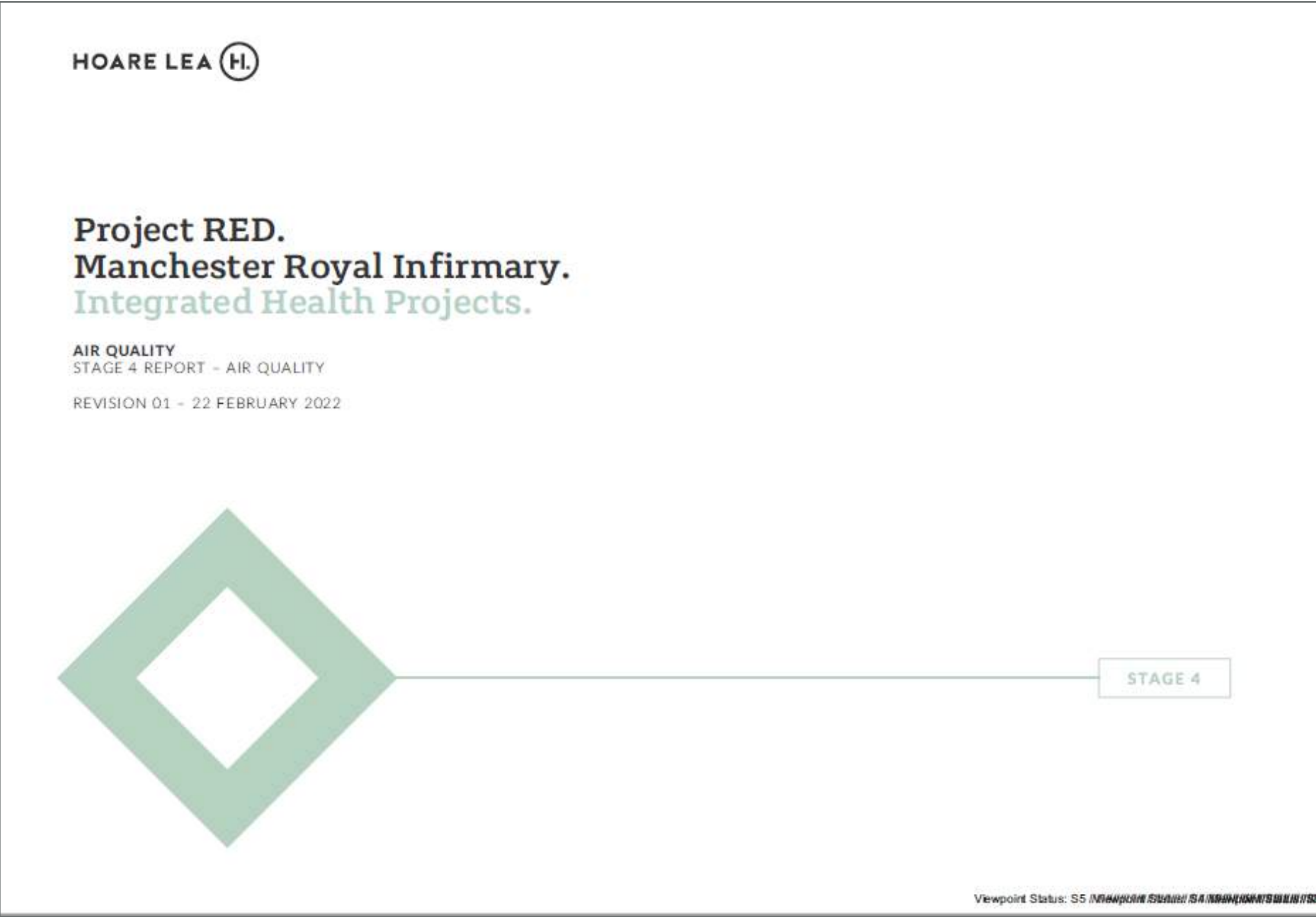
Standard perforated patterns from Metal Fabricator







5.0 APPENDICES





HOARE LEA 

Project RED Electrical Infrastructure.
Manchester.
Manchester University NHS Foundation Trust .

MEP SPECIFICATION
REVISION P03 – 29 APRIL 2022



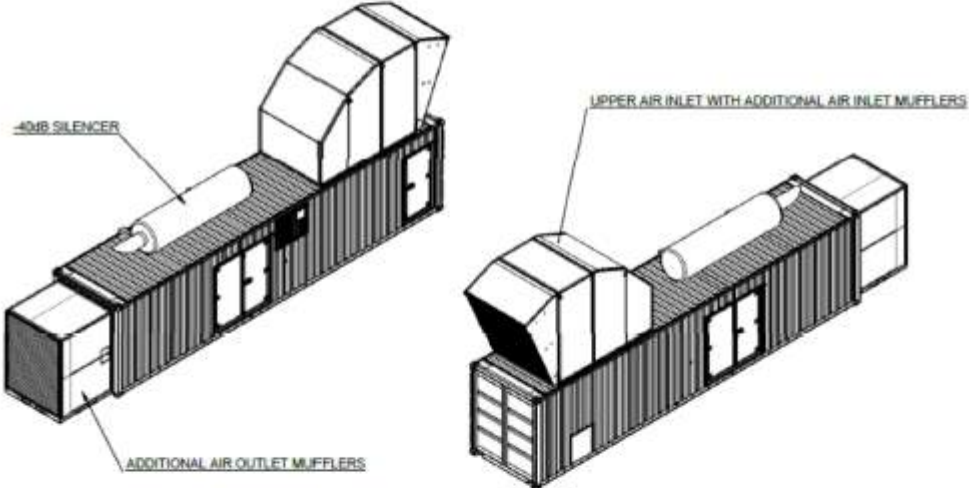
INTERNAL FUEL TANK

Supply and install 1 x 1000 Litre day tank:

- Screwed connections.
- Overfill and bund alarm.
- 50mm mushroom vent cap with overspill protection.
- 25mm low level feed connection.
- Fuel gauging equipment
- 40mm internal sludge suction pipe with cap.

Fire Rating

After discussion with our generator manufacturer, we/they are able to offer a 1-hour fire rating at additional cost. Please see option list below.



Drawings for Demonstration purposes only

Approximate Overall Container dimensions:

Length – 14152mm, Width – 2438mm, Height – 5852mm (top of inlet attenuator)

• SUPPLIERS OF ELECTRICAL POWER GENERATORS & BACKUP SYSTEMS •

HEAD OFFICE: Unit 13, Newby Road, Newby Road Industrial Estate, Hazel Grove, Cheshire, SK7 5DA
TEL: 0161 4360200 FAX: 0161 4360089 EMAIL: Sales@ingraminstallations.co.uk
Regd. In Eng. No. 1036948. Regd. Office: AS ABOVE. V.A.T. No. 157 5114 69

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Acoustic & Engineering Consultants Limited
Suite 316, 3rd Floor, Broadstone Mill, Broadstone Road, Stockport, SK5 7DL
Telephone: 0161 449 5900 mail@aecld.co.uk www.aecld.co.uk

Ref: P4171/L01/DMT (email attachment)

07 September 2021

To:	Michael Alderson	of:	Vinci Construction UK Ltd
Cc:	-	of:	-

Dear Michael,

Project RED, Stand-by Generator Compound – Plant Noise Assessment

A plant compound is proposed for two stand-by generators relating to the extension and refurbishment of Manchester Royal Infirmary ("Project RED"). The proposed plant compound is located close to the junction of Upper Brook Street and Grafton Street.

AEC undertook a baseline noise survey in September 2020 at the nearby residential receptors and reported the findings in a noise assessment report (Ref: P4171/R01a/DMT). These measurements and findings are summarised in this letter and used as the basis for this assessment.

This technical note presents a noise assessment of the proposed stand-by generators relating to Project RED, and the potential impact on the nearby residential receptors.

Proposed Development

The proposals are to construct a compound to house two stand-by generators and other ancillary equipment. The nearest residential receptors are located on the corner of Grafton Street. The site location and nearest residential receptors are indicated on Figure 1 below.

The generators are required in the case of power failure at the hospital. If a power failure was to occur then both generators would switch on for a short period (a matter of minutes) until the load was stabilised and then one generator would operate until the problem was resolved. This is highly unlikely to occur and would be considered an emergency situation if it was to occur.

These stand-by generators would be tested every month for a period of 1-2hours maximum.

Baseline Noise Levels

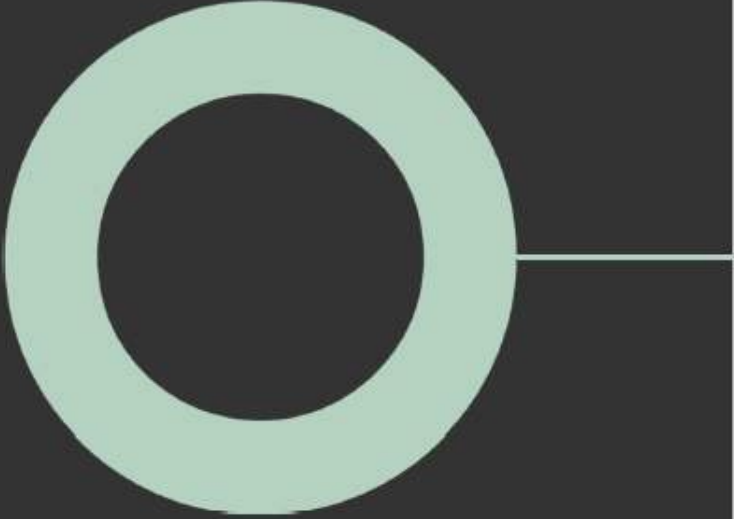
The baseline noise levels were monitored at Location A (see Figure 1) by AEC in September 2020. The results are reproduced below with further details provided in Appendix A.

The average background noise levels measured at the Sanctuary Students buildings (Location A) were 57dB_{L_{A90,15min}} and 49dB_{L_{A90,15min}} during the daytime and night-time periods, respectively. This background noise was mostly due to road traffic noise on Upper Brook Street, and other surroundings roads, and building services noise from the existing nearby buildings.

HOARE LEA 

Project Red Electrical
Infrastructure
Stage 4

SEAN MYERS & NIALl VOSE



AkzoNobel Powder Coatings

AkzoNobel

Product Data Sheet

AkzoNobel Powder Coatings

Interpon D2525 Sablé - Y4304I Tanami Sablé

Product Description

Interpon D2525 Sablé Y4304I Tanami Sablé is part of the Interpon D2525 Texture range, which is a series of ultra-durable powder coatings with a sand-blasted aspect, specifically formulated without TGIC. It is intended for use on architectural aluminium and galvanized steel. Providing new levels of weathering resistance **Interpon D2525 Sablé** surpasses the performance of leading architectural powders. It offers significantly higher gloss retention and resistance to colour change combined with maximum film integrity to ensure long term cosmetic and functional protection. These powder coatings are classified in Family I – class 6c under standard NFT 36-005.

Interpon D2525 Sablé meets the requirements of GSB Master, Qualicoat Class 2, EN 12206 (formerly BS6496), EN13438 (formerly BS6497:1984) and AAMA 2604.

Qualicoat Licence number: P-0643 (France), P-0877 (Italy), P-1252 (Turkey) under the brand name Interpon D2525 Texture

GSB Licence number: 183e (gloss 10)

Powder Properties	Chemical type	Polyester	
	Appearance	Fine Texture	
	Gloss level	5 ± 5 gloss units	
	Particle Size	Suitable for electrostatic spray	
	Specific gravity	1.31 g/cm ³ ± 0.03	
	Storage	Dry, cool conditions (open boxes must be resealed)	
	Shelf life	24 months below 30°C peak temperature 12 months below 35°C peak temperature	
Mechanical Tests	Curing schedule (at object temperature)	15-35 minutes at 180°C 12-25 minutes at 190°C 10-20 minutes at 200°C	
	Flexibility	ISO 1519 (cylindrical Mandrel)	Pass Qualicoat class 2 requirements
	Adhesion	ISO 2409 (2mm Crosshatch)	Pass Gt0
	Erichsen cupping	ISO1520	Pass Qualicoat class 2 requirements
	Impact resistance	ISO 6272	Pass Qualicoat class 2 requirements
Environmental and Durability Tests	Hardness	ISO 2815	> 80
	Acetic Acid Salt Spray	ISO 9227	<16 mm ² corrosion/10cm (1000 hrs)
	Constant Humidity	ISO 6270	No blistering, creep <1mm (1000 hrs)

Interpon D2525 Sablé Y4304I Tanami Sablé

Page 1 of 3

AkzoNobel Powder Coatings

AkzoNobel

	Sulphur Dioxide	ISO 3231	Pass 30 cycles– no blistering, loss of gloss or discoloration
	Permeability	Pressure Cooker EN12206-2004	Pass 1 hour, no blistering
	Chemical Resistance		Generally good resistance to acid, alkalis and oils at normal temperatures.
	Mortar Resistance	EN12206-2004	No effect after 24 hours
	Accelerated Weathering	ISO16474-2 (1000 hrs) ISO11507:1997 QUV B 313 (600 hrs)	>90% Gloss retention >50% Gloss retention
	Exterior Durability	ISO 2810	Meets qualicoat class 2 requirements after 3 years Florida Meets AAMA 2604-13 requirements after 5 years Florida
Test Conditions	Testing has been determined under laboratory conditions using the following application properties and is for guidance only.		
	Substrate	Aluminum (0.5-0.8 mm Al Mg1)	
	Pretreatment	Chrome free Qualicoat/GSB approved pretreatment	
	Film thickness	70-90 microns (ISO 2360)	
	Cure schedule	10 minutes at 200° C (object temperature)	
	Actual film performance will depend on the individual circumstances in which the product is used.		
Pre-treatment	For maximum protection it is essential to pretreat components prior to the application of Interpon D2525 Sablé . Aluminium components should receive a full multi-stage chromate conversion coating or suitable chrome-free pre-treatment or suitable pre-anodising to clean and condition the substrate. Detailed advice should be sought from the pre-treatment supplier.		
	Interpon D2525 Sablé products may also be used on cast or mild steel. For outdoor use Interpon PZ anti-corrosive primer over a correctly prepared substrate is recommended		
Application	Interpon D2525 Sablé powders can be applied by manual or automatic electrostatic spray equipment. Unused powder can be reclaimed up to a maximum of 20% using suitable equipment and recycled through the system. Please consult AkzoNobel for further details as to the correct mixing ratio for virgin/reclaim powder.		
	Interpon D2525 Sablé powders should be applied at minimum 60µm.		
	All powders can show small color differences from batch to batch, this is normal and unavoidable. While AkzoNobel take every precaution to minimize visible differences, this cannot be guaranteed. Applicators and fabricators are advised to use a single batch for parts that will be assembled together. Differences are more likely with special effect powders.		
	Bonded products have better application properties than blended products (more stable) but attention should still be paid to line settings in order to avoid "marble effect" and		

Interpon D2525 Sablé Y4304I Tanami Sablé

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AkzoNobel Powder Coatings

AkzoNobel

	changes in aspect after recycling. For more information, it is suggested to read the <i>Metallic Applications Guidelines</i> .
	Products with different codes should not be mixed even if same colour and gloss.
Post Application	For specific advice on the suitability of post coating processes such as bending or the use of sealants, adhesives, thermal break, cleaning etc. Please consult AkzoNobel.
Maintenance	For specific advice on Cleaning and Maintenance, please consult the <i>Interpon D series Cleaning and Maintenance Guidelines</i> available from AkzoNobel.
Safety Precautions	Text as per local regulations
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