



LAUDERDALE TOWER + SHAKESPEARE TOWER + CROMWELL TOWER
INTERNAL FIRE DOOR REPLACEMENT
MAJOR WORKS PROGRAMME BOARD PRESENTATION

26 NOVEMBER 2025

reform
ARCHITECTS

INTRODUCTION

Reform Architects has been appointed by the City of London Corporation to provide Architectural services in relation to the replacement of fire doors for Lauderdale Tower, Shakespeare Tower and Cromwell Tower at the Barbican Estate.

Project Team:
Client - City of London Corporation
Architect - Reform Architects
Planning Consultant - Grade Planning
Heritage Consultant - Heritage Information
Fire Consultant - BB7
Contractor - Gerda

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1. CLIENT BRIEF

The client brief is to carry out a programme of works to replace all front entrance doors (including any associated panel surrounds, refuse cupboards and fanlight windows) within the tower blocks of the Barbican Estate, and to include the replacement of any communal corridor fire doors and windows, and any doors/windows/openings to cupboards, risers etc. that need to be fire rated. Replacement doors and windows are to be fully compliant modern equivalents which satisfy heritage constraints and the current Building Regulations.



Glass door from external balconies



Plant room door on residential level



Fire escape door on residential level



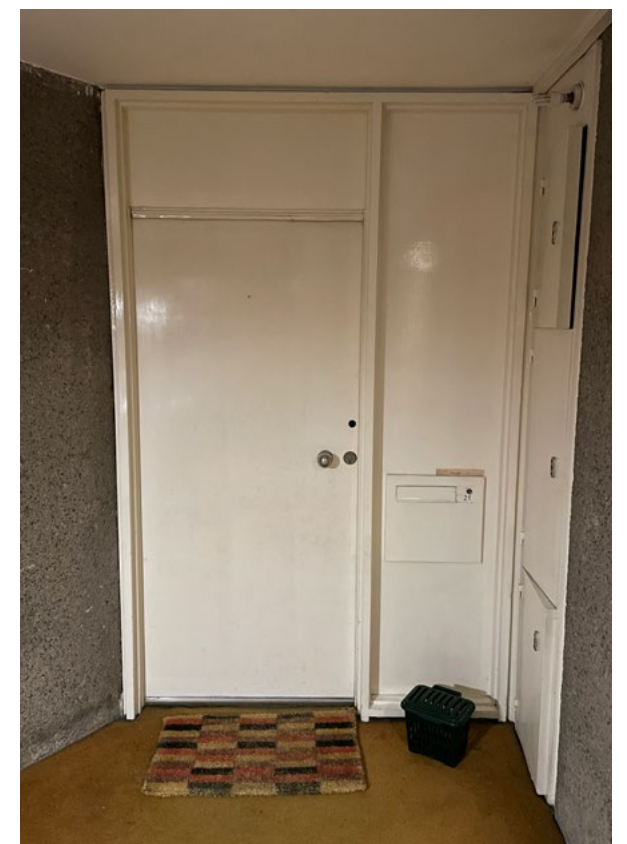
Smoke louvre door



Circulation door in entrance



Plant Room door on basement level



Residential front door

2. SITE + CONTEXT

2.1 BARBICAN ESTATE

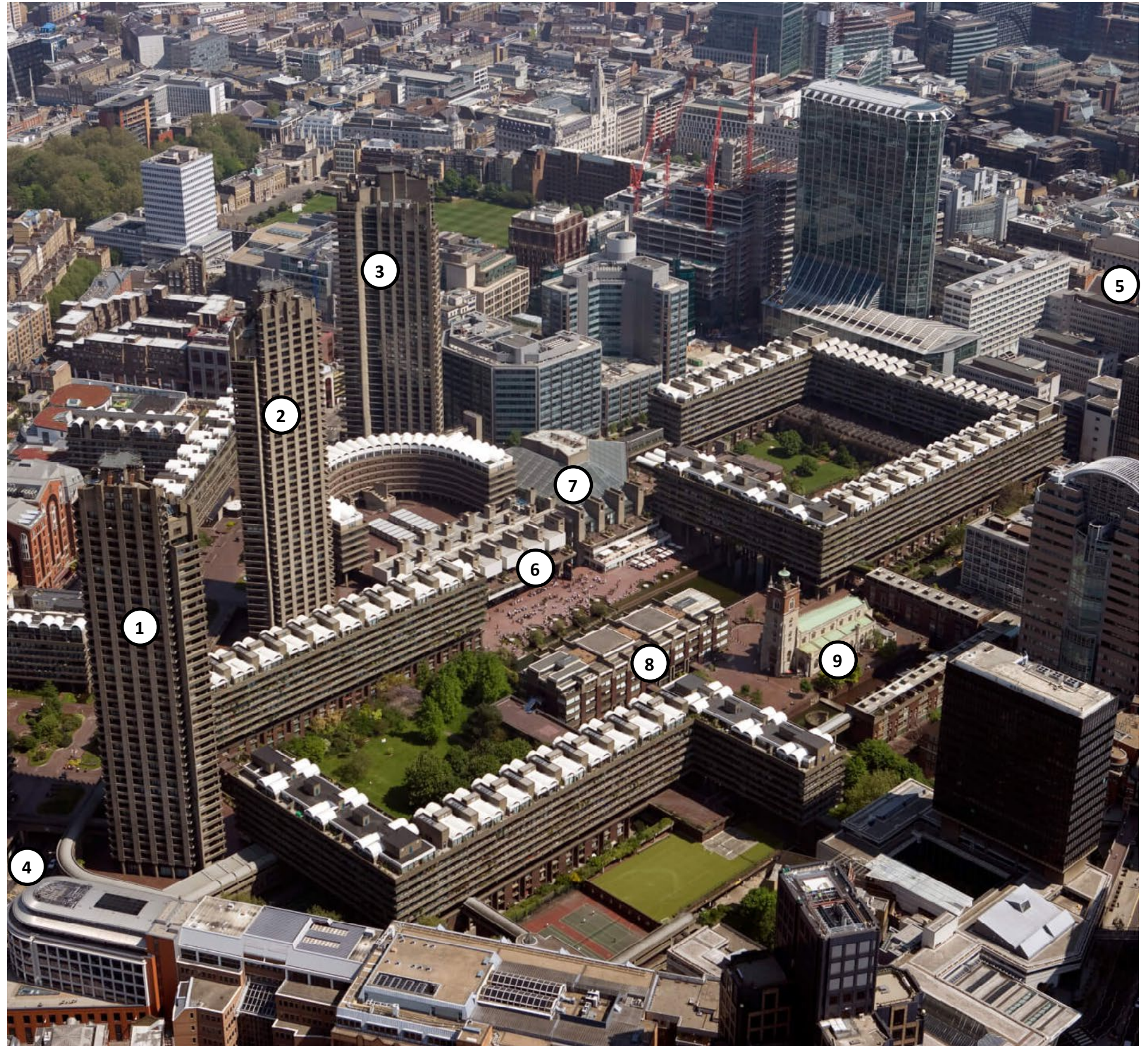
The Barbican Estate is a large residential complex in the City of London, designed by Architects Chamberlin, Powell and Bon. It was built between 1965 and 1976 in an attempt to regenerate an area of London which was left devastated by bombing during the Second World War. The modernist vision for the residential complex has become one of the most significant architectural achievements of the 20th century, and a landmark for London in terms of scale, cohesion and ambition.

It is comprised of over 2,000 flats, maisonettes and houses, which are distributed across 21 residential blocks named after prominent historical figures. The Barbican's internationally recognised urban plan had a utopian vision for modern life in the City of London.

This estate was never envisioned as a social housing project; the design was built with middle and upper class professionals in mind. Its goal was to repopulate the City of London in the aftermath of WWII. The architects' intention was to create a residential precinct which would allow people to live "both conveniently and with pleasure". Their mission would include a quiet pedestrian space which would be "uninterrupted by road traffic" and where people would be able to "move about freely enjoying constantly changing perspectives of terraces, lawns, trees and flowers" and seeing "the new buildings reflected in the ornamental lake." Their vision came to life in the Barbican Estate.

Apartments have individual balconies which overlook verdant landscaped squares and a lake with fountains. The buildings are isolated from the hubbub of the city and accessed by a pedestrian walkway raised above street level. The residential towers are three of London's tallest and gave a "dramatic contrast to the otherwise horizontal treatment of the buildings" and have become an iconic part of London's skyline.

1. Lauderdale Tower
2. Shakespeare Tower
3. Cromwell Tower
4. Barbican Underground Station
5. Moorgate Underground Station
6. Barbican Arts Centre
7. Barbican Conservatory
8. City of London School for Girls
9. St Giles Cripplegate



Aerial View of the Barbican Estate from the South West

2. SITE + CONTEXT

2.2 HISTORY

Historically, the plot sat within the City Walls of the main fort of old Roman London. Later, this area became known as Cripplegate Ward. Throughout the 19th Century, it was a bustling commercial area, and the Square Mile's population at the time amounted to approximately 128,000 residents - 14,000 of which lived in Cripplegate.

During the Second World War, the City of London suffered serious damage. The Square Mile's population was reduced to just over 5,000; Cripplegate ward was virtually demolished, and its population dropped below 50 residents. Business and commerce soon became the main land use within the City, replacing residential.

In 1952, discussions began regarding the future of the site, and after the second World War, there was a national expectation that living standards should improve.

Following rising concerns that the City was at risk of losing its right to an MP due to its small electorate, a decision was made in 1957 by the Court of Common Council to build new residential properties. This would regenerate the 'Square Mile' and reintroduce a stable population to the City. The development would appeal to a population of affluent City professionals and their families.

Developed for the Corporation of London between 1965 and 1976, the Barbican Estate was let out at market rents, singling it out from other similar



Map of the City of London (Cripplegate ward shown in red)



Historic map of Cripplegate Ward

developments of the era such as the neighbouring Golden Lane Estate, which was dedicated to social housing.

In 1980, Margaret Thatcher's Conservative Government implemented The Housing Act, giving many council tenants in England and Wales the Right to Buy their rented residences at heavily discounted rates.

Although those living in the Barbican were not council tenants, the City of London Corporation was seen as a local authority under the Act, and many residents were able to purchase their properties. As a result, most residences are privately owned today, although the overall Barbican Estate is managed by the City of London Corporation, and a large proportion of flats are rented out by private landlords.

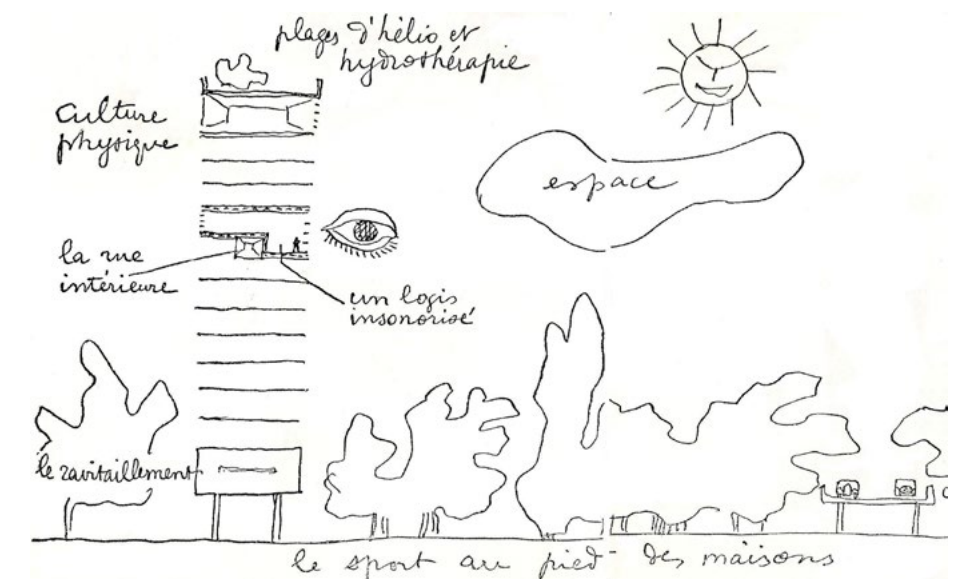
The City of London Corporation's single ownership of the overall estate has ensured appropriate maintenance and regular investment into repairs has taken place in the years since the Barbican was built.

In 2003, a referendum took place to decide whether the residents should take over management of the Barbican Estate. However, it was heavily defeated. Instead, the Residents Consultation Committee was created, as an advisory group to make recommendations to the Barbican Residential Committee.

2.3 DESIGN

Now recognised as one of London's principal examples of Brutalist architecture and modern urbanism, Chamberlin, Powell and Bon's design of the Barbican was radical for its time. The housing was part of a utopian vision to transform the City of London, and provide an estate which would put its residents first. The development was inspired by the contemporary work of Le Corbusier, Swiss-French Architect and pioneer of modern architecture.

Le Corbusier's high density housing project, 'Unite d'Habitation' in Marseilles, was completed shortly before work on the Barbican began. The modernist housing model was designed around the human scale, and model apartments were built, tested and exhibited prior to construction. The Unite's influence was clearly visible in blocks of the Barbican both in terms of appearance and organisation. Described as a 'city within a city', the Unite offered communal facilities interspersed throughout the building such as a running track, gym, garden and kidergarten on the roof, and shops, medical facilities and a small hotel spread through the building's mixed use interior.



Unite d'Habitation, Marseilles - Le Corbusier

2. SITE + CONTEXT

Similarly, the Barbican was designed so that residents would be able to access many amenities without having to ever leave the complex. These included the Barbican Arts Centre, a public library, the City of London School for Girls, Guildhall School of Music and Drama, St. Giles-without-cripplegate Church and the Museum of London.

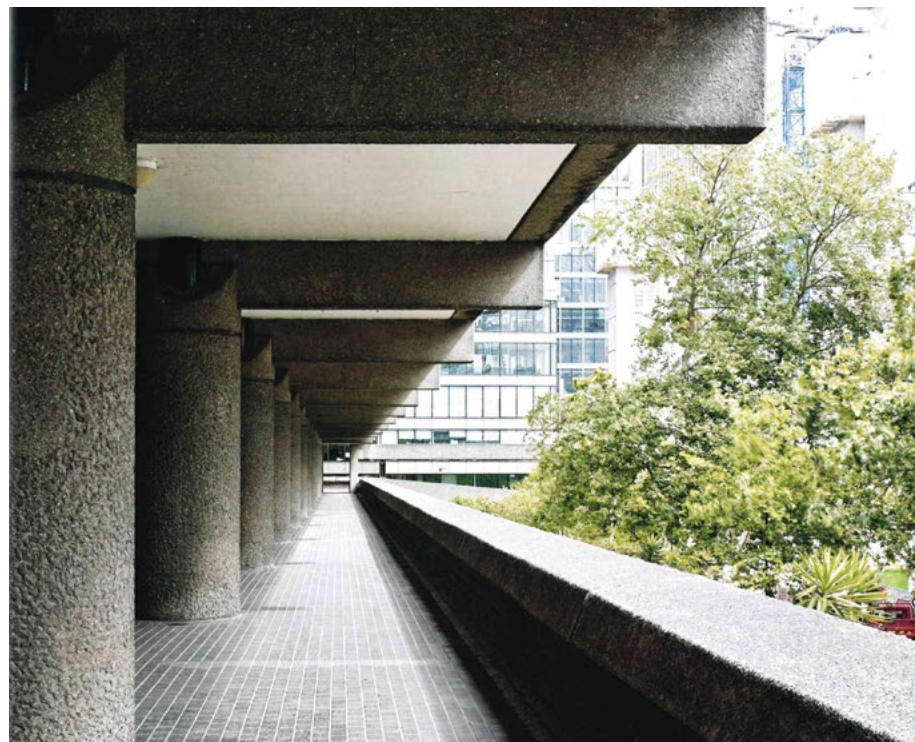
Although it has since changed use, the original complex also provided a local shop, and inclusion of a shopping mall was originally planned, in order to create a self sustained microcosm within the City.

Total separation of motor vehicles and pedestrians, through a series of podiums and raised walkways, allowed circulation between these facilities and the blocks, without impediment of traffic or noise.

This concept was already being trialed in commercial areas of the City, south of the Barbican plot, with a series of high walks connecting buildings around the old London Wall. By raising the entire Barbican Estate on a Podium, it meant that even flats on lower levels of the perimeter buildings such as Andrewes House, would still be significantly higher than street level, and would feel separate from the vehicular level.

As well as improving conditions for Barbican residents, this allowed major improvements in the City's infrastructure, as there was less resistance to the dual carriage-ways alongside the London Wall for instance.

An added benefit of the raised Podium, was the fact that it meant land could effectively be used twice. In order to satisfy the requirements for amenity



Raised walkway

space for such a high density residential scheme, the buildings were raised on pillars, and the spaces beneath them used for recreation.

A lake, numerous water features and private green spaces were set out throughout the complex, providing residents leisure spaces and attractive views out from the properties. Each cluster of blocks was grouped around a green space or water.

The layout of the flats throughout the Barbican Estate was designed to maximise natural light in habitable rooms. Wherever possible, dwellings are planned to catch the sun during at least part of the day, and living rooms are planned to have the best views to the exterior.

As a result, bedrooms, dining rooms and living rooms are always positioned along external walls, whilst kitchens and bathrooms are most often placed in inner locations. Although building regulations required kitchens to be both naturally lit and ventilated, the Architects argued that the Barbican Estate's professional residents would only use kitchens in a limited capacity, labeling them 'cooking areas' instead.

All flats have direct access to balconies, fitted with concrete planters encouraging residents to cultivate vertical gardens, which additionally serve as a secondary means of escape for all dwellings.

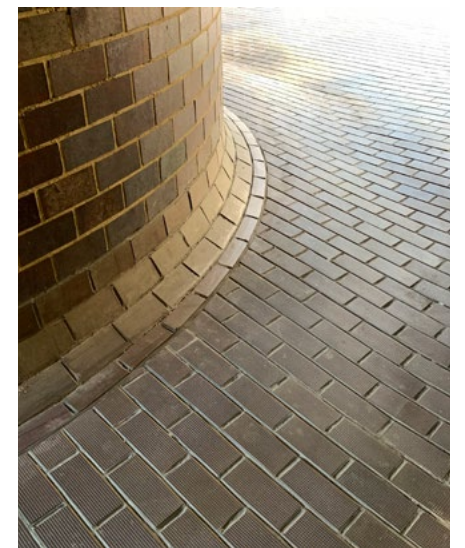
2.4 MATERIALITY

Consistent material grammar and detailing is visible throughout the entirety of the complex. A palette of architectural features unifies the numerous blocks with a common architectural language. These include pick and bush hammered concrete facades, exposed granite aggregate, glazed engineering brick cladding, structural features such as upswept balconies and varnished timber window frames.



Pick and bush hammered concrete; Exposed granite aggregate

Brick was employed at the lower levels up to the height of the original Roman city wall. Above this hammered concrete was employed as the primary material, the intention being that the brick would act as *a technologically and historically intermediate between the ground and the wholly man-made (the towers).*

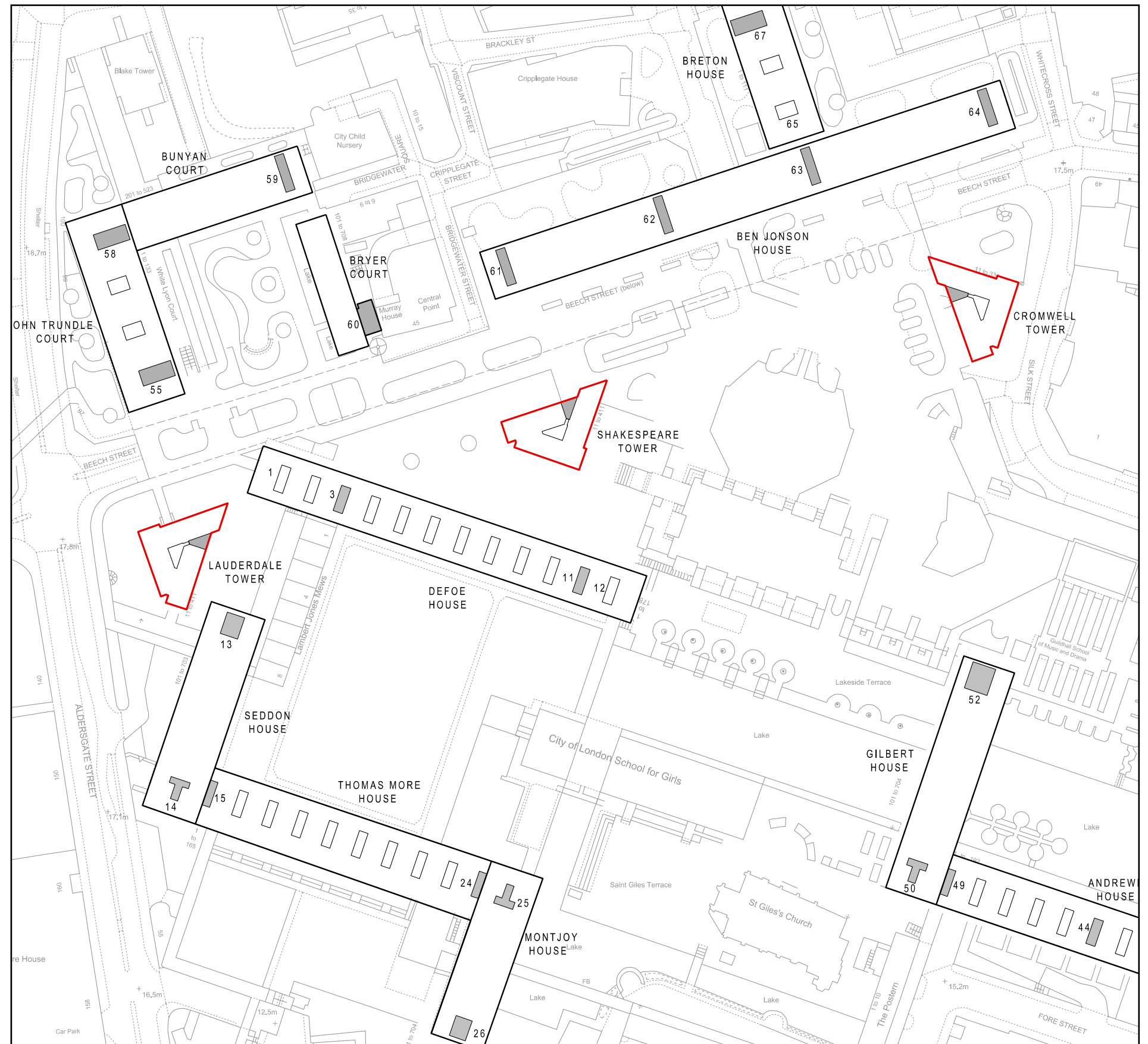


Varnished timber window frames; Bricks at podium level

2. SITE + CONTEXT

2.5 LAYOUT

The three towers are arranged along a single axis parallel to the Beech Street tunnel, and are individually rotated to fit designated positions within the larger site geometry. They divide the North and South portions of the Barbican Estate. Lauderdale is mirrored in contrast to Shakespeare and Cromwell.



Plan of the Barbican Estate showing the 3 towers outlined in red

2. SITE + CONTEXT

2.6 ORGANISATION

Whilst the three towers are seemingly identical in plan and form, they are each unique. The diagram on the right shows the differences between the towers with regard to levels, main entry points and fire exits. Lauderdale and Cromwell are accessed from street level, whilst Shakespeare is accessed from the lower podium level.

Basement Levels:

These provide access to plant rooms, tenants stores and connect via external lobbies to the parking levels.

Street/Mezzanine/Podium Levels:

These provide concierged entrances, fire escape routes and commercial units.

Residential Lower Levels:

These have 3 dwellings per level, with external balconies providing a secondary means of escape from the dwelling to the escape stair.

Residential Typical Levels:

These have 3 dwellings per level, and have additional stairs between the dwellings linking the lift lobby to the external balconies 1 and 2 stories above.

Residential Upper Levels:

The number of dwellings per level is gradually reduced, with plant rooms replacing apartments. There is a staggered arrangement at the top of the towers with duplex (flat A) and triplex (flat B + C) penthouses.

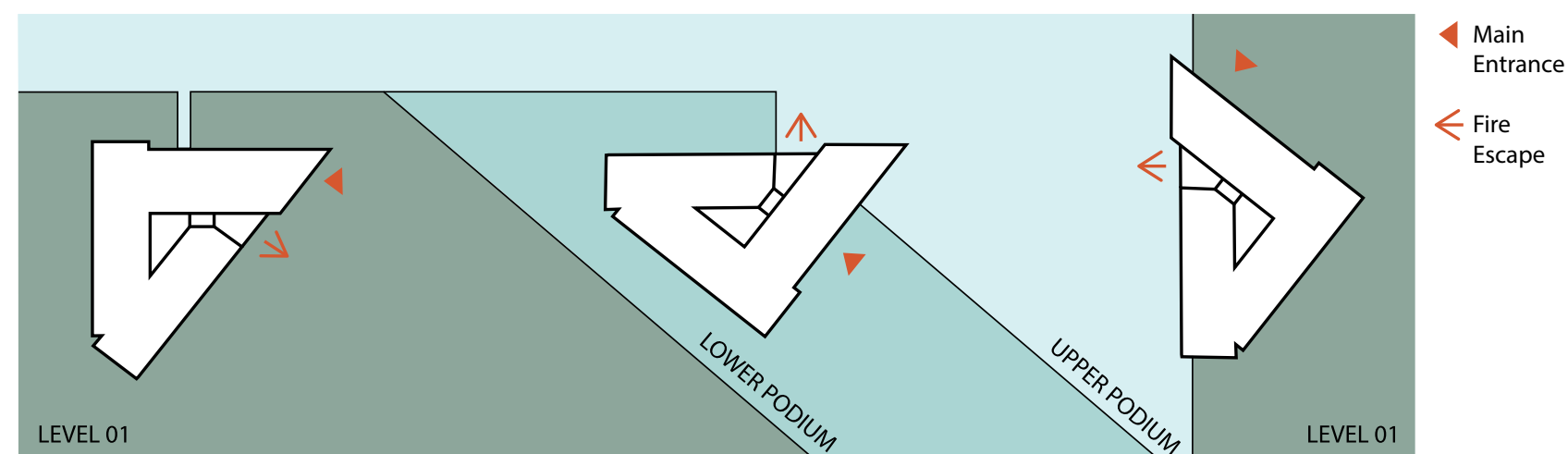
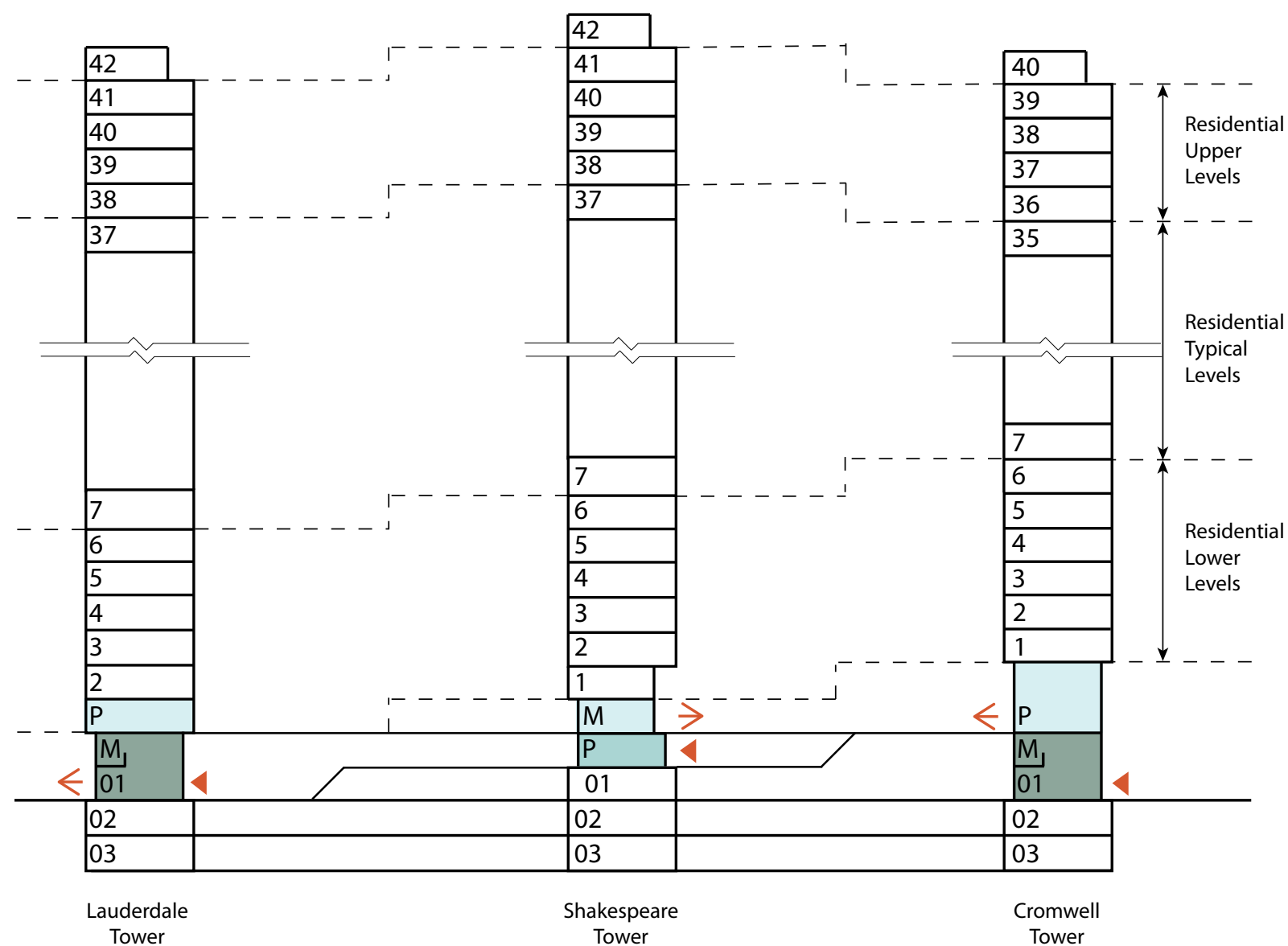


Diagram showing the levels arrangement of the 3 towers

2. SITE + CONTEXT

2.7 FACADES

At the time of construction, the 42 storey towers were the tallest residential blocks in Europe. They are finished in bush hammered concrete and have thick upswept concrete balustrades which counteract the wind, and have now become a recognisable feature of the Barbican Estate.

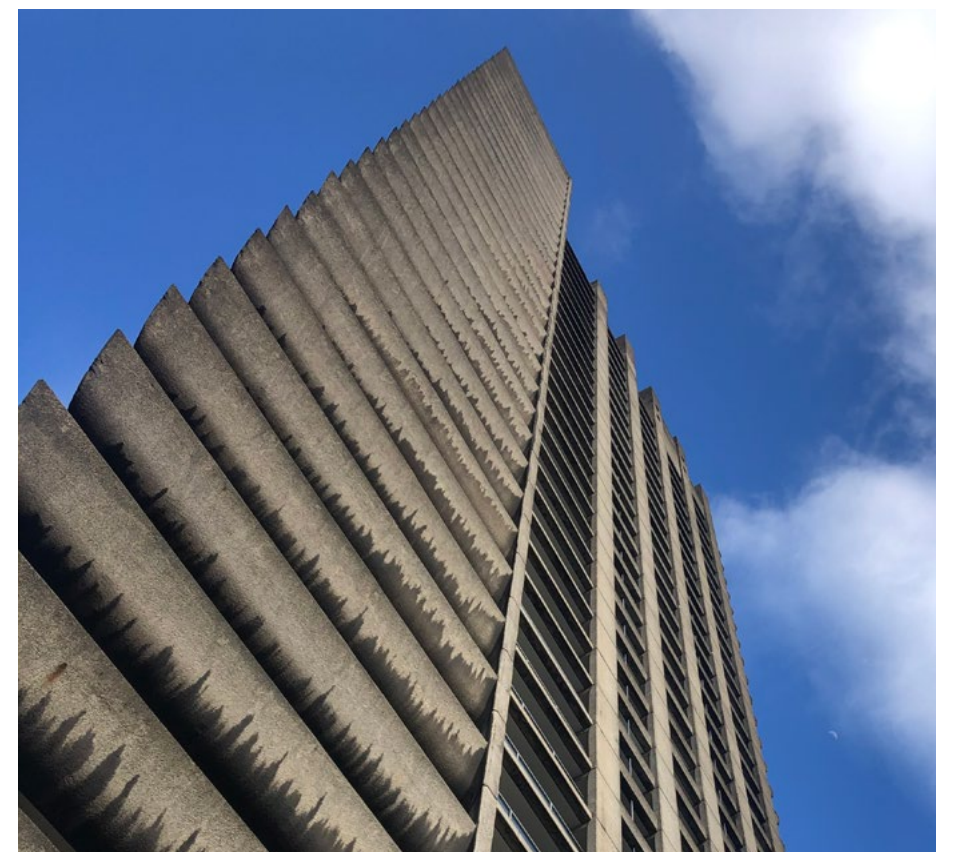
The upper floors of the towers are staggered, creating a interesting and unique silhouette on the London skyline.



Staggered roofline



Shakespeare Tower commercial unit + entrance at lower podium level



Upswept corner balustrades

2. SITE + CONTEXT

2.8 ARRANGEMENT

The flats are larger than those in the terraced blocks of the estate, and upper levels provide penthouses of up to three storeys with roof gardens. On lower levels, three flats are accessed per floor, taking up one whole side of the facade each.

The main structure is formed by a central triangular lift core and stairwells, with a peripheral framework of beams and split piers. External balconies allow residents a secondary means of escape to the single stairwell via slit stairs leading to the floor 1 or 2 stories below.

The internal layout of typical floors in all three towers is the same. The only variations occur on the access levels, and upmost penthouse levels.

The lift lobbies for the towers are internal, and have the benefit of thermal control from significant thermal mass. The residential apartments are not exposed to the common landing areas, with lifts and services risers offering shelter from the exposed walls to the lift lobbies.

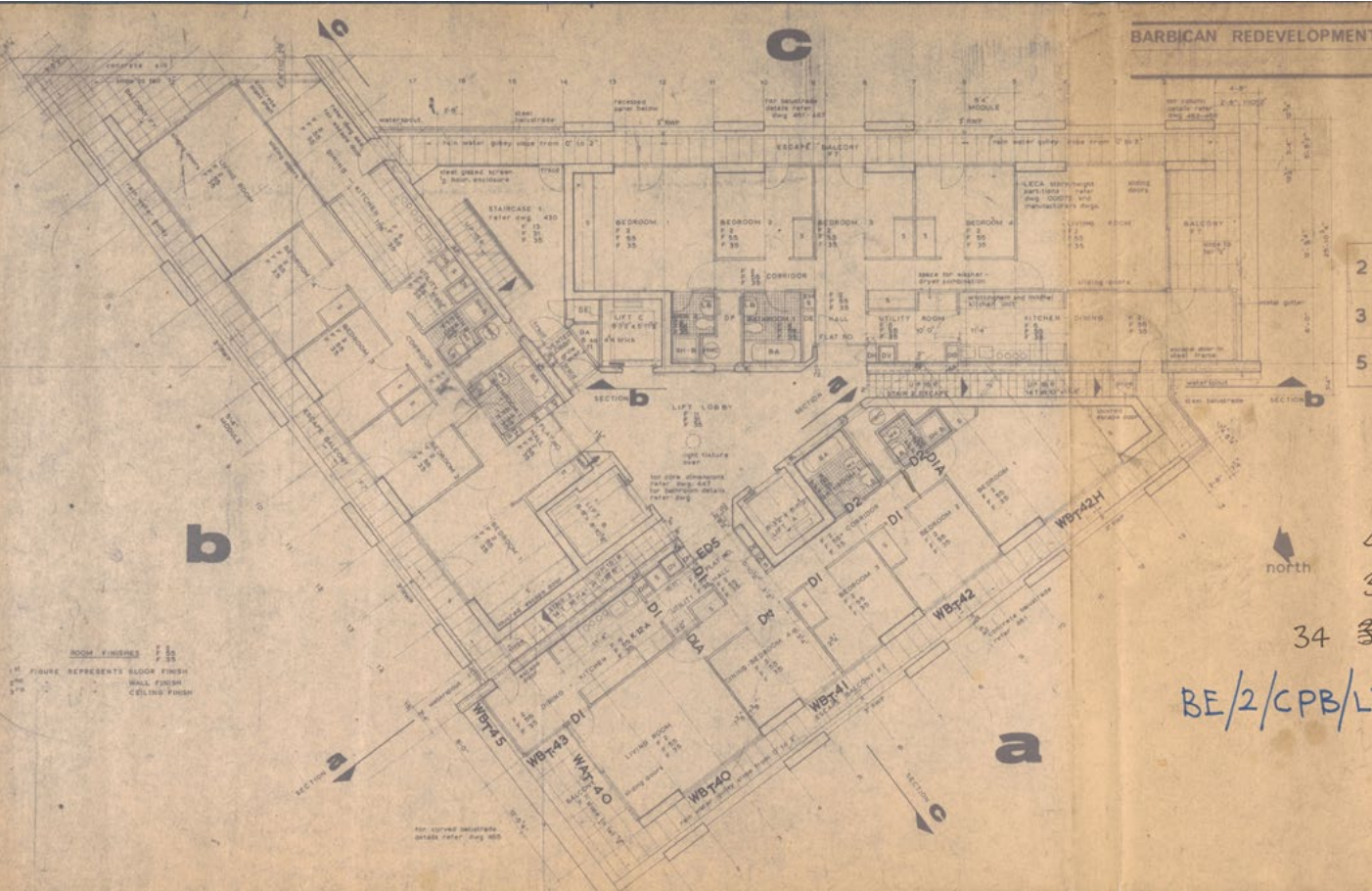
The number of residential units per tower are as follows:

Lauderdale Tower	117 flats
Shakespeare Tower	116 flats
Cromwell Tower	111 flats
Total	344 flats

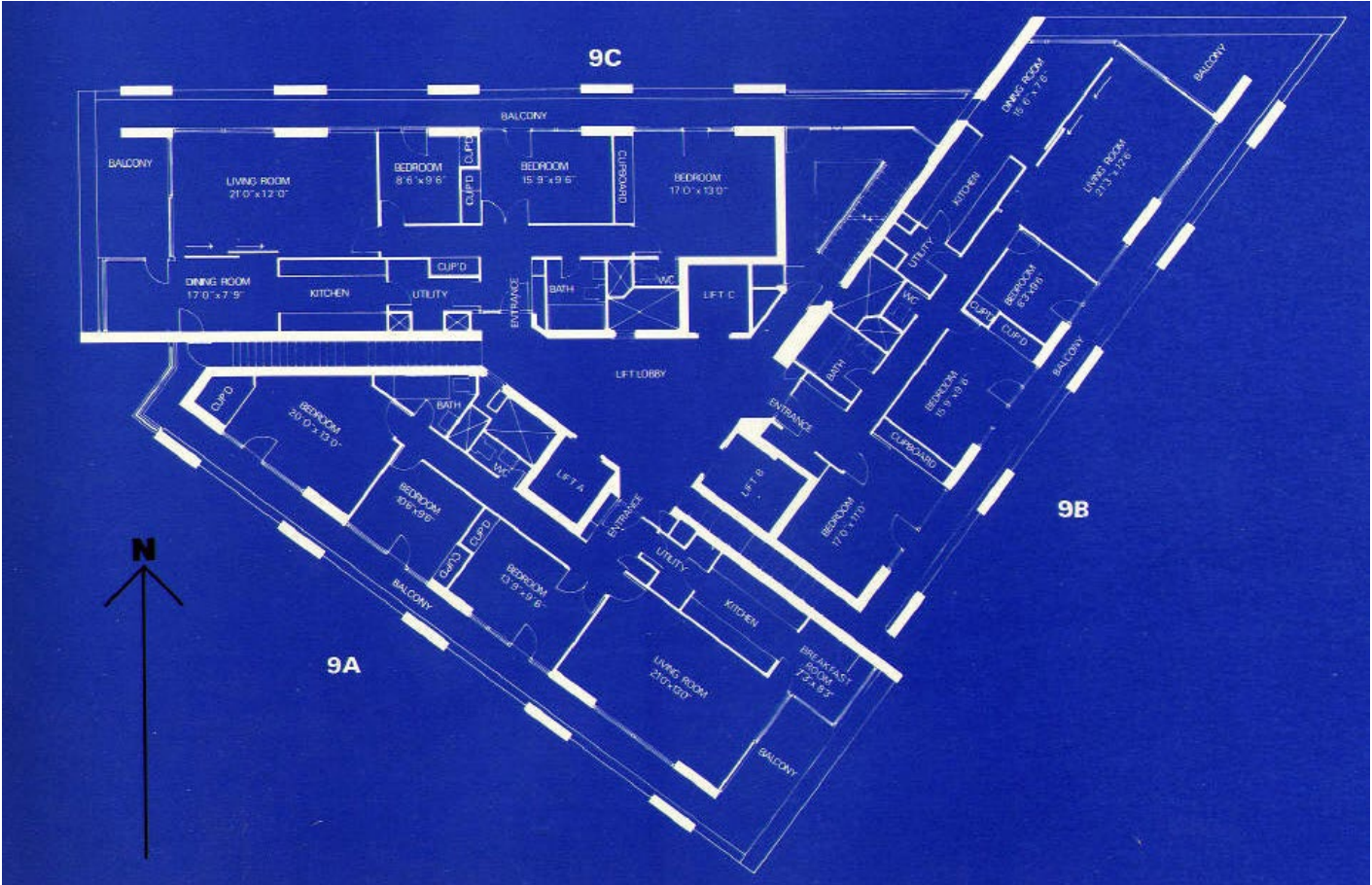
The number of commercial units per tower are as follows:

Lauderdale Tower	2 units (level 01)
Shakespeare Tower	2 units (lower podium)
Cromwell Tower	1 units (level 01)
Total	5 units

There is a void space at level 01 in Cromwell Tower with planning consent for a residential apartment.



Original construction drawing of a floor plan for a tower



Original blueprint of a floor plan for a tower

2. SITE + CONTEXT

2.9 LIFT LOBBY

The bush hammered concrete of the facades was repeated within the lift lobbies of the towers, together with futuristic metallic lift control panels and lighting feature above.

The lighting levels are low, and are supplemented by the slit escape stairs that provide indirect daylight to the lift lobbies.

Front doors to the apartments are positioned in the 3 corners of the triangular lift lobby, a single door leads to the escape stair and on the uppermost stories plant room doors replace some residential front doors.



Lighting for lift doors + panel with daylight from escape stairs



Concrete stair leading up from lift lobby to external balconies above



Fire escape door and plant room door



Residential front doors with side cupboards

2. SITE + CONTEXT

2.10 TIMBER FIRE DOORS

Doors are simple timber frames and doors, and the front doors of the towers are recessed into the internal corners with adjoining cupboards perpendicular to the front doors, accomodating utilities, refuse and grocery deliveries, accessible from inside the flat via an internal hatch. Fire escape doors and plant room doors are similarly detailed.



Fire escape door



Plant room single leaf door



Plant room double leaf door



Residential front doors with side cupboards

2. SITE + CONTEXT

2.11 FINISHES

Great attention was paid to the finishes and fittings across the Barbican Estate, with great attention to detail, and door hardware simple but robust in polished stainless steel.

The intention is to match existing hardware as closely as possible.



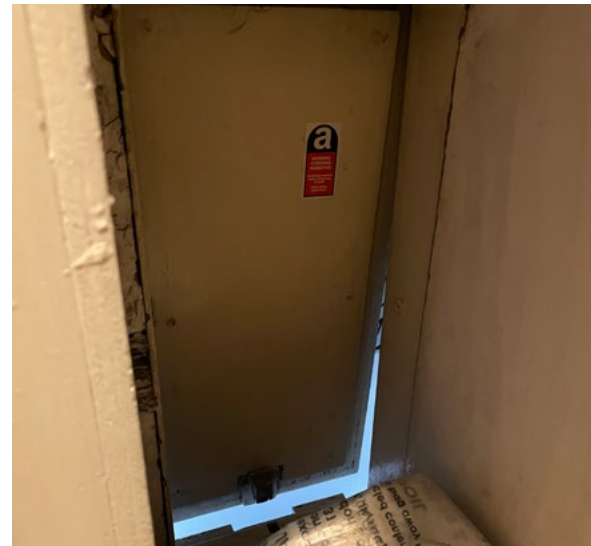
Lift control panel with lighting above



Access hatch to external cupboard from flat



Light fitting



Access hatch from external cupboard



Letter panel with plate + bell



Recessed wet riser in concrete wall



Cupboard doors adjacent to residential front door



Typical door handle + key plate



External door hardware

3. PLANNING + HERITAGE

3.1 PLANNING

The City of London is the local planning authority, and all applications must be approved through their planning application processes. The City of London forms one of London's 33 local administrations however, it does not form a London Borough, and is the only local authority to remain apolitical.

Throughout planning processes, a number of legislative documents are referenced for guidance on appropriate development. These include:

- The Civic Amenities Act 1967/Planning Act 1990
- National Planning Policy Framework (NPPF)
- The London Plan (2016)
- Local Plan (2015)
- City Plan 2036

The Barbican Estate was designated a conservation area in September 2008, further protecting its appearance. The Draft Supplementary Planning Document from 2020 describes the character, appearance and significance of it, grouping the Barbican with the Golden Lane Estate and Blake Tower (formerly the YMCA).

The SPD set out the guidelines that any development affecting the conservation area would be managed in accordance with legislation and the nation and local planning policies.

Development should preserve and enhance the distinctive character and appearance of the Barbican and Golden Lane conservation area – as set out in this SPD – and the significance of individual heritage assets within the boundary. Where appropriate, development should seek to better reveal the significance of the conservation area and other individual heritage assets.

- Barbican and Golden Lane Conservation Area, Draft SPD 2020

The characteristics which contribute to the special interest of the conservation are summarised as below:

- *Two Estates which, together, provide a unique insight in the creative processes of a seminal English architectural practice, Chamberlain, Powell & Bon*
- *Integration of the ancient remains of the Roman and medieval City wall and the medieval church of St. Giles Cripplegate in a strikingly modern context*
- *In scope and extent, the Estates are important visual evidence for the scale of devastation wrought by the Luftwaffe bombing campaign of 1940-41 known as the 'Blitz'*
- *Seminal examples of ambitious post-war housing schemes incorporating radical, modern ideas of architecture and spatial planning reflecting the*

development of Modernism

- *Unprecedented and ingenious provision of open space and gardens within central London, which continue to be a defining characteristic of the Estates today*
 - *New and striking architectural idioms, particularly at the Barbican, applied on a significant scale; a new architectural language deliberately modern and forward-looking; a way of planning and arranging buildings and spaces which was unprecedented in Britain and reflected evolving ideas of the modern city.*
- Barbican and Golden Lane Conservation Area, Draft SPD 2020

3.2 LISTING

The Barbican Complex became Grade II listed in September 2001, as announced by the Minister of Arts. It has since been designated a site of special interest for its 'scale, cohesion and ambition'.

The award was part of an ongoing process which aimed to identify important post war buildings to be added to the register, in order to avoid domination by classical architecture. English Heritage referred to the project as "a building that is an example of its time... An outstanding design".

Extensive features, both internal and external, are protected by the listing. The towers are described as follows:

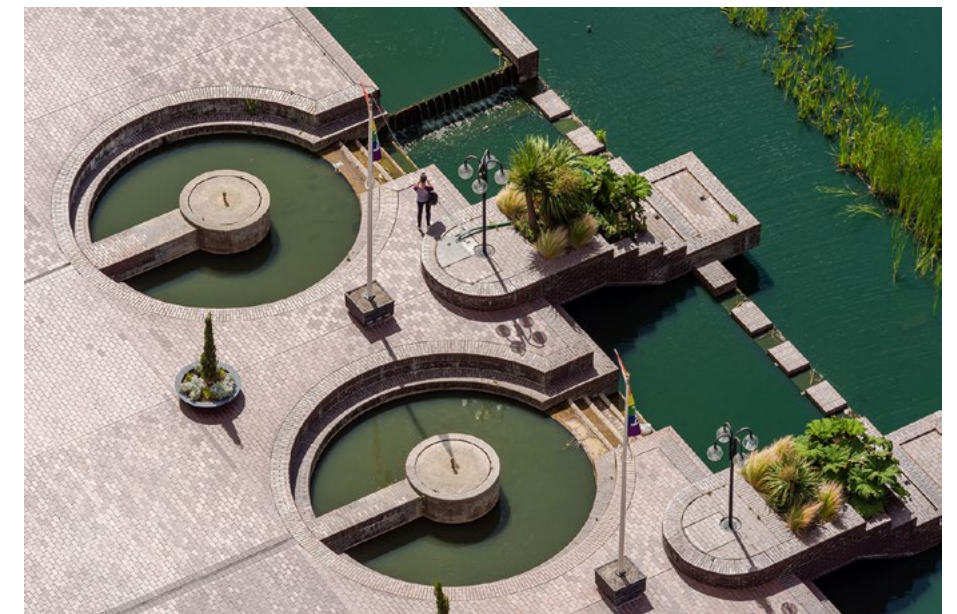
Blocks I, II and 111: Triangular plan with upswept balconies running round, jagged stepped tops containing penthouses, of up to three storeys with roof gardens. Below penthouse level there are three large flats per floor, the living rooms in the prows, served by a central triangular well with a lift on each side, which can be ordered from a common central control panel. Sliding timber windows, metal and glass balustrades, the steel uprights painted. Double-height glazed entrances, Lauderdale House also incorporating two ground-floor shops.

- Historic England, Barbican List Entry

Although listing does not necessarily preserve a building for all time, it ensures care will be taken over decisions affecting its future, and that any alterations will respect the character and interest of the building.



Lauderdale Tower and the Barbican Arts Centre



Lakeside water features in front of the Barbican Arts Centre

4. DESIGN APPROACH + DEVELOPMENT

4.1 FIRE RISK ASSESSMENT

In 2018, Frankham RMS conducted Fire Risk Assessments on the residential buildings on the Barbican Estate, on behalf of the Landlord, the City of London Corporation, under the requirements of the Regulatory Reform (Fire Safety) Order 2005.

The objectives of this Fire Risk Assessment were :

- To identify all current significant fire hazards to which relevant persons on the premises, or in the immediate vicinity of the premises, would be exposed.
- To reasonably quantify the level of residual fire risk that was attributed to the premises and its use, with regard to existing (preventive and protective) controlling measures with the emphasis on life safety.
- To advise on the nature and extent of any additional (preventive and protective) controlling measures which should be implemented in order to counteract this residual risk, in accordance with the ‘Principles of Prevention’ as defined in Article 10 of The Regulatory Reform (Fire Safety) Order 2005

4.2 FIRE SAFETY ACTION PLAN

Alongside Fire Risk Assessments, Frankham RMS also produced Fire Safety Action Plans for all blocks. The Fire Safety Action Plans were also shared with the Barbican Residents Consultation Committee and the Barbican Residential Committee.

Information contained in these reports were is based on the findings from the Fire Risk Assessments, and all observations, recognised hazards, recommendations and evaluations were identical to the previous document.

Additional information provided in the Fire Safety Action Plan included a set of relevant actions taken, with the responsible party and date of action indicated.

4.3 FIRE DOOR SURVEYS

In 2021 Guardian Consultancy Services were appointed to carry out an audit of the residential and communal fire doors of the residential buildings on the Barbican Estate.

The scope of works was to assess and record the viability of those doors which had been noted by the client as fire doors and to assess whether doors which were not identified as fire doors should be fire doors. In addition to the surveys, a RAG assessment was prepared to detail the order of urgency of the replacement program.

Category	Location	RAG Rating	Recommendations
Residents front doors	Every floor with Flats	R	Replace doors will move the rating from red to green.
EDA and electrical Cupboards	Throughout the building	R	Replace will move the rating from red to green.
Internal compartment doors	Throughout the building	A	Improve by adding smoke protection and upgrading ironmongery will turn from amber to green rating.
Lift moto rooms and plant room doors	Located mainly on the roof of each building.	R	Replace will move the rating from red to green.
Car park entrance / exit doors	Car park level to building	G	Review maintenance and efficiency of door.
Residents’ balcony doors	Each floor where required	G	Review maintenance and efficiency of door.
Escape exit doors to outside	Each floor where required	G	Review maintenance and efficiency of door.
Residents Storage doors	Lower level of the building	A	Review maintenance and efficiency of door.

Example of RAG Assessment - Guardian Consultancy Services

4.4 FIRE COMPARTMENTATION

There were no existing survey drawings of the Barbican Estate, nor any fire compartmentation drawings. To provide a thorough assessment of where replacement of fire doors were required, a set of fire compartmentation drawings were prepared, to be used by Guardian Consultancy Services Ltd to complete their audit and identify correctly the doors and windows which require replacement.

In 2022 the City of London Corporation commisioned the preparation of fire compartmentation drawings of the Barbican Estate.

4.5 DIAGRAMMATIC FLOORPLANS

reForm Architects were appointed to prepare a set of diagrammatic floorplans drawings for all the residential buildings showing ALL levels. The residential level floorplans were to show the residential units and common parts, and the basement and roof level drawings to show where the residential common parts meet parking, services or external areas.

The work was be based upon a non-destructive assessment of the common parts of the building, not the private dwellings, service/plant areas or parking.

4. DESIGN APPROACH + DEVELOPMENT

4.6 LIFE SAFETY FIRE COMPARTMENTATION

BB7 Fire Engineering were appointed separately to mark up the recommended fire compartmentation to these drawings, which were issued as ‘Life Safety Fire Compartmentation Plan Mark Ups’.

The buildings were annotated to show the expected levels of fire compartmentation on the plans; the fire doors located in the walls were expected to achieve half the fire resistance of the wall.

The buildings were constructed in phases between 1963 and 1972, they were designed by architects Chamberlain; Powell & Bon, the Building contractor was Turriff.

In 1962, BSI published a new code of practice, ‘CP3 chapter IV part 1’, which provided recommendations for fire precautions in blocks of flats over 80ft (approximately 24m) in height. The code of practice was also considered appropriate for buildings less than 80ft in height.

The 1962 version of ‘CP3 chapter IV part 1’ was highly significant as it was the first national code to advocate, and incorporate, fire safety measures based on, what is now known as a ‘stay put’ policy. In 1962 this was expressed as a principle whereby those in flats on floors above that in which a fire occurred would be safe to remain within their own flats. It was acknowledged that flats on the same floor as the fire, or even in the immediate vicinity of the fire, might need to be evacuated, but a fire alarm system was not considered necessary.

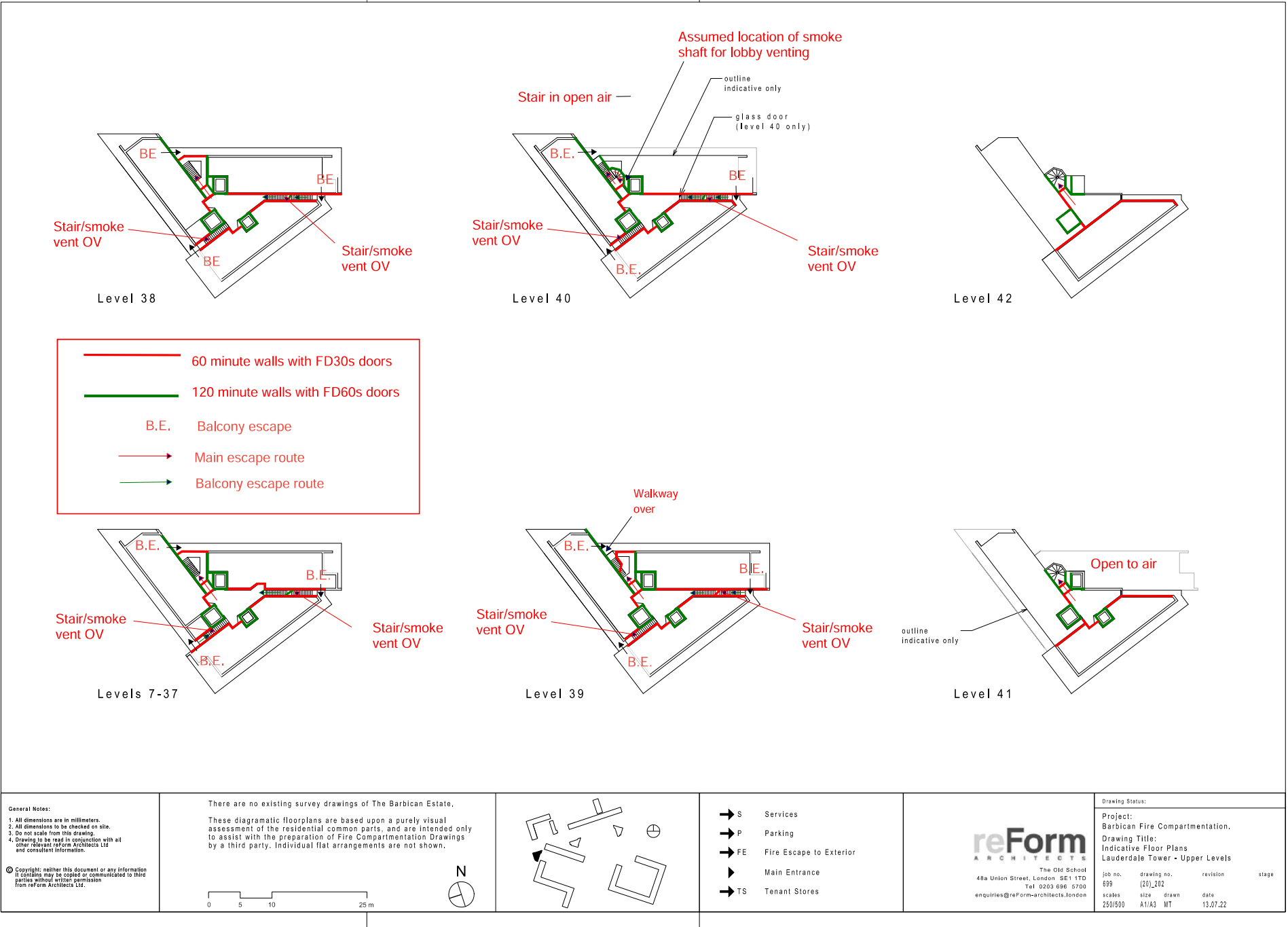
The fire safety measures recommended were intended to ensure that means of escape remained safe for use by those with a need, or desire, to evacuate the block. The means of escape hinged on the provision of suitable compartmentation, the ventilation of escape routes and internal flat layouts.

Without a detailed retrospective fire strategy study, the full picture and the state of fire safety in the blocks could be confirmed. However, the plans were annotated to identify the level of compartmentation expected to be in place.

A site visit was carried to ensure correct interpretation of the plans (not to be construed as a site survey). No information on the internal flat layouts was available and there was no access to any flats, and limited access to balcony escapes.

The principal reference document used was ‘Fire safety in purpose-built blocks of flats’. Before committing to replacing the doors, it was advised that further advice is obtained (from BB7 or other suitably qualified organisation) for the following reasons.

- The majority of the doors will require replacement but some doors may be open to improvement
- The fire resistance of the opening protected by a fire door may be supplemented by roller shutters
- The door/window may form part of the ventilation arrangements and



Example of Fire Compartmentation Mark-up - BB7

4. DESIGN APPROACH + DEVELOPMENT

4.7 CONTRACTOR APPOINTMENT

GERDA were appointed as contractor to carry out the specialist design work and compliance certification for the programme of works to replace all front entrance doors and (including any associated panel surrounds and fanlight windows), and communal corridor fire doors, service intake or riser cupboard doors.

The design work was to be carried out in close collaboration with Reform Architects, whose role was to ensure that the original design intent of the architects was maintained, and the historic importance of the building’s design preserved.

To date, 14 design team meetings with the client, architect, GERDA and other consultants have been held to discuss design development.

Building Regulations Guidance - Flat Entrance Doorsets (Internal)



Restricting fire entering or escaping



Preventing smoke leakage



Keeping the dwelling conditioned



Protecting the dwelling from intruder attack



Ensuring ease of access



Assisting noise reduction



Operation & safety



Testing for enhanced security requires BS6375 tests for operation & durability

Overview of Building Regulations compliance required for flat entrances



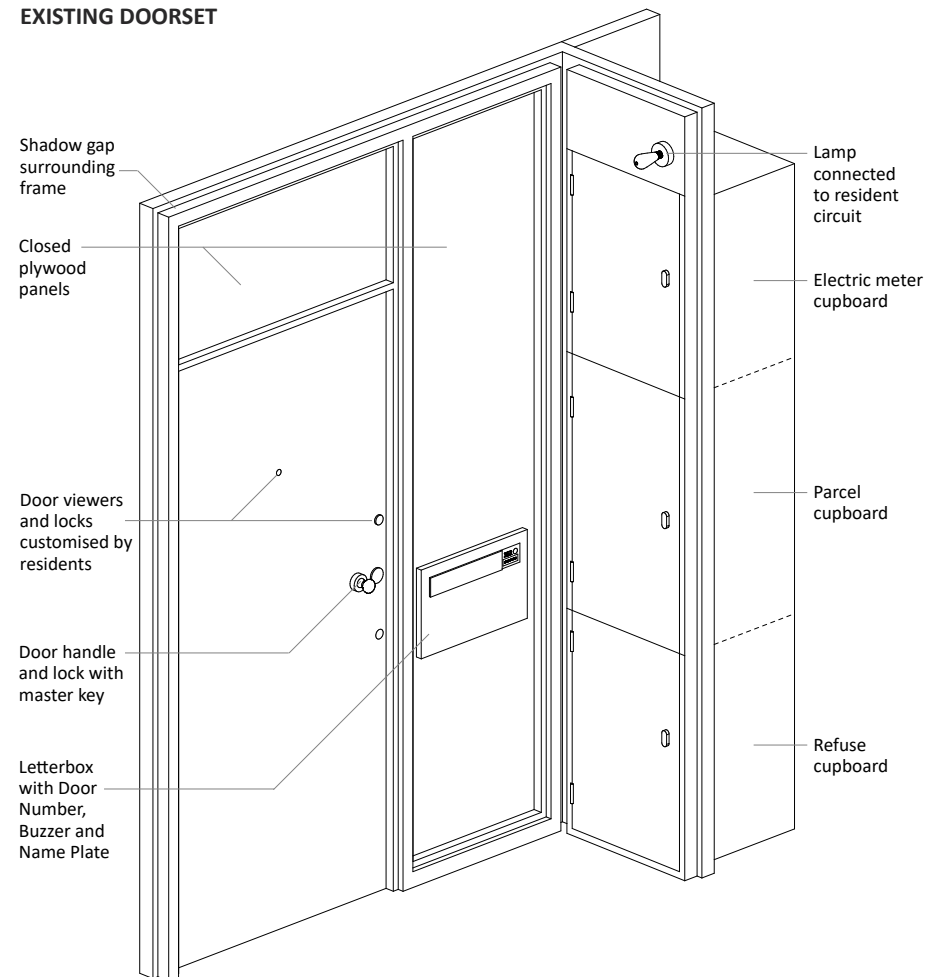
GERDA initial front door design based on components with existing test data pre-certified

4. DESIGN APPROACH + DEVELOPMENT

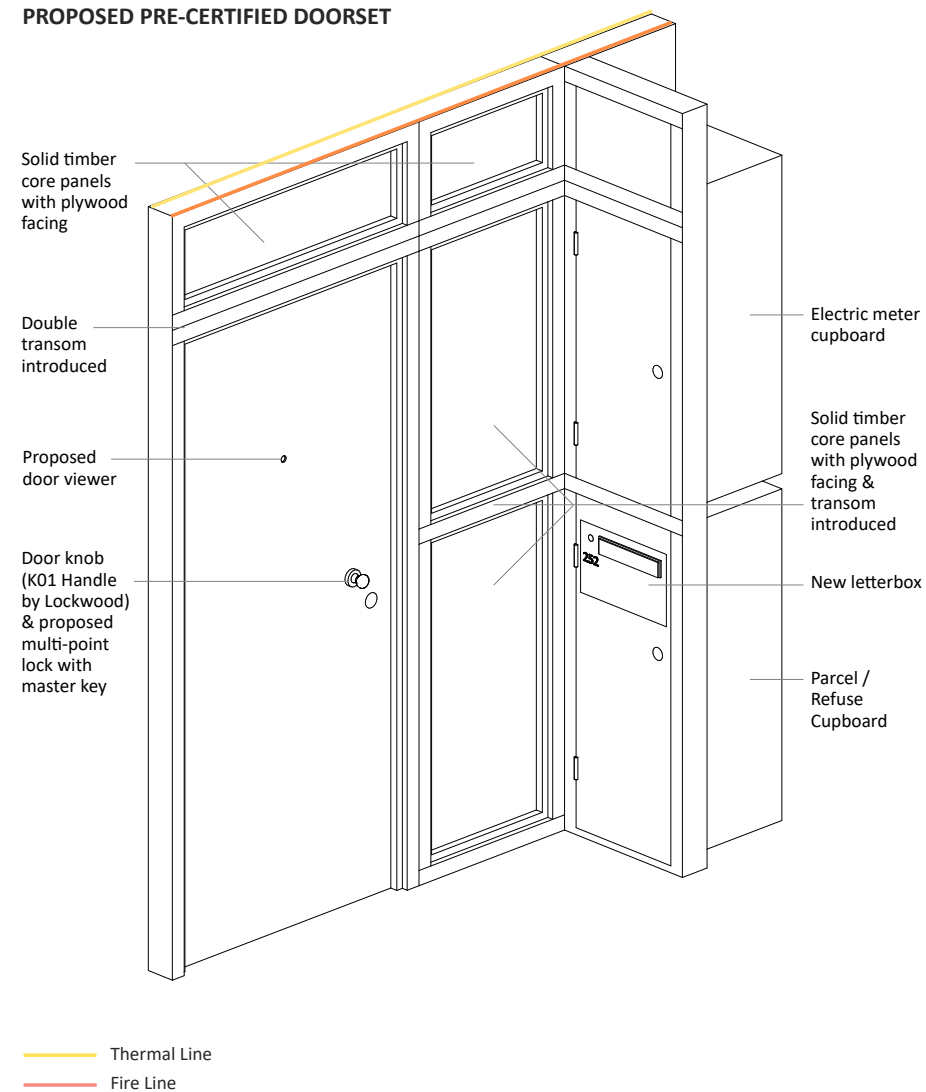
GERDA proposed two approaches to achieving compliance:

- Pre-certified fire doors - This would be the simplest and most efficient method, but could only provide a 'like for like replacement' on simple fire doors. For the front doors the pre-certified fire door option could not respect the proportions of the the original design, and the subtlety and elegance would be lost.
- Bespoke design for the fire doors - This would require new certification, with a significant cost and programme impact on the project.

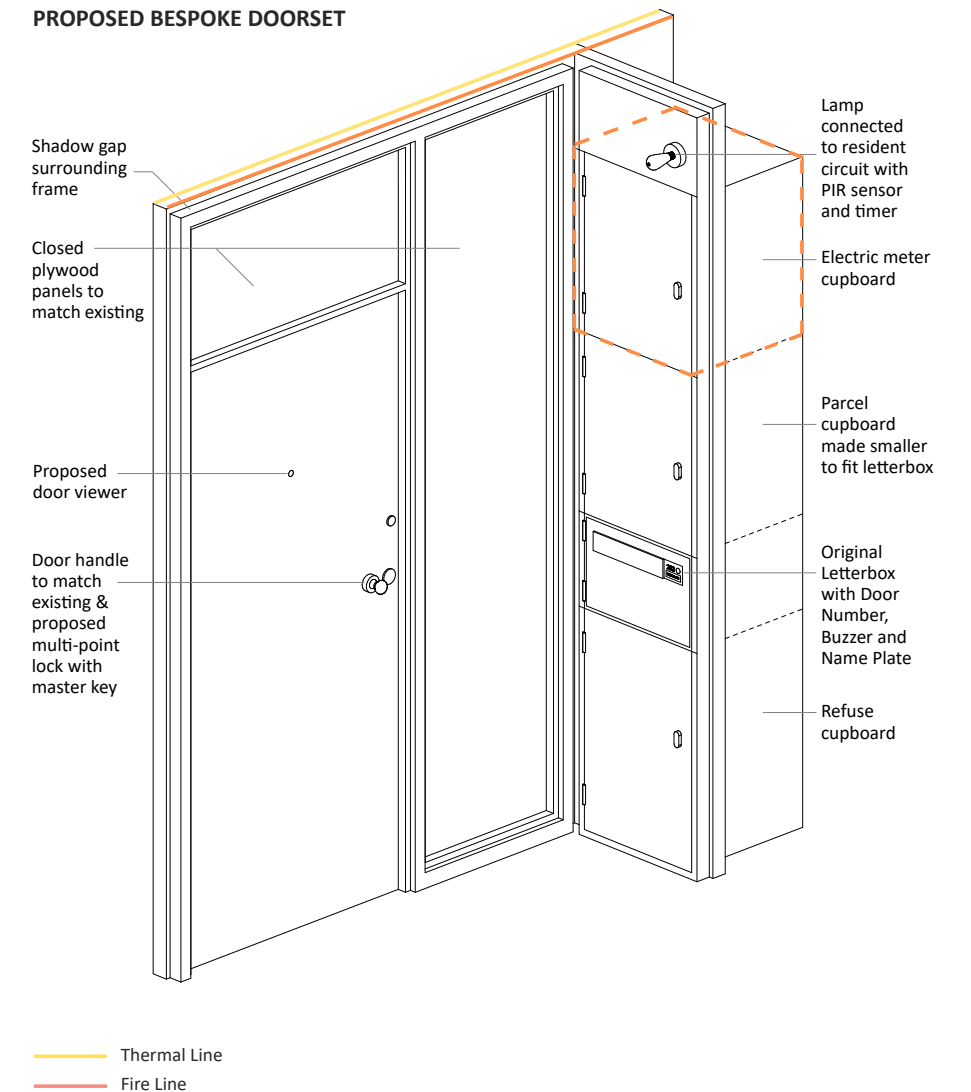
EXISTING DOORSET



PROPOSED PRE-CERTIFIED DOORSET



PROPOSED BESPOKE DOORSET



Initial design proposal comparison

4. DESIGN APPROACH + DEVELOPMENT

4.8 INITIAL SCOPE

The initial design study examined the existing situation and condition of the doors, assessed the available options and described the design strategy and approach. It also addressed the following:

- Consideration of accessibility and equality (under the relevant legislation)
- Improvements to the comfort of the flats
- Repair and consideration of internal finishes
- The continued occupation of all flats by residents throughout the works
- Consideration of the impact of construction works upon the residents and their continued comfort, security and safety during the works
- Tolerances to deal with post-war concrete construction standards
- Control of future resident adjustments / personalisation
- Secure by Design
- Removal of redundant materials
- Consideration of carbon footprint with materials and supply chain
- The potential presence of asbestos and appropriate risk assessment
- Future maintenance

The study was carried out in collaboration with a sustainability consultant.

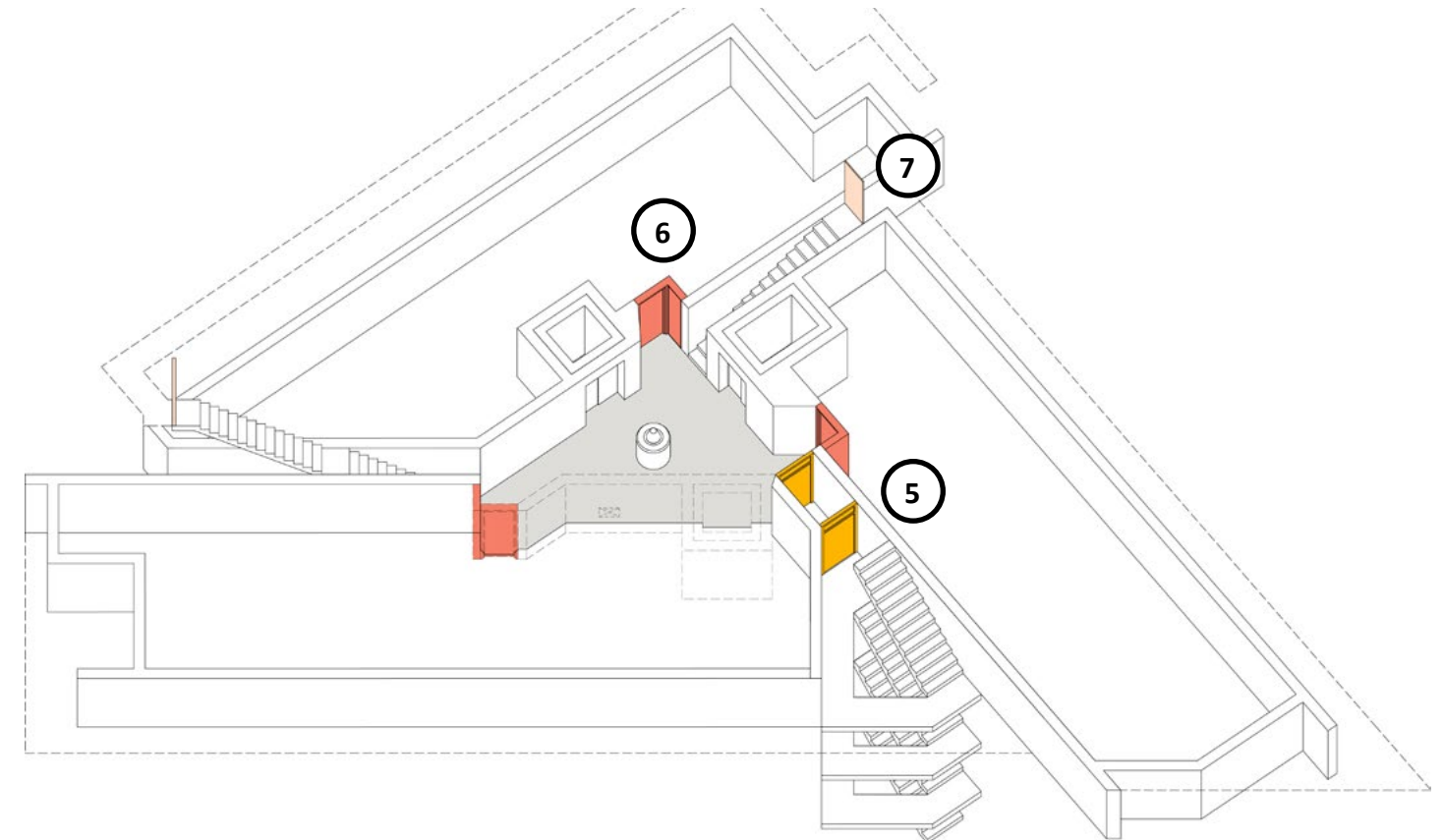
The proposals included the replacement of all doors with a fire-rating, including both timber and steel framed doors, and all doors at the basement levels. In addition, improvements were proposed to the thermal performance of external escape doors and ventilation hatches to the lift lobbies, removing the need for electric heating in the lift lobbies.

During the design process the following items were removed from the scope, to simplify the project and focus efforts on the primary aim of replacing fire doors where required:

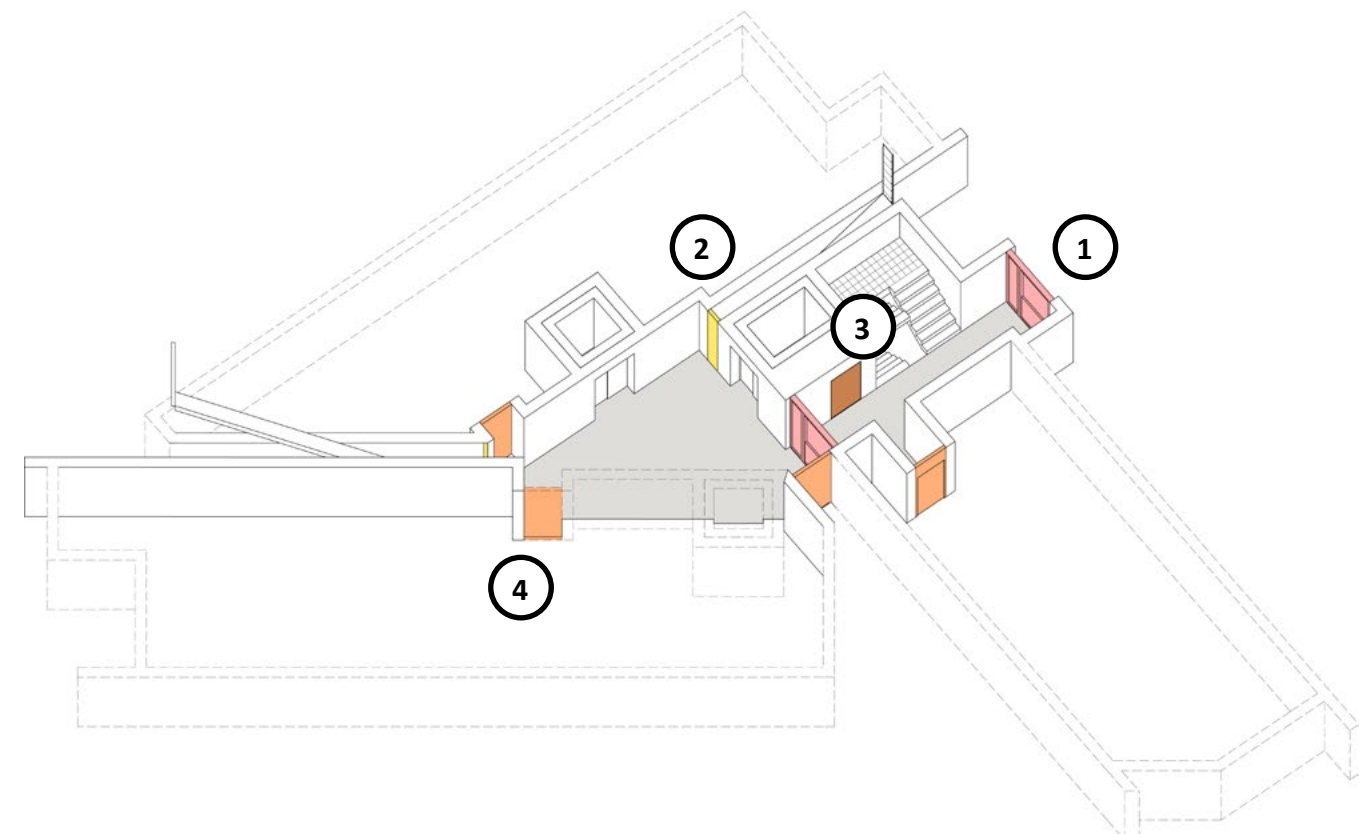
- Steel doors (replacement not required in FRA)
- Thermal upgrades to lift lobby escape doors and hatches (not part of fire door improvements)
- Basement doors where fire shutters present (fire shutters are tested annually by the client for compliance)
- Cupboard doors that do not form part of the fire compartmentation

Key:

1. Circulation doors to car park and lift lobby to be replaced due to age
2. Smoke louvre doors to have improved thermal performance
3. Plant room/service cupboard doors to be replaced to improve fire rating
4. Tenant stores and landlord plant to be replaced to improve fire rating
5. Fire escape doors to be replaced to improve fire rating
6. Residential front doors to be replaced to improve fire rating
7. Glass external escape doors to have improved draft proofing



Typical residential level of Lauderdale Tower shown



Level 02 of Lauderdale Tower shown

4. DESIGN APPROACH + DEVELOPMENT

4.9 INITIAL FRONT DOOR DESIGN PROPOSAL

The main focus of the fire door replacement was on the residential front doors, as the remaining timber doors were to be replaced on a like for like basis using pre-certified fire doors.

For the residential front doors the initial proposal was to re-locate the letterbox to improve thermal insulation, noise protection and security of the door set. The thermal barrier would remain a straight line, with the removal of internal hatches to improve thermal performance. The tower flats would continue to enjoy cross-ventilation due to their dual aspect on a corner, and the front door would not allow cross ventilation, as this would compromise the fire compartmentation.

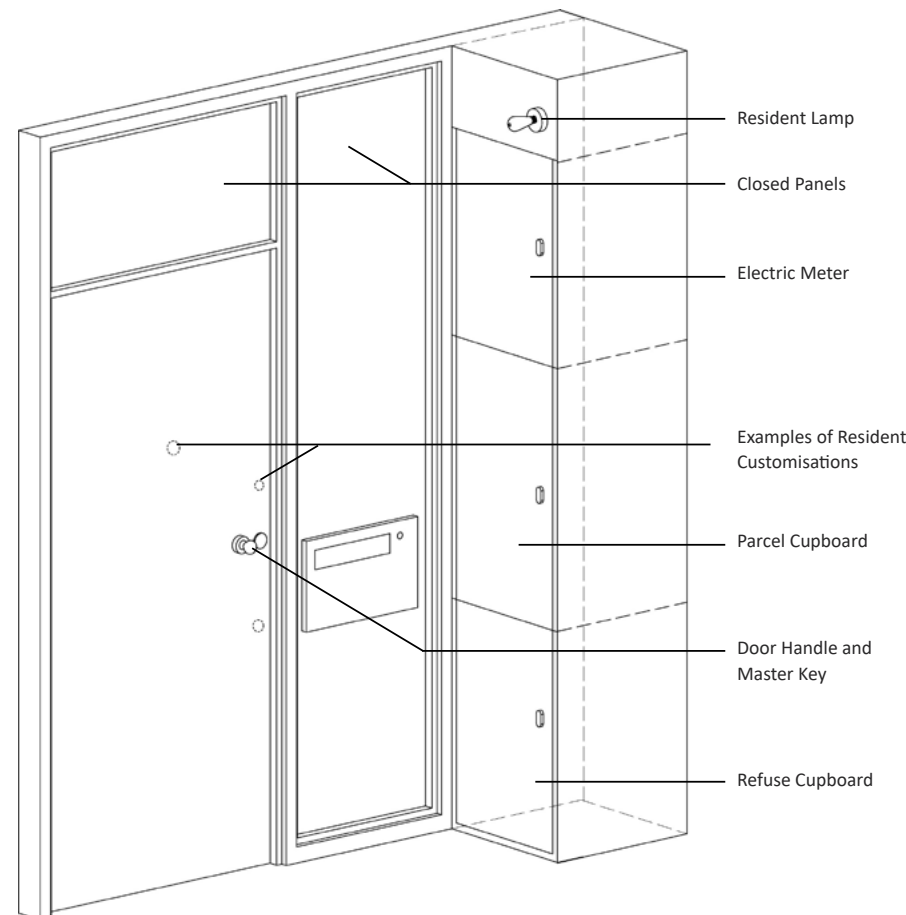
A key operated multi-point locking system was proposed (SS312 Diamond approved), a type of lock that bolts the door into the door frame. A door chain or bar and door viewer were also proposed.

It was proposed that all residential doorsets use identical enhanced security measures, to ensure that there is no need for any individual compromising of the doorsets.

The following enhanced features were recommended to avoid resident customisation which could impact the appearance of the listed building

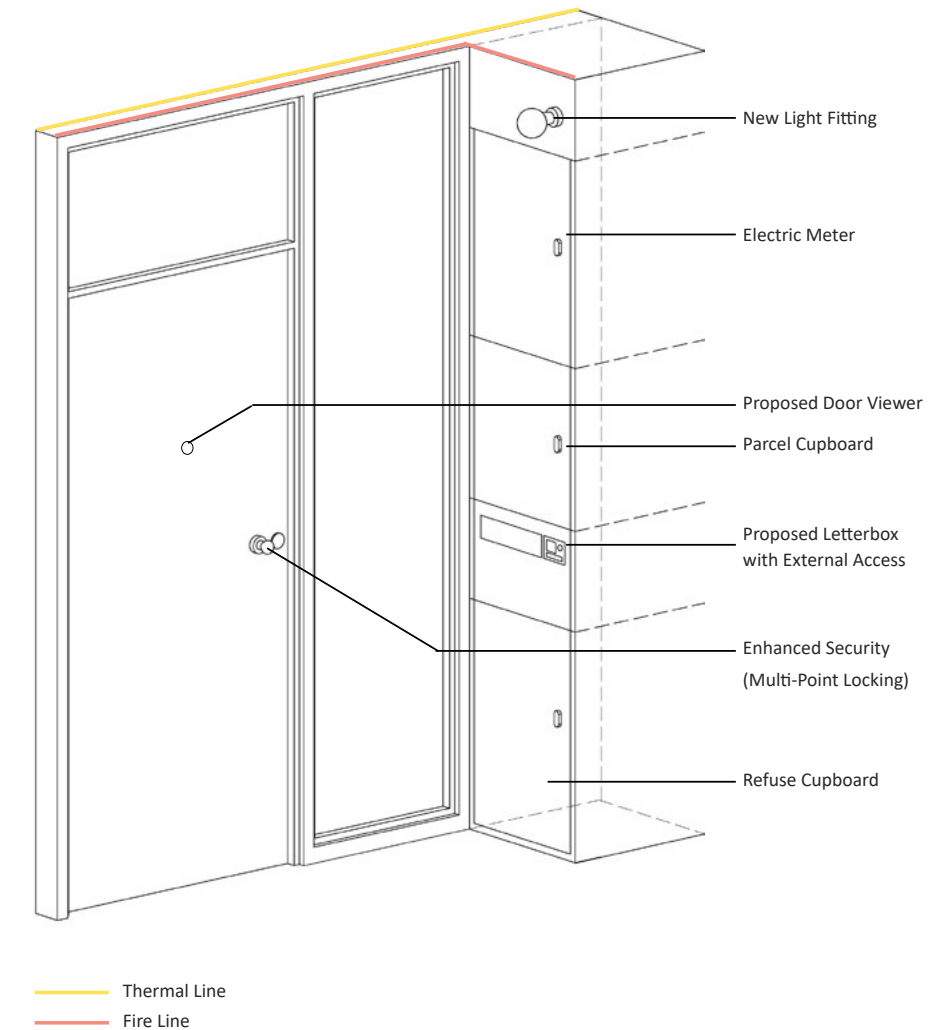
- Doorbell
- Numbering
- Name plate
- Master key operated multi-point locking system
- Door viewer
- Door chain lock
- External letterbox
- Front door lights

EXISTING



Initial Design Proposals

PROPOSED



4. DESIGN APPROACH + DEVELOPMENT

4.10 RESIDENT CONSULTATION

A report for resident consultation was prepared in October 2023, setting out the design strategy and approach, necessity and frequency of replacement fire doors. Initially the scope of work was much greater, and included not only timber fire doors, but also steel and glass doors, and improvements to improve the thermal performance of the lift lobbies.

The City of London Corporation received comments from residents from all 3 towers, which were circulated to the design team.

Many of the comments received from residents were beyond the scope of the fire door replacement works, but key points raised by residents relating to the works are listed below:

- Interface with internal finishes
- Cabling in and around door sets and cupboards
- Security relating to the front doors
- Security relating to the single master key system
- Objections to the re-location of the letterbox
- Appropriate levels of lighting
- Requirement for a life-size mock-up mto be presented to residents
- Retention of original appearance of front doors and hardware
- Ventilation of lift lobbies

It is the client's intention to carry out further consultation through the Major Works Board in November 2025 and to hold a Town Hall for all residents in early 2026. This will include a full-size mock-up of the residential front doors and cupboards for residents to view both externally and internally, including proposed hardware and security measures.

4.11 PRE-PLANNING CONSULTATION

An initial Pre-Planning Application meeting took place on the 11th of January 2024. It was confirmed that as the building is listed, the replacement of like for like would be expected, and that the pre-certified fire door option would not be acceptable for residential front doors.

It was noted that the relocation of the letterbox could be justified as there were functional reasons for this, and that whilst the 3 original cupboards adjacent to the front doors were innovative for their time (utilities/groceries incl. bread shelf/refuse), they were not fit for purpose by current standards.

The following suggestions were made:

- Enlarged flat numbering in the side panel to the front doors would improve visibility of the flat numbering
- Original ironmongery should be retained or replaced with similar where possible.
- Unity on a floor was proposed e.g. a single floor to have only original ironmongery or only new ironmongery, but to avoid mixing the two where possible.

A follow-up Pre-Planning Application meeting took place on the 19th of September 2025. The following key comments were made:

- Single cupboard door in place of 3 is acceptable
- It would be preferable for the fixed panel above the cupboard door to be flush with the surrounding frame and door
- Door handle and keyhole plate on the inside of the door to be separate elements
- Doors and frames to be re-paintable
- No blue 'Fire door' sign on the outside of the cupboard door

Further information was provided to the Planning Officer on 13th October 2025. This was generally acceptable with the following comments received:

- The proposed light fittings appear slightly utilitarian, but would provide the benefit of a more controlled level of illumination that could be characterful within the lobbies. Could the internal elements of the cowl be finished in a colour to provide some visual interest?
- Recessed panels acceptable as long as it is a consistent detail across the towers.
- Cupboard door locks to be lozengier shaped like the existing situation

4. DESIGN APPROACH + DEVELOPMENT

4.12 FIRE COMPARTMENTATION

Alternative options for the positioning of the fire compartmentation were explored, with a view to reducing the impact of the fire door replacement works on flat interiors, with associated disruption to residents, and to reduce the visual impact of the changes from the lift lobby.

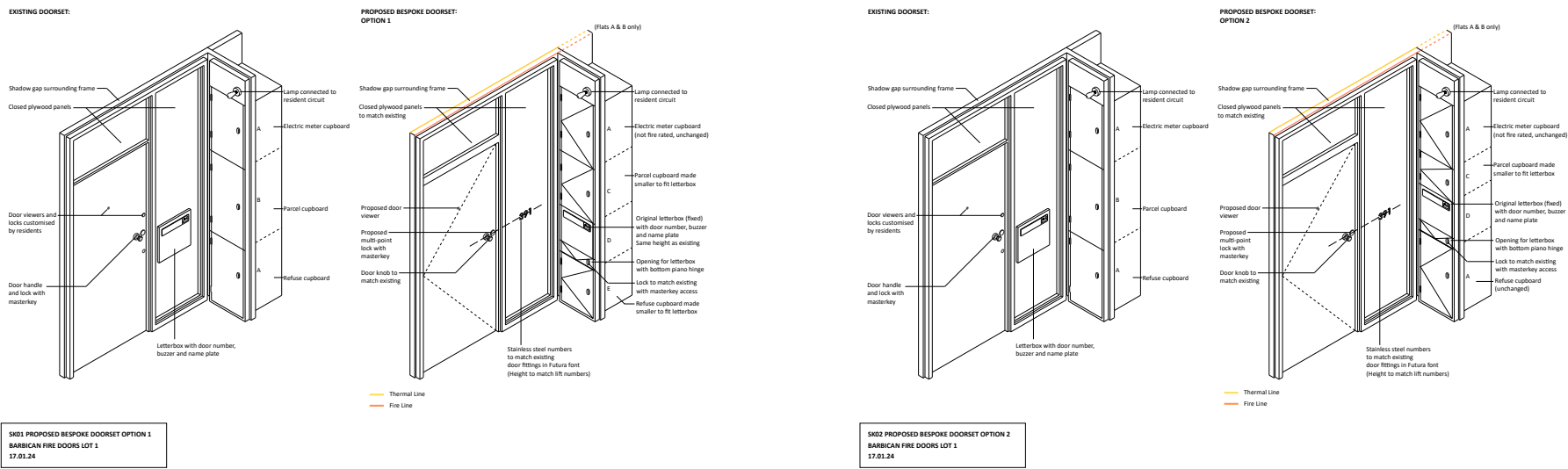
Site visits were carried out on 4th December 2023, 18th January 2024 and 13th March 2024, to develop a greater understanding of the internal flat arrangements and potential issues with interfaces.

The flat layouts adjacent to the front doors differed between the different flat types, and whilst the internal wall of the cupboards was accessible with flat type A + C, this was not possible with flat type B where a communal riser was situated. This meant that the fire resistance of this wall could not be enhanced from within the flat, and the number and complexity of services in the cupboards did not make this feasible from the side of the cupboard. In addition, asbestos was found to be present in hatches within this internal wall, further complicating works if this wall was included in the scope of works, as this would require asbestos removal within the utility rooms, and not solely the hallway.

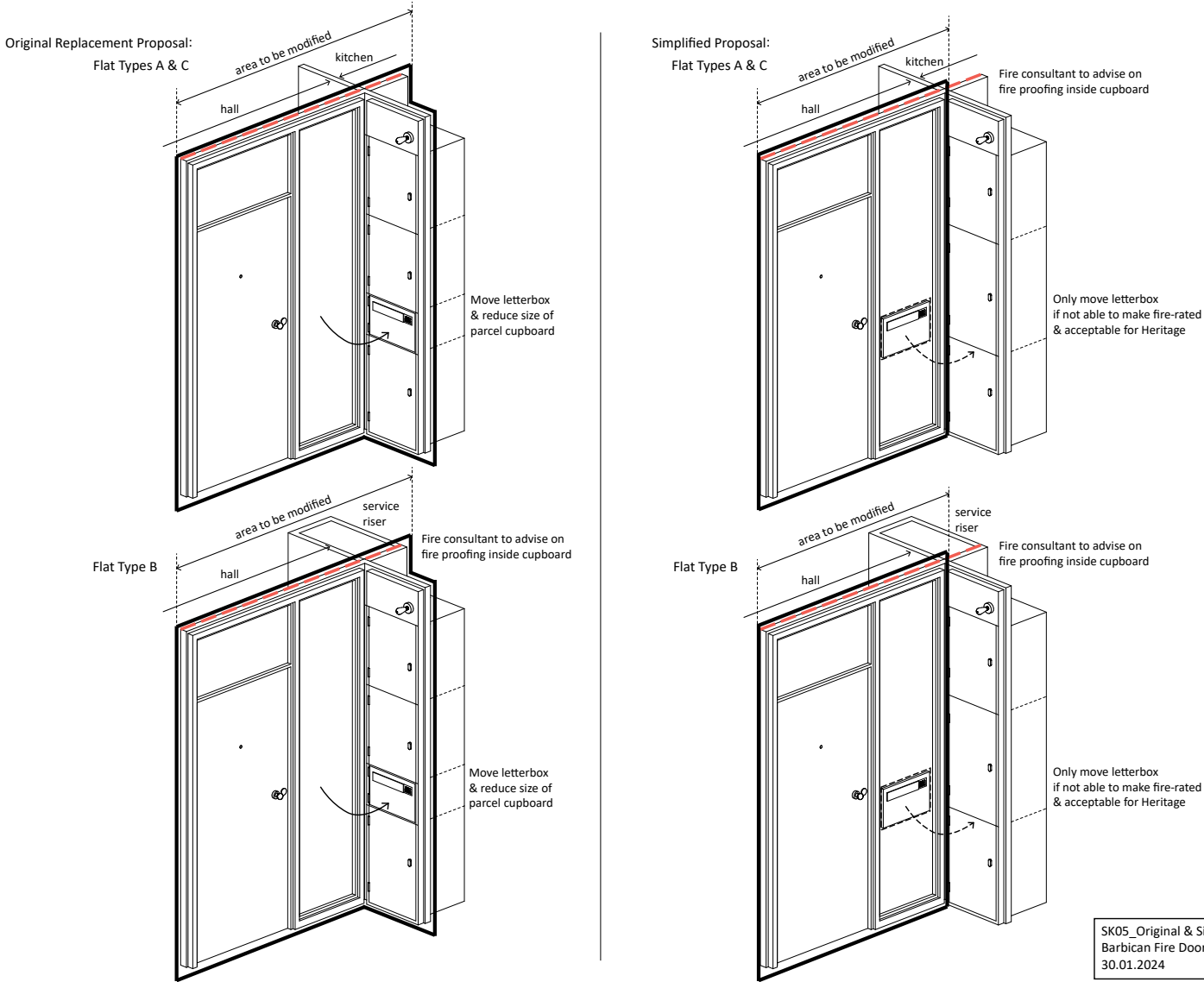
It was concluded that the best solution was for the cupboard doors to form the line of the fire compartmentation, avoiding the need for works in the kitchen/utility area of flats A+C or disruption to services / utilities in the cupboards or riser in flat B.



Access hatch between external cupboard and dwelling



Different options for positioning of opening for letterbox and adjustment of fire compartmentation line



SK05_Original & Simplified Front Door Proposals
Barbican Fire Doors Lot 1
30.01.2024

Reduced works to flat interiors

4. DESIGN APPROACH + DEVELOPMENT

4.13 FIRE TESTING

A fire test was carried out on a door prototypes on 9th May 2024.

The following design amendments were proposed to deal with issues that arrived during the test:

- Increasing the thickness of fire protection used to wrap the hardware to 2mm
- To redesign specific fire packs for adjustable hinges to accommodate more sealing material
- To add sealing material on the face of the hinge blades to close the gaps more tightly.
- To exchange the threshold type to a smaller variant to slow down temperature transmission
- To adding additional MAP intumescent at the face of the locks keeps located in the frame to compensate for the intumescent interruption in the frame.

There were further tests carried out on 11th July and 9th September 2024. The findings from these tests further informed the design development.



Fire testing



4. DESIGN APPROACH + DEVELOPMENT

4.14 PROTOTYPE

A prototype doorset was built in the GERDA factory and discussed with the architect during a factory visit on 28th May 2024.

This was generally positive with a couple of small comments on the appearance and finishes:

- Using a drop-seal (instead of aluminium profile)
- Changing the seal around the door from black to white to better match the door
- Pushing back the plywood threshold to line up with the door frame and allow a shadow gap underneath the side panel. The plywood will be varnished to a grey/neutral finish.



External door hardware



Internal door hardware



Hinges + fire seals



Prototype viewed from outside



Prototype viewed from inside

4. DESIGN APPROACH + DEVELOPMENT

4.15 CUPBOARD DOOR DESIGN

In order to achieve the required fire resistance for the cupboard doors, a single door approach was proposed to reduce the risks, summarized as below:

- Fewer hinge cutouts at the edge of the door that may cause a potential fire break
- Fewer lock cutouts at the edge of the door which can also cause fire to pass through the door
- Fewer breaks in the continuity of fire seals caused by the various cutouts for the hardware
- Reduced the chance that the door can be left open, which will reduce potential fire spread in the event of fire
- A lower number of connections between components reduces the potential for a fire break
- In a configuration with three doors, the hinges are close together, which may cause the door leaf to drop, causing excessive gaps at the top edge. Excessive gaps make doors not compliant and increase the potential for a fire break.

A three-leaf arrangement introduces multiple vertical and horizontal joints, frame sections, and meeting edges. Each of these represents a line of weakness where smoke, hot gases, or flames can bypass. In contrast, a single-leaf fire doorset provides one continuous leaf and frame, creating a far more robust fire-resisting construction.

The performance of any fire door is determined not only by the leaf itself but by the control of perimeter gaps and the activation of intumescent and smoke seals. Testing in accordance with BS 476 Part 22 and EN 1634-1 shows that junctions and meeting stiles can be the most vulnerable points during a fire test, often failing earlier than the leaf or frame. A three-leaf composition has two additional meeting stiles compared with a single-leaf door, increasing the risk of premature failure. A single-leaf door reduces this risk by simplifying the perimeter seal line, allowing the intumescent materials to expand evenly and maintain a continuous barrier.

Reliability in service is also a factor. Fire doors are only effective if they close fully and engage correctly on every use. A three-leaf arrangement requires multiple hinges, latches, and closing mechanisms. This increases the likelihood of misalignment, wear, or partial closure, particularly in a cupboard door subject to frequent access. Any one of the three leaves failing to shut securely would compromise the entire doorset's performance. By contrast, a single-leaf certified fire doorset is simpler to maintain, more durable, ensuring consistent operation throughout its service life. when taking into account future maintaining of fire doors. The proposed single-leaf doorset eliminates unnecessary points of weakness, and provides a simpler, more reliable.

- BB7, Fire Consultant

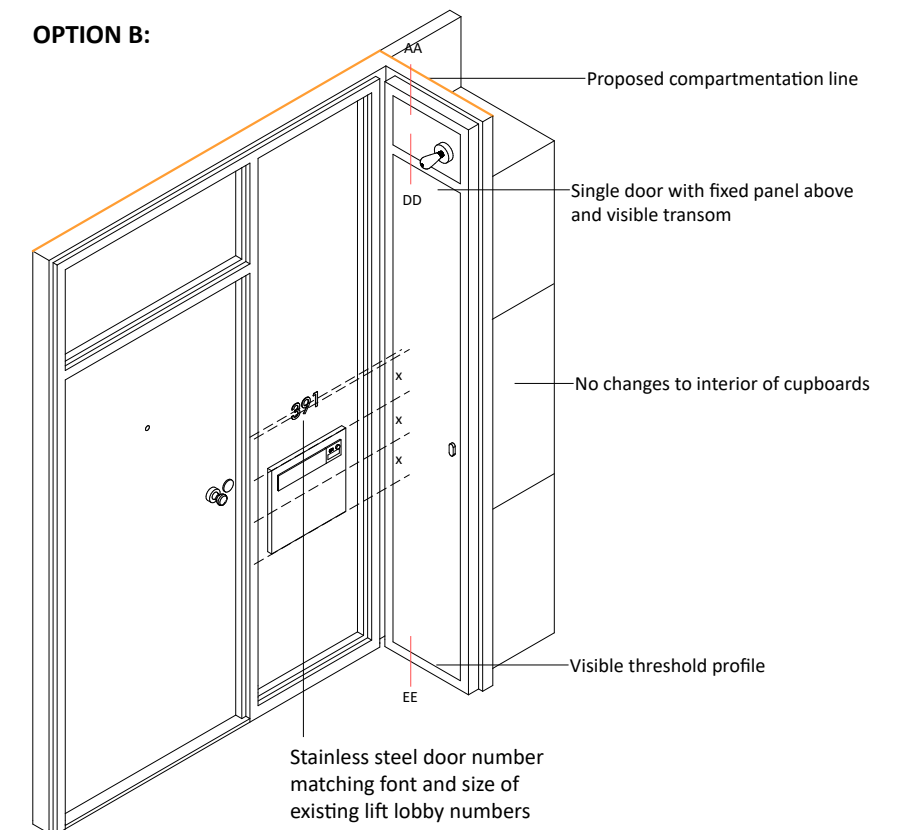
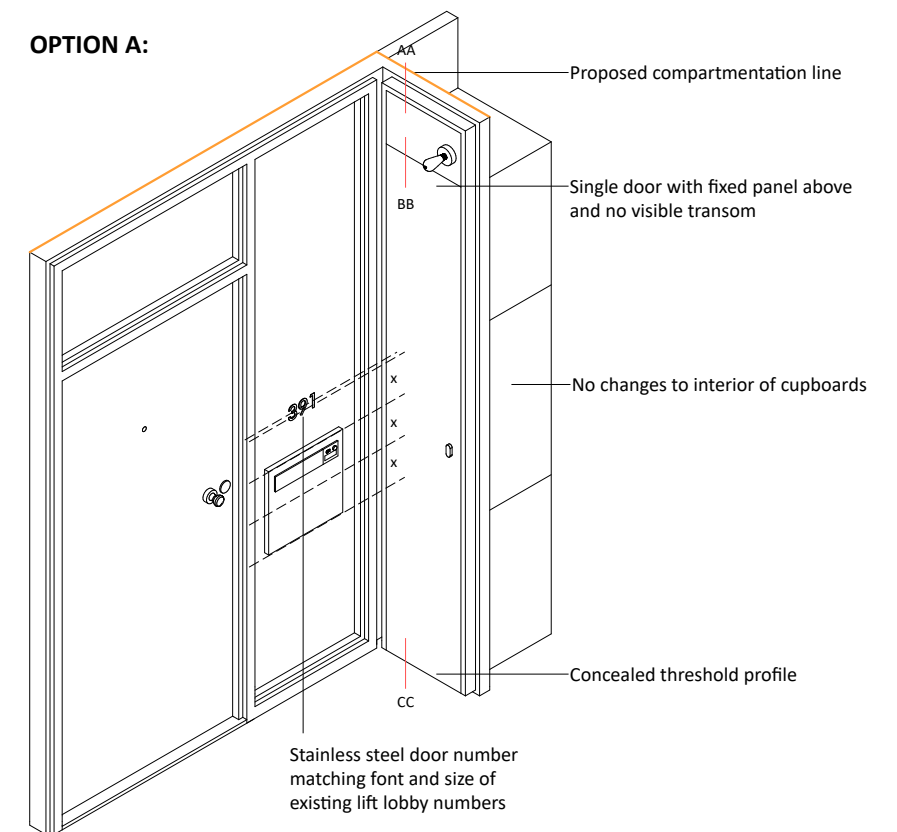
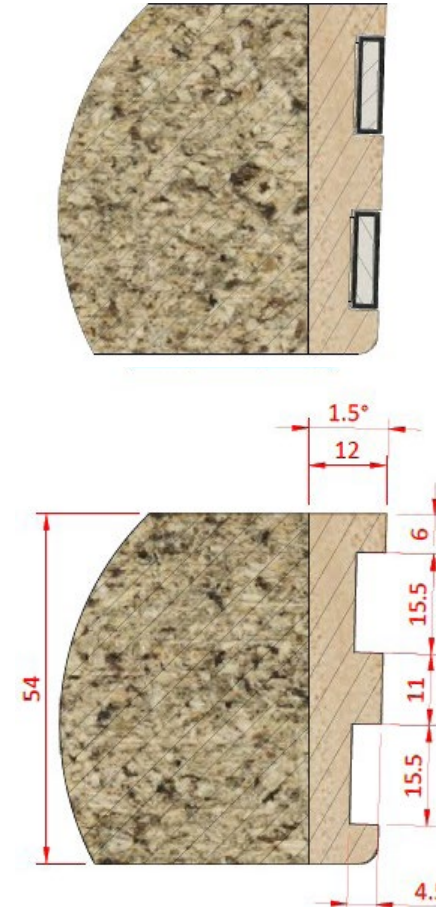
Following the pre-app response that fire door signage should be placed on the door leaf edge and not on the face, a bespoke design for the sign was proposed that would be positioned between the two intumescent strips on the door leaf edge.

Given the limited space available, and the reduction in visibility due to the reduced size of text, possibilities for door closers were explored. The narrow width of the door excluded the inclusion of face mounted closers (within the cupboard), and the most suitable closer was a hinge integrated into the leaf and frame.

The client has appointed a further fire test to be carried out to ensure compliance of the cupboard door (due to the introduction of the self-closer), and this will allow the introduction of a false panel above the cupboard door to achieve the flush finish requested by the planning officer and matching the existing appearance as closely as possible.



Profiling and fire signage on door leaf edge



Cupboard Door Options

4. DESIGN APPROACH + DEVELOPMENT

4.16 LETTER PLATE

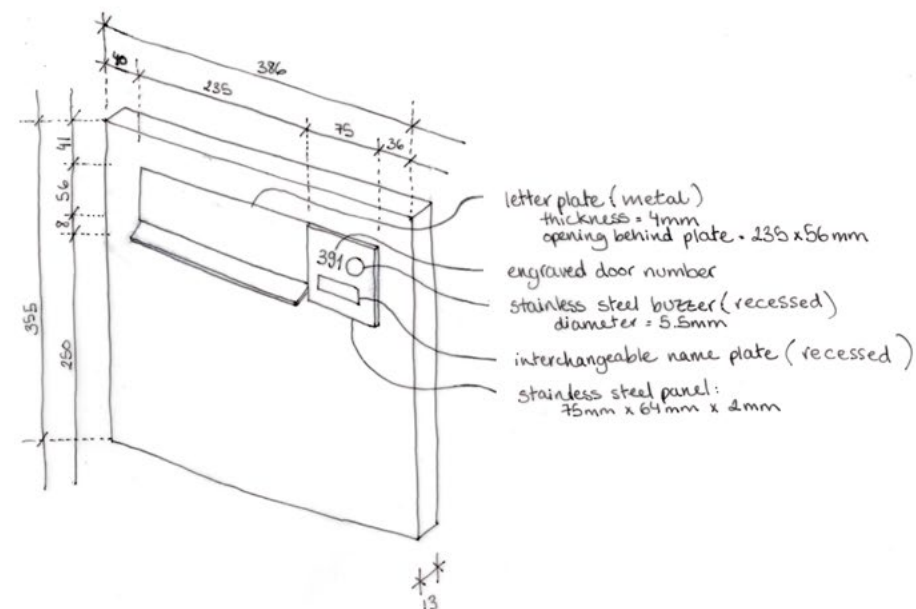
The intention is to replicate the existing letterplate in appearance as closely as possible, whilst achieving the required compliance.

An enlarged letter opening will be required to meet current standards, and a slim-line certified fire-resistant letter plate will be used on the inner face of the side panel. On the outer side a protruding panel will match the existing panel, with bespoke metal letter plate and bell panel closely matching the original.

It is proposed that the flat number is removed from the letterplate, and re-located at a larger size above the letter plate, as suggested by the planning officer to improve legibility.

The current name plate is very small and difficult to read, and it is proposed that these are removed to reduce resident enhancement of the front doors.

The existing solution is built up out of 3 separate sheets of metal to create the opening and slit on the side, and it would not be feasible to replicate this construction.



Measured survey of existing letter plate panel



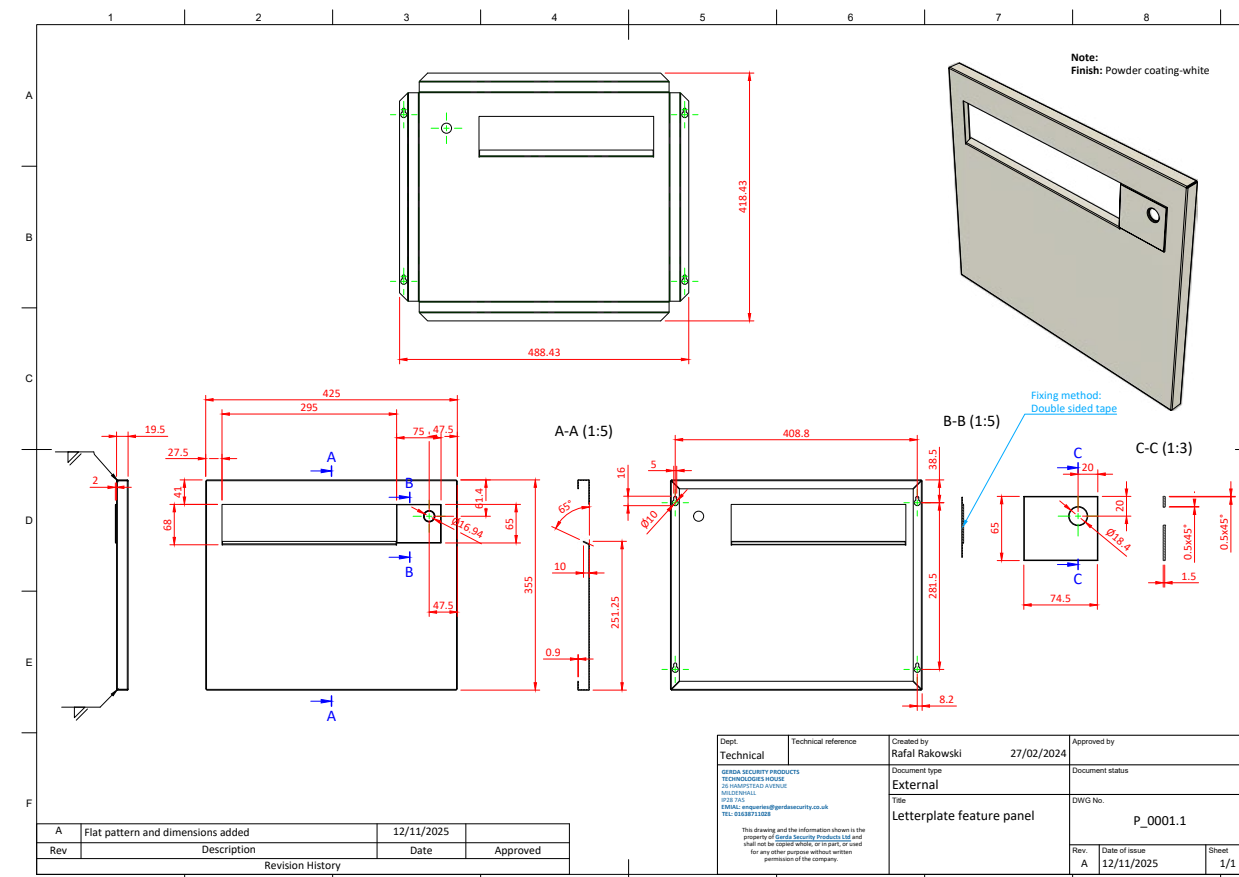
External Letterplate



Internal Letterplate

3D model of external letter plate

3D model of internal letter plate



Drawing + dimensions of letter plate panel



Existing letterplate + panel



Existing numbering, name plate + door bell

4. DESIGN APPROACH + DEVELOPMENT

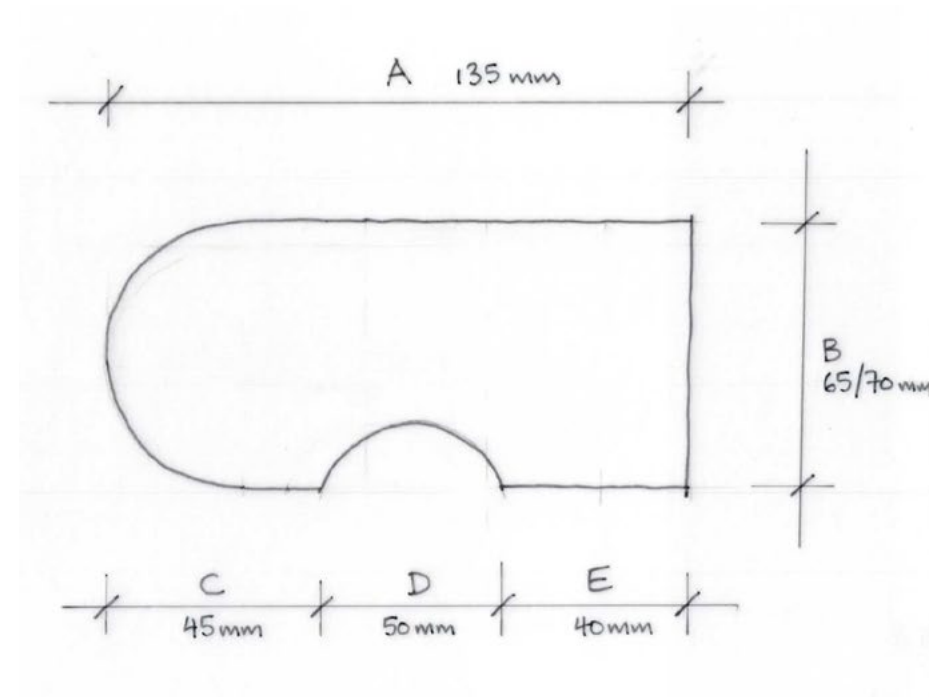
4.17 LIGHT FITTING

24 hour lighting in the lift lobby is provided by the central communal light above the lift panels. On some floors there is additional daylighting via the secondary escape stairs.

There is an electrical point in the panel above the meter cupboard doors, with a light fitting controlled by the residents. At present there is no uniformity or consistency in the light fittings, as residents have replaced the original fittings over the years. It is the aim to replace the fittings with new uniform fittings and LED lights, with the landlord responsible for the replacement of the bulbs, to ensure uniform colour and temperature and reduced risk of damage or loss of fittings.

The possibility of connecting the light fittings to the landlord supply was explored, to allow continuous activation of these lights for improved security. However, this would have incurred considerable additional electrical work, with exposed cabling, and was not pursued. The landlord's intention is to increase lighting levels above the lift doors.

A study of available archive material did not reveal what the original fitting design was. Different new light fittings were discussed with the Conservation Officer, however, from limited surveys of the three towers there appeared to be a commonly recurring fitting, possibly original, that matched the robustness of the surrounding design elements. It was felt that re-producing a bespoke light in this form would be the best means of providing uniformity and staying in keeping with the original design intent of the architects



Measured survey of existing light fitting



Commonly recurring light fitting



Cupboard doors with light fitting above top right

1. Batten Lamp Holder

Utilitarian wall mounted batten lamp holder. Appx 10cm dia.



2. Teti – Artemide

Stylised wall mounted lamp holder. 14cm dia. 7cm depth.



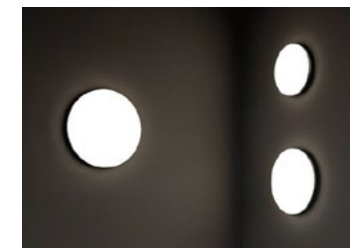
3. Lichtbaustein Light Brick (Circular) – Bega

Round opal glass and cast aluminium luminaire. 25cm dia. 7cm depth.



4. Dot – Folio

Round opal glass and aluminium luminaire with thin profile. 20cm dia. 4.8



5. Itka – Artemide

Stylised opal glass luminaire with curved features. 20cm dia. 8.5cm depth.



Initial light options discussed during pre-app meeting

4. DESIGN APPROACH + DEVELOPMENT

4.18 KEY DESIGN CHANGES

The following section highlights the design developments that took into account the comments from the planners and residents, along with the results of fire testing and advice:

- Letterplate to be located in its original position in the side panel, with a bespoke design and further fire testing to be carried out
- New enlarged stainless steel numbering to be positioned above the letter panel
- 3 cupboard doors to be replaced with a single door with a transome seperating the top panel
- No alterations to be made to the wall between the meter cupboard and dwelling to avoid works in the kitchens/utility rooms
- A bespoke light fitting to be used to match the existing
- A drop-seal to be installed at the foot of the door leaf to avoid a visible aluminium profile
- Engineered timber to be used due to the size of the door and possible twisting/distortion
- No fire door signage on the face of the cupboard door and a flush top panel above the cupboard door

