Hume House – New Windows and Façade Repair
152 The Terrace, Wellington

BC 83149 Hume House

Fire Engineering Strategy

Holmes
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Issue Authorisation

Project: Hume House – New Windows and Façade Repair, 152 The Terrace, Wellington

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A	17 July 2023	Preliminary Report	KDI	FHW
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Version	Extent of Revision
B	Amend cladding requirements
C	Re-amend cladding requirements

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Submission of this Fire Engineering Strategy document for Building Consent Authority approval implies full understanding and acceptance of the above.

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1 PURPOSE

The purpose of this report is to determine the minimum fire safety precautions required within the existing Hume House Apartment building located at 152 The Terrace, Wellington Central to demonstrate compliance with Section 112 of the New Zealand Building Act 2004 with respect to the fire regulations, as part of the works for replacing exterior windows and remedial works to the façade.

This is a legal requirement whereby it must be shown that after the completion of works, the objectives of the New Zealand Building Code relating to means of escape from fire are satisfied to the extent required by the Act.

This Fire Engineering Strategy consists of three sections as follows:

- The scope of works details the work required in order to achieve compliance,
- Appendix A contains verification information required for consent approval only,
- The attached Fire Strategy Sketches supplement both the scope of works and verification items.

This is not a 'For Construction' document in isolation but a performance-based document that is intended to be used by the Architect and other consultants in implementing their detailed designs and preparing their working drawings and specifications. The consultants whose documentation is required to incorporate the requirements of this Fire Engineering Strategy are expected to have read this report, understood the implications as it affects their scope of work, and incorporated the relevant fire requirements into their drawings, specifications, and other construction documents.

Additional comments have been included in shaded boxes similar to this to give further information to be considered by the design team.

This report will not be suitable for submission for Building Consent until all issues are resolved, options selected and these shaded boxes removed from the report.

2 PROJECT DETAILS

The project includes the removal of existing steel windows (in the north, east and west elevations), replacement with new windows and undertaking repairs to the façade.

Hume House is an existing 8-level building used for apartments that also includes a basement carpark. The building includes a 2-level annex that connects to the tower and also includes a basement carpark. The annex is used for commercial tenancies (meeting rooms for hire) on the Ground Floor and apartments on Level 1. We understand each apartment is a separate unit title.

The building is largely sprinkler protected, the exception being the Ground Floor commercial tenancy and the basement (lower ground floor) undercroft carparking area that we understand at the time of converting the building from offices to apartments in the late 1990's was exempted from being sprinkler protected due to access constraints.

3 DESIGN APPROACH

Compliance Pathway

To demonstrate compliance with the relevant fire safety clauses of the Building Code, the following Compliance Document has been adopted as the design basis:

- C/AS2 – Acceptable Solution for Buildings other than Risk Group SH, 1st Edition Amendment 2, 5 November 2020

Assumptions & Clarifications

The design is based on the following assumptions:

1. No legal agreements exist or are proposed that relate to fire.
2. The building importance level is not IL4 or IL5.
3. The fire design is based around an all out evacuation strategy. Upon alarm all occupants evacuate to a place of safety outside the building.
4. There are no past agreements with the Building Owner and the Building Consent Authorities for progressive fire safety upgrades or similar.
5. The building has a current Building Warrant of Fitness and the systems within the building are functional and compliant.
6. There are no solid fuel, gas burning or oil-fired appliances, or open fires proposed in the works.
7. There are no specific spaces for which the sprinkler system is not permitted to be installed as defined by other disciplines.

Property Protection

New Zealand Building Regulations do not impose specific requirements on a building owner to protect their own property. Consideration of protection of the building owner's and tenants' property is not included in this design beyond the extent which arises from compliance with the Building Code, unless specifically noted otherwise. Accordingly, in the event of a fire, it is possible that the property loss could be significant.

FENZ Design Unit Review

In accordance with section 46(1) of the Building Act 2004 some kinds of applications for Building Consent must be provided to Fire and Emergency New Zealand for review. The proposed fire engineering design solution contained herein;

- Constitutes an internal fit-out that does not incorporate a change of use.
- Establishes compliance in accordance with the provisions of an applicable compliance document, does not involve a modification or waiver of clauses C1-6, D1, F6 or F8 of the Building Code and does not involve other than minor alterations to the fire safety systems.

Therefore, under the Gazette we believe that this application is not required to be forwarded to Fire and Emergency New Zealand for review.

4 WORK BY OTHERS

Access Routes

Escape route widths specified in this fire engineering strategy are the minimum widths for fire safety only and may not specifically address requirements for access for people with disabilities.

This report does not detail all requirements required for compliance with D1 and we understand that the compliance with D1 will be documented by others.

Visibility in Escape Routes

The design of systems to achieve compliance with F6 of the NZBC is outside the scope of this report. Any comments in the Fire Engineering documentation regarding visibility in escape routes are for purposes of assisting the designers responsible for F6 compliance.

The design of systems to provide artificial lighting to escape routes (both internal and external paths) in compliance with G8 of the NZBC is outside the scope of this report.

Wayfinding/Signage

The design of exit signage for compliance with F8.3.3 a) of the NZBC is outside the scope of this report. Any comments in the Fire Engineering documentation regarding exit signage positioning and signage icons on the attached Fire Strategy Sketches are for purposes of identifying the required egress routes in assisting the designers responsible for clause F8.3.3 a) compliance.

Structure

Defining the period of fire resistance and fire severity in consideration of clause C6.2 b, c, and d of the NZBC is addressed by this fire strategy. Identification of the structural systems needed for structural stability to achieve the performance requirements and the means of achieving this requirement is to be provided by others.

HSNO

This Fire Engineering Strategy does not specifically consider requirements for Hazardous Substances and New Organisms (HSNO). Therefore, clause C5.7 c) of the NZBC is not covered by this report.

If the building will contain hazardous substances (as defined under the HSNO Act) we expect that specialists will complete a review of the requirements for safe storage of these materials and advise of any fire safety additions (e.g., fire rated enclosures and signage) that arise out of this review.

Fire Safety and Evacuation of Building Regulations

Preparation and approval of any required amendments to the Evacuation Scheme or Evacuation Plan, is to be provided by others.

5 SCOPE OF WORKS

We believe that the proposed work to Hume House will comply with the objectives of the New Zealand Building Code clauses C1 to C6 Protection from Fire, to the extent required by the Building Act, based on implementation of the following Scope of Works. This is required to be read in conjunction with the Fire Strategy Sketches.

5.1 Fire Safety Systems

5.1.1 The existing sprinkler system shall be extended throughout the areas of the building not currently protected (Ground Floor commercial conference centre tenancy and the Basement/Lower Ground Floor undercroft carparking area) in accordance with NZS 4541 (and as amended by Appendix B of C/AS2).

5.1.2 Where internal alterations are undertaken (e.g. the addition of partitioning to form storage areas off the apartment common area corridors) the sprinkler arrangement is to be altered as necessary to maintain compliance with NZS 4541 (and as amended by Appendix B of C/AS2).

> Confirmation is required that this strong recommendation is going to be undertaken prior to the fire report for building consent could be prepared.

5.1.3 The existing manual fire alarm system is to be retained and maintained to the requirements of NZS 4512. However the fire alarm panel may require to be upgraded for facilitating the provision of smoke detectors (see next).

5.1.4 The 230V smoke alarms in the common corridors serving the apartments on each levels are to be replaced with the provision of new supplementary smoke detectors complying with NZS 4512 in the corridors and the stairs. These detectors are to be spaced within these areas as per the spacing requirements within NZS 4512 for smoke detectors. Indicative locations for these new supplementary smoke detectors are shown on plans attached. Their final locations are to be confirmed by the fire alarm contractor.

Upon activation of these smoke detectors the fire alarm evacuation sounders are to sound throughout the building and an automatic call to FENZ is to be made.

5.1.5 The existing Fire Indicator Panel is to be updated to reflect the presence of supplementary smoke detection in the common corridors.

5.1.6 The existing smoke alarms provided within the apartments are to be retained. It is required for access to be gained to each apartment to check and rectify that smoke alarms are present and of quantities to meet the positioning requirements of F7/AS1.

Any new smoke alarms are to be photo-electric type, manufactured to at least one of: AS 3786, ISO 12239 or BS EN 14604 and have a long-life battery. The date of install shall be marked in permanent marker on the back of the alarm.

For ongoing maintenance of this system the following is proposed (which accounts for the difficulties of accessing apartments):

- Every year the apartment occupants are to provide a statement to the Body Corporate that the smoke alarms within their apartment are still present, they are functional and have been cleaned by vacuuming.
- The IQP is to base their sign off on the smoke alarm system based on these statements.
- Every second year, corresponding with the sprinkler system biennial survey it is required that an IQP checks the presence of the smoke alarms, vacuums each smoke alarm and replaces the battery of those that are not long life sealed battery type.
- Smoke alarms are to be replaced within the manufacturer's warranty period.

Approval of this, on an as near as is reasonably practicable basis, is at the discretion of Wellington City Council (WCC), noting that if the building were new these smoke alarms would be non-latching detectors with sounder bases run off the fire alarm panel and would also include a wall-mounted hush button as a Type 5 enhanced smoke detection system.

5.2 Escape Route Requirements

5.2.1 Escape routes are to be retained as existing.

5.2.2 Where the new store is provided on Level 2, the corridor width is not to be decreased below 1.0 m.

5.2.3 The door to the new store is to provide a clear width of not less than 600 mm and not be less than 1955 mm in height. It is to include door handles complying with D1/AS1.

5.2.4 The replacement fire door to the annex stair on Ground Level is to match that of the existing door in height or width, or if a match is not possible the new door is to be not less than 875 mm in clear opening width and 1955 mm in height. It shall have door handles complying with D1/AS1 and door opening forces that do not exceed 67 N to release the latch, 133 N to set the door in motion, and 67 N to open the door to the minimum required width.

5.2.5 The side-hinged wind lobby doors to the entry off the Terrace to the conference centre are required to be re-hung to open in the direction of escape.

Should also consider re-swinging the Matiu and Poneke doors as indicated on the attached fire safety sketches.

5.2.6 The existing automatic sliding doors to the entry off the Terrace to the conference centre are required to be checked and be rectified accordingly that on malfunction or power failure to automatically slide open and remain open, or being readily pushed to the outward open position by the building occupants in an emergency.

5.2.7 Locking devices on the new doors provided as part of these works shall be clearly visible, located where such a device would normally be expected, designed to be easily operated without a key or other implement and allow the door to open in a normal manner.

5.2.8 As part of the works the locking provisions on existing doors on escape routes from the conference centre and the common areas of the apartment level are to be checked and be rectified to meet the above (5.2.7).

5.2.9 Any electronic locking devices on doors on escape routes shall either act under free handle or be fitted with a push button or switch that is fail safe (i.e. independent of any building management system or security system). The operation must be such that it releases the lock and allows the door to be open.

5.3 Artificial Lighting and Signage

5.3.1 The existing emergency lighting system is to be retained as existing and be maintained in accordance with the standard of installation.

> Note WCC will likely ask in an RFI for plans and details of the existing system and what upgrades to the system are proposed. Emergency lighting is outside of Holmes expertise, and it will be required for an Electrical Engineer to advise.

5.3.2 Illuminated exit signage complying with F8 is required to be provided throughout the conference centre and the basement carpark of the tower.

Note that exit sign symbols are shown on the attached Fire Strategy Sketches to identify the required egress paths. The design of the exit signage system is to be provided by others.

5.3.3 The existing exit signage on the apartment levels is to be retained as existing.

> This signage is not self-illuminated and deficient to today's requirements, therefore acceptance of this on an as near as reasonably practicable basis is at the discretion of the WCC.

5.3.4 Signage for the fire related safety features of the building shall be checked and be rectified accordingly to comply with F8. This includes signage to the manual call points and signage depicting the stair level.

5.3.5 A "NO EXIT" sign is to be positioned on the tower stair flight to the basement as indicated on the attached fire safety sketches

5.4 Limitation on Internal Materials Usage

5.4.1 Throughout the building any new internal surface finishes shall meet the following group number requirements (when tested to ISO 9705:1993 as per C/VM2 Clause A1.2, or ISO 5660:2002 as per C/VM2 Clause A1.3).

Table 1: Group Number limitations

Building Elements	Location	Maximum Material Group[1]
Ceilings and walls	Within the common corridors to the apartments and within the stairwells.	2
Ceilings	Crowd spaces (conference centre)	2
Walls	Crowd spaces (conference centre)	3
Ceilings and walls	All other occupied spaces	3
HVAC ducts	Internal surfaces	2
	External surfaces	3

Note 1: Any lower Group Numbers than that specified, and those with additional Group Number -S, will meet the requirement.

Note 2: Surface finish controls do not apply to:

- Small areas of non-conforming product within a space with a total aggregate surface area not more than 5.0 m^2.
- Electrical switches, outlets, cover plates and similar small discontinuous areas.
- Pipes and cables used to distribute power or services.
- Handrails and general decorative trim of any material such as architraves, skirtings and window components including reveals, provided these do not exceed 5% of the surface area of the wall or ceiling to which it is attached.
- Damp-proof courses, seals, caulking, flashings, thermal breaks and ground moisture barriers.
- Timber joinery and structural timber building elements constructed from solid wood, glulam or laminated veneer lumber. This includes heavy timber columns, beams, portals and shear walls not more than 3.0 m wide, but does not include exposed timber panels or permanent formwork on the underside of floor/ceiling systems.
- Individual doorsets.
- Continuous areas of permanently installed openable wall partitions not more than 3.0 m high and having a surface area of not more than 25% of the divided room floor area or 5.0 m^2, whichever is less.

Note 3: The correlation of wall and ceiling surface finishes derived from Australian or European classifications to the Group Number requirements of NZBC Clause 3.4(a) can, without the need for further testing, be taken as described in the following.

Table 2: Australian or European correlations

Group Number to NZBC Clause C3.4(a)	Australian Group Number to NCC Specification C1.10 Clause 4 using AS ISO 9705:2003	European Classification to EN 13501-1:2007+A1:2009
2	Group 2	Class C
3	Group 3	Class D

5.4.2 If any new foamed plastic building materials or combustible insulating materials form part of a wall, ceiling or roof system, the completed system (foamed plastic and/or foamed plastic plus a surface lining) is required to meet the above maximum material group number as applicable for the location of this building material. In addition, the foamed plastic is to meet the flame propagation criteria as specified in latest versions of AS 1366. It is strongly recommended that foamed plastic materials are not used.

5.4.3 Throughout the building any new flooring shall meet the following critical radiant flux limitations (when tested to ISO 9239-1:2010).

Table 3: Critical flux limitations for flooring

Area of Building	Minimum Critical Radiant Flux [kW/m^2]
Within the common corridors to the apartments and within the stairwells.	2.2
All other occupied spaces	1.2

5.5 Internal Fire Separations

5.5.1 New fire rated construction provided as part of these works is to be formed by systems tested in accordance with AS 1530.4:2005 or NZS/BS 476:1987 Parts 21 and 22.

5.5.2 Bounding construction of the following firecells as indicated on the attached Fire Safety Sketches are required to achieve a fire resistance rating of not less than that stated:

- Each apartment – (30)/30/30
- Each safe path corridor on Levels 1 and above – (30)/30/30
- The tower stair from Levels 1 and above – (30)/30/30
- The tower stair on Level G and Basement and the associated corridor off the Terrace at Ground Floor – (60)/60/60

- The annex stair at Ground Floor and Basement – (60)/60/60

5.5.3 The walls bounding the tower stairwell are to be rectified to continue from where they presently terminate (at ceiling level) to extend to the underside of the concrete floor above. The in-fill is to be as per a system that achieves an FRR of not less than -/30/30 and accounts for the ability to be constructed around existing services and to be fire stopped (refer clause below on fire stopping requirements).

5.5.4 A storage area is to be created on Level 2 to accommodate the storage currently in the safe path corridor. The partitioning is required to extend from the Level 2 floor slab to the underside of the floor slab over (requires cutting out of the existing plasterboard ceiling) and is to achieve an FRR of not less than -/30/30.

It is recommended this is provided on other levels to avoid accumulation of fire load in areas that are meant to be bereft of fuel load.

5.5.5 The windows in the concrete wall to the lightwell bounding the new storeroom on Level 2 shall be in-filled with fire rated construction that achieves an FRR of no less than -/30/30. The fire rating may be as per a one-way system that is applied in the direction of the storeroom to the lightwell.

5.5.6 The entry doors to the storage room created off the common apartment corridor is to be new certified fire door to NZS 4520 that achieve an FRR of not less than -/60/30. The door is to be fitted with smoke seals to the top and both side edges of the door leaf or frame.

5.5.7 The door to the annex stairwell at Ground Floor is required to be replaced with a new certified fire door to NZS 4520 that achieves an FRR of not less than -/60/30. The door is to be fitted with smoke seals to the top and both side edges of the door leaf or frame. Preferably this door matches the existing opening, however if this is not possible, the bounding walls will need to be modified accordingly to have framing added so the new door frame installs into the wall as per the manufacturer's instructions (minimum 10 mm wedging gap) and that cut existing wall linings and new linings have all edges formed over framing. Any new linings are to be equivalent to that used in a -/60/60 FRR wall system.

5.5.8 The electrical boards on each level are to be fire separated from the common safe path corridors. Existing construction is to be checked and rectified accordingly that the walls between the electrical board and the corridor are complete (any new patches to be completed with linings used on -/30/30 FRR systems), penetrations fire stopped (refer below) and that the existing solid core doors are maintained closed, with suitable locking provided and with turn snib on the inside face of the door.

5.5.9 All penetrations through fire separations (created by wires, cables, pipes, flush boxes, etc.) or any gaps, or control joints, that are created or uncovered as part of these works are required to be fire stopped with systems (collars, wraps, sleeves, mastics, etc.) that are approved for the proposed use (e.g. rating, orientation, penetration type, construction type) in accordance with AS 1530.4

2005 and AS 4072.1:2005. Where fire stopping systems to AS 4072.1 :2005 are not able to be provided, it is acceptable to incorporate systems tested to BS EN 1366.3:2009. Fire stopping systems are required to be installed strictly in accordance with the manufacturer's instructions.

Services shall be supported on both sides of the fire separation to resist movement or collapse during fire and as per the requirements of the fire rated system being applied. Supports shall also not prevent normal expansion and contraction of the services at the penetration.

5.5.10 Throughout the building the provision of fire dampers is to be checked and be rectified at duct penetrations through fire separations. New dampers are required to be installed in accordance with AS 1682.2:1990 and the manufacturer's instructions. Existing fire dampers are required to be checked and rectified accordingly to be fitted to the wall in accordance with AS 1682.2 and the manufacturer's instruction (inclusive of checking and rectifying the provision of checked and suitable slip joints where rigid ducting attaches to the damper body).

5.5.11 At basement level of the tower stair the metal pipes penetrating the wall bounding the stair are to be fire stopped at the wall penetration as per a system for a metal pipe penetrating a concrete wall (it is noted the pipes transition to plastic within the stair and that there is no known fire stopping solution for this – however the risk of fire spread and smoke within the stair from this penetration is considered negligible).

5.5.12 At Level 7 the services pipes through the wall bounding the existing storeroom are to be fire stopped as per the requirements of 5.5.9.

5.5.13 At Level 7 the door to the lift machine room (that is accessed from within the stair enclosure) is required to be fitted with a smoke seal at sill level (if the gap exceeds 10 mm use Raven RP114 or equivalent, if less than 10 mm, then any smoke seal that is medium smoke rated, such as the Raven RP38Si or equivalent) and the other three edges of the door are to be checked and retrofitted with smoke seals as necessary (the side and top seals may be batwing type).

Refer to comment on the Ground Floor plan re a smoke lobby preceding the annex stair. We will not present the need or otherwise of this and if raised will respond to the RFI that provision of sprinklers is sufficient upgrade given the scope of the proposed works.

5.6 External Construction

5.6.1 The steel framed and Georgian wired windows to the lightwell and the south elevation (that is directly adjacent the site boundary) are to be retained as existing.

5.6.2 Windows in the east, west and north elevations of the building are permitted to be unrated and may be replaced with aluminium framed windows that include opening sashes and include non-fire-resistant glazing.

5.6.3 Attachments to the existing concrete walls and/or render coats provided as part of these works where within 1 m of a relevant boundary shall be either:

i. composed entirely of glass, concrete, steel, brick/block, ceramic tile or aluminium or classified as non-combustible when tested to AS 1530.1 or classified as A1 (non-combustible) or A2 (limited combustible) in accordance with BS EN 13501-1, or

ii. a type that has been tested to ISO 5660 Part 1: 2002 and ISO 5660 Part 2:2002 as per C/AS2 Clause C7.1 and which achieves:

- Peak Rate of Heat Release not exceeding 100 kW/m²
- Total Heat Released not exceeding 25 MJ/m²

5.6.4 Attachments to the existing concrete walls and/or render coats provided as part of these works due to the building height are also to be as per or achieve one of the following:

- Be non-combustible or limited combustible materials, or
- Be classified in accordance with AS 5113 and achieve a EW classification, or
- Undergo fire testing in accordance to BS 8414-1 or BS 8414-2 and satisfy the acceptance criteria in BR 135, or
- Undergo testing in accordance to NFPA 285 and additionally be comprised of cladding materials that are
  - non-combustible or limited combustible or
  - tested in accordance with ISO 5660 Part 1 or AS/NZS 3837 and has a peak heat release rate ≤ 100 kW/m² and total heat released ≤ 25MJ/m².

The proposed StoArmat Miral Exterior render system meets 5.6.3 ii) and has been tested to BS 8414-2 (over aerated concrete panel) and meets BR 135 and is therefore considered suitable for use on this project.

5.7 Prevention of Fire Occurring

5.7.1 Throughout the building, any new electrical installation shall be installed in accordance with Clause G9 of the Building Code.

5.7.2 The existing couches in the safe paths are to be removed and the Body Corporate is responsible for making sure the safe paths remain free of any combustible items.

Appendix A - Verification

A.1 Building Characteristics

The occupancy of the building is as follows:

Table 4: Summary of Risk Groups and Occupant Loads in Building

Level	Firecell	Risk Group	Area [m²]	Density [m²/person]	Occupant Load [people]
B	Tower Basement Carpark	VP	250	50	5
	Annex Basement Carpark	VP	120	50	3
G	Meeting Rooms	CA	315	2.5	126 (111) [1]
1	Apartments (7 off)	SM	No. of beds		30
2-6	Apartments (6 off per level)	SM	No. of beds		18 per level
7	Apartments (4 off)	SM	No. of beds		12

Explanatory Note:

1) The conference centre advertises lesser occupancy, as shown on the attached Fire Safety Sketches and totalled in parenthesis.

A.2 Fire Safety Systems

The following summarises the fire safety precautions for the building from C/AS2.

Table 5: Fire Safety Systems Required

Risk Group	Occ. Load	Escape Height [m]	Systems	Notes
SM (permanent)	N/A	>10 but < 25	5, 15, 18	Where only a single means of escape Clause 3.13.1 requires sprinklers where the escape height is greater than 10 m.
CA	251 to 1000	< 4	4, 18	Where the environment is challenging for smoke detection, the Type 4 may be substituted with a Type 3 with supplementary smoke detection
VP	N/A	≤10	2, 18	If the building is protected with an automatic fire alarm system, the risk group VP must have a minimum Type 3 system installed.

Table 6: Fire Resistance Ratings Required

Risk Group	Life Rating [min]	Property Rating [min]
SM (sprinklered)	30	30
CA (sprinklered)	30	60
VP (sprinklered or cross ventilated)	30	30

Given the above the proposed fire safety features are shown below with comparison to the requirements of C/AS2 as appropriate.

Table 7: Proposed Fire Safety Precautions

Feature	C/AS2 Requirement	Existing/Proposed Features
Fire Rating	(30)/30/30 between firecells in the most part, with (60)/60/60 to the unit-title property boundaries at the Ground Floor CA Risk Group areas.	Existing fire separations to be retained largely as existing. Some upgrades are detailed within the Scope of Works. Refer also to Section A.4
Alarm System	A Type 7 sprinkler system (due to the single stair) with an automatic fire alarm system that includes modified smoke detection and manual call points.	Existing provisions include: ▪ A Type 6 automatic fire sprinkler system with manual call points is provided throughout the building, with the exception of the sprinklers being omitted from the Ground Floor conference centre and the annex basement carpark (these spaces include heat detectors). ▪ 230V smoke alarms in the circulation corridors and stairwells. ▪ Type 1 smoke alarms inside the individual apartments. Proposed upgrades are outlined within the Scope of Works and include remedying the sprinkler system to be provided throughout the building and replacing the 230V smoke alarms with supplementary smoke detectors connected to the fire alarm panel. Refer also to Section A.2.1.
Fire Hydrant System	Charged fire hydrant riser.	None provided. Refer to Section A.2.2.
Fire Service Lift Controls	Fire service lift control.	Understand this is provided.

Feature	C/AS2 Requirement	Existing/Proposed Features
Handheld Fire Fighting Equipment	Nil	Existing fire hose reels and hand held fire extinguishers are to be retained and be maintained in accordance with NZS 4503.
Visibility in Escape Routes	Emergency lighting fixtures to be provided in accordance with F6/AS1.	Emergency lighting fixtures located in circulation corridors and in stairwell and safe path corridors. These are to be retained as existing.
Exit & Directional Signage	Exit and directional signage required accordance with F8/AS1.	The apartment levels are provided with reflective type exit signage. This is to be retained as existing, given the extent of works, the presence of emergency lighting and that occupants of the apartments are familiar with the layouts. The signage in the conference centre and basement of the tower is presently lacking and is to be upgraded with new illuminated exit signage.

A.2.1 ANARP Discussion Type 5 Fire Alarm

C/AS2 requires a Type 5 alarm system to be installed in the building, with local alerting (non latching) smoke detectors in the apartments and common alerting (latching) smoke detectors in the corridors, stairs and other common areas.

The building is provided with a Type 6 (sprinkler system) throughout and is meant to include Type 1 (domestic smoke alarms) within the apartments (as per an earlier Building Consent, but access was only available to one apartment to confirm this is provided within that inspected apartment). It also includes supplementary smoke detection within the safe path corridors by way of 230V interconnected smoke alarms (i.e. not connected to the fire alarm panel).

It is proposed to upgrade the detection within the common areas, but it is not proposed to extend the fire alarm system into the apartments. The costs and disturbance of running wiring into the apartments (with cutting out of plasterboard ceilings and the subsequent patching, sanding and painting of – and likely having to repaint the entire ceiling to get a colour match) is considered far too onerous, especially in relation to the proposed works that were initially proposed to be all external, but are including upgrades to the sprinkler system and fire rating of the stair that are considered of much greater benefit to occupant safety.

The Scope of Works outlines a maintenance requirement for the battery powered alarms in the apartments and with this being followed there is considered negligible benefit from the provision of a Type 5 system, when the Type 1 is providing a similar early warning of fire function within the apartments as the local alerting smoke detectors of a Type 5 system.

A.2.2 ANARP Discussion Fire Hydrant System

The building is not provided with a building hydrant and does not comply with current C/AS2 requirements. We consider that a building hydrant provides little benefit to the objectives of life safety during the early stages of the fire, and that the cost to retrofit a new building hydrant, possibly at a cost of over $100k, outweighing the increased level of life safety, and as such we are of the opinion that existing arrangement complies on an ANARP basis.

A.3 Means of Egress

A.3.1 Escape Route Features

The following summarises the configuration of the escape routes within the building.

Basement Carparks

The enclosed basement carpark of the tower is provided with a single means of escape, via the main stair to the ground level apartment entry lobby that discharges to The Terrace. The basement stair entry is provided with a smoke lobby, as per the requirements of Clause 3.13.1 of C/AS2.

The basement carpark of the annex is largely open sided and occupants can readily evacuate directly to outside and can disperse to The Terrace along a pathway to the side of the building.

Ground Floor

Ground floor occupants are provided with two means of escape, one via the main entry to The Terrace, the other via the annex stair to the basement and exit to the open carpark.

Level 1

A single of means of escape is provided in Level 1 via the annex stair to the basement and exit to the open carpark.

Level 2 to Level 7

Levels 2 to level 7 are provided with a single means of escape via the main (tower) stair to the ground floor and directly outside to The Terrace.

A.3.2 Escape Route Widths

The following summarises the allowable and actual escape route widths provided within the building.

Table 8: Egress Width Requirements - Horizontal

Level	Description	Occ. Load	Total Width Required [mm]	Width Required Horiz. [mm]	Width Actual Horiz. [mm]
B	Basement Carpark (Tower)	-	-	1 x 850	1 x >2000
G	Apartment Entry Foyer	-	-	1 x 1000	1 x 2000
	Meeting Room Tenancy	126	882	2 x 850	2 x 1000
1 to 7	Apartment entry doors	-	-	1 x 600	1 x 860
	Common corridors	-	-	1 x 1000	1 x 1100

Table 9: Egress Width Requirements - Vertical

Level	Description	Occ. Load	Total Width Required [mm]	Width Required Vert.[1, 2] [mm]	Width Actual Vert. [mm]
7 to G	Tower Stair	-	-	1 x 1000	1 x 1000
B to G	Tower Stair	-	-	1 x 1000	1 x 745 [3]
G to B	Annex Stair	63	567	1 x 1000	1 x 1000
1 to G	Annex Stair	-	-	1 x 1000	1 x 1000

Explanatory Notes:

1) Doors to exitways are permitted to impinge into the required escape route width by up to 125 mm without affecting the required horizontal travel width.
2) Handrails are permitted to impinge into the required escape route width by up to 100 mm without affecting the required vertical travel width.
3) See comments below regarding acceptance of this width on an ANARP basis.

The above shows that the escape route widths within the building comply with the minimum requirements of C/AS2, with the exception of the exit from the tower basement.

The tower basement serves an extremely low occupant load and at a width of 745 mm it is going to allow one person per tread. Increasing the stair to 1000 mm, even if possible (not considered possible due to the bounding wall being masonry construction and most probably load-bearing), would not result in any measurable improvement of egress time, as a 1000 mm wide stair also only enables one person per tread. Given the low occupant load and intermittently occupied only there will be no queuing formed and

occupants will readily evacuate single file up the stair in the same amount of time as they would on a 1000 mm stair. The width of this stair is therefore acceptable as is on an ANARP basis.

A.3.3 Travel Distances

The following summarises the allowable and actual travel distances, taking into account the permitted distances based on the installed fire safety systems.

Table 10: Summary of Actual and Permitted Travel Distances

Level	Description	DEOP Permitted [m]	DEOP Actual [m]	TOP Permitted [m]	TOP Actual [m]
B	Basement enclosed area	70	30	180	30
G	Ground Floor Conference Tenancy – Cable Car Room	40	37	100	37
	Ground Floor Conference Tenancy – Poneke Room	40	9	100	23, 34
1	Safe Path Corridor	30	28[1]	-	-
1	Apartment 1C	30?	15	-	-
2 to 6	Safe Path Corridor	30	9	-	-
	SW apartments	30?	11	-	-
7	Safe Path Corridor	30	4	-	-
7	SW apartment	30?	17	-	-

Explanatory Note:

1. This is measured to the exit to the carpark at the foot of the stair (includes 1.2 x multiplier for travel on the stair).

The above shows that the travel distances within the building comply with the maximum permitted by C/AS2.

A.4 Internal Spread of Fire

As the Life Rating of the building is 30 minutes, it is required under C/AS2 that each firecell be separated with bounding construction that achieves a FRR of no less than (30)/30/30 sm.

However, as the building is unit-titled, the property rating is to be provided to the unit-title boundaries. The unit-title plans have not been sourced, but it is assumed that the apartments are all separate titles, the common safe path corridors and stairs are assigned common area and that the conference centre is one title. The property rating for the apartments and carpark is the same as the life rating therefore it is

considered 30 minute fire separations apply everywhere, other than to the common areas on the ground floor where the property rating is 60 minutes.

The locations of the existing fire separations are notated on the attached fire safety sketches. These separations are a combination of concrete and light-weight walls lined with plasterboard. These fire separations are to be retained as is, on an as nearly as is reasonably practicable basis.

It is noted that within the Ground Floor conference centre that there are existing double sets of sliding fire doors that are on fusible links. It is unknown why these exist, other than they were likely provided previously to protect a property boundary in the past (the building appears to consist of two buildings that may have previously been on separate titles and such doors would have provided the property protection to the openings in the concrete wall between the buildings). Given these doors are on fusible link and that should they activate due to local heat (very unlikely once sprinklers are extended through the conference centre), it is not expected occupants will be escaping this way to potentially interfere with the escape route (and delay occupants that would need to manually slide the door open) and therefore the doors may remain as existing.

A few non-fire stopped penetrations were noted on our site visit and the remedial of these are as detailed within the Scope of Works section.

Our site visit revealed that the walls bounding the tower stair are incomplete above the ceiling. As part of these works it is required for the walls bounding the tower stair to be rectified to include fire rated wall assemblies above the ceiling to the underside of the floor slab over, and all services penetrations be fire stopped. The doors to the tower stair are timber framed and Georgian wired. These doors are proposed to be retained as existing, on an as nearly as is reasonably practicable basis, given the presence of sprinklers and the bounding construction between the apartments and the common (safe path) corridors that are to be made free of combustible furnishes and storage (refer below). Any fire is expected to originate within an apartment and with the presence of sprinklers and bounding construction to the apartment the effects of fire will most likely be contained within the apartment and not spread to the corridor and test the fire rating of the stair entry door.

Our site visit also observed masses of storage within the Level 2 common corridor and as such it is required for a fire rated storeroom to be provided, as indicated on the attached plans and noted in the Scope of Works. As the new storeroom will have a fire load, prevention of fire spread across the lightwell to the apartment and to the corridor is to be provided, and this is to be undertaken by utilising the inherent fire rating of the existing masonry external wall of the lightwell and to in-fill the three windows within the storeroom with fire rated construction that achieves an FRR of not less than -/30/30. The fire rating of the in-fill may be as per a one-way system that is fire rated in the direction of the storeroom to the lightwell.

At the conference room level (ground), plans prepared at the time of converting the Level 1 annex to apartments indicate the walls bounding the stair to be 1 hr fire rated. The walls were observed to be of light-weight construction and lined both sides with plasterboard. With the proposal to extend the sprinkler system into the conference centre it is considered reasonable to retain the bounding construction to the stair as existing. The door from the conference centre to the stair is solid timber with an oversized Georgian

wired panel. The fire rating of the door is potentially only -/30/-. As this door is between an area with fire load and the only means of escape from the Level 1 apartments, it is proposed to replace the door with a new certified fire door that achieves and FRR of not less than -/60/30.

A.5 External Spread of Fire

Due to the works involving replacement of windows and plastering of the concrete façade it is required to consider the provisions for external spread of fire.

South Elevation

This elevation is directly adjacent to the site boundary and as the neighbouring building is also in close proximity to this boundary (is fully concrete wall) no works are proposed to this elevation. The existing construction may be retained as existing.

West, East and North Elevations

These elevations all face road or land reserved for motorway purposes, therefore they are permitted to be 100% unprotected. New windows in these elevations therefore have no requirement to be fire rated for horizontal spread of fire.

Cladding

Cladding restrictions are based on Building Height. This building is slightly over 25 m in height, the top of Level 7 is not absolutely known, being anywhere between 25.5 m and 26.9 m, noting that roof area of Level 7 serves as some plant space and sometimes it is interpreted the top of Level 7 is the ceiling level of the occupied space (ceiling level of the apartments), refer to Figure 1.

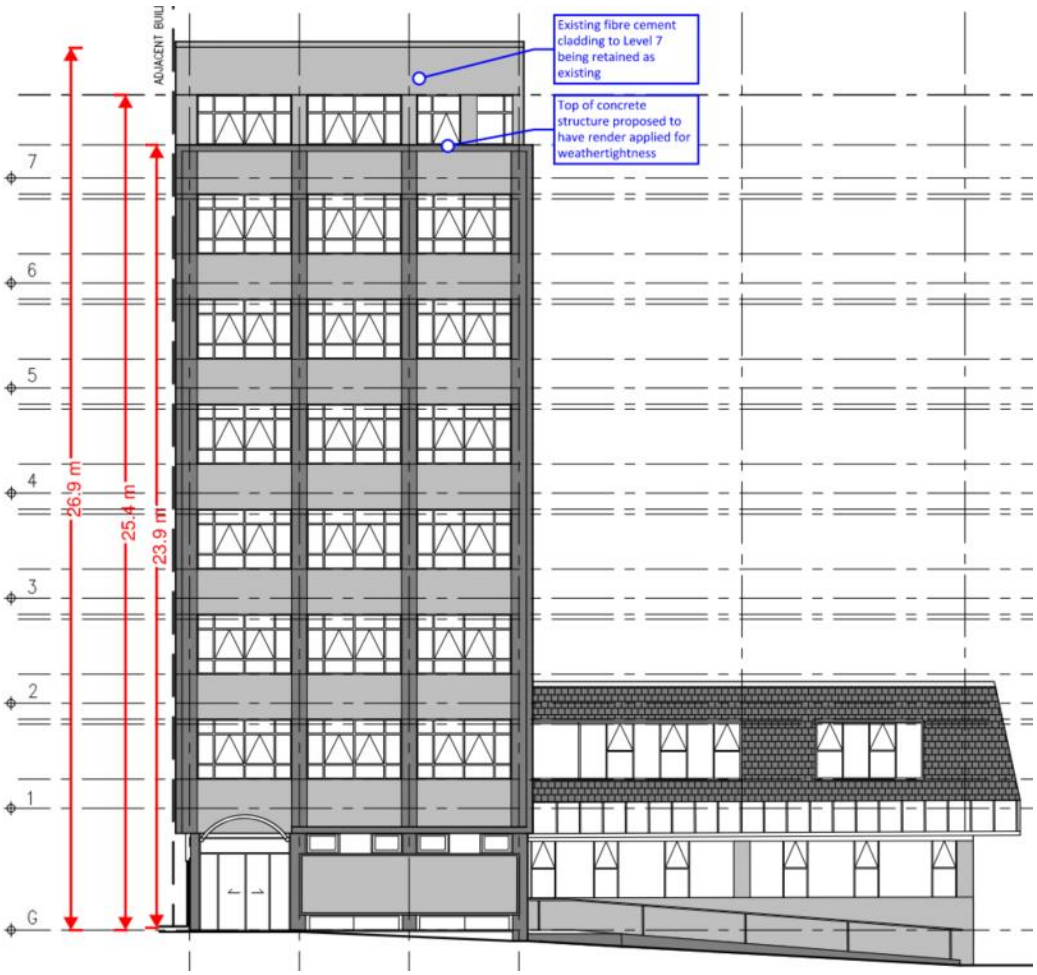


Figure 1: East Elevation and heights above ground level.

The existing cladding is concrete from ground floor to the top of Level 6 and at Level 7 the external walls are of lightweight construction and lined externally with fibre cement sheet.

The concrete is weathered and requires protective coatings, and this forms the majority of the proposed works. The Level 7 construction is to be retained as existing.

For weathertightness the render proposed is a system has been tested to ISO 5660 Part 1: 2002 and ISO 5660 Part 2:2002 as per C/AS2 Clause C7.1 and which achieves:

- Peak Rate of Heat Release not exceeding 100 kW/m²
- Total Heat Released not exceeding 25 MJ/m²

This meets the requirements of C/AS2 for cladding for a building within 1 m of a property boundary and for buildings more than 1 m from the boundary and up to 25 m in height.

C/AS2 requires additional requirements for buildings having a building height greater than 25 m, which requires the entire external wall cladding system to:

- be non-combustible or limited combustible materials, or
- be classified in accordance with AS 5113 and achieve a EW classification, or
- be a system that has undergone fire testing in accordance to BS 8414-1 or BS 8414-2 and satisfies the acceptance criteria in BR 135, or
- be a system that has undergone intermediate scale fire testing in accordance to NFPA 285 and additionally be comprised of cladding materials that are
    - non-combustible or limited combustible or
    - tested in accordance with ISO 5660 Part 1 or AS/NZS 3837 and has a peak heat release rate ≤ 100 kW/m^2 and total heat released ≤ 25MJ/m^2.

The proposed render (StoArmat Miral Exterior Render System) has been tested over aerated concrete to BS 8414-2 and satisfies the acceptance criteria in BR 135. The difference between an aerated concrete substrate and standard concrete is not considered influential on the results.

As for Level 7, this is acceptable remaining as is, as no works are being undertaken on this level and spread of fire provisions are being made no worse on this level. In addition, MBIE Guidance "Fire Performance of External Wall Cladding Systems – Revision 2:2020" states:

"For the purposes of an external wall cladding system demonstrating compliance with the Building Code for Protection from Fire, substantive components may exclude:

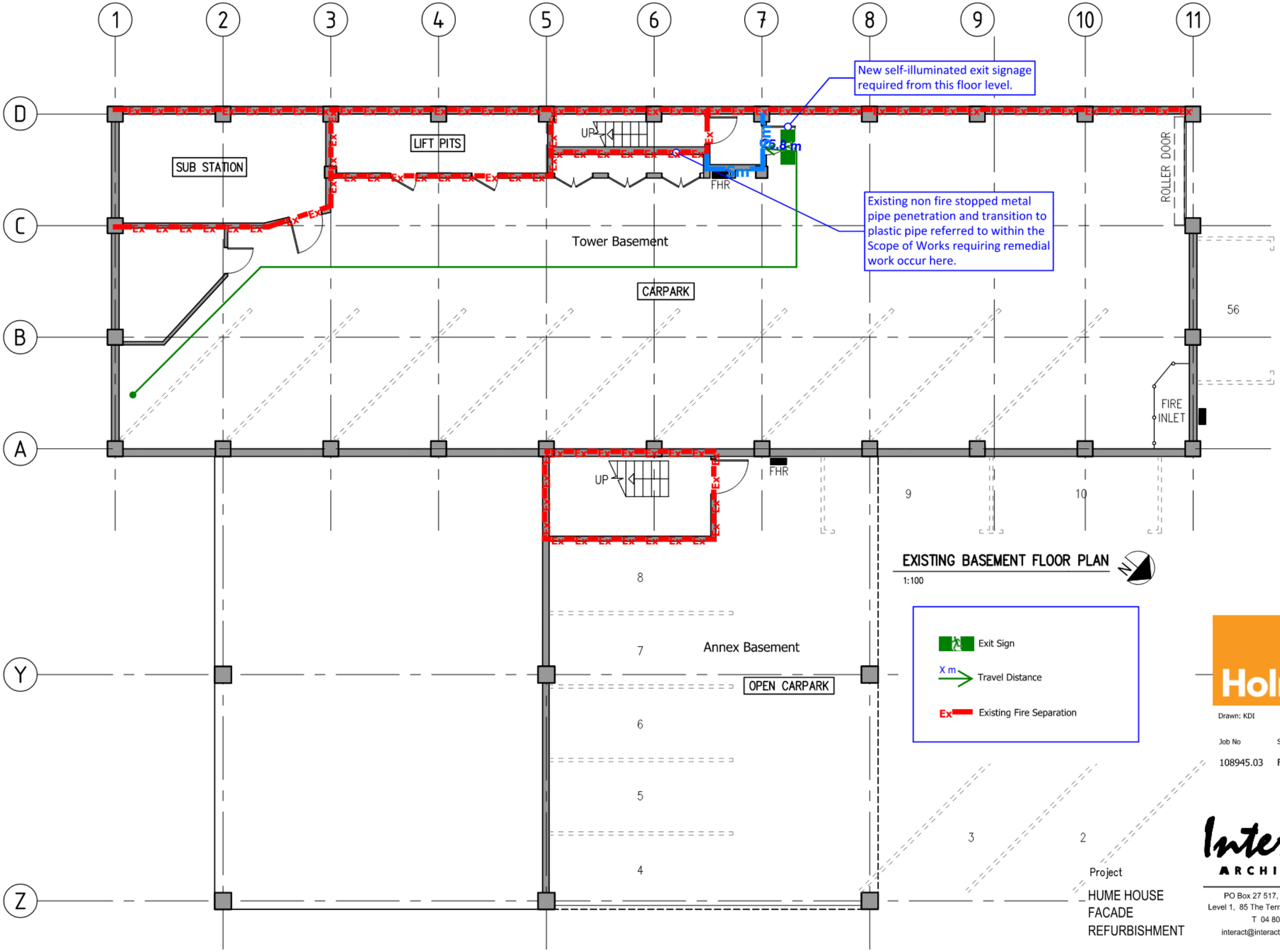
……..

- any materials used as part of the external wall cladding system for the topmost floor provided the roof does not require a fire resistance rating…"

Therefore, it is considered acceptable retaining Level 7 as existing.

A.5.1 External Vertical Fire Spread

As the building is sprinkler protected, external vertical spread of fire is not required to be addressed further. New windows in the west, east and north elevations therefore have no requirement to be fire rated for vertical spread of fire.



EXISTING BASEMENT FLOOR PLAN

1:100

Exit Sign

X m Travel Distance

Ex Existing Fire Separation

Holmes

Drawn: KDI Date: 19/07/2023

Job No	Sheet No	Rev
108945.03	FSK 01	B

Project

HUME HOUSE
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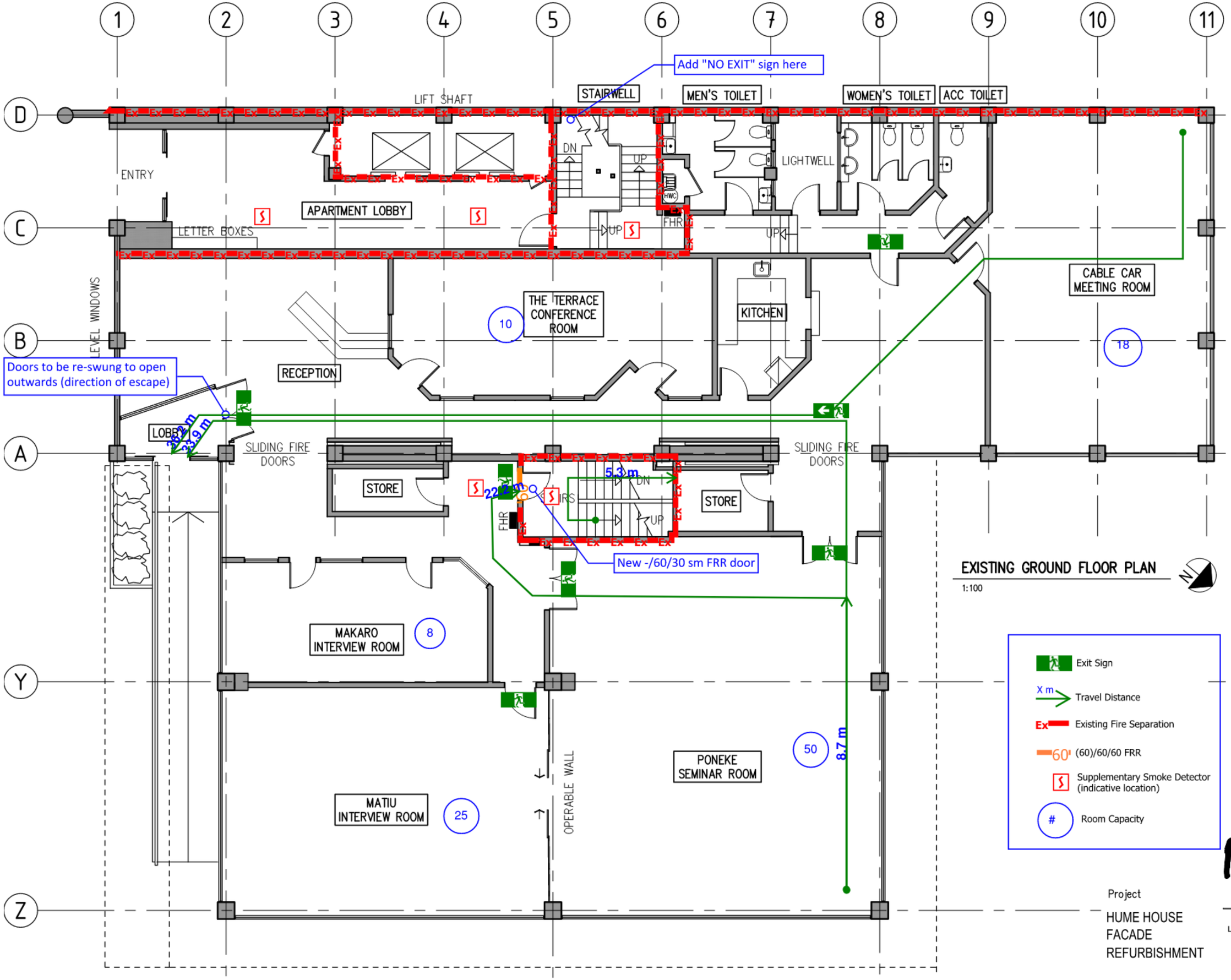

EXISTING GROUND FLOOR PLAN

1:100

Exit Sign

X m Travel Distance

Ex Existing Fire Separation

60' (60)/60/60 FRR

Supplementary Smoke Detector (indicative location)

Room Capacity

Holmes

Drawn: KDI Date: 19/07/2023

Job No	Sheet No	Rev
108945.03	FSK 02	B

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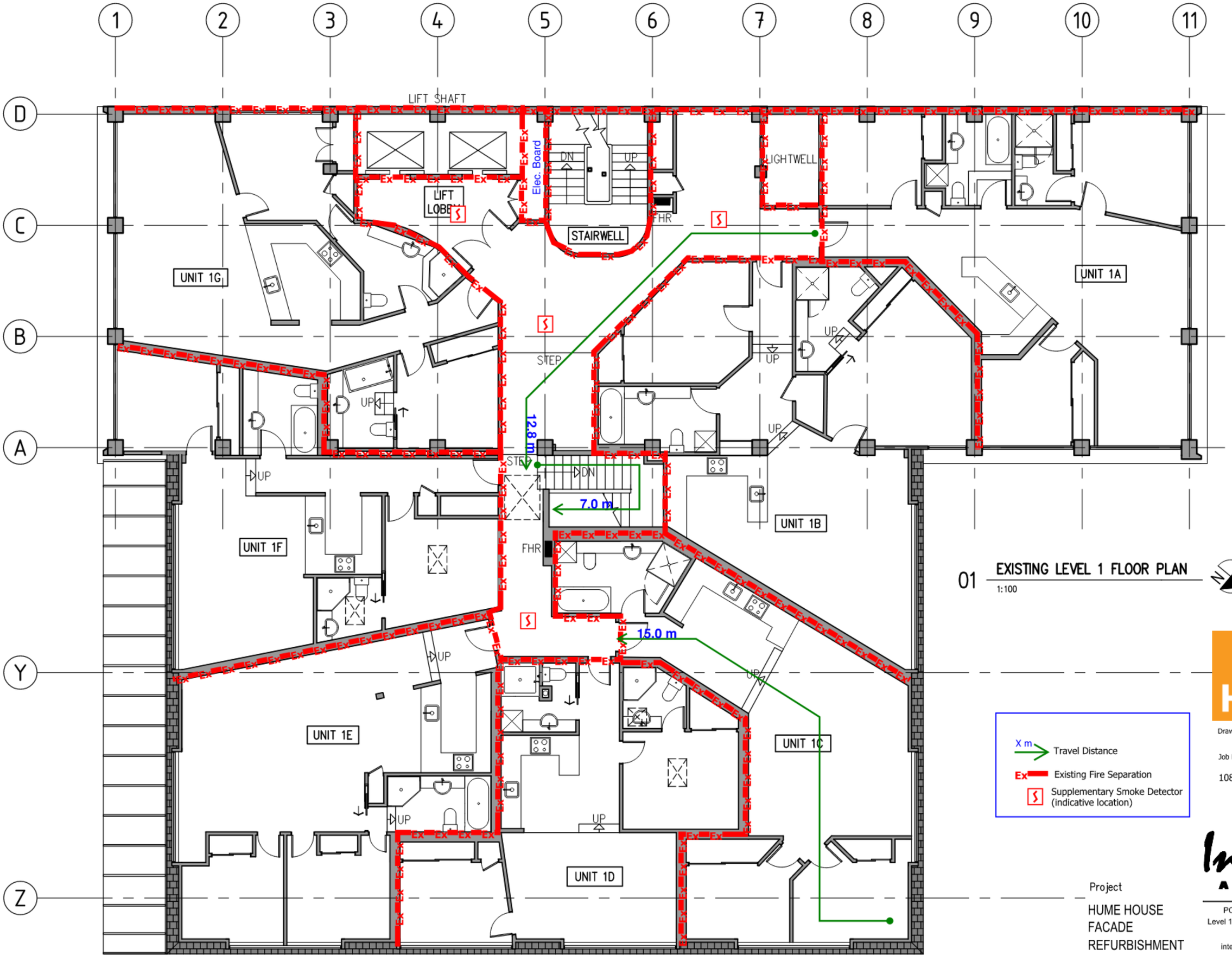

01 EXISTING LEVEL 1 FLOOR PLAN

1:100

X m → Travel Distance

Ex Existing Fire Separation

Supplementary Smoke Detector (indicative location)

Holmes

Drawn: KDI Date: 19/07/2023

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108945.03	FSK 03	B

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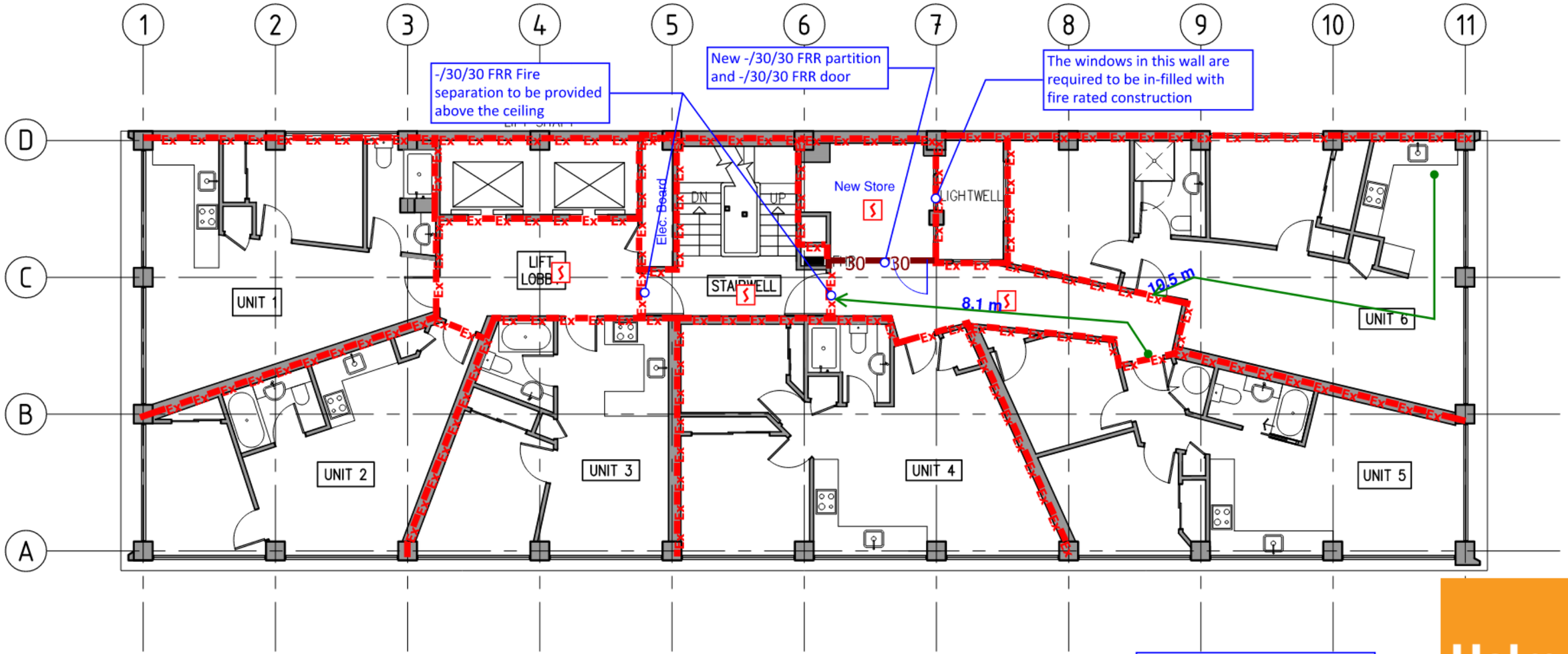

EXISTING LEVEL 2 FLOOR PLAN

1:100

X m → Travel Distance

Ex — Existing Fire Separation

Supplementary Smoke Detector (indicative location)

Holmes

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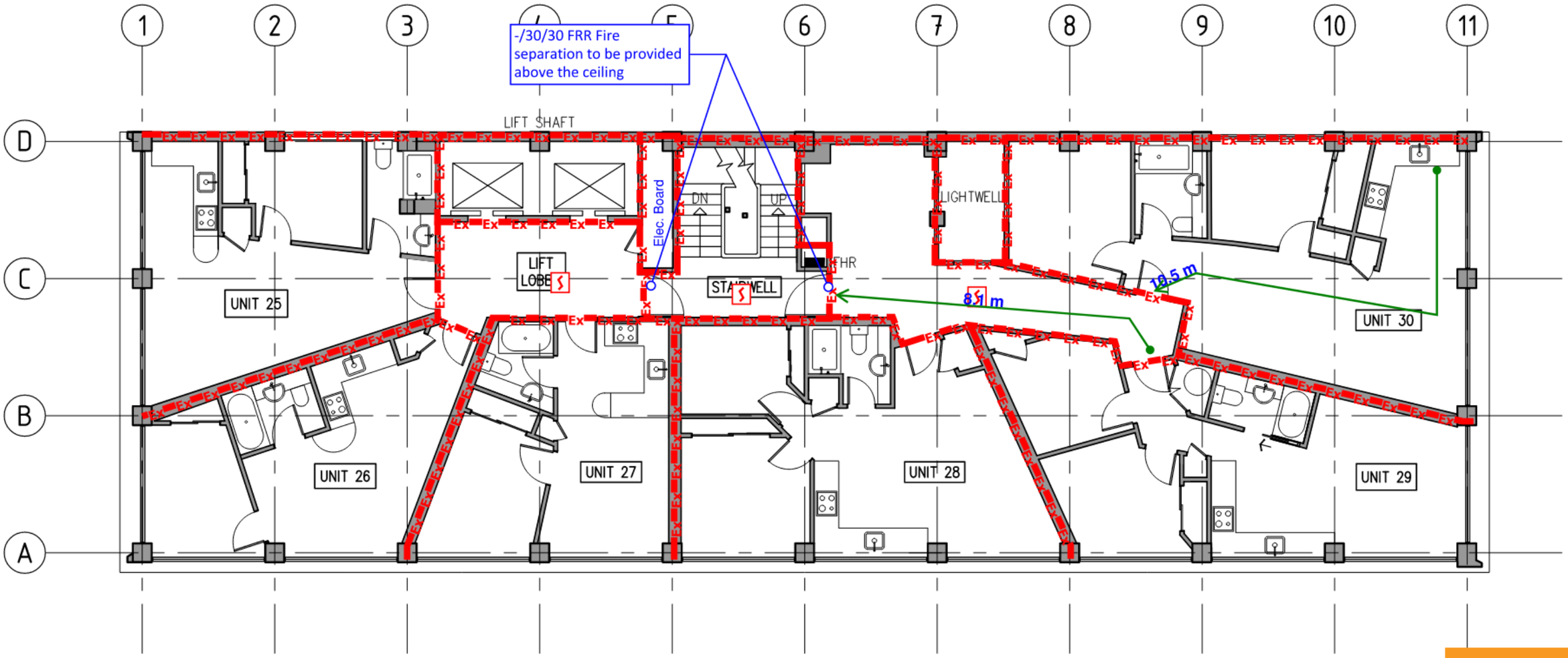

EXISTING LEVEL 3 to 6 FLOOR PLAN

1:100

Apartment # stated are those on Level 6

X m → Travel Distance

Ex — Existing Fire Separation

Supplementary Smoke Detector (indicative location)

Holmes

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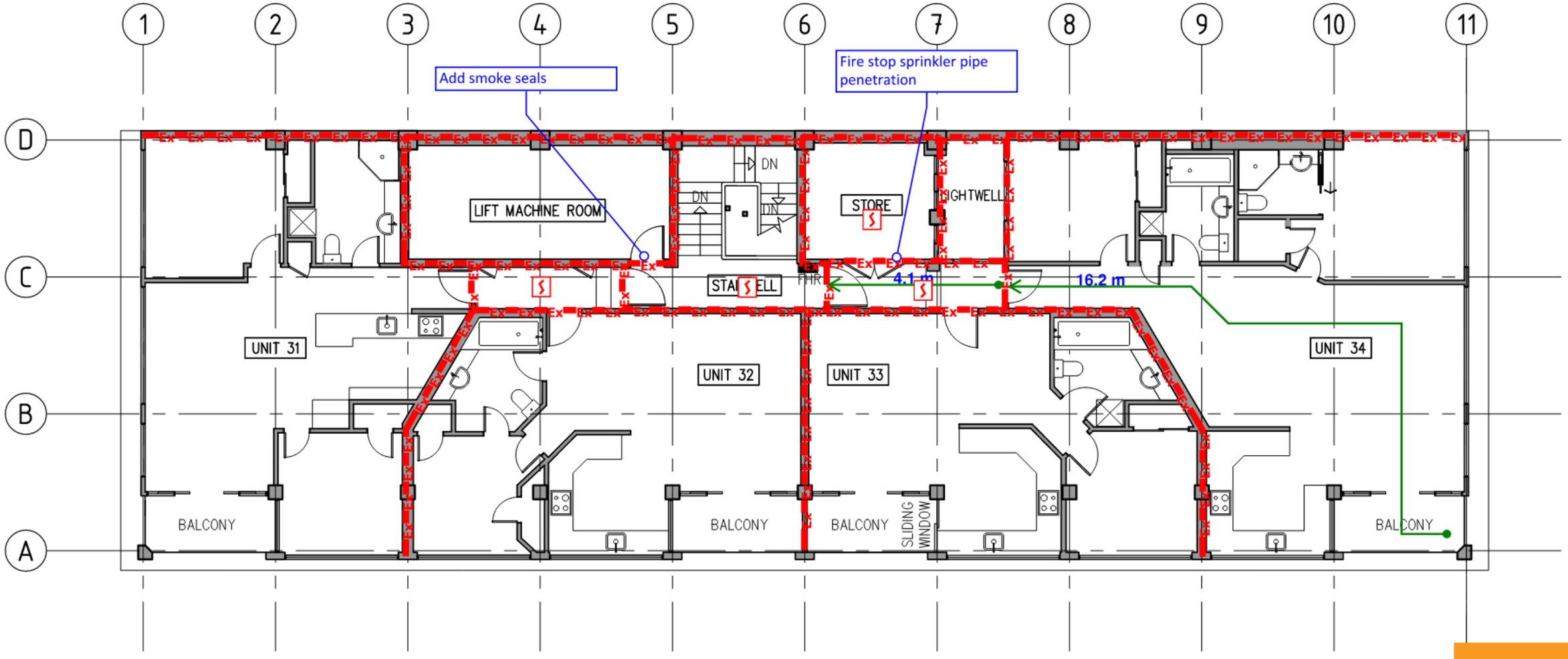

EXISTING LEVEL 7 FLOOR PLAN

1:100

X m → Travel Distance

Ex — Existing Fire Separation

S — Supplementary Smoke Detector (indicative location)

Holmes

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