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449 Lordship Lane

Dulwich, London

FIRE STRATEGY REPORT



Audit Sheet

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1. INTRODUCTION

1.1 Brief

The purpose of this report is to provide a fire engineering assessment and fire safety strategy for the proposed new-built residential development known as 449 Lordship Lane, Dulwich, London.

This report has been developed using the following Stage 4 GA drawings by BCDS Services Architects and is intended to be read in conjunction with the compartmentation and means of escape schematics contained within Appendix B:

- (09)101 Lower Ground Floor Plan - Setting Out
- (09)102 Ground Floor Plan - Setting Out
- (09)103 First Floor Plan - Setting Out
- (09)104 Second Floor Plan - Setting Out

This fire strategy addresses issues relating to means of escape, internal fire spread, external fire spread, and Fire Service access, and is principally based upon the guidance provided in BS9991, supplementary British Standards. This document will be provided as part of the Building Regulations submission (in support of Regulation 16B and Part B - Fire Safety) and may be used by the 'responsible person' whilst undertaking the risk assessment of the building required under the Regulatory Reform (Fire Safety) Order 2005.

In accordance with the requirements of the Building Regulations, this strategy has considered the scenario of a fire in a single location at any one time. It is important that the building management have a clear understanding of the fire strategy adopted and of the operation and maintenance of the fire safety systems and equipment within the building that are designed to protect lives and property.

1.2 Building Description

The 449 Lordship Lane project is proposed as a new built residential development featuring 4 apartments split over four storeys, Lower Ground Floor, Ground Floor Level and two upper floors.

The height of the building will be approximately 9.975 m, measured from the access road level to the top of the roof. From the Ground Floor Level FFL to the last occupied floor FFL, the 2nd floor, the measured height is 6.9. The roof level has been discounted as the roof is not a habitable floor.

1.3 Statutory Guidance

The building will be subject to a range of Statutory Legislation. The principal fire related considerations include:

- The Building Regulations
- The Regulatory Reform (Fire Safety) Order

1.3.1 The Building Regulations 2010

The building will be subject to the requirements of the Building Regulations 2010 – including the 2019 and 2020 Amendments. It will be necessary, therefore, for the development, to meet the requirements of Schedule 1 of the Regulations relating to:

- B1 (Means of warning and escape)
- B2 (Internal fire spread (linings))
- B3 (Internal fire spread (structure))
- B4 (External fire spread)
- B5 (Access and facilities for the fire service)

For most building types, guidance as to how the functional requirements of the Regulations can be satisfied is set out in the Approved Document B to the Building Regulations (AD-B). However, although AD-B provides guidance for some of the more common building arrangements, there is no obligation to

adopt any particular solution contained in the document, and alternative solutions are acceptable, provided that an equivalent level of fire safety to that provided by the standard solutions can be demonstrated.

For the 449 Lordship Lane development, it is proposed that, the guidance of BS9991 *Code of practice for fire safety in the design, management and use of residential buildings*, to be utilised. BS9991 utilises a risk based approach, which is designed to allow a bespoke fire "Risk Profile" to be assigned to the building. This approach also takes into account additional fire safety features (both passive and active), that are to be incorporated into the building. Appendix A and B outlines the design criteria used to determine the risk profile for the Ellington Court development, which provides the platform for this fire engineering strategy. Where fire engineering solutions have been used by achieving variations from the current codes and standards, appropriate reference shall be made within this document to the standard or method used.

1.3.2 The Regulatory Reform (Fire Safety) Order

The Regulatory Reform (Fire Safety) Order (the RRO) was introduced to replace some previously applicable fire safety legislation, including the Fire Precautions (Workplace) Regulations and the Fire Precautions Act.

This legislation is based on risk-appropriate compliance and requires regular fire risk assessments to be carried out by the building management/owners/occupiers. The Fire Service will conduct inspections of premises to enforce the Regulations. Whilst guidance documents have been produced by the government to assist in the preparation of the risk assessment, it should be noted that these documents are not intended to be used to design the building – the building design should focus on satisfying the functional requirements of the Building Regulations.

The RRO provides Statutory Legislation to ensure that the ongoing maintenance and fire safety management of new premises will be maintained during the life of the building, which is not currently fully addressed under the Building Regulations. Therefore, the fire strategy detailed in this report does not explicitly address all the management requirements of the RRO. It will be necessary for effective fire safety management regimes to be developed by the building occupier, and a risk assessment of the premises to be conducted prior building occupation (and updated on an on-going basis).

1.3.3 Property Protection

Property Protection is not a requirement of the Building Regulations and, as this report deals only with statutory requirements, property protection is not explicitly addressed, although it is recognized that some fire safety provisions will inherently offer a degree of property protection to the building. As such, it is recommended that the building insurers are consulted at an early stage to ensure that any additional needs are satisfied.

1.3.4 Management Issues

This report primarily relates to the fire safety requirements needed to ensure that the building design satisfies the Building Regulations. However, it is recognised that fire safety management is critical to ensure the safety of the building occupants. Although some management issues may be discussed in this strategy document, it does not explicitly address all of the management needs of the development. **Prior to building occupation, a suitable management strategy should be developed by the relevant building management bodies to cover issues including:**

- **Fire management structure;**
- **Evacuation procedures;**
- **Staff training;**
- **Housekeeping and fire prevention;**
- **Maintenance and control of fire safety systems;**
- **Conflicts between security and means of escape issues.**

2 MEANS OF WARNING AND ESCAPE

Functional Requirements

“The building shall be designed and constructed so that there are appropriate provisions for the early warning of fire, and appropriate means of escape in case of fire from the building to a place of safety outside the building capable of being safely and effectively used at all material times.”

2.1 Overview of Means of Warning and Escape Strategies

The escape strategy has been developed on a “Stay put strategy” – strategy normally adopted in blocks of flats. The residential development will be provided with a high degree of compartmentation and therefore there is a low probability for fire spread beyond the dwelling of origin before it is put out.

2.2 Fire Alarm and Detection

All new dwellings should have a fire detection and fire alarm system, minimum Grade D Category LD3 standard, in accordance with the relevant recommendations of BS 5839-6.

Nevertheless, it is proposed to provide a **Category LD1 automatic fire detection and alarm system**. A LD1 system is a system incorporating detectors throughout the building, in all circulation spaces that form part of the escape routes from the premises, and in all other rooms or areas. The fire alarm system will be designed and installed in accordance with BS 5839. It is proposed that the alarm system to incorporate smoke detectors in the flats internal lobbies, heat detectors in the kitchen and as mentioned before, smoke detectors in the common areas.

Sufficient sounders (and xenon beacons, where necessary) will be provided so the fire alarm is clearly audible throughout all areas of the building, in order to enable early occupant response.

Roof-top and internal plant areas will be covered by, and linked to, the comprehensive automatic fire detection and alarm systems within the main area of the development and will be simultaneously alerted to any incident by means of sounders and xenon beacons.

2.3 Means of Escape – General Principles

It is proposed to outline the general principles related to means of escape, however, compliance with these general principles will be assessed for each area of the developments in Sections 2.4 to 2.8 and Appendix B, below.

2.4 Horizontal Travel Distances

RESIDENTIAL APARTMENTS

As detailed within the BS9991, for small buildings (not exceeding 11m in height), the internal arrangement of the building will be such that the following travel distances are not exceeded.

Table 2.4.1 – Summary of Travel Distance Limits

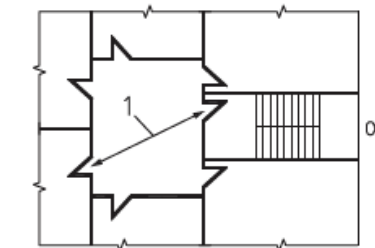
Area	Maximum permitted travel distance in
	A single direction
From Flat entrance door to the common stair or lobby	4.5m
Internal travel distance within the flat	9m

2.4.1 Common escape routes

To prevent exposure of escaping occupants to smoke and heat in the internal corridor or lobby the travel distance between the exit doors from the dwellings and a smoke-free area should be limited, and the amount of smoke and other combustion products in the internal corridor or lobby kept to a minimum by providing either cross-corridor fire doors and ventilation or an independent alternative escape route should be provided.

The arrangement of the internal layout was designed so that the horizontal travel distances will not exceed the imposed limits, also the staircase has been provided with a natural smoke ventilation by provision of AOV (automatic openable vent) that will open in case of a fire event at the floor and location of origin.

Schematic of principle:



a) Small single stair building (see Notes)

- Key**
- 1 Maximum travel distance 4.5 m
 - AOV Automatic opening vent (1.0 m² minimum)
 - OV Openable vent for fire and rescue service use (1.0 m² minimum)
 - Fire-resisting construction

2.4.2 Common corridors widths

The common corridors widths have to be kept at a minimum of 1.0m in order to match the stairs width.

2.5 Vertical Means of Escape

2.5.1 Common stairs

The unobstructed width (measured between the walls and/or balustrades) of each common stair should be not less than 750mm; a common stair which is a fire-fighting stair should have an unobstructed width (measured between the walls and/or balustrades) of 1100 mm. The width should be kept clear for a vertical distance of 2000mm.

For the 449 Lordship Lane building, the total width of the stairs is 1000mm, as this is not required to be a firefighting stair.

Note: Handrails and strings that do not intrude more than 100mm into these widths may be discounted when calculating the common stair width.

The building is provided with a single protected escape stair, which discharges into a protected lobby at Ground Floor level connected straight to outside.

The width of the staircase is 1000mm which is considered sufficient for accommodating the “stay-put evacuation” strategy.

It is considered that the proposed width of the staircase is in line with the imposed limits.

2.6 Disabled Means of Escape

Evacuation by stairs

Providing an accessible means of escape should be an integral part of fire safety management in all residential buildings. Fire safety management should take into account the full range of people who might use the premises, paying particular attention to the needs of disabled people.

NOTE 1: It is the responsibility of the premises management to assess the needs of all people to make a safe evacuation when formulating evacuation plans.

An evacuation plan should not rely on the assistance of the fire and rescue service. This is an important factor that should be taken into account in the building design. It cannot be assumed that facilities provided in a building to make it accessible will be usable in a fire evacuation. For example, lifts that are not appropriately designed for emergency evacuation and are not usable for evacuation. This should be taken into account at the design stage when it is relatively easy to incorporate accessible escape features which will make evacuation planning more effective, an evacuation easier to manage and help to preserve the dignity of disabled people in an evacuation.

All the details of the disabled people evacuation have to be written in the Fire Risk Assessment that has to be conducted once the building is handed over and it is the responsibility of the building management bodies that this is done and kept up to date at any given time.

2.7 Emergency Lighting and Escape Signage

Suitable lighting should be provided to enable the safe movement of persons along escape routes to a place of relative or ultimate safety. For a Type C building, Table 8 of BS9999 recommends that emergency escape lighting should be provided, in accordance with BS 5266-1.

In general, people using this class of premises can be expected to be reasonably familiar with the layout and safety provisions, and orderly evacuation can normally be expected in the event of an emergency. Based on these considerations, a 3 h duration system should be used in common access routes within blocks of flats, as these are escape routes from sleeping risk premises.

It is recommended that the provision for emergency lighting includes all external and roof-top escape routes, which should also be fully demarcated.

Every escape route, other than exits in ordinary use (i.e. main entrances), should be distinctively and conspicuously marked by emergency exit signage complying with the recommendations of BS 5499: Part 1, BS 5499: Part 4, and the Health and Safety (Safety sign and signals) Regulations 1996.

3. EXTERNAL SPREAD OF FIRE

3.1 Functional Requirements

“The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use, and position of the building. The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building.”

Under the requirements of Building Regulations, it is necessary to construct buildings such that the potential for fire spread to other buildings is limited.

To ensure that the building is sufficiently remote from adjacent buildings (or the site boundaries) it is necessary to conduct a space separation analysis, which takes into account the maximum fire size (assumed to be confined to a single compartment), the nature of the external façade (dimensions and the provision of external fire resisting construction), and the distance to either the site boundary or adjacent buildings.

An assessment of each elevation will be required to be undertaken using the ‘enclosing rectangle’ method, detailed in BRE 187, to determine the permitted area of unprotected façade within each elevation, relative to the available boundary separation. By virtue of the provision of compartment floors within the building, a worst-case floor level assessment has been included below for each elevation.

The North elevation external wall sits at a distance of approximately 500 mm from the notional boundary line. Therefore, the fire engineering proposal is to fire rate all the North elevation external wall to 60 minutes of fire performance.

The balconies glazed partitions are to be offset from the façade with an additional 500mm, which will make the distances from the glazed doors to the boundary line to be 1000mm.

In accordance with BRE 187, calculations have been produced to demonstrate that if the distance is 1000mm from the glazed balcony doors to the boundary line, this is acceptable. Please refer to the appendix for detailed calculations.

Also, the South elevation at Ground Floor only, is situated on the boundary line, but it has no fenestration. The South elevation will be provided with 60 minutes of fire resistance from both sides at Ground Floor only. The upper floors on the South elevation are offset from the boundary with distances greater than 1000mm therefore, no additional requirements are imposed.

The other elevations are further than 1000mm from the notional boundary lines and there are no further restrictions imposed.

3.2 Facade

Given that the building height does not exceed 18m, the reaction to fire performance of external surface of walls must be Class B-s3, d2(2) or better where the relevant boundary is less than 1000mm away from the façade line.

If the boundary line is located at a greater distance than 1000mm, up to 10m above ground, the reaction to fire performance of external surface of walls must be Class C-s3, d2(2) or better – in accordance with Approved Document B 2010 [2019 Edition] and BS 9999:2017. From 10m in height and above there is no minimum performance requirement.

4. INTERNAL FIRE SPREAD (LININGS)

Functional Requirements

The building shall be designed and constructed so that, in the event of fire, its stability will be maintained for a reasonable period.

Where reasonably necessary to inhibit the spread of fire within the building, measures shall be taken, to an extent appropriate to the size and intended use of the building, comprising sub-division of the building with fire-resisting construction.

4.1 Wall and Ceiling Linings

All wall and/or ceiling linings within the development will satisfy the following classifications given in Table 4.1 (below), when tested under either the National Classifications, in accordance with BS 476 or under the European classifications in accordance with BS EN 13501-1.

Table 4.1 - Limitations on wall and ceiling linings

Location	National Class		European Class
	Walls	Ceilings	
Circulation spaces	Class 0	Class 0	B-s3, d2
Other rooms	Class 1	Class 1	C-s3, d2

The National classifications used are based on tests in BS 476: Fire tests on building materials and structures, namely Part 6: Method of test for fire propagation for products and Part 7: Method of test to determine the classification of the surface spread of flame of products. However, Part 4: Non-combustibility test for materials and Part 11: Method for assessing the heat emission from building products are also used as one method of meeting Class 0.

The European classifications are described in BS EN 13501-1, Fire classification of construction products and building elements, Part 1-Classification using data from reaction to fire tests. They are based on a combination of four European test methods, namely:

BS EN ISO 1182, Reaction to fire tests for building products – Non-combustibility test;
 BS EN ISO 1716, Reaction to fire tests for building products – Determination of the gross calorific value;
 BS EN 13823, Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by a single burning item; and
 BS EN ISO 11925-2, Reaction to fire tests for building products, Part 2-Ignitability when subjected to direct impingement of flame.”

For the purposes of classification:

A wall is deemed to include:

- the surface of glazing (except glazing in doors)
- any part of a ceiling that slopes at an angle of more than 70°to the horizontal.
- and smoke within concealed spaces in its structure and fabric is inhibited.

A wall is not deemed to include:

- doors and door frames
- window frames and frames in which glazing is fitted

- architraves, cover moulds, picture rails, skirtings, and similar narrow members
- fireplace surrounds, mantel shelves and fitted furniture

A Ceiling is deemed to include:

- the surface of the glazing
- any part of a wall that slopes at an angle of 70°or less to the horizontal

A Ceiling is not deemed to include:

- trap doors and their frames
- the frames of windows or roof lights and frames in which glazing is fitted
- architraves, cover moulds, picture rails, exposed beams, and similar narrow members

5. INTERNAL FIRE SPREAD (STRUCTURE)

Functional Requirements

The building shall be designed and constructed so that, in the event of fire, its stability will be maintained for a reasonable period. A wall common to two or more buildings shall be designed and constructed so that it adequately resists the spread of fire between those buildings. To inhibit the spread of fire within the building, it shall be sub-divided with fire-resisting construction to an extent appropriate to the size and intended use of the building. The building shall be designed and constructed so that the unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited.

5.1 Elements of Structure

For a Type C building that is no greater than 18m, all structural frames, beams, columns, load bearing elements, and floor structures should be provided with 60 minutes fire resistance, in accordance with Tables 23 of BS9999 and Table 4 of BS 9991.

It is noted that, in accordance with BS9991, the structure of a roof, and structure that supports only a roof, does not generally require fire resistance, except where the roof forms part of an escape route, or functions as a floor (e.g. plant level), or is part of a portal frame structure where the roof and the supporting stanchions form a single structural element. In addition, any roof structure also supporting an external wall that is required to be fire resisting for the purposes of external fire spread should be provided with fire resistance.

5.2 Compartmentation

Whilst Appendix B provides indicative compartmentation schematics, Table 5.1, below, provides a summary of the compartmentation and fire-resistance required throughout the development.

All the common areas will have a fire resistance of 60 minutes for all elements, as well as the partitions between flats.

Table 5.1 – Compartmentation Requirements

Area	Minimum fire resistance (minutes)
Elements of structure	60
Compartment floors	60
Means of escape stair	60

5.3 Internal planning of multi-storey flats

Two duplex apartments located at Ground Floor Level and Lower Ground Level, are provided with the kitchen and living area at the LG level, whilst the sleeping accommodation is located at Ground Floor. In order to comply with the Building Regulations and the relevant fire British Standards, the apartments have to be designed and constructed in accordance with the following requirements imposed by Approved Document B – Volume 1 – 2019 Edition:

When multi-storey flats do not have their own external entrance at ground level, adopt one of the following approaches:

- a. Approach 1** – provide at least one alternative exit from each habitable room that is not on the entrance storey of the flat (Diagram 3.5 and paragraph 3.22).
- b. Approach 2** – provide at least one alternative exit from each storey that is not the entrance

storey of the flat. All habitable rooms should have direct access to a protected landing (Diagram 3.6 and paragraph 3.22).

c. Approach 3 – provide a protected stairway plus a sprinkler system in accordance with Appendix E and provide smoke alarms in accordance with BS 5839-6.

d. Approach 4 – if the vertical distance between the entrance storey of the flat and any of the storeys above or below does not exceed 7.5m, **provide all of the following:**

- i. A protected stairway.
- ii. Additional smoke alarms in all habitable rooms.
- iii. A heat alarm in any kitchen.

For the duplex apartments a fire engineered solution is proposed as follows:

The duplex apartments are what we call “upside-down living”, as the kitchen and the living room are located at the lower floor of the apartment.

In order to mitigate the effect of a fire breaking out in of the bedrooms, fire resistant construction has been provided for separating the bedrooms from the main apartment entrance.

In order to mitigate the effect of a fire breaking out in the kitchen / living room area and to allow for a delay of the smoke spread through the open staircase, a 300mm smoke screen is to be provided at the bottom of the stairs. This will create a smoke reservoir and will delay the smoke spread to the upper floor of the apartment.

It is also to be mentioned that the cooking machine is located at a distance greater than 1.8m from the means of escape.

It is to be noted that both apartments are provided with automatic fire sprinklers and an LD1 fire alarm which will provide early response. Also, the communal staircase is ventilated by AOVs at each floor.

This solution is subject to final approval by Building Control.

5.4 Open-plan flat design

In accordance with BS 9991, the following recommendations have to be met for proposing an open-plan flat design:

Open-plan flat layouts should not be provided for accommodation where the occupants are not capable of independent evacuation.

Open-plan flats that do not have protected corridors or hallways but have bedrooms that are inner rooms without having an alternative means of escape, and that are accessed directly from a lounge or similar type accommodation, should be fitted throughout with a Grade D LD1 fire alarm and fire detection system in accordance with BS 5839-6:2013, and an AWFSS [Automatic Water Fire Suppression System].

Open-plan flats should meet the following specific recommendations.

- a) The size of the open-plan flat should not exceed 16 m x 12 m.
- b) Open-plan flats should be situated on a single level only.

[NOTE 1 Single level flats exclude flats with galleries.]

- c) The ceilings within the open-plan flat should have a minimum height of 2.25 m.
- d) The kitchen should be enclosed in open-plan flats having an area exceeding 8 m x 4 m. Cooking appliances in open-plan flats having an area smaller than 8 m x 4 m should not be adjacent to the entrance of the flat.

[NOTE 2 An open-plan flat design is not compatible with small, single staircase buildings reliant upon internal protected entrance halls for lobby protection to the staircase enclosure.]

In order to cater for this issue, it is proposed that in addition to the automatic fire sprinklers or the equivalent fire water mist system and LD1 fire alarm system provision to the open plan apartments, the communal staircase will be ventilated at every floor by means of automatic opening vents.

This solution is subject to final approval by Building Control.

5.5 Provisions of Fire Doors

Doors in fire-separating elements are one of the most important features of a fire protection strategy, and it is important to select a fire door that is suitable for its intended purpose.

The fire resistance for fire doors should be from either side, with the exception of doors to lift wells, where the fire resistance need only be from the landing side.

All fire doors, front doors to flats and communal doors to be self-closing, with the exception for cupboards or service risers, which should be kept locked shut.

All fire doors should have the specified fire resistance shown on the adjacent drawings and on the provided door schedule by the architect. The fire doors have been specified in accordance with Approved Document B – Volume 1: Dwellings and BS 9991.

5.6 Cavity Barriers & Fire-stopping

Openings in any fire separating element (e.g. compartment walls, cavity barriers, protected corridor etc) should be protected with appropriate fire stopping or sealing to ensure that the fire resistance of the element is not compromised.

The provision of any such protection should meet the general recommendations of Clause 33 of BS9999.

Where appropriate, suitable provisions should be made to prevent the unseen spread of fire and smoke through cavities or concealed spaces (i.e. ceiling and floor voids) by the use of cavity barriers.

Thermally-activated automatic fire dampers (e.g. fusible link) should be fitted to all ductwork where it passes through compartment walls and floors.

Furthermore, Section 32.5 of BS9999 makes the following recommendations with regards to ductwork systems:

- Ventilation ducts, and their associated plant, supplying or extracting air directly to or from a protected escape route, should not also serve other areas. A separate ventilation system should be provided for each protected stairway.
- Where a ductwork system serves more than one part of a compartmented or fire separated protected escape route, smoke detector operated fire dampers should be provided where ductwork enters each fire separated or smoke separated section of the escape route.
- The smoke detector operated fire dampers should be caused to close if smoke is detected. Any ductwork passing through an accommodation space should be fire-resisting (i.e. fire-resisting ductwork or ductwork enclosed in fire-resisting material).
- Any ductwork passing through a protected stairway, lobby or corridor without an opening into that area should be fire-resisting (i.e. fire-resisting ductwork or ductwork enclosed in fire-resisting material).

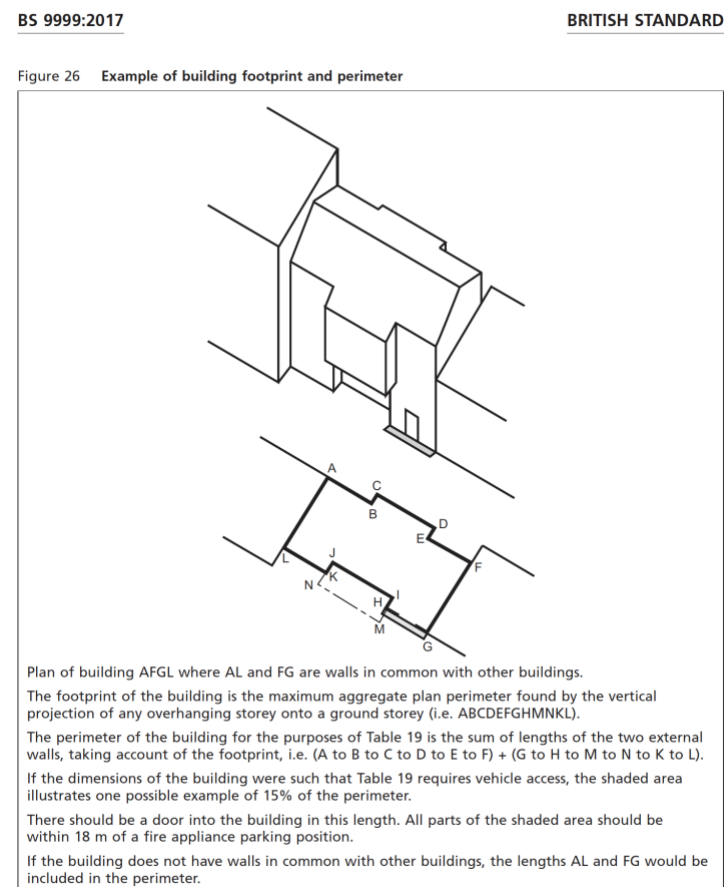
6. FIRE SERVICE ACCESS AND FACILITIES

Functional Requirements

The building shall be designed and constructed so as to provide reasonable facilities to assist fire fighters in the protection of life. Reasonable provision shall be made within the site of the building to enable fire appliances to gain access to the building.

6.1 Fire Access

Vehicle access should be provided to small buildings (i.e. buildings up to 2 000 m² with a top storey less than 11 m above ground level) to within 45 m of every point on the projected plan area or "footprint" of the building (see Figure 26) or to 15% of the perimeter, whichever is the less onerous.



Every elevation to which vehicle access is provided should have a suitable door(s) not less than 750 mm wide giving access to the interior of the building. Doors should be provided such that there is no more than 60 m between each door and/or the end of that elevation (e.g. a 150 m elevation would need at least two doors).

6.2 Ventilation

Small buildings having a single stair should be designed and constructed in accordance with the following recommendations.

a) Small buildings having a single stair and a common lobby approach to the dwellings should have:

1) an openable vent having a minimum free area of 1 m², that is inserted at the highest level practicable at each floor level within the staircase;

or

2) an openable vent having a minimum free area of 1 m² at the top of the staircase that can be remotely operated at fire and rescue service access level.

For the proposed design intent, it is proposed to provide AOV's at the top of the main protected staircase.

6.3 Automatic Fire Sprinklers

In order to comply with the requirements imposed by Building Regulations and relevant fire British Standards, the duplex apartments at Ground Floor and Lower Ground Floor have to be provided with an automatic fire sprinkler system in accordance with BS 9521.

The provision with an automatic fire sprinkler system for the upper floors is subject to agreement and approval by the approved inspectors of Building Control and the local Fire Brigade. The internal proposed layout will play a very important role in the entire building's fire strategy and in setting out the requirements for the automatic fire sprinkler system provision.

The automatic fire sprinkler design and installation is part of the Contractor's Design Portion items and the specialist sprinkler contractor needs to develop and detail a compliant design and installation, which ultimately, they will have to certify and warrant.

6.4 Dry Riser

As the building height does not exceed 11m, the provision with a fire main (dry riser) is not mandatory.

APPENDIX A – RISK PROFILES

INTRODUCTION

As previously discussed, it is proposed that, in order to satisfy the Building Regulations the guidance of BS 9999 *Code of practice for fire safety in the design, management and use of buildings* and BS9991: *Code of practice for fire safety in the design, management and use of residential buildings*, shall be used.

BS9999 and BS 9991 utilise a risk based approach, which is designed to allow a bespoke fire “Risk Profile” to be assigned to the building. This approach also takes into account additional fire safety features, (both passive and active) that are to be incorporated into the building.

RISK PROFILES

In order to determine the level of protection for a building using BS9991, a risk profile is created. A risk profile consists of two parts:

1. Occupancy Characteristic, and,
2. Fire Growth Rate.

Occupancy Characteristic

The occupancy factor assigned to a building is determined on a combination of whether the occupants are familiar or unfamiliar with the building and whether they are awake or asleep. Occupancy characteristics are summarised in Table A.1 below.

Table A.1 – Occupancy characteristics

Occupancy Characteristic	Description
A	Occupants who are awake and familiar with the building
B	Occupants who are awake and unfamiliar with the building
C	Occupants who are likely to be asleep
D	Occupants receiving medical care
E	Occupants in transit

Fire Growth Rate

The fire growth rate is an estimated rate at which a fire within the accommodation would develop. It should be noted that the growth rate assigned is not necessarily a reflection of the fire load, but more of the type of fire load present.

Table A.2 – Fire growth rate

Category	Fire Growth Rate
1	Slow
2	Medium
3	Fast
4	Ultra-fast

Overall Risk Profiles

The final risk profile assigned to a building is a combination of both the occupancy characteristic and the fire growth factor.

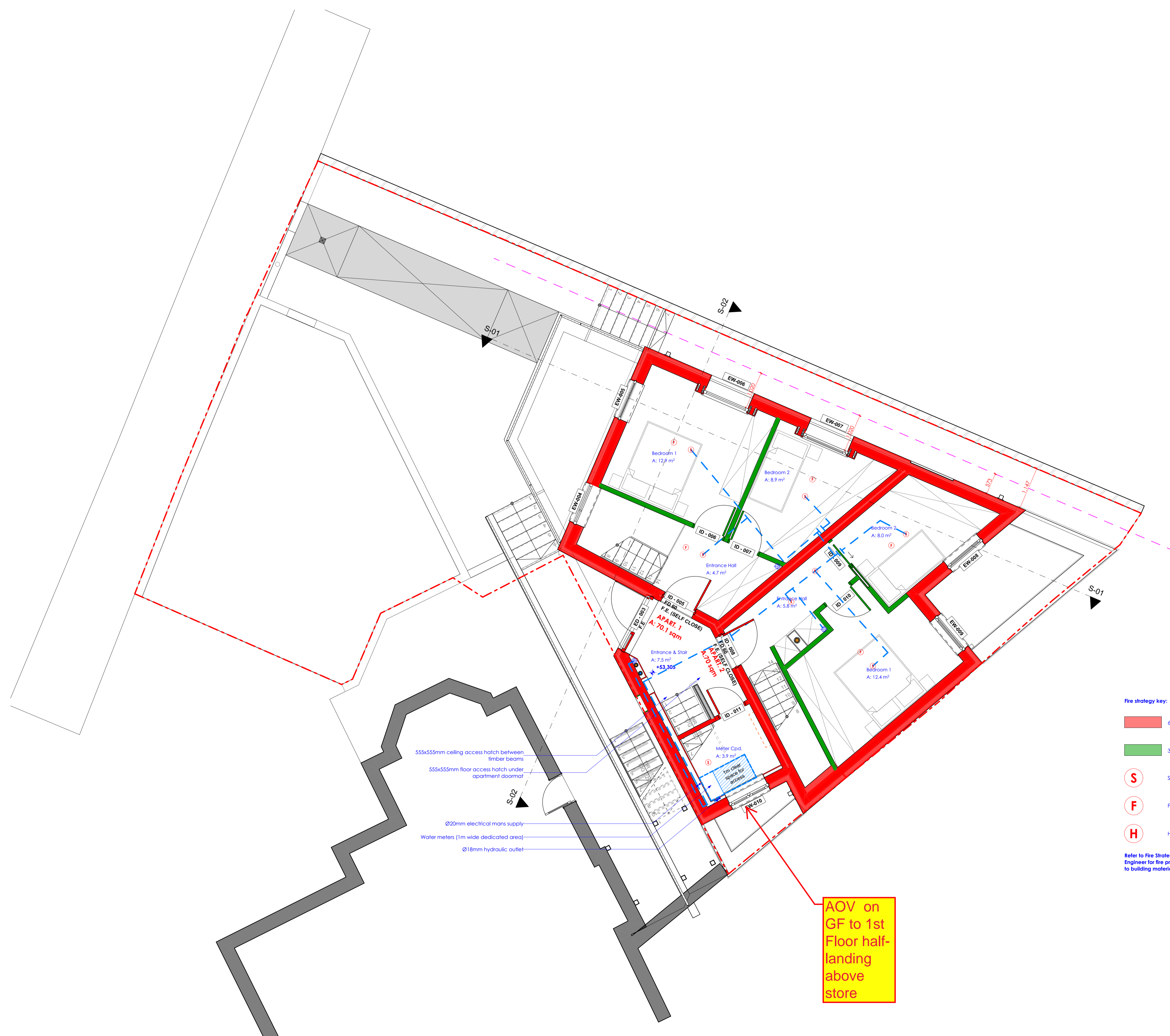
Residential Accommodation

It is considered that the residential occupants will be likely to be asleep however and familiar with the building; hence an occupancy characteristic of ‘C’ has been assigned.

Residential accommodation is typically classed as a ‘medium’ fire growth rate. Therefore, the residential upper floors are to be classified with a C2 risk profile in accordance with BS 9999 and BS 9991.

APPENDIX B – COMPARTMENTATION & MEANS OF ESCAPE SCHEMATICS

- NOTES**
- All dimensions and levels are to be checked on site.
 - Any discrepancies are to be reported to the DAS Ltd before any work commences.
 - This drawing shall not be scaled to ascertain any dimensions. Work to figured dimensions only.
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- Fire strategy key:**
- 60' Fire resistant walls
 - 30' Fire resistant walls
 - S Sprinkler
 - F Fire/Smoke Alarm
 - H Heat Detector
- Refer to Fire Strategy report by Fire Engineer for fire protection and resistance to building materials and escape strategy.

- 55x55mm ceiling access hatch between timber beams
- 55x55mm floor access hatch under apartment doormat
- Ø20mm electrical mans supply
- Water meters (1m wide dedicated area)
- Ø18mm hydraulic outlet

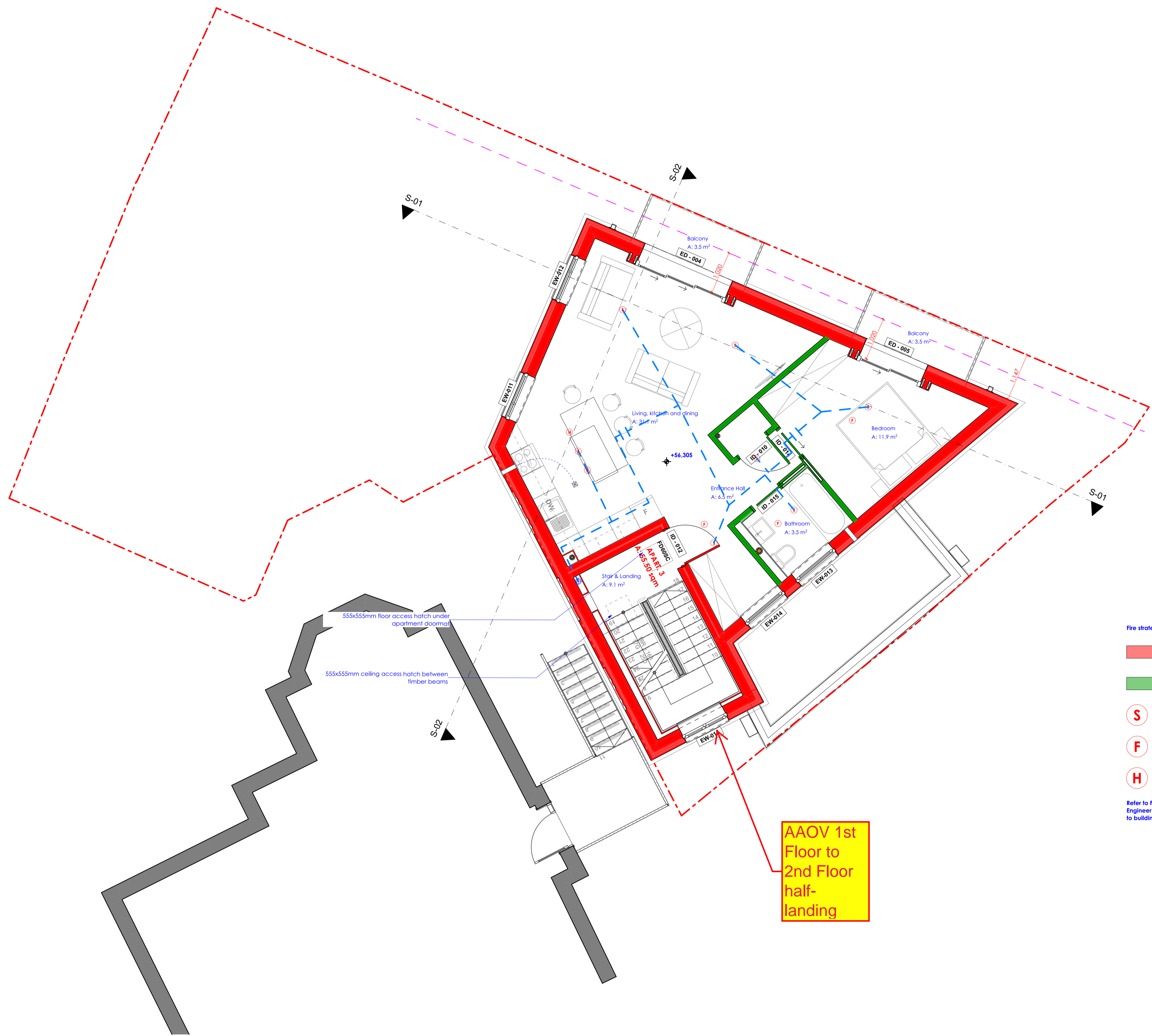
AOV on GF to 1st Floor half-landing above store

Rev	Description	Date	Status
#	Issued for Construction	06-Apr-21	Construction
A	Stair south wall enlarged & external lights added & manholes position revised. Issued for construction.	15-Jun-21	Construction
B	Walls of manholes & Service pits set to 150mm thickness.	21-Jul-21	Construction
C	Fire strategy amended to match provider drawings	01-Nov-22	Construction
D	Windows & Doors to north elevation recessed. Fire rating removed from doors & windows. Sliding doors re-instated as per client's instructions	16-Nov-22	Construction
E	Dry Riser Removed	25-Nov-22	Construction

drawing stage	Stage 4		
drawing status	Construction		
client	TRIO - The Difference		
project	449 Lordship Lane, East Dulwich, London SE 22 8JN		
drawing title	Ground Floor Plan - Fire Strategy		
date	06/03/2020	drawn	OP
scale	1:50 @ A1	checked	CL



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AAOV 1st Floor to 2nd Floor half-landing

- Fire strategy key:**
- 60' Fire resistant walls
 - 30' Fire resistant walls
 - S Sprinkler
 - F Fire/Smoke Alarm
 - H Heat Detector
- Refer to Fire Strategy report by Fire Engineer for fire protection and resistance to building materials and escape strategy.

- NOTES**
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Rev	Description	Date	Status
#	Issued for Construction	06-Apr-21	Construction
A	Fire strategy amended to match provider drawings	01-Nov-22	Construction
B	Windows & Doors to north elevation recessed. Fire rating removed from doors & windows. Sliding doors reinstated as per client's instructions	16-Nov-22	Construction
C	Dry Riser Removed	25-Nov-22	Construction

drawing stage Stage 4

drawing status Construction

client

TRIO - The Difference

project

449 Lordship Lane, East Dulwich,
London SE 22 8JN

drawing title

First Floor Plan - Fire Strategy

date 06/03/2020 drawn OP

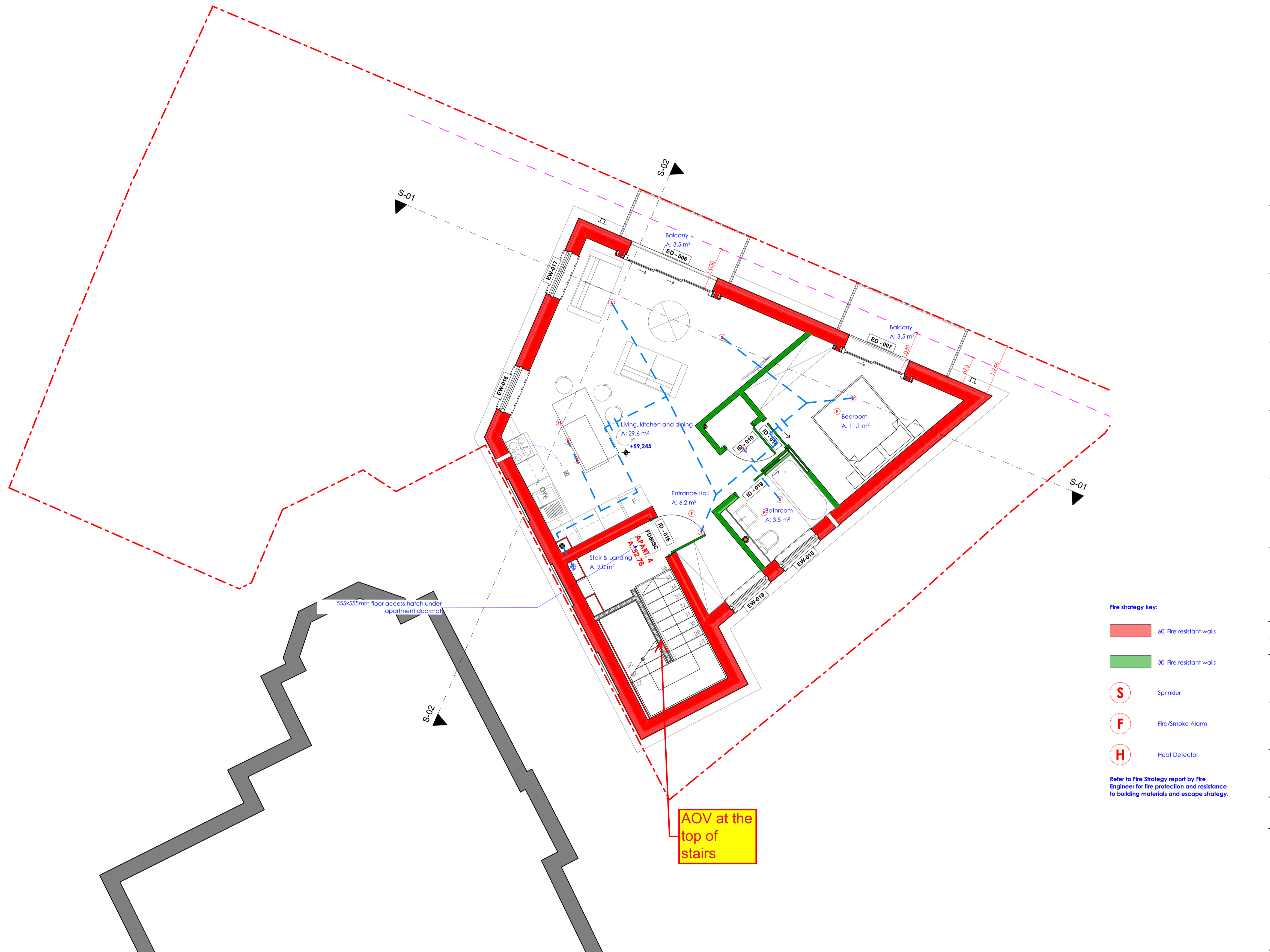
scale 1:50 @ A1 checked CL



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NOTES

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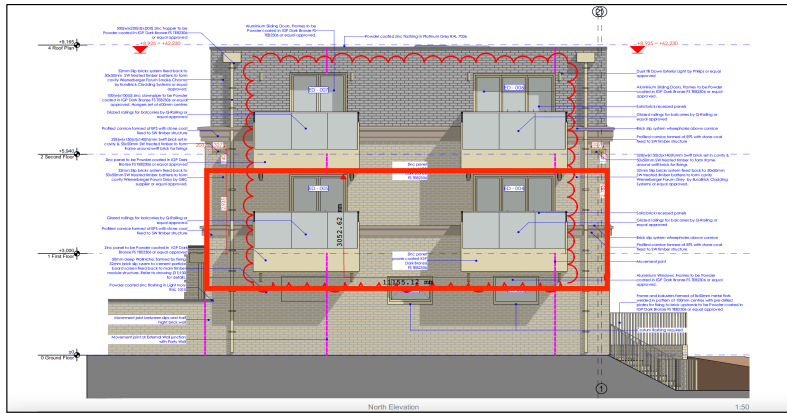
Rev	Description	Date	Status
#	Issued for Construction	06-Apr-21	Construction
A	Dry riser boxing out enlarged.	28-May-21	Construction
B	Fire strategy amended to match provider drawings	01-Nov-22	Construction
C	Windows & Doors to north elevation recessed. Fire rating removed from doors & windows. Sliding doors re-instated as per client's instructions	16-Nov-22	Construction
D	Dry Riser Removed	25-Nov-22	Construction

drawing stage Stage 4
drawing status Construction
client TRIO - The Difference
project 449 Lordship Lane, East Dulwich, London SE 22 8JN
drawing title Second Floor Plan - Fire Strategy
date 06/03/2020 drawn OP
scale 1:50 @ A1 checked CL



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Unprotected Areas Calculations
 North Elevation



Calculating method - BRE 187 (2.2.5)

North Elevation - enclosing rectangles 11.1m (L) x 3m (H) - highlighted in red

1st Floor

Enclosing rectangle - calculated method

1st Floor

w= 11.1 m
 h= 3 m
 u= 24.11 %
 G= 0.62 (Figure 26 BRE 187)

$$d = G \sqrt{\frac{u \times w \times h}{100}} \text{ m}$$

d = 1.76 m

Due to the fact that this development accommodates residential premises at the calculated floors, the distance can be halved

=> d = 0.88 m

Actual d= 1.00 m
 => the distance is in compliance with the requirements

