



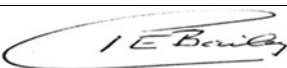
Fire
Safety
Engineering
Consultancy

Registered office
20-22 Wenlock Road
London
England
N1 7GU

A FIRE SAFETY STRATEGY

For

ERECTION OF A PART FOUR STOREY RESIDENTIAL BUILDING AT 27 - 28 HIGH STREET GRAVESEND KENT DA11 0AZ COMPRISING OF 5 SELF-CONTAINED APARTMENTS AND COMMERICAL UNIT

Date	Issue no	Prepared by	QA	Signed
14/06/2025	1	M Hurst	PB	Draft
08/10/2025	2	M Hurst	PB	
09/10/2025	3	M Hurst	PB	
17/11/2025	4	M Hurst	PB	



PROPOSED EAST ELEVATION

Issue 3: bin management added

Issue 4: Hydrant distance confirmed

CONTENTS

1	Introduction
2	Executive Summary
3	Relevant Legislation
4	Means of Escape and Warning (B1)
5	Internal Fire Spread – Linings (B2)
6	Internal Fire Spread – Structure (B3)
7	External Fire Spread (B4)
8	Access and Facilities for the Fire Brigade Rescue (B5)
9	Building Maintenance and the Provision of Fire Safety
10	Conclusion
11	Information, limitations and assumptions
12	Bibliography
13	Plans

FIGURES

- Figure 1: Location plan
- Figure 2: Site plan
- Figure 3: Single stair building escape route.
- Figure 4: Travel distances
- Figure 5: Escape widths
- Figure 6: Classifications of linings as per AD B vol 1
- Figure 5: Maximum nominal internal diameter of pipes passing through a compartment wall/floor
- Figure 7: - Recommended Periods of Fire Resistance for elements of structure.
- Figure 8: Table 9.1, Maximum nominal internal diameter of pipes passing through a compartment wall/floor
- Figure 9: Fire stopping
- Figure 10: Cavity barrier positions
- Figure 11: Maximum dimensions of cavities within non-domestic buildings
- Figure 12: Table 13.1 Vehicle access

1. INTRODUCTION

1.1 Introduction

FSEC Fire Safety Engineering Consultancy has been commissioned by PS Housing Limited Of 116 Pelham Road Gravesend Kent DA11 0JH to develop a fire strategy for the construction of a four-storey mixed use residential and commercial building including the demolition of existing building and erection of a part 3 storey and part four storey building on the same footprint, to create 1no. retail unit on the ground floor and 5no.residential units above (3 x 2 beds and 2 x 1 bed over the upper three levels with access fronting onto the High. Street and with rear access into a service road.

The site is located to the east side of the High Street. See (Fig 1)

The application site is situated in the Gravesham Borough council.

The site is well located in terms of local amenities.

This report is based on drawings received from Spillways Limited and its purpose is to primarily consider the fire safety requirements of the Building Regulations 2010 and suggest features that can be introduced to assist in gaining Building Regulation approval. The report provides a strategy for life safety in the event of fire. It is not the objective of this strategy to achieve property protection.

This fire strategy is intended to identify key fire safety principles associated with the project and proposes solutions to resolve these challenges.

The building is designed in accordance with the recommendations outlined within

Building Regulations Approved Document Part B (ADB) and BS 9991 2024. However, where a fire engineered approach is to be proposed as an alternative method of meeting the functional requirements of the Building Regulations, this will be detailed in the report.

1.2 General

Typically, solutions will be developed based on a combination of fire engineering principles and the guidance given in The Building Regulations 2010: Fire Safety Approved Document Part B Volume 1: Dwellings: 2019 editions in order to satisfy the functional requirements of the Building Regulations. Where the design deviates from the standard guidance of AD B, BS7974: 'Application of fire safety engineering principles to the design of buildings and the supporting published documents will be followed. These alternative solutions will need to meet or exceed the minimum life safety provisions specified in the Building Regulations.

The designs as proposed within this report are subject to formal approval by a Building Control Body (either Local Authority or Approved Inspector), and the Local Fire Authority. It is recommended that building works are not commenced until approval for this report from both above parties has been obtained. Unless specifically identified within this report, all other elements of the scheme design are assumed to be commensurate with standard guidance.

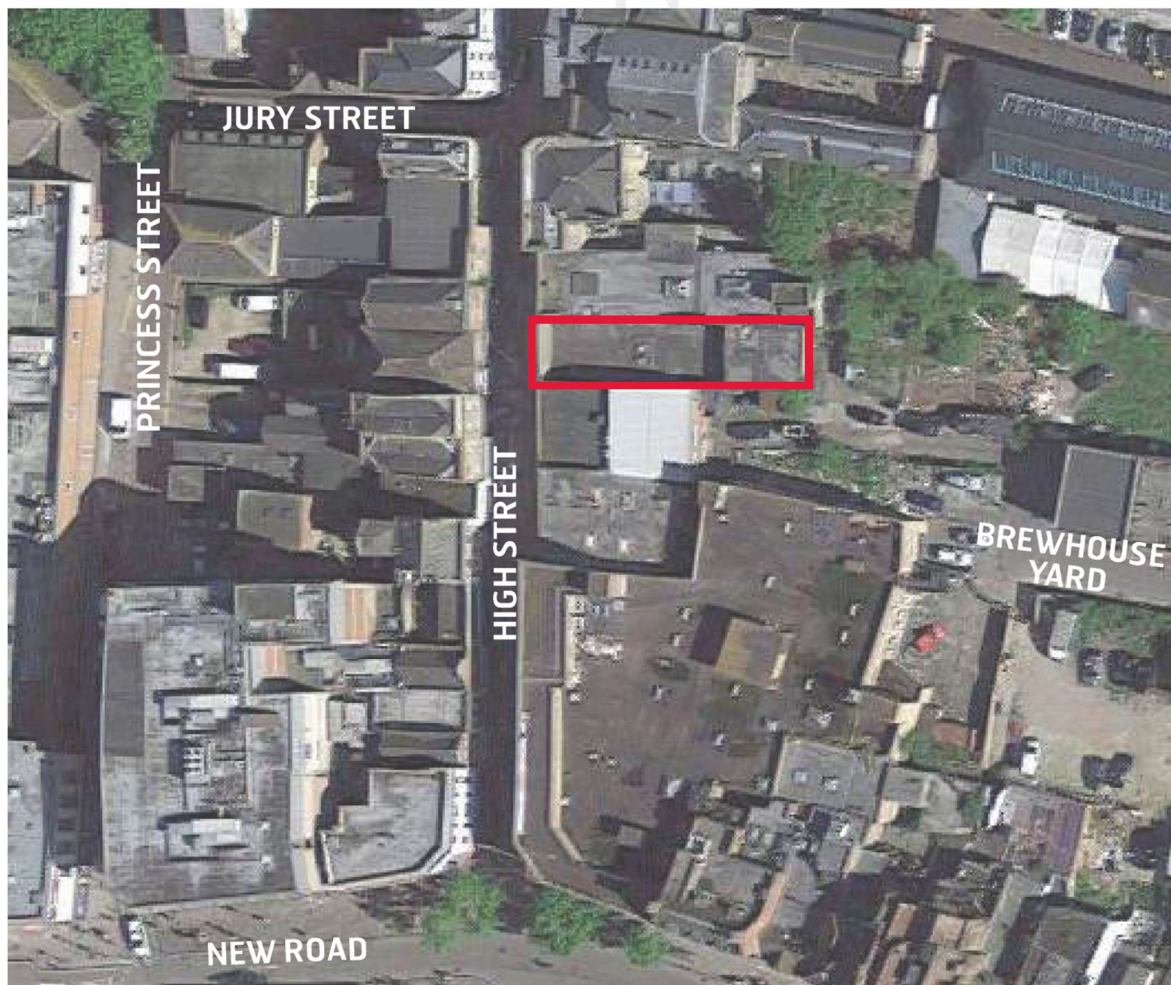


FIGURE 1 SITE LOCATION PLAN

2.0 EXECUTIVE SUMMARY

This document highlights the fire safety strategy related to the redevelopment of the site and the construction of 5 self – contained apartments.

The building is constructed of traditional masonry brickwork and blockwork with metsec sections and Concrete floors and tiled roof on timber rafters.

The building consists of four floors. The principal entrance to the apartments will be from the High Street. The entrance level will be on the ground floor with the ancillary areas accessed from the ground floor to the rear, these include a bin and cycle store, both separated from the

stair lobby and entrance buy a FD60S fire door and fire-resistant construction.

On entering the building there is a single stair which leads to the upper floors and residential accommodation

The first and second floors layouts are repeated. On leaving the protected stair you enter a corridor, there are two flats on each of the first and second floors, both flats on each floor are within 4.5m of the stair access door.

There is a riser at each level with is contained in a 60-minute fire resisting construction.

The stairs continue up to the third floor, here again there is a lobby off the stair. The furthest flat is within 4.5m of the stair access door and is compliant. There is also a door into the loft arear of the terminated rear addition floor below and the through floor riser.

The commercial unit on the ground floor has its own separated entrance from the ground.

The key aspects of the fire strategy include the following:

- The floors are served by a single protected staircase.
- The height of top storey is under 11m.
- The guidance adopted for the residential areas is ADB Vol 1 Dwellings and the relevant Updates and ADB Vol 2 Buildings other than Dwellings and updates.
- Grade A Category LD2 detection system will be provided to the residential
- Apartments follow guidance in table 1 BS 5839-6:2019+A1:2020.
- Category L2(M) level of coverage to BS5839: pt. 1 2017 detection system will be installed within the shop premise.
- The residential block will adopt a stay put strategy, if safe to do so.
- AOV will be provided to the head of the internal stairs.
- The apartments will be designed with protected hallways.
- The fire resistance of the elements of structure and compartments will be a minimum of 60 minutes with each room and protected hallway in each apartment providing 30 minutes fire resistance.

FIRE STRATEGY

- Each floor will be its own fire resisting compartment.
- Escape from all flats is within 4.5m of the protected staircase and compliant with ADB.
- firefighting appliance can reach all flats within 45m.
- The commercial unit will adopt a simultaneous evacuation policy.
- The number of exits to the retail premise will be design in consideration to the number of people using the facility or the floor area.
- The number of occupiers of the commercial floor has been designed for 60 persons occupying the building at any one-time including staff and members of public.

This strategy is written in order to demonstrate the building meets the functional requirements and the Building Regulations.

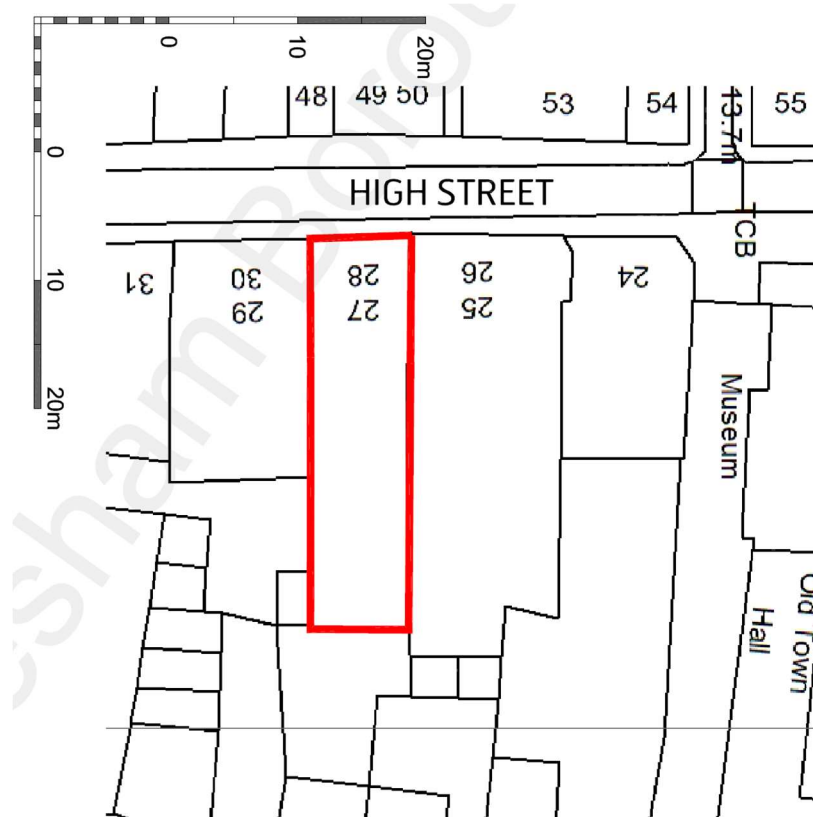


Figure :2 site plan

3.0 RELEVANT LEGISLATION

The primary legislation relevant to the project is the Building Act 1984 and its Statutory Instrument “The Building Regulations”. Following the guidance outlined with Approved Document B (ADB) provides one method of meeting the Building Regulations. The Building Regulations do not require anything to be done except for the purpose of securing reasonable standards of health and safety for persons in or about buildings. They cannot be applied retrospectively and make no recommendations relating to property protection, loss prevention or business continuity.

To comply with the Building Regulations the functional requirements must be met. It is noted that ADB does not set out statutory requirements but provides solutions to meeting the functional requirements and acknowledges that alternative solutions may be applied to achieve an acceptable level of safety and in certain circumstances it might be necessary to use one publication to supplement another. Where this approach is taken it is imperative that a cohesive solution is achieved.

Approved Document B provides general design guidance on ways in which the functional fire safety requirements can be satisfied.

In England and Wales, these Regulations are expressed in the form of six functional requirements, these being:

- Regulation B1 Means of warning and escape
- Regulation B2 Internal fire spread (linings)
- Regulation B3 Internal fire spread (structure)
- Regulation B4 External fire spread

- Regulation B5 Access and facilities for the fire service

In addition.

- Regulation 6(3)(4) Material Change of Use, 7(1)(2)(3) Materials and Workmanship

- Regulation 38 Fire safety information

There is no obligation to adopt any particular solution contained in an Approved Document, if the designer prefers to meet the relevant requirement in some other way.

Where the design deviates from the standard guidance of AD B, BS7974: 'Application of the safety engineering principles to the design of buildings and the supporting Published Documents will be followed. These alternative solutions will need to meet or exceed the minimum life safety provisions specified in the Building Regulations.

3.1 Regulatory Reform (Fire Safety) Order 2005

All existing fire safety legislation, except that relating to the Building Regulations, has been gathered together under a single Order. This Order encompasses the previous requirements made under the Fire Precautions Act 1971 and the Fire Precautions (Workplace) Regulations 1997, and extends them to include a requirement to take precautions to safeguard other persons who may be affected by a fire in a building. This legislation is based on risk-appropriate compliance and requires a fire risk assessment to be carried out once the building has been occupied.

3.2 CDM 2015

Construction projects undertaken in Great Britain and Northern Ireland are subject to the requirements of the Construction (Design and Management) Regulations 2015

(CDM Regulations).

The objective of the CDM Regulations is to reduce risk to health and safety during construction and maintenance of construction sites and occupied buildings. To fulfil their duties under CDM Regulation 29, contractors should ensure, so far as reasonably practicable, that the early installation and operation of fire protection measures contained within this report and any others required as part of the contractor's construction phase fire safety plan.

4.0 MEANS OF ESCAPE AND WARNING (B1)

The Functional Requirements states that – “The building shall be designed and constructed so that there are appropriate provisions for the early warnings 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”.

4.1 PURPOSE GROUP

The proposed building is defined as Purpose group 1(a) (Flats) in accordance with Approved Document Part B for the apartments and Purpose group 4 for the commercial unit.

4.2 Means of escape rationale.

4.2.1 Residential

The general philosophy for means of escape is that upon activation of an alarm within a residential property those occupants should be able to turn their back on a fire and escape via their nearest exit without additional assistance from other occupants or Firefighters. In the first instance, this is achieved by limiting travel distances within the flats, and then limiting the travel distance within the lobbied protected corridors and providing sufficient number of exits

with suitable exit width capacity.

4.2.2 All residential areas will operate a Stay-put (also known as defend-in-place) evacuation protocol, whereby only the apartment of fire origin evacuates in the first instance of a fire. Further evacuation of other properties in the building may be ordered and controlled by the Fire and Rescue Service, as instigated depending on fire or smoke development, or upon an occupant's own choice given perceived risk from fire or smoke.

4.2.3 Commercial

The general principle to be followed when designing facilities for means of escape is that any person confronted by an outbreak of fire within a building is able to turn away from the fire and make a safe escape. The number of escapes routes and exits to be provided depends on the number of occupants and the limitations imposed on the distance of travel within the room, tier or storey.

4.2.4 A simultaneous evacuation is proposed to the building and such that all persons within the building should be evacuated at the same time.

4.3 Residential Horizontal Escape

4.3.1 All 5 apartments operate a stay put policy where safe to do so.

4.3.2 All flats have protected entrance halls; all accommodation is positioned off a protected hallway, the travel distance within the protected hallway is less than 9m. all internal doors will be 30-minute fire resisting doors with flat entrance doors to have intumescent strips and self-closers.

4.4 Lobby ventilation

On leaving each apartment with access from the central stairs you enter a protected lobby

FIRE STRATEGY

which leads onto the staircase and then down to the main entrance and final exit to the street.

Where the flat entrance door is within 4.5m of the protected stairs, ventilated lobbies are not Required as all floors comply with Approved document B dwelling 2019 edition with amendments, diagram 3.29a which demonstrates provisions for a small single stair building not more than three storeys above ground and protected in accordance with the diagram(see fig 3). All apartments will have their entrance doors leading onto a lobby.

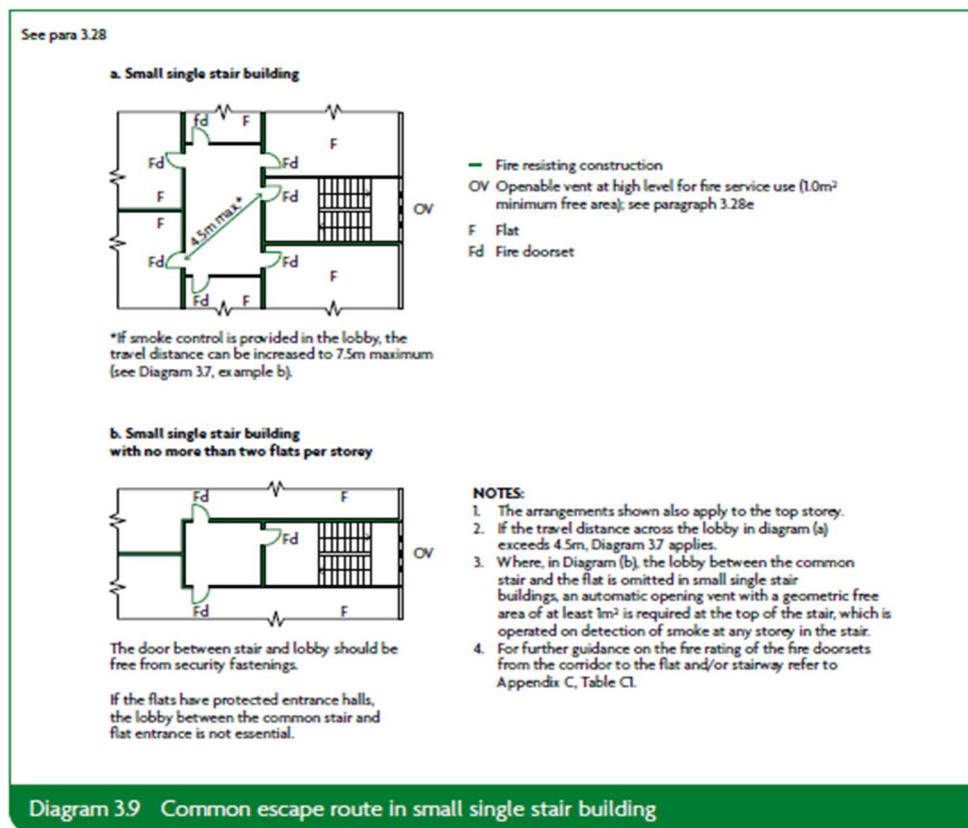


Figure 3: Single stair building escape route.

4.4.1 As all apartments are within 4.5m of the ventilated stairs no smoke ventilation will be provided to the lobbies.

A vent to the outside with a minimum free area of 1m² should be provided to the head of the stair and connected to the fire alarm system, which will be activated if smoke escapes into

the stair or open by a sounder or fire brigade override switch.

The firefighters override switch should also be able to prevent the vents being activated on other floors, but this has to be fully under their control at any stage in the fire"

4.5 Vertical Escape

The third, second and first floor apartments descend from their lobbies on each floor down the single staircase to the ground floor.

At ground floor the main entrance leads to a final exit into the street.

4.6 Stairs

The stairs are located within a protected shaft; it connects the compartment floors.

The stairs will be enclosed in a minimum of 60 minutes fire resisting construction.

The doors opening into the stairs should be a minimum of FD30S with self-closing devices with vision panels.

The head of the stairs will be provided with a 1m² AOV (Free area).

The AOV should be designed in accordance with BS EN 12101-2 and will be designed to be remotely openable via the smoke detectors.

There should also be the provision of a fireman's switch for manual operation if required.

On detection of smoke on any common lobby on the floors, the vent at the head of the stairs shall open-up automatically.

Any recesses or projections from the stairs will be protected with fire-resisting construction by up to 1.8m from the inside.

As the height of the stairs are less than 18m, the clear width of the stair should be not less than 800mm clear width. Wider stairs may be required to satisfy Part M of the Building Regulations. Handrails protruding less than 100mm may be ignored.

The final exits will be at least the minimum width of the stair. Otherwise, the minimum width of the final exit should be 800mm, and subject to compliance with Part M of the Building Regulations. Note door openings should be the clear width measured from the door leaf opening at 90 degrees and to the ironmongery.

Final exit doors where electrically secured are to be connected to the alarm to fail open on an alarm.

The stairs should be constructed to Class A2-s3, d2 or better.

4.7 Final Exit

On descending the stairs from the upper floors to the ground floor you descend into the entrance lobby which leads directly to the street.

Located alongside the stairs are a set of FD30S double fire doors with a vision panel which leads to a long room which includes holds the ancillary areas including the bin store, cleaner cupboard, service riser, meter cupboards, booster tank cupboard and cycle store. All are located adjacent the party wall with the corridor leading to the rear of the building and access to a final exit via a shared protected lobby with the commercial space to the rear of the building.

This area is divided into four areas, by FD60 fire doors with vision panels by the and exit the building through the main entrance lobby. There are two ways out of this area within 18m leading to final exits the area is segregated into four areas and has acceptable means of escape with early warning and fire resistance.

4.8 Commercial unit means of escape Methodology.

4.8.1 The building falls within purpose group 4 shop and commercial. Due to the nature of the building and size, and where not known the maximum occupancies of ground floor of the building is based on table D1 of Approved document B volume 2 which provides a floor space factor of 7.0 for shops which are divided into the area of each floor. In the case when the occupancy is known then this figure can be taken as the occupancy value.

4.9 Occupancy

The occupancy of the building can be calculated using the floor space factor set out in Table D1 in ADB volume 2 has been taken as category for shops, which based upon the area of the building divided by the factor of 7.0.

The total usable floor area on the ground floor is 150sqm which is consisted of the following:
Therefore, we have a total usable area in the shop is 150sqm which is divided by a factor of 7
The total occupancy of the unit including public and private areas is therefore 22 persons based on the calculations above.

However, this building will be designed based upon an occupancy number of 60 persons.

4.10 Travel distance

4.10.1. The maximum allowed travel distances in accordance with AD B is detailed in Table 2.1 below. The travel distance has been accessed as category 4 (Shop and Commercial) and therefore, the travel distance in a single direction of travel is 18m and 45m in two directions.

Purpose group	Use of the premises or part of the premises	Maximum travel distance ⁽¹⁾ where travel is possible in:	
		One direction only (m)	More than one direction (m)
2(a)	Residential (institutional)	9	18
2(b)	Residential (other):		
	a. in bedrooms ⁽²⁾	9	18
	b. in bedroom corridors	9	35
	c. elsewhere	18	35
3	Office	18	45
4	Shop and commercial	18	45
5	Assembly and recreation:		
	a. buildings primarily for disabled people	9	18
	b. areas with seating in rows	15	32
	c. elsewhere	18	45
6	Industrial ⁽³⁾		
	Normal hazard	25	45
	Higher hazard	12	25

Figure 4: Travel distances

4.10.2. From the ground level you have access to the main entrance and the access to the rear. There are two ways out from the commercial shop within 45m.

The doors at the rear of the premises on providing access to a rear car park, from there, occupants can proceed through the car park to a place of safety.

Therefore, you have two ways out of the building within 45m and three ways out in total, this is acceptable.

4.10.3. If the internal layout is unknown, AD B recommends that the “direct distance”, which is taken as two thirds of the measured travel distance, should be used for assessment. The use of the direct distances is to account for any unknown internal partitions and obstructions that may inhibit the means of escape. However, our internal layout is known. The direct distance in each section is 30m respectively which is acceptable.

4.11 Horizontal Escape

4.11.1 In order to prevent excessive time queuing at an exit, the exit needs to have sufficient width, as prescribed in AD B. door The final door exit width needs to cater for the number people within the building at any one time occupying the floor to escape.

4.11.2. Occupancies of rooms up to 60 persons require a minimum of one exit. Occupancies up to 600 require a minimum of two exits and Occupancies greater than 600 require a minimum of three exits, though more exits may be required in order to satisfy the travel distance requirements.

4.11.3 On the ground and first floor due to the travel distance requirements there are two exits within 45m. Anybody on any floor can leave through the main entrance and rear escapes routes. this is acceptable.

As there will be 60 persons at any one time using the building, the number of exits is acceptable.

4.11.4 Width of Exits and doors

The door width per person expected to a room should not be less than the number of persons per room.

The minimum effective clear width between door stops for rooms with an occupancy of 60 persons or less should be 750mm.

Maximum number of people	Minimum width (mm) ⁽¹⁾⁽²⁾⁽³⁾
60	750 ⁽⁴⁾
110	850
220	1050
More than 220	5 per person ⁽⁵⁾

NOTES:

1. See Appendix D for methods of measurement.
2. Widths may need to be increased to meet guidance in Approved Document M.
3. Widths less than 1050mm should not be interpolated.
4. May be reduced to 530mm for gangways between fixed storage racking, other than in public areas of 'shop and commercial' (purpose group 4) buildings.
5. 5mm/person does not apply to an opening serving fewer than 220 people.

Figure 5: Escape widths

From Table 2.3 from Approved document B volume 2 the total door widths of the building area should be capable of allowing the 60-maximum occupancy from leaving the building therefore, the final exit should be at least equal to 750mm. This is acceptable.

Generally, the width of escape routes and exits should meet the provisions in Table 2.3, as well as the guidance in Approved Document M.

The width is measured from the edge of the door stop to the door ironmongery measured when the door is at 90 degrees

All doors should have handle controls and no locks, room doors will have catches and locks with internal turn snubs.

The width of the corridors or escape route should be not less 750mm.

4.12 Final Exits

4.12.1 Final exits should be dimensioned and sited to facilitate the evacuation of persons out of and away from the building. Accordingly, they should be not less in width than the

minimum width required for the escape route(s) they serve (as indicated above,) unless otherwise stated. All final exits should open easily without the use of a key. They should open with push bars or push pads and have suitable signage as to how to operate.

All exit doors on a secure locking system will fail to open on the sound of a fire alarm activation.

4.12.2. Final exits should be sited to ensure rapid dispersal of persons from the vicinity of the building so that they are no longer in danger from fire and smoke. Direct access to open space will be available. The route clear of the building should be well defined and, if necessary, have suitable guarding.

4.12.3 Final exits should not present an obstacle to wheelchair users and other people with disabilities.

4.12.4 Exit door widths should be equal to the width of the exit doors which is a minimum 750mm. The width is measured from the edge of the door stop to the door ironmongery measured when the door is at 90 degrees.

4.13 Automatic Fire Detection and Alarm System (residential)

The residential apartments will have a 'stay put if safe to do so' evacuation strategy.

The apartments with protected entrance halls will have Category LD2 detection following guidance in table 1 BS 5839-6:2019+A1:2020 with Grade D1 system for rented apartments of one or more mains powered detectors, each with a tamper-proof standby supply consisting of a battery or batteries.

The category of system comprises detectors in all circulation spaces that form part of the escape routes from the apartment and in all rooms or areas that present a high fire risk to occupants, therefore, heat detectors will be fitted into the kitchens.

Optical type detectors will be provided except in kitchen areas, where heat detectors will be installed to minimise the potential for false alarms.

Mains powered Carbon Monoxide alarms conforming to BS EN 50291 and installed in compliance with BS EN 50292 should also be installed in each apartment and may be interlinked with the fire detection and alarm system if the manufacturer of all the components make such a recommendation.

On actuation of a detector in an apartment, the fire alarm signal will only sound within that apartment. Where there is more than one smoke/fire alarm in any single apartment, these will be interlinked such that the actuation of any single alarm will result in the fire signal being given by all smoke/fire alarms within that apartment.

The actuation of an alarm within any single apartment will not result in an alarm being raised in any other apartment in the building.

The common areas in all buildings will be fitted with an L5 alarm system detectors in accordance with BS 5839 Part 1 to only activate fire-fighting systems, such as the smoke control systems (AOVs) and will not sound an audible alarm.

All ancillary rooms on the ground floor will have smoke detection with the refuse store having a standalone sounder to warn passersby of an incident.

4.14 Automatic Fire Detection and Alarm System (commercial)

4.14.1. The provision of automatic smoke detection systems can be significant benefit in terms of providing early warning for the occupants.

4.14.2. The response of occupants of a building is generally enhanced by the installation of a fire warning system that provides information about a fire incident. In circumstances where the occupants might be unaware of a fire; they will rely upon the level of information given by

the warning systems in making the decision to evacuate or not.

4.14.3. The commercial floor of the building will be provided with a fire alarm system fitted to L2 (m) BS 5839 part 1:2017. The setup should divide the building into broad zones.

Detectors are wired in circuits to a central control panel. If a detector is triggered, the control panel indicates the zone but not the exact location of the activation. Smoke detection will be provided on both floors and call points (to BS 5839-2.) at each final exit, and adjacent to the kitchen area, in accordance with BS 5839 part 1 2017.

As the escape strategy is one of simultaneous evacuation, activation of the fire alarm system in any part of the ground floor should give warning from all fire sounders so that all staff are alerted to give warning throughout the premise for immediate evacuation.

4.14.4. Manual call points may allow for the alarm to be raised before it is automatically detected. Manual fire call points should be provided by storey exits, final exits, areas of high risk such as near any kitchen.

The fire alarm system is to be connected to the buildings alarm system so on any activation in any space then the whole building should go into alert so that evacuation of the building is carried out.

A designated refuge space away from the building should be prepared and provide to all staff and occupiers.

4.15 Fire detection (General)

The fire alarm system will be hard wired throughout.

Heat detectors will be provided in plant rooms, kitchens and any other areas where dust, steam or smoke is likely to be present as part of the ambient conditions.

Any ceiling void that exceeds 800 mm in depth will be provided with automatic fire

detection appropriate for the risk contained within the void.

Sufficient alarm sounders will be provided to achieve a sound pressure level of not less than 75 dB(A) at the bedhead when all doors are shut.

Where ambient noise levels are excessive, the audible alarm will be supplemented by one or more flashing xenon beacons. These will also be provided in areas where it is possible that a person with impaired hearing may be resorting or working in relative isolation.

If there are a non-essential service that will be interfaced with the fire detection and alarm system, and these should be arranged to shut down on detection of fire. In the event that the fire is detected, it is anticipated that air handling systems, gas supplies, etc. will shut down on fire detection and will remain isolated until the fire detection and alarm system has been re-set.

The Fire Panel and plan box should be ideally situated in the protected entrance lobby and accessible by the fire authority with the plan box.

4.16 Emergency Lighting Systems

The common areas of the residential units will be provided with an emergency lighting system.

The emergency lighting system will be a non-maintained X060 (residential buildings) and X180 (non-residential buildings), designed according to the recommendations in BS 5266 Part 1 and BS EN 1838, and will be provided with self-contained luminaires, non-maintained system with a duration of not less than 60 minutes, respectively.

A minimum emergency lighting level of 1 lux should illuminate the escape routes in the common areas.

Emergency luminaires being provided to the following areas:

- All internal circulation areas, open plan areas greater than 60m² in area and any windowless accommodation
- At every storey exit and exit door from the building
- External escape routes and external areas in the immediate vicinity of exits
- In all escape stairs to ensure that, each flight receives direct light. Lighting to escape stairs should be on a separate circuit from that supplying other parts of the system
- At any changes in floor level and any changes in direction of escape routes
- Close to (typically within two metres of) all fire safety, or other safety equipment
- All plant rooms,

4.17 Exit Signage

Typically, exit or directional signs should be provided over doors and routes that form part of the normal access and egress routes from the building. The signage should comply with the recommendations of BS EN ISO 3864 Part 1 and positioned in accordance with BS 5499 Part 4; comprising of a graphical symbol, directional arrow and supplementary text.

All signage is required to be illuminated to ensure they are legible and conspicuous. Effective illumination is required both in normal and in mains-failure conditions. The lighting of the signage should be in accordance with section 5 of BS 5499-4.

The signs will be in accordance with BS ISO 3864-1:2011, and Health and Safety (Safety Signals and Signs) Regulation 1996.

Any doors in the lines of fire resistance will be provided with appropriate fire signage.

In general doors to staircases and sub-division corridor doors will be provided with

‘Fire door keep shut’ signage. Doors to cleaner’s cupboards, stores, plant rooms and service risers will be provided with ‘Fire door keep locked’ signage.

Signages should be provided in all areas.

To assist the fire service to identify each residential floor above ground level, wayfinding signage by way of signage within stair cores and landings for identification of respective floor levels will be provided to BS ISO 3864-1:2011

Any doors in the lines of fire resistance will be provided with appropriate fire signage. In general doors to staircases and sub-division corridor doors will be provided with ‘Fire door keep shut’ signage. Doors to cleaner’s cupboards, stores and service risers will be provided with ‘Fire door keep locked’ signage. Signages should be provided in all areas.

5.0 INTERNAL FIRE SPREAD (LININGS)

5.1 General

Although they are not likely to be the materials first ignited, the interior wall and ceiling surfaces can have a significant influence on how fast a fire may spread through the building. This is particularly important in circulation spaces, where the rapid spread of fire is most likely to prevent occupants from escaping. Therefore, the linings of the walls and ceilings within the building will satisfy the surface spread of flame classifications outlined in the table below.

These provisions do not apply to the upper surfaces of floors and stairs.

5.2 Residential

Materials used in the linings of walls and ceilings for the residential apartments and floors should comply with the classifications in accordance with the recommendations of AD B, reproduced below for information.

Table 4.1 Classification of linings	
Location	Classification
Small rooms of maximum internal floor area of 4m ²	D-s3, d2
Garages (as part of a dwellinghouse) of maximum internal floor area of 40m ²	
Other rooms (including garages)	C-s3, d2
Circulation spaces within a dwelling	
Other circulation spaces (including the common areas of blocks of flats)	B-s3, d2 ⁽¹⁾
NOTE: 1. Wallcoverings which conform to BS EN 15102 , achieving at least class C-s3, d2 and bonded to a class A2-s3, d2 substrate, will also be acceptable.	

Figure 6 Table 4.1: Classifications of linings as per AD B VOL 1

Parts of walls in rooms may be of a lower class than that given in the table above but not lower than Class 3 or European Class D-s3, d2, provided that the total area of those parts in any one room does not exceed one half of the floor area of the room, subject to a maximum of 20m². This does not apply to circulation spaces.

With respect to adhesive substances used of securing carpets in the common stairway, ideally the adhesive should have limited inflammable substances within the makeup, to prevent rapid fire involving the carpet within the protected stairway.

From the table above the linings on the first and second floor should be a minimum of C-s3, d2 with the staircase areas being B-s3, d2.

6.0 INTERNAL FIRE SPREAD (STRUCTURE)

6.1 Loadbearing Elements of Structures

This building is considered to be a residential building Purpose Group 1a residential in accordance with Table B4 of Approved Document B, in a building having a floor more than 5m above ground but less than 11m, the period of fire resistance for elements of structure indicated in table B4 is 60 minutes.

Therefore, any new steelwork and structural walls supporting the floors should be protected to this standard. This can be achieved in different ways, i.e., intumescent paints, fire boarding etc. The contractor will normally specify his preferred choice.

Any elements of structure also supporting a compartment wall described in the following section will need to be provided with the same fire resistance as the compartment wall it supports.

Part of building	Minimum provisions when tested to the relevant European standard (minutes) ⁽¹⁾	Minimum provisions when tested to the relevant part of BS 476 ⁽²⁾ (minutes)			Method of exposure
		Loadbearing capacity ⁽³⁾	Integrity	Insulation	
Structural frame, beam, or column	R60 See Table 7	See Table 7	N/A	N/A	Exposed faces
Loadbearing wall (which is not also a wall described in any of the following items)	R60 See Table 7	See Table 7	N/A	N/A	Each side separately
Floors ⁽⁴⁾ Any other floor, including compartment floors	REI 60 See Table 7	See Table 7	60	60	From underside ⁽⁵⁾
Roofs a) any part forming an escape route b) any roof that performs the function of a floor.	REI30	30	30	30	From underside ⁽⁵⁾
	REI 60 See Table 7	See Table 7	See Table 7	See Table 7	

FIRE STRATEGY

Part of building	Minimum provisions when tested to the relevant European standard (minutes) ⁽¹⁾	Minimum provisions when tested to the relevant part of BS 476 ⁽²⁾ (minutes)			Method of exposure
		Loadbearing capacity ⁽³⁾	Integrity	Insulation	
External walls any part a maximum of 1000mm from any point on the relevant boundary ⁽⁶⁾ any part a minimum of 1000mm from the relevant boundary ⁽⁶⁾ c. any part beside an external escape route	REI 60 See Table 7	60	60	60	Each side separately
	RE 60 See Table 7 I15	See Table 7	See Table 7	15	From inside the building
	RE30	30	30	No provision ⁽⁷⁾⁽⁸⁾	From inside the building
Compartment walls separating occupancies	REI 60 See Table 7	See Table 7	See Table 7	See Table 7	Each side separately
Compartment walls Other than above	REI 60 See Table 7	See Table 7	See Table 7	See Table 7	Each side separately
Enclosure (which does not form part of a compartment wall or protected shaft to a: Protected stairway. Lift shaft	REI 60 ⁽⁸⁾	60	60	60 ⁽⁸⁾	Each side separately
	REI 60	60	60	60	
Enclosure (which is not a compartment wall or to a: Protected lobby. Protected corridor Protected entrance halls to flats	REI 60 ⁽⁸⁾	60	60	60 ⁽⁸⁾	Each side separately
	REI 60 (8)	60	60	60 (8)	
	REI 30 ⁽⁸⁾	30	30	30 ⁽⁸⁾	
Cavity barrier	EI 30 ⁽¹¹⁾	Not applicable	30	15	From underside ⁽⁵⁾
Ceiling	E 30	Not applicable	30	30	From outside
Duct	E 30	Not applicable	30	No provision	From outside
Casing around a drainage system		Not applicable	30	No provision	From outside
Flue walls	EI Half the period specified for the compartment wall/floor	Not applicable	Half the period specified for the compartment wall/floor	Half the period specified for the compartment wall/floor	From outside
Notes: BS EN 13501-2 Classification using data from fire resistance tests, excluding ventilation services. BS EN 13501-3 Classification using data from fire resistance tests on products and elements used in building service installations: fire resisting ducts and fire dampers. BS EN 13501-4 Classification using data from fire resistance tests on components of smoke control systems. In the European classification: 'R' is the resistance to fire in terms of loadbearing capacity. 'E' is the resistance to fire in terms of integrity. 'I' is the resistance to fire in terms of insulation. The national classifications do not automatically equate with the alternative classifications in the European column, therefore, products cannot typically assume a European class unless they have been tested accordingly. BS 476-20 for general principles, BS 476-21 for loadbearing elements, BS 476-22 for non-loadbearing elements, BS 476-23 for fire-protecting suspended ceilings and BS 476-24 for ventilation ducts. Applies to loadbearing elements only (see paragraph B19). Guidance on increasing the fire resistance of existing timber floors is given in BRE Digest 208. Only if a suspended ceiling meets the appropriate provisions should it be relied on to add to the fire resistance of the floor. Such walls may contain areas that do not need to be fire resisting (unprotected areas). See Section 11. Unless needed as part of a wall in item 5a or 5b. 8. Except for any limitations on uninsulated glazed elements given in Table B5.					

Figure 7: - Recommended Periods of Fire Resistance for elements of structure.

6.2 Fire Compartmentation

Compartmentation will have the same level of fire resistance as the elements of structure i.e., a minimum of 60 minutes.

Compartment floors will be provided at every level and will have a fire resistance of 60 minutes.

Compartmentation should be provided between the apartments including the communal areas. Compartmentation should be 60 fire resistance in terms of integrity, insulation and load-bearing capacity.

The protected stair should be a minimum of 60 minutes fire resistance in terms of integrity, insulation and load-bearing capacity with FD30S fire doors and vision panels on each floor.

Compartment walls having a minimum fire resistance of 60 minutes should be provided to separate occupancies.

Each room in each apartment will have 30 minutes fire resistance.

The internal circulation spaces within the apartments will be enclosed in a minimum in 30 minutes, fire resisting construction.

All services penetrating a fire compartment line will be fire stopped to the same level of the fire compartment line as a minimum standard.

6.3. Protection of Openings and Fire Stopping

Systems must be designed, installed, tested and maintained in full accordance with the relevant BS 476 standard.

6.4 Openings for pipes

Pipes that pass through a compartment wall or compartment floor (unless the pipe is in a

protected shaft), or through a cavity barrier, should be in accordance with of the following alternatives:

- For proprietary seals of any pipe diameter, a proprietary sealing system may be provided that has been shown by test to maintain the fire resistance of the wall, floor or cavity barrier.
- For pipes with a restricted diameter, where a proprietary sealing system is not used, fire-stopping may be used around the pipe, keeping the opening as small as possible. The nominal interior diameter of the pipe should be no more than the relevant dimensions given in AD B: Table 9.1
- A pipe of lead, aluminium, aluminium alloy, fibre-cement or PVC, with a maximum nominal diameter of 160 mm, may be used with a sleeving of non –combustible pipe as shown in AD B.

Table 9.1 Maximum nominal internal diameter of pipes passing through a compartment wall/floor			
Situation	Pipe material and maximum nominal internal diameter (mm)		
	(a) High melting point metal ⁽¹⁾	(b) Lead, aluminium, aluminium alloy, uPVC, ⁽²⁾ fibre cement	(c) Any other material
1. Structure (but not a wall separating buildings) enclosing a protected shaft that is not a stair or a lift shaft	160	110	40
2. Compartment wall or compartment floor between flats	160	160 (stack pipe) ⁽³⁾ 110 (branch pipe) ⁽³⁾	40
3. Wall separating dwellinghouses	160	160 (stack pipe) ⁽³⁾ 110 (branch pipe) ⁽³⁾	40
4. Wall or floor separating a dwellinghouse from an attached garage	160	110	40
5. Any other situation	160	40	40

NOTES:

1. Any metal (such as cast iron, copper or steel) which, if exposed to a temperature of 800°C, will not soften or fracture to the extent that flame or hot gas will pass through the wall of the pipe.
2. uPVC pipes that comply with either **BS 4514** or **BS 5255**.
3. These diameters are only in relation to pipes that form part of an above-ground drainage system and are enclosed as shown in Diagram 9.1. In other cases, the maximum diameters given for situation 5 apply.

Figure 8: Table 9.1, Maximum nominal internal diameter of pipes passing through a compartment wall/floor

FIRE STRATEGY

All joints between fire separating elements will be adequately fire stopped and all openings for services that pass-through fire separating elements will be:

- Kept as few in number as possible
- Kept as small as practicable; and
- Fire stopped (which in the case of pipes or ducts allow for thermal movement)

The selection of fire stopping products and materials will take account of the size and nature of the gap and any predicted alteration of movement. Only compatible fire stopping materials will be used where there is interaction between more than one product.

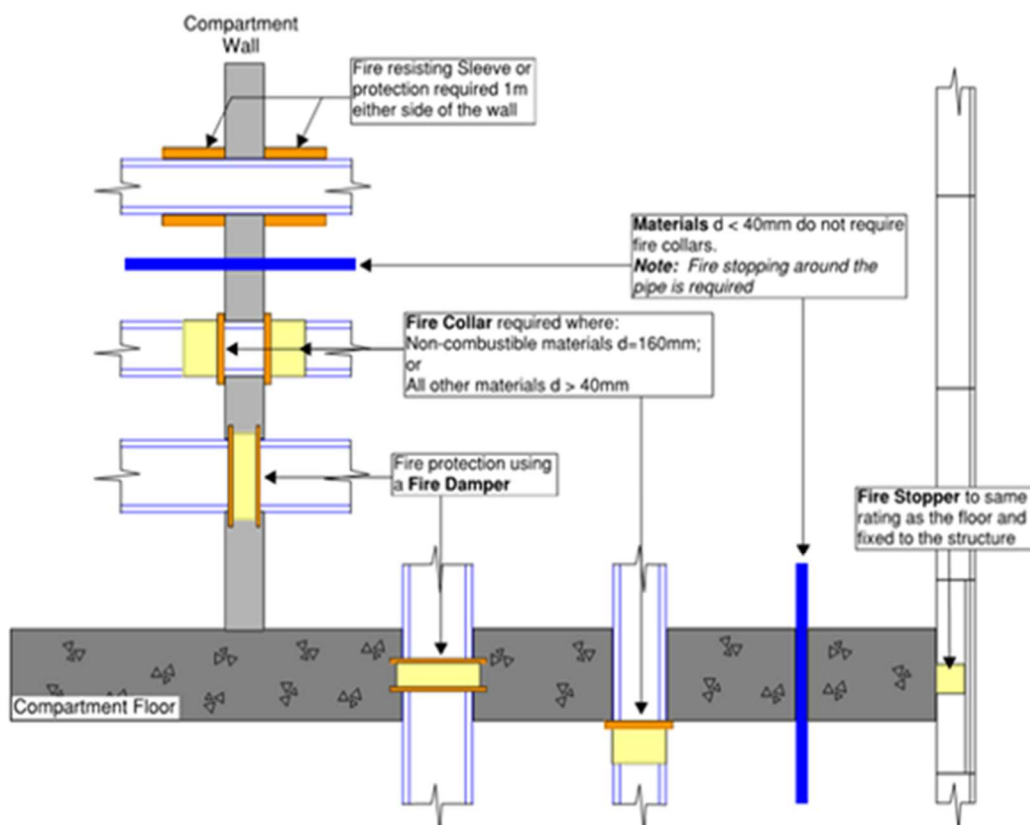


Figure 9: Fire stopping

6.5 Cavity barriers

Cavity barriers will be provided to sub-divide any extensive cavities. These will typically, be at 20m in any direction, they should be installed in accordance with Section 8 of ADB volume 1

Cavity barriers are also required to:

- Above/below any fire resisting walls (except compartment walls that run the full height of the storey), doors and screens sub-dividing a corridor, where the walls are not taken the full height of the storey
- At the junction of compartment walls and floors in external cavity walls
- At the junction of fire resisting walls and any non-fire resisting construction; and
- To close any cavities

All cavity barriers will achieve a minimum of 30 minutes fire resistance (integrity) and 15 minutes fire resistance (insulation). The requirements for cavity barriers should be reviewed as the design progresses.

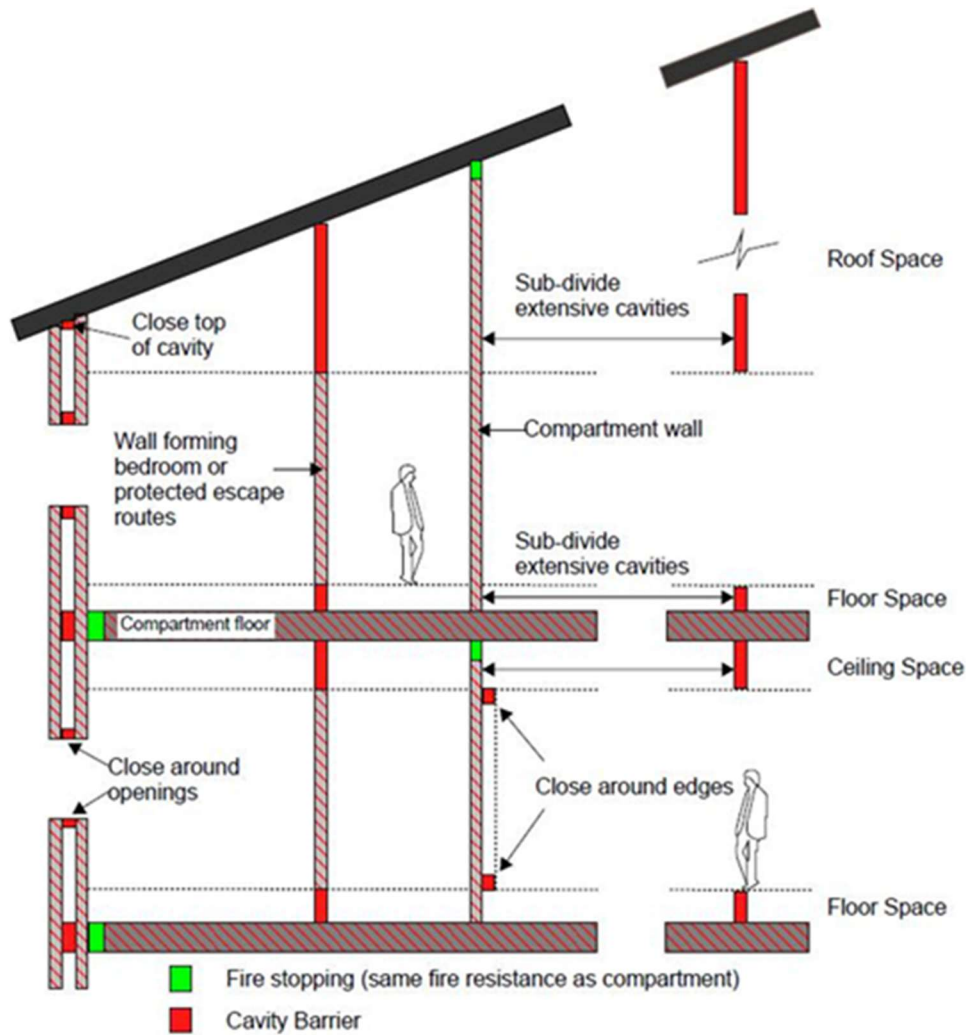


Figure 10: Cavity barrier positions

6.6 Ductwork

The design of the mechanical and electrical ductwork has an important impact on the level of compartmentation provided in the building. Should any part of ductwork breach through an identified compartment wall/compartment floor, a damper will need to be installed so as to prevent the passage of fire and smoke in the protected escape routes (unless the ductwork is fire rated). The same standards should be applied to ventilation systems which with modern requirements of ventilation require ductwork to be installed throughout the dwelling leading to

a means of fire spread.

All of the following precautions should be taken to avoid the spread of smoke and fire to the protected stairway.

- a. Transfer grilles should not be fitted in any wall, door, floor or ceiling of the stair enclosure.
- b. Any duct passing through the stair enclosure should be rigid steel. Joints between the ductwork and stair enclosure should be fire-stopped.
- c. Ventilation ducts supplying or extracting air directly to or from a protected stairway should not serve other areas as well.
- d. Any system of mechanical ventilation which recirculates air and which serves both the stair and other areas should be designed to shut down on the detection of smoke within the system.
- e. For ducted warm air heating systems, a room thermostat should be sited in the living room. It should be mounted at a height between 1370mm and 1830mm above the floor. The maximum setting should be 27°C.
- f. Where dampers are installed, they must be installed in accordance with BS EN 1366.
- g. Where ductwork passes through a protected stair but does not serve the stair the ductwork is required to be either fire rated or enclosed in fire rated construction. The use of dampers is not adequate or appropriate in this instance.

6.7 Ancillary rooms including risers

There are ancillary rooms, such as the bin store and cycle store including a plant room on the ground floor accessed from both the rear and front entrance. Access is through FD60s fire doors. This area will be provided with 0.4m² of permanent ventilation, both will have smoke detection linked to the landlord supply.

The doors from the bin and plant stores will be FD60S fire door. All separated spaces within this area will be within 60 minutes fire resisting construction.

The bin Management plan attached to this strategy outlines the required procedures for the safe and compliant internal management of refuse and recycling bins within the building. The objective being to ensure fire safety, compliance during bin servicing.

Risers are within the accommodation lobbies on each floor; they will be enclosed within 60-minute fire resisting construction with FD60 fire doors with intumescent strips and smoke seals. Each floor will be fire stopped and there will be a smoke detector in each riser and service cupboard connected to the landlord's alarm system. The smoke detector in each riser and service cupboard should have a standalone sounder to alert occupiers in case of an emergency.

6.8 Fire doors

Fire doors and door sets to be installed to relevant positions as indicated below:

- FD30S to apartment front entrance doors with intumescent strips.
- FD30 forming part of the enclosure to a protected entrance hall in a flat.
- FD60S to service risers and cupboards with keep lock signs with intumescent strips.
- FD30S with vision panels to staircase lobby doors
- FD60S to plant room, refuse and cycle doors with intumescent strips.
- FD60S with intumescent strips to the entrance doors and within the ancillary accommodation.

6.9 Cycle store

The cycle store is also accessed from within the ancillary area between the front and rear entrance see also clause 6.7.

Doors will be FD60S fire door with intumescent strips. The store will have a 0.4m² permanently vented grill and be within 60 minutes fire resisting construction.

As the room is a risk room due to the possibility of cycle batteries being stored the permanent vent will allow smoke to disperse.

6.10 Means of Escape for Disabled Occupants

There is no lift installation within this building.

Disabled wheelchair refuges are not expected to be provided in residential buildings relying on a stay-put evacuation policy, as the only occupants within the affected flat would evacuate.

All areas at ground floor will be provided with step-free, or ramp access. Any ramps will be designed in accordance with Approved Document M.

Travel beyond the building final exits must be away from the building, towards a place of safety, and not be jeopardised by unprotected openings of the building.

In general, the building will be provided with escape routes, upon exiting the building that are directly away from the building, have alternate path along the building façade.

Final exits should not present a barrier for disabled people. Where the route to a final exit does not include a stair, a level threshold and, where necessary a ramp will be provided.

In the event that a disabled person takes residence in the building it is recommended that information pertaining to the persons disability be provided to the fire and rescue service by the Responsible Person or managing agents provided the vulnerable resident (or their legal guardian) gives their consent, it is recommended that the shared information would be:

- (a) The resident's flat number
- (b) The resident's floor number
- (c) An indication of the nature/degree of the resident's impairment
- (d) Whether or not the resident has a plan in place to evacuate the building in the event of a fire without direct FRS support

Such information will need to be kept up to date by the Responsible Person or accountable person

6.11 Use of space within protected stairways

A protected stairway should not be used for anything else, except a lift well or electricity meters.

In single stair buildings, electricity meters should be in securely locked cupboards. Cupboards should be separated from the escape route by fire resisting construction. Mailboxes will 30 minutes fire resisting construction.

Gas service and installation pipes and meters should not be within a protected stairway, unless installed in accordance with the Pipelines Safety Regulations 1996 and the Gas Safety (Installation and Use) Regulations 1998.

6.12 Sprinklers

As the building is under 11m in height there is no requirement to provide sprinkler protection to the building.

6.13. Concealed Cavities

6.13.1 Guidance on the maximum dimensions of cavities in non-domestic buildings is outlined in the table below.

Table 9.1 Maximum dimensions of cavities in buildings other than dwellings (purpose groups 2 to 7)		
Location of cavity	Class of surface/product exposed in cavity (excluding the surface of any pipe, cable or conduit, or any insulation to any pipe)	Maximum dimension in any direction (m)
Between roof and a ceiling	Any	20
Any other cavity	Class C-s3, d2 or better	20
	Worse than Class C-s3, d2	10

Figure 11: Maximum dimensions of cavities within non-domestic buildings

6.13.2 Note: Exceptions to the provisions in the table above are:

- Any cavities in a wall which should be fire resisting only because it is loadbearing.
- Any cavities in a masonry or concrete external cavity wall.
- Any cavity in any floor or roof cavity above a fire resisting ceiling and which extends throughout the building or compartment, subject to a 30m limit on the extent of the cavity.
- Any cavity formed behind the external skin of an external cladding system which masonry or concrete inner leaf at least 75mm thick, or by over cladding an existing concrete roof, provided that the cavity does not contain combustible insulation, and the building is not put to a residential or institutional use.
- Any cavity between double-skinned corrugated or profiled insulated roof sheeting, if the sheeting is a material of limited combustibility and both surfaces of the insulating layer have a surface spread of flame of at least Class 0 or Class 1 and make contact with the inner and outer skins of cladding.
- Any cavity below a floor next to the ground or over site concrete, if the cavity is less than 1000mm in height or if the cavity is not normally accessible by persons, unless there are openings in the floor such that it is possible for combustibles to accumulate in the cavity.

6.13.3. Where the concealed space is over an undivided area which exceeds 40m (this may be in both directions on plan), there is no limit to the size of the cavity if:

- An automatic fire detection system which follows the recommendations of BS 5839-1 is installed in the building, and
- If the ceiling void is used as a plenum, the recommendations regarding recirculating air distribution systems in BS 9999-2017 need to be followed, and
- The surface of the ceiling exposed in the cavity must be Class 0 surface spread of flame and

- the supports and fixings in the cavity must be Class 0 surface spread of flame and
 - the supports and fixings in the cavity need to be non-combustible and
 - Pipe insulation will have Class 1 surface spread of flame, and
 - Electrical wiring in the void will be laid in metal trays or metal conduit, and
 - Other materials in the void must be of limited combustibility.
- air distribution systems in BS 9999-2017 need to be followed, and
- The surface of the ceiling exposed in the cavity must be Class 0 surface spread of flame and the supports and fixings in the cavity must be Class 0 surface spread of flame and the supports and fixings in the cavity need to be non-combustible, and
- Pipe insulation will have Class 1 surface spread of flame, and
 - Electrical wiring in the void will be laid in metal trays or metal conduit, and
 - Other materials in the void must be of limited combustibility.

7.0 EXTERNAL FIRE SPREAD

7.1. External Surfaces

Requirement B4 of ADB and Regulation 7 requires the following:

- (a) 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.
- (b) 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.

The building will be constructed from traditional construction consisting of a mixture of traditional masonry brick and blockwork and tiled roof.

The provisions in the above Table 10.1 apply to all external surface materials used on the wall construction.

As this building is within one metre from the boundary and under 11m the fire resistance to all materials in the construction of the wall or specified attachments to achieve a Class B-s3, d2(2) or better. Any insulation product, filler material (such as the core materials of metal composite panels, sandwich panels and window spandrel panels but not including gaskets, sealants and similar) etc. used in the construction of an external wall should be class A2-s1, d0 or better.

Any insulation in the wall should be non-combustible. Suitable materials may include mineral wool, rock wool or possibly glass wool.

There is still however, a requirement to prevent fire spread over the boundary.

The potential of an external fire spreading can be limited from building to building,

It is however recommended that insulation should be non-combustible. Suitable materials may include mineral wool, rock wool or possibly glass wool. Combustible materials ban applies to residential buildings greater than 11m. Combustible and polymeric insulation products should be avoided but may be used in certain areas subject to a fire risk assessment.

Insurers should be consulted if any timber cladding is proposed as they may have additional requirements or restrictions other than the measures necessary to satisfy Building Regulations.

There is still the requirement to prevent fire spread over the boundary.

7.2 Resistance of Fire Spread from one Building to another

Boundary conditions can present problems possible radiant heat transfer.

The number of windows and the number of combustible materials allowed close to the boundary that may provide unprotected radiant heat flux hazards from the dwelling to nearby premises and the boundary and the distance to that boundary condition.

Note that the relevant boundary is the site boundary, and the notional boundary is an invisible line in between buildings on same site.

The building is constructed from traditional construction consisting of a mixture of traditional masonry brick external finish and concrete floors.

The external fire spread assessment was carried out in accordance with BR 187 adopting the enclosing rectangle method. The external fire spread analysis is based on the largest radiating panel to the relevant boundary. As the distance from the relevant boundary increases, an increasing percentage of the wall can be made unprotected, i.e. have no fire resistance. Where the site is bordered by a road, the midline of the roadway has been used as the relevant boundary.

The external fire spread assessment takes into account the provision of compartmentation on every storey of all apartment within the block. Where compartmentation is provided, the size of the radiating panel is reduced. Where a protected shaft is provided, these areas may be discounted since they are sterile spaces. The external fire spread analysis is based on the largest radiating panel to the relevant / notional boundary.

The front elevation is 3.9 m away from the notional boundary with the centre of the road with the rear elevation is facing the garden some 14.65m away from the rear boundary.

The first-floor windows worse situation account for 8.1m² of unprotected areas within an enclosing rectangle with a storey height of 3.5m the rectangle is 36m² at 3m away you are allowed 70% unprotected areas of glazing, the actual area is 22%, therefore this is acceptable.

The shop front on the ground floor equates to an area of 10.5m² of glazing including shop door. Using the enclosing rectangle calculation at 3.9m away from the notional boundary they are allowed 48% which is acceptable.

The residential entrance door and surround should be 30 minutes fire resistant and a fire resisting surround.

The rear elevation is 14.65m away from the rear boundary. The first-floor windows worse situation account for 2.6m² of unprotected areas within an enclosing rectangle with a storey height of 3.5m. The rectangle is 18m² at 1m away would be allowed 30%, we have 15% it is therefore acceptable.

The exposed rear outrigger flank wall has 3 windows on each upper floor to flats 2 and 4 equalling to 7.13m², the length of wall is 10.8m x height is 3.5m with an enclosing rectangle of 72m².

The amount of unprotected area is 10% within the wall at 1m away you are allowed 20% this is also, therefore acceptable.

8.0 ACCESS AND FACILITIES FOR THE FIRE AND RESCUE SERVICE

8.1 Access

Within the design, consideration has been given to providing adequate firefighting facilities for the Local Fire and Rescue Service.

The land is occupied by a terraced property and there is a good road network to the site and as the roads are residential the access roads around the new development it is assumed already have provisions for adequate access for fire fighting vehicles.

8.2 Provision and design of access routes and hard standings

For apartments, access for a pumping appliance should be provided to within 45m of all points inside each flat in the block measured along the length of the block. If this is not possible, the building will be fitted with a dry riser located in the protected lobby on each floor.

For buildings fitted with dry fire mains, both of the following apply.

- a. Access should be provided for a pumping appliance to within 18m of each fire main inlet

connection point. Inlets should be on the face of the building.

b. The fire main inlet connection point should be visible from the parking position of the appliance, and the fire mains should be located within the protected stairway enclosure, with a maximum hose distance of 45m from the fire main outlet to the furthest point inside each flat, measured on a route suitable for laying a hose.

The access road specification should comply with the table in Fig 12.

Table 13.1 Typical fire and rescue service vehicle access route specification						
Appliance type	Minimum width of road between kerbs (m)	Minimum width of gateways (m)	Minimum turning circle between kerbs (m)	Minimum turning circle between walls (m)	Minimum clearance height (m)	Minimum carrying capacity (tonnes)
Pump	3.7	3.1	16.8	19.2	3.7	12.5
High reach	3.7	3.1	26.0	29.0	4.0	17.0

NOTES:

1. Fire appliances are not standardised. The building control body may, in consultation with the local fire and rescue service, use other dimensions.
2. The roadbase can be designed to 12.5 tonne capacity. Structures such as bridges should have the full 17-tonne capacity. The weight of high reach appliances is distributed over a number of axles, so infrequent use of a route designed to accommodate 12.5 tonnes should not cause damage.

Figure 12: Table 13.1 Vehicle access

8.4 Provision of private hydrants

As the proposed building is within a residential and commercial area and the nearest localised hydrant is within 100m of the site

The nearest Hydrant point is located outside of Gravesend Town Hall, a little under 30m from the site. Therefore, this complies.

9. BUILDING MAINTENANCE AND THE PROVISION OF FIRE SAFETY

9.1 The Regulatory Reform (Fire Safety) Order: 2005 (FSO) requires the premises to be overseen by a 'Responsible Person' whose responsibilities include the conducting and maintaining of a Risk Assessment. In carrying out his duties, the responsible person may enlist the services of a competent person to ensure fire precautions measures are adequately maintained. In most instances regular testing and inspection of some hardware could be carried in-house, but inspection and servicing of sophisticated installations – such as the automatic alarm and detection system – may require the assistance of a competent person, which the FSO defines as a person who has sufficient training and experience or knowledge and other qualities to enable him properly to assist in undertaking the preventive and protective measures.

If you are a 'Responsible Person' on whom duties are imposed under the Regulatory Reform (Fire Safety) Order 2005, additional new responsibilities have as the result of amendments made to the Fire Safety Order by Section 156 of the Building Safety Act 2022. These new requirements come into force on 1 October 2023.

The Fire Safety Act 2021 clarified that the external walls, flat entrance doors and structure of buildings are all covered by the FSO and must be accounted for in fire risk assessments.

This fire strategy highlights the issues that should be included, and the need for attention to particular matters. Some of these are outlined here:

A copy of this strategy together with the detailed plans of the building and internal layouts should be made available to the owner(s)/occupier(s) to ensure that they are

aware of the facilities provided to assist their fire safety planning. Occupants should be issued with a fire safety management pack detailing their responsibilities and actions to be carried out on discovering a fire.

The systems provided should be regularly maintained, the owners being made aware of the need to ensure the ongoing maintenance of any active fire safety systems, including the following:

- General passive fire safety measures,
- fire safety signage remains relevant and legible.
- Maintenance of plant and equipment in support of life safety provisions is required in accordance with the FSO, including:
 - Detection and alarm system
 - Door closers and hold-open release mechanisms
 - Disabled communications
 - Fire panels.
 - Fire dampers and associated ductwork.
 - Corridors notice boards and exhibition space.
 - Fire-stopping
 - Handheld firefighting equipment

9.2 Regulation 38 – Fire safety information

Regulation 38 of the Building Act also states that these salient features should be made available to the Responsible Person (RP) to enable them to be in a position to fully inform all persons dealing with any of the fire safety features sufficient information to understand how all the items work in harmony to safeguard the occupants.

Regulation 38 to the Building Regulations also requires fire safety information to be given to the Responsible Person at completion of the project when the building is first occupied including management assumptions in the fire strategy.

9.3 Fire risk assessments

An employer, owner or occupier of commercial premises have a legal duty to complete a Fire Risk Assessment, identify fire hazards and ensure the business has effective fire protection.

The common areas of the residential block will require a written record. By understanding the risks and taking precautions to reduce or eliminate it increases the likelihood your business would recover from a fire.

Risk Assessments are defined by five key steps:

1. Identify the fire hazards.
2. Identify the people at risk.
3. Evaluate, remove or reduce.
4. Record the assessment, prepare an emergency plan and provide necessary training.
5. Review and update the FRA frequently, particularly with any significant changes to the business.

The person carrying out the FRA must have suitable training to make the right judgements about risks and how to reduce them. For larger, more complex businesses a professional fire risk assessor is recommended to ensure regulatory compliance.

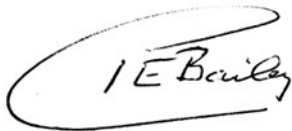
10.0 CONCLUSION

Based upon the above proposals it is considered that adequate measures are provided to meet the functional requirements of the Building Regulations.

This report is therefore submitted for consideration in this matter as forming a compliant solution under the functional requirements of the Building Act.

Fire Engineer

P Bailey

A handwritten signature in black ink, enclosed within a large, loopy oval. The signature appears to read 'P Bailey'.

B Eng. Hons Fire Engineering

M I Fire E

MIFSM

FRACS

NAFRAR

11.0 INFORMATION, LIMITATIONS AND ASSUMPTIONS

The information limitations and assumptions used in the preparation of this report are noted below: -

DRAWINGS

This report is based on drawings issued to us. Dimensions have been taken from these drawings.

The following GA drawings received 30th September 2025 and listed below have been used when preparing this report:

The following drawings were used: -

Official Copy (K29688-DEED-24 Oct 1973)

1492 - DR210 - Proposed Details - Sheet 1 - C2

1492 - DR211 - Proposed Details - Sheet 2 - C3

1492 - DR212 - Proposed Details - Sheet 3 - C3

1492 - DR213 - Proposed Details - Sheet 3 - C3

1492 - DR300 - Proposed Ground Floor GA - C4

1492 - DR301 - Proposed First Floor GA - C2

1492 - DR302 - Proposed Second Floor GA - C2

1492 - DR303 - Proposed Third Floor GA - C2

1492 - DR304 - Proposed Roof GA - C2

1492 - DR800 - Proposed Ground Floor Fire Strategy Plan – P4

1492 - DR801 - Proposed First Floor Fire Strategy Plan - P4

1492 - DR802 - Proposed Second Floor Fire Strategy Plan - P4

1492 - DR803 - Proposed Third Floor Strategy Plan - P4

BUILDING REGULATIONS

This report considers building regulations, which deal with life safety. Property protection and insurance issues are not addressed in this report. Guidance on property protection and insurance requirements can be found in the document Approved Document B: Fire Safety (Volume 1 and 2) Incorporating Insurer's Requirements for Property Protection, RIBA Publishing 2008.

OTHER LIMITATIONS

Complying with the recommendations of this report will not guarantee that a fire will not occur.

Unless otherwise described in this report, the fire strategy assumes that the building design, the mechanical and electrical systems, construction methods and materials specifications will comply with current Building Regulations guidance, and relevant British Standards and Codes of Practice. The design of mechanical and electrical systems such as the fire alarm is a specialist area. Fire Strategy recommendations are given in this report however, the design and specifications need to be developed at the appropriate stage in consultation with the specialist designers of these systems.

This report has been prepared for the sole benefit, use and information of

PS Housing Limited and the liability of FSECUK Limited, its directors and employees in respect of the information contained in the report will not extend to any third party.

12.0 BIBLIOGRAPHY

The below outlines the main information and documentation referred to in the preparation of the document.

Standards publications

BS5266-1 – Emergency Lighting Part 1:2016

BS9991 - 2024

BS5499 – Graphical symbols and signs

Other publications

Building Regulations 2010 and subsequent amendments.

The Building Regulations 2010 – Approved document B volume 1 and 2 2019.

The Regulatory Reform (Fire Safety) Order 2005

BS5499 – Graphical symbols and signs

BS 5839-1:2017, Fire detection and fire alarm systems for buildings – Part 1: Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises

BS 5839-6:2019, Fire detection and fire alarm systems for buildings – Part 6: Code of practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in domestic premises

Building Safety Act 2022

NOTES:

Drawings are attached independently to this report.