Stage 4/5 - Fire Strategy Report

FIRE SAFETY SOUTH EAST
fire risk management

Site: 50 Mount Pleasant (2 Flats)

Address: 50 Mount Pleasant, Reading, RG1 2TD

Client: Bloomfield Homes Limited

Date	Status	Version	Subject	Author
16/07/2026	Final	1.0	Fire Safety Strategy	Gary Ferrand MA EngTech FIFireE MIFSM Principal Fire Consultant

Table of Contents

Section 1 – Executive Summary 5

1.0 Terms, Definitions and Abbreviations 5

1.1 Property Type & Risk Profile 7

1.2 Name of Site Contact 7

1.3 Documents Reviewed 7

1.4 Summary 7

Section 2 – Report Limitations & Assumptions 9

Section 3 – Property Description 10

3.1 Description 10

3.2 Lift 10

3.3 Plant 10

3.4 Site Plan 11

Section 4 – Means of Escape 12

4.1 Evacuation Policy 12

4.2 Horizontal Means of Escape 12

4.3 Vertical Means of Escape 13

4.4 Li-on battery use and storage 14

Section 5 – Goals, Objectives and Performance Requirements 15

5.1 Goals 15

5.2 Objectives 15

5.3 Performance Requirements 15

5.4 Building Regulations 2010 16

5.5 Statutory Consultation 16

5.6 Construction, Design and Management (CDM) Regulations 2015 16

5.7 Fire Safety Management and The Regulatory Reform (Fire Safety) Order 2005 17

5.8 The Building Safety Act 18

5.9 The Fire Safety (England) Regulations 2022 18

5.10 Extreme Events 18

Section 6 – Building Population 19

6.1 Staffing 19

6.2 Disabled Persons 19

Section 7 – Fire Safety Systems & Installations 21

7.1 Fire Alarm Classification 21

7.2 Fire Alarm Description 22
7.3 Weather Protection of the Common Escape Routes 22
7.4 Fire-Fighting Equipment 22
7.5 Dry Rising Main 22
7.6 Fire Suppression 22
Section 8 – Internal Fire Spread (Linings) 23
Section 9 – Structural Protection 25
9.1 Load Bearing Elements 25
9.2 Compartment Construction 26
9.3 Fire Doors 27
9.4 Steel Protection 30
9.5 Concealed Spaces 31
9.6 Pipe Penetrations 33
9.7 Service Penetrations through External Wall Constructions in Residential Buildings 35
9.8 Fire & Smoke Dampers 36
9.9 Fire Stopping 37
9.10 Third-Party Installation Certifications Schemes 38
Section 10 – External Fire Spread 40
10.1 External Fire Spread 40
10.2 Space Separation 41
10.3 Re-entrant Corners 41
10.4 Roof 41
10.5 PV Arrays 42
10.6 Waste Management 43
Section 11 – Fire Service Access and Facilities 44
11.1 Fire Service Access and Facilities 44
11.2 Vehicle access for fire appliances 45
11.3 Access for firefighting personnel 46
11.4 The provision of adequate water supplies 46
Section 12 – Management Strategy 47
12.1 Fire Risk Management (common parts only) 47
Section 13 – Recommendations 49
Appendix A – Floor Layouts 51
Appendix B – Normative References 52

Appendix C – Building Regulation 38 54
Appendix D – Details of the Author 55

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Section 1 – Executive Summary

1.0 Terms, Definitions and Abbreviations

For the purposes of this document, the following terms and definitions will apply.

Compartmentation:
The division of a building into fire compartments for the purpose of containing a fire within the compartment of fire origin.

Competent Person:
A person with the skills, knowledge, experience and appropriate behaviours to achieve a defined outcome. [The relevant fire safety legislation requires nomination of various competent persons to carry out a number of different defined tasks]

Design Fire Strategy:
A dynamic statutory document that translates fire safety principles into technical specifications (Stage 4) and on-site installation benchmarks (Stage 5) to guarantee the building's required compliance with the Building Regulations 2010 (as amended).

Electrically Powered Personal Vehicles:
This includes all the following;

- E-scooters: Both privately owned and rental schemes. Under UK law, these are categorized as Personal Light Electric Vehicles (PLEVs).
- E-bikes / E-cycles: Electrically Assisted Pedal Cycles (EAPCs) and converted pedal cycles.
- Other Devices: Electric unicycles, hoverboards, Segways, mobility scooters or powered wheelchairs.

Escape Route:
A route forming part of the means of escape from any point in a building to a final exit.

Final Exit:
The end of an escape route from a building, giving direct access to a street, passageway, walkway or open space, and sited to enable the rapid dispersal of persons from the vicinity of a building so that they are no longer in danger from fire and/or smoke

Fire Compartment:
An enclosed space, which can be subdivided, separated from adjoining spaces within the built asset by elements of construction having a specified fire resistance.

Protective Measure:
A design feature, system, equipment, structural measure or management activity to reduce danger to people and property if fire occurs.
[Examples of such measures include means of preventing, detecting, extinguishing or containing fires]

Fire Resistance:
The ability of a component or construction of a building to meet ,for a stated period of time, some or all of the appropriate criteria specified in a standard fire resistance test – this is explained in greater detail in Section 9.

Place of special fire hazard:
A room with any of the following use:

- Oil-filled transformer room.
- Switch gear room.
- Boiler room.
- Storage space for fuel or other highly flammable substance(s).
- Room that houses a fixed internal combustion engine.
- Refuse store.

Fire Risk Assessment (FRA):
The process of identification and evaluation of fire risk to people, property or the environment.

Fire Safety Management:
The task(s) carried out by a defined individual or individuals, with appropriate powers and resources to facilitate the correct operation, at all times, of all passive, active and procedural fire safety systems within a building.

Fire Safety Objective:
A specified (or specifiable) goal intended to be achieved by a fire protection measure(s).

Means of Escape:
The means whereby a safe route or routes in the event of fire is or are provided for persons to travel from any point in a building to a place of ultimate safety.

Occupant:
Any resident, worker, visitor or other person in and around a building.

RVP:
A designated, safe, and easily identifiable location where emergency service vehicles and personnel will gather during an incident before being deployed to the scene.

Stakeholders:
This includes designers, contractors, asset managers, duty holders, regulators, emergency responders, and building occupants.

Storey:
Includes any of the following.

- Any gallery in an assembly building
- Any gallery in any other type of building if its area is more than half that of the space into which it projects.

- A floor at ground level and above.
- A roof, unless it is accessible only for maintenance and repair.

A basement is not counted as a storey in a building.

Storey Exit:
The designated doorway or passage that marks the end of a floor's internal escape route. It is the threshold where occupants leave the general floor area to enter a safer, fire-protected zone.

Travel Distance:
The distance a person needs to travel between two points within a building, having regard to the layout of walls, partitions and fixings.

Vulnerable People:
Includes those who are elderly, socially deprived, people with learning or physical disabilities and those with mental health issues.

1.1 Property Type & Risk Profile

Residential (Purpose Group 1a) - Flats.

The risk profile for this residential building has been assessed as Ci2 (in accordance with BS 9999:2017). This recognises that the occupants are likely to be asleep and will occupy the building on a long-term basis (not short lets). This includes an assessment of the fire growth which has been determined to be 'medium' (mid-level fire load comprising a mix of combustible materials). This risk profile is expected for a building of this use, which presents no unusual hazards, contents or features.

1.2 Name of Site Contact

Goda Pletkute – Hives Architects LLP.

1.3 Documents Reviewed

The following Drawings were provided for review.

Document description	Dwg No / Rev	Produced by
Existing Plans with Alterations to existing fabric	2787 301 / P4	Hives Architects
Proposed Plans	2787 302 / P4	Hives Architects
Existing & Proposed Elevations	2787 303 / P4	Hives Architects

1.4 Summary

This strategy has been developed during the technical design stage and does not represent all construction or 'as-built' detail and does not include all technical inputs and detail provided by third party specialists (such as the smoke control designer/installer).

This fire strategy relates to the enlargement of the existing building creating a ground floor rear extension. The ground floor will change use from commercial to residential. There will be two self-contained flats.

The finished floor height of the uppermost habitable floor (the FFL to the first floor) will be unchanged at approximately 4.8m.

Approved Document B, Volume 1: 2019 edition (incorporating 2020, 2022 and 2025 amendments and forthcoming 2026 and 2029 changes) has been used as the design guide for this strategy.

The summary of this strategy report is set out below.

1. The residential apartments will operate a Stay Put evacuation strategy.
2. Each residential apartment will form its own fire compartment and will be separated from the rest of the building with materials affording a minimum of REI60.
3. The basement will be accessed externally and will be separated from the rest of the building with materials affording a minimum of REI60. This will be a void area (out of use), except for services such as sewage pipes and electrical connections.
4. All load bearing and structural elements will achieve REI60, or better.
5. Flat 1 will be constructed with an internal protected hallway (minimum of REI30) serving the habitable rooms.
6. Flat 2 will be constructed with an inner room bedroom which will be fitted with an escape window.
7. Both flats will access the stairway directly from an internal hallway.
8. Flat 1 will be fitted with a Grade C, Category LD2 fire alarm and detection system in accordance with BS 5839-6:2019.
9. Flat 2 will be fitted with a Grade C, Category LD1 fire alarm and detection system in accordance with BS 5839-6:2019.
10. The layout and dimensions of the residential units will allow access from the parked fire appliance on Mount Pleasant to within 45m of all parts. Consequently, there will be no requirement to install a dry rising main.
11. The refuse will be stored outside the building, the location will be within 3m of the perimeter of the building, however, these will be situated adjacent an external wall constructed with fire-resisting materials (REI60).
12. The external wall systems should be constructed with materials which achieve Class B-s3,d2 or better, where they are within 1m of the relevant boundary.
13. There will be PV arrays over the flat roof sections.
14. There will be no green roof or green walls.
15. The flat roof systems should meet the B_{ROOF}(t4) designation.
16. The Fire & Rescue Service access and facilities will satisfy Part B5 of the Building Regulations 2010 (as amended) – see Section 11 of this fire strategy report.

Section 2 – Report Limitations & Assumptions

The purpose of this report is to set out a fire safety strategy for the proposed development at 50 Mount Pleasant, with the aim of achieving an appropriate standard of life safety for occupants, building management, and attending Fire and Rescue Service personnel in the event of fire. This report does not consider property protection, asset loss, or business continuity.

This document does not constitute a Fire Risk Assessment, which remains the responsibility of the building owner, landlord, or responsible person in accordance with the Regulatory Reform (Fire Safety) Order 2005. A suitable and sufficient Fire Risk Assessment will be required for the building upon occupation, in compliance with Article 9 of the Order.

This report reflects the professional judgement of the consultant based on the information available at the time of writing, including information provided by third parties. No liability is accepted for any inaccuracies or omissions in the information supplied by others.

The following assumptions have been made during the preparation of this report.

a) there will be no concealed spaces that have not been disclosed by the client;

b) any riser cupboards spanning storeys will not be used for any other purpose than housing the electric, gas (if any) and water supplies and meters;

c) where gas is enclosed within a protected shaft any pipework will be of screwed or welded steel construction and installed in accordance with the Gas Safety (Installation and Use) Regulations 1998 and The Pipelines Safety Regulations 1996;

d) the occupants will meet the description of 'general needs' and there will be no accessible units;

e) there will be unrestricted egress from the common escape route (front and rear) for occupants evacuating from the building, leading to a place of ultimate safety; and

f) there are no other changes to the means of escape other than those shown in the drawings provided.

The following sections of this report provide measures which are recommended to achieve a satisfactory standard of life safety and suitable Fire & Rescue Service access.

Section 3 – Property Description

3.1 Description

The building at 50 Mount Pleasant is an existing two storey Listed Building with a small basement and additional loft storage. The ground floor of the building will change use from commercial to residential and will be extended over the ground floor at the rear elevation.

There will be two self-contained apartments. The client intends to change the use of the first floor at a later date. At this time, the first floor is not in scope. The occupancy of each ground floor flat is shown below.

Flat No.	Occupancy (Bed / Persons)	Floor
Flat 1	1B/2P	Ground
Flat 2	1B/2P	Ground

The finished floor height of the uppermost habitable floor (the FFL of the first floor) will remain unchanged at approximately 4.8m from the lowest reference point (when measured in accordance with Diagram D6 of Approved Document B, Volume 1: 2019 edition (incorporating 2020, 2022 and 2025 amendments and forthcoming 2026 and 2029 changes).

The building will be constructed over a slightly sloping site with unrestricted access at the front elevation from Mount Pleasant. The side elevation will allow restricted access from a shared pathway.

3.2 Lift

There will be no Lift.

3.3 Plant

There will be no dedicated Plant Room.

3.4 Site Plan

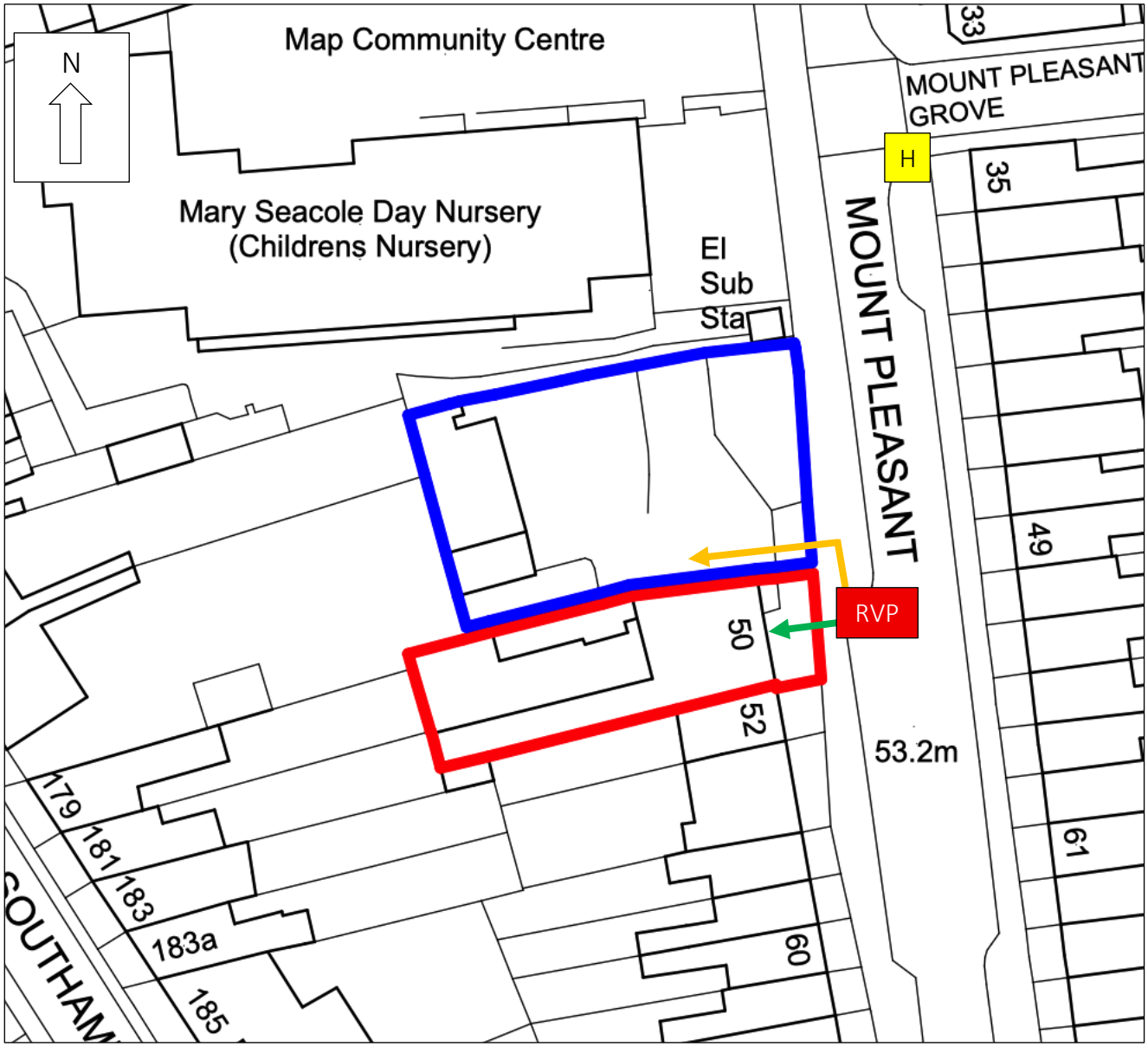

Figure 1 – Site Plan showing North and the footprint of the site in red, adjacent site in blue, entrance to the main stairway enclosure (green) and route to rear and side elevation (amber), RVP (fire appliance location) and the nearest public fire hydrant.

Section 4 – Means of Escape

The general philosophy for the means of escape of occupants is that there is satisfactory means of giving warning of a fire and travel distances (normally in more than one direction) are within recommended limits. The principles of the escape strategy are that in the event of a fire people can turn their back on a fire and make their way to a place of intermediate safety (e.g., a protected route or stair core) without additional assistance from other occupants or fire fighters. A place of intermediate safety should always give direct access to a place of ultimate safety (e.g., ground level at the front of the building) and escaping occupants should not have to leave the place of intermediate safety to reach the place of ultimate safety.

4.1 Evacuation Policy

The type of evacuation proposed for this property can have a significant impact on the overall design and flexibility of the building. In this case, the evacuation strategy for the building will be Stay Put.

4.2 Horizontal Means of Escape

Flat 1

This flat will be constructed with an internal protected hallway serving habitable rooms (REI30 as a minimum). The habitable rooms will be accessed directly from the hallway (bedroom to the front elevation and open-plan living/kitchen/dining room to the rear). The doors to these rooms will achieve FD30 as a minimum – see Section 9.2.

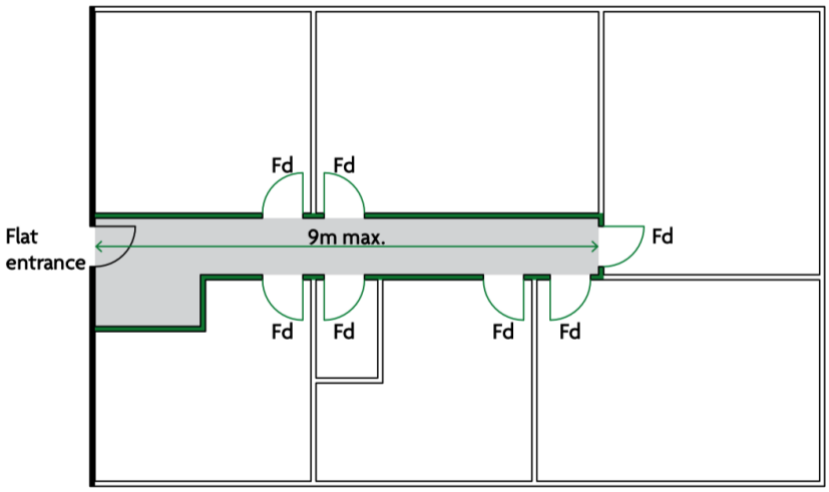

Figure 2 – extract from Diagram 3.2 of ADB1 showing the protection and travel distance from the flat entrance door

The flat is shown to have a cooking facility which would not impede the escape from the flat to the stairway.

Flat 2

Flat 2 will have an inner room bedroom and will be fitted with an escape window within the sleeping facility. The escape window should meet all the following criteria.

a) it should have an unobstructed openable area of not less than 0.33m2, with minimum dimensions of 450mm in height and 450mm in width
b) The bottom of any openable area should be no more than 1,100mm above the floor of the room in which it is situated (where the bottom of the openable area is less than 800mm from the floor, it might be necessary to guard the openable area with a protective barrier in accordance with BS 6180, at a height dependent on the design of the guard and whether it is fitted internally or externally. If the guard extends to a height greater than 1,100mm, the window is no longer suitable for escape purposes
c) The sill should be no higher than 4.2m above ground level.

Doors on escape routes

The main (common) entrance door on the common escape route should be either of the following;

a) Not fitted with locks, latches or bolts; or
b) Fitted only with simple fastenings that are all the following.

   i. Easy to operate; it should be apparent how to undo the fastening.
   ii. Operable from the side approached by people escaping.
   iii. Operable without a key.
   iv. Operable without requiring people to manipulate more than one mechanism.

There will be a single exit door at the ground floor (main entrance). Any exit door should ideally open in the direction of escape, but this is not mandatory as there will be less than 60 occupants in this building.

Door Access Controls

If an electronic locking mechanism is fitted, then it should fail to the unlocked position in any of the following situations:

- The fire detection system activates; or
- There is a mains failure.

There should be an override switch adjacent the door control, such as a Type A call point in accordance with BS 7273-4 (Green Break Glass). The Type A call point should be positioned on the approach-side (the direction of escape).

4.3 Vertical Means of Escape

The stairway enclosure will be protected from the ingress of smoke from the two flats. This will be achieved by separating the stairway from each flat with an internal hallway (REI 30 and 2 x FD30 doors).

4.4 Li-on battery use and storage

Under no circumstances should Electrically Powered Personal Vehicles (EPPVs) be stored or charged in any location.

Any form of Battery Energy Storage System should only be located at this site following advice from a competent person.

The client is reminded that the common parts of residential buildings and the basement area are covered by the Regulatory Reform (Fire Safety) Order 2005.

Section 5 – Goals, Objectives and Performance Requirements

5.1 Goals

The main goals of this fire strategy are to address:

- Life safety
- Inform interested parties on the fire safety features within the building.

5.2 Objectives

The specific objectives of the fire safety and management strategy, following from the overarching goals are to:

- Ensure an appropriate standard of life safety of people within and around the building with respect to fire events.

- Define the management systems, standards, and procedures for fire safety throughout the residential property.

- Clarify the allocation of responsibilities and duties for fire risk assessment and management, incorporating the principles of prevention, active and passive protection, and emergency response.

- Identify and clarify the means of escape, fire alarm and extinguishing systems and ensure they are consistent with the occupation and use.

- Allocate and define responsibilities and standards for the provision, installation, testing and planned maintenance of fire safety equipment, devices, alarm, and extinguishing systems.

- Explain the implementation of the fire emergency plan including the evacuation procedures, first-aid, firefighting, contacting the emergency services and emergency co-ordination.

- Define the emergency procedures to ensure early recovery from an unforeseen incident involving fire to maximise safety, minimise problems and enable operations to continue.

5.3 Performance Requirements

This fire strategy applies a code-based approach. The strategy has been developed taking account of all building parameters; construction, fire spread and control, Fire & Rescue Service access, and fire safety management.

This fire strategy aligns with a prescriptive design utilising Approved Document B, Volume 1: 2019 edition (incorporating 2020, 2022 and 2025 amendments and forthcoming 2026 and 2029 changes).

The performance requirements and the objectives of each fire safety component can be seen in the relevant sections below.

5.4 Building Regulations 2010

The Building Regulations, produced under the Building Act 1984, are the primary legislation controlling building work and they apply to the majority of new or materially altered buildings.

Part B of Schedule 1 to the Building Regulations includes five functional requirements:

- 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.

This report defines the fire safety and management strategy for meeting the functional and performance requirements to satisfy all of Part B of the Building Regulations 2010 (as amended).

5.5 Statutory Consultation

During the Building Regulations application process, the building control body is required to formally consult with the local fire authority. The purpose of this consultation is to give to the fire authority the opportunity to make observations with respect to the Building Regulations and to provide an opportunity to make the applicant aware of action that may require execution to meet the requirements of the Fire Safety Order. This fire strategy report will form a crucial element of this process.

The consultation should allow both parties to reach mutually compatible views on whether the building meets the requirements of both pieces of legislation. In the exceptional event that the fire authority requires physical changes to be made to the building to meet the requirements of the Fire Safety Order, the building control body should make the applicant aware.

5.6 Construction, Design and Management (CDM) Regulations 2015

The Construction (Design and Management) Regulations 2015 require that all parties involved in the design of a building, or whose advice may effect a change upon the design of the building shall be required to:

- Take account of any pre-construction information provided by the client (and principal designer, if one is involved).
- Eliminate foreseeable health and safety risks to anyone affected by the project (this is typically undertaken by the CDM co-ordinator or the Principal Contractor).
- Take steps to reduce or control any risks that cannot be eliminated.

The above is generally communicated via a Designers Risk Assessment (DRA) which identifies elements of the design which may present a construction hazard and identifying what measures may be taken to eliminate the risk or otherwise reduce the hazard presented.

This report provides the strategy to satisfy the functional and performance requirements of the Building Regulations 2010 (as amended). This report does not provide a risk assessment or make recommendations to satisfy the fire safety requirements of the CDM Regulations. This should be provided by the Principal Contractor.

5.7 Fire Safety Management and The Regulatory Reform (Fire Safety) Order 2005

The Regulatory Reform (Fire Safety) Order 2005 (RRO) places a general duty of fire safety care on employers, occupiers, and owners of almost all premises, and requires them to take such fire precautions as may be reasonably required to ensure that premises are safe for the occupants and those in the immediate vicinity.

The responsible person has a duty to carry out a fire risk assessment which must focus on the safety in case of fire of all 'relevant persons'. The risk assessment should pay particular attention to those at special risk, such as the disabled and those with special needs or whom may need assistance to evacuate and must include consideration of any dangerous substance likely to be on the premises.

The Building Regulations and the RRO have been drafted to ensure co-ordination between design and operation phases of buildings. Ideally, the design should reflect the operational intent. Therefore, although compliance with the Building Regulations ensures the minimum standard of safety, additional or alternative measures may be necessary to enable the operational intent and compliance with the RRO. Therefore, the following approach has been applied in developing the strategy described herein:

- Where known or foreseeable, the operational intent had been accommodated within the design;
- Where the operation intent or occupation is unknown, the strategy has been developed to meet the minimum standard required by the Building Regulations and the RRO upon occupation;
- The exact way in which the building will be operated is based on existing policies and procedures.

This fire safety and management document forms part of the RRO process (fire risk assessment) and details the key fire safety design objectives and provisions within residential buildings.
The Fire Safety Act was enacted in 2021 and now includes external wall systems within the holistic assessment of a building's fire safety provisions. The external walls will therefore need to be incorporated into the assessment of risk when undertaking the fire risk assessment at the development.

It should be noted that the RRO applies to all common parts of the residential building. There is a responsibility on any tenant to undertake their own fire risk assessment under and in accordance with the RRO. The landlord's managing agent undertakes a fire risk assessment of the areas for which they retain responsibility under the RRO.

This fire strategy takes cognisance that the building is an actively managed site. The strategy relies on suitable management procedures being in place to support fire safety. Further information about the fire safety management operational procedures can be found in BS 9999:2017 at Section 9.

5.8 The Building Safety Act

The Building Safety Act was enacted in 2022. The Act sees the Building Safety Regulator being established to provide oversight of the new system with powers of enforcement and sanctions. The Act also reinforces the 'golden thread' of information. The golden thread is to aid in the storage and dissemination of all safety related matters in the design and construction of certain high-risk buildings. There are also new requirements in the Act on duty holders to have clear accountability and statutory responsibilities as buildings are designed, constructed, and refurbished.

5.9 The Fire Safety (England) Regulations 2022

These regulations make it a requirement in law for responsible persons (building owners or managers) of high-rise blocks of flats to provide information to Fire and Rescue Services to assist them to plan and, if needed, provide an effective operational response. Also, the regulations require responsible persons in multi-occupied residential buildings which are high-rise buildings (18 metres or at least seven storeys), as well as those above 11 metres in height (or four storeys), to provide additional safety measures. In all multi-occupied residential buildings, the regulations require responsible persons to provide residents with fire safety instructions and information on the importance of fire doors. The regulations apply to new and converted residential buildings.

5.10 Extreme Events

The fire strategy for this project will only address a single, accidental, fire event. It is not a requirement of the Building Regulations currently to address a terrorist or an arson event.

Section 6 – Building Population

The residential building will provide two dwelling units occupied as a sole or main residence for general needs residents on the ground floor. The apartments will not be provided for student accommodation, nor will they be used by paying guests for short-term lets or hotel/aparthotel-style accommodation.

6.1 Staffing

The building will be unstaffed.

6.2 Disabled Persons

Disabled persons or any person with mobility challenges will be unable to occupy the flats as the means of escape will incorporate steps at the front and rear elevations.

For those who may become disabled during occupation on an upper floor, a PEEP (personal emergency evacuation plan) should be developed for those who may fall into the categories listed below.

a) Personal Emergency Evacuation Plans (PEEPs) – Regular Occupants
Individual PEEPs should be developed for persons with disabilities or impairments who regularly occupy the premises (e.g. staff, contractors or frequent visitors). These plans should be prepared in consultation with the individual and detail the specific arrangements for safe evacuation, including any assistance required. The Responsible Person should ensure that reasonable adjustments to the building, management procedures or evacuation strategy are implemented as necessary. The PEEP should also consider arrangements in the event of a false alarm and procedures where re-entry to the building is not immediately possible following an evacuation.

b) PEEPs – Identified Visitors
Procedures should be in place to support visitors who may require assistance and who identify themselves upon arrival (e.g. guests). Such individuals should be encouraged to notify staff of their needs. The Responsible Person should ensure that suitably trained staff (including disability awareness training) are available to implement appropriate evacuation measures. Generic PEEP guidance should be developed to address a range of potential needs and should be adapted to suit the specific building and the individual visitor where practicable. These arrangements should clearly define both the actions required by the visitor and the responsibilities of staff and should reflect the fire safety provisions available (e.g. visual alarms for hearing-impaired persons).

c) PEEPs – Unidentified Visitors
The overall evacuation strategy should be inclusive and account for occupants who have not been previously identified as requiring assistance. Fire action notices and emergency plans should include clear information relevant to persons with disabilities. Any staff who may be available should be trained in the use of evacuation facilities (e.g. refuges, evacuation lifts and evacuation chairs) and in assisting mobility-impaired occupants. Sufficient numbers of trained personnel (where employees will be on site) should be available at all times to ensure that evacuation procedures

remain effective, including where assisted evacuation (e.g. carry-down techniques) may be required.

The evacuation strategy should recognise that occupants may fall into any of the above categories. PEEPs need to consider both horizontal and vertical evacuation and, where necessary, incorporate assistance from others to ensure a safe means of escape.

Section 7 – Fire Safety Systems & Installations

7.1 Fire Alarm Classification

Accommodation	Minimum Requirements
Flat 1	This flat will be provided with a minimum of a Grade C, Category LD2 detection and alarm system, designed, installed and maintained in accordance with BS 5839-6:2019+A1:2020. This will include a heat detector over the cooking facility.
Flat 2	This flat will be provided with a minimum of a Grade C, Category LD1 detection and alarm system, designed, installed and maintained in accordance with BS 5839-6:2019+A1:2020. This will include a heat detector over the cooking facility.

NOTE 2:

A Grade C system can incorporate a simple Control & Indicating Equipment (CIE), providing a source of power for either a number of smoke alarms (and, possibly, heat alarms) or a number of fire detectors, with a very basic form of control and indication. The system can comprise the CIE of an intruder alarm system or social alarm system, to which a number of fire detectors and fire alarm devices are connected. Facilities provided by the CIE in a Grade C system can also include some facilities that are, more typically, provided in the CIE of Grade A and Grade B systems, these would satisfy all recommendations in respect of CIE for Grade C systems.

Each apartment fire alarm and detection system will comprise the following components.

- *Smoke detectors – sited throughout the circulation areas. Where there are flat ceilings, the horizontal distance between any point in a protected area and the detector nearest to that point should not exceed 7.5m if the nearest detector is a smoke detector. Detectors should not be sited closer than 300mm from any wall or light fitting. Point detectors should conform to BS EN 54-7;*
- *Heat detector – sited in the kitchen, this added protection will be based on the risk within this room. Where a detector is sited within a room opening onto the escape route in a Category LD2 system, it should either be sited on the ceiling (no point of the sensitive element lower than 150mm) or should be sited on a wall, close to any door that opens onto an escape route. Point detectors should conform to BS EN 54-5; and*
- *Sounder devices/bases – to ensure there will be sufficient audibility from all areas the fire alarm sound notification should be audible throughout the apartment and to a level that is not less than:*
    - *75dBA at the bedhead (measured with doors to the room closed)*
    - *65dBA in living areas (measured with door to the room closed)*

- *65dBA on private balconies (measured with access door open); or*
- *5dB above ambient levels, whichever is the higher.*

Multi-sensor fire detectors should conform to the requirements of BS EN 54-29, BS EN 54-30 or BS EN 14604 and BS 5446-2.

Following installation, the Developer/Principal Contractor should obtain a system commissioning certificate from the installer. This should clearly state the Category of system that has been designed and installed. This should be retained and passed to the owner of each flat.

The systems set out above will not be interlinked and will operate independently.

7.2 Fire Alarm Description

Occupants within the affected flat will evacuate immediately to a place of safety. The alarm system within each apartment will not interface with any other system (such as other flats).

7.3 Weather Protection of the Common Escape Routes

The responsible person for the building will ensure that the escape routes (e.g., the final exit at the front and rear) remain clear from any weather effects (such as snow), so far as reasonably practicable.

7.4 Fire-Fighting Equipment

There will be no requirement to provide fire-fighting equipment within the flats.

7.5 Dry Rising Main

As the building will allow access for a fire appliance to within 45m of all points within each apartment, when measured along a route suitable for laying hose from the parked FRS appliance, a dry rising main will not be required.

7.6 Fire Suppression

The flats will be constructed with a compliant design. One flat will be constructed with an inner room bedroom, however, there will be escape window provided next to the sleeping facility.

The building height will not exceed 11m, consequently, there will be no requirement to install an Automatic Water Fire Suppression System (AWFSS).

Nonetheless, in accordance with guidance provided by the National Fire Chiefs Council, it is strongly recommended that the advantages gained by installing an appropriate life safety sprinkler system throughout the building is given due consideration.

Section 8 – Internal Fire Spread (Linings)

The choice of material for walls and ceilings can significantly affect the spread of a fire and its rate of growth, even though they are not likely to be the materials first ignited.

The requirement of the Building Regulations 2010, with regard to internal linings states the following.

'To inhibit the spread of fire within the building, the internal linings shall:

> *a. Adequately resist the spread of flame over their surfaces; and*
> *b. Have, if ignited, a rate of heat release or a rate of fire growth, which is reasonable in the circumstances.'*

The above requirement: is particularly important in circulation spaces where linings may offer the main means by which fire spreads and where rapid spread is most likely to prevent occupants from escaping.

Several properties of lining materials can influence fire spread. These include the ease of ignition and the rate at which the lining material gives off heat when burning. The guidance relating to the European fire tests and classification provides for control of internal fire spread through control of these properties.

Although they are unlikely to be the first materials to ignite, the materials used for walls and ceilings can significantly affect the spread of a fire and its rate of growth and need to be selected carefully. Internal linings selected for circulation spaces need to be able to delay the spread of fire, consequently, the table below provides recommendations for different rooms.

Location	Classification
Small rooms of maximum internal floor area of $4m^2$ Garages (as part of dwellinghouses) of maximum internal floor areas of $40m^2$	D-s3, d2
Other rooms (including garages) Circulation spaces within a dwelling	C-s3, d2
Other circulation spaces	B-s3, d2[1]
NOTE: 1. Wallcoverings which confirm to BS EN 15102, achieving at least Class C-s3, d2 and bonded to a Class A2-s3, d2 substrate, will also be acceptable.	

The internal linings within circulation spaces within the apartments should achieve class C-s3, d2 or better.

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Section 9 – Structural Protection

9.1 Load Bearing Elements

Premature failure of the structure can be prevented by provisions for load bearing elements of structure to have a minimum standard of fire resistance, in terms of resistance to collapse or failure of load bearing capacity.

The requirement of the Building Regulations, with regard to building structure is as follows.

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

<u>Elements of Structure</u>

Elements of structure include, but are not limited to:

- A member forming part of a structural frame or any other beam or column or supporting element;
- A load bearing wall or load bearing part of a wall (internal or external);
- A compartment wall or floor;
- Any part of structure forming a floor;
- An external wall structure supporting fire protected elements for the prevention of external fire spread;
- Structure supporting roof top plant areas, i.e., heavy plant.

NOTE 5:

The following is intended to assist the reader in understanding what forms a loadbearing element.

If one element of structure supports or carries or gives stability to another, then the fire resistance of the supporting element should be no less than the minimum period of fire resistance for the other element (whether that other element is loadbearing or not) – in this case REI60. In some circumstances, it may be reasonable to vary this principle, for example:

- *if the supporting structure is in the open air and is not likely to be affected by the fire in the building: or*
- *if the supporting structure is in a different compartment, with a fire-separating element (that has the higher standard of fire resistance) between the supporting and the separated structure: or*
- *if a plant room on the roof needs greater fire resistance than the elements of structure that support it.*

Fire resistance is always required where one of the following applies to the element.

- *It is part of, or supports, an external wall, and there is provision in the guidance on requirement B4 to limit the extent of openings and other unprotected areas in the wall.*
- *It is part of, or supports, a compartment wall, including a wall that is common to two or more buildings.*
- *It supports a gallery.*

If one element of structure supports or carries or gives stability to another, the fire resistance of the supporting element should be no less than the minimum period of fire resistance for the other element (whether that other element is loadbearing or not).

The structural engineer should identify which elements are loadbearing. The architect's drawings would be unlikely to identify all loadbearing elements without input from the structural engineer.

Periods of Fire Resistance for Elements of Structure

The period of fire resistance refers to the performance achieved by the structural elements when tested in accordance with the appropriate parts of BS EN 13501-2:2023 for load bearing elements of structure.

Fire Resistance is common to all provisions of Part B of the Building Regulations. It is a measure of one or more of the following criteria.

a) Resistance to collapse (loadbearing capacity), which applies to loadbearing elements only, denoted R in the European classification of the resistance to fire performance.
b) Resistance to fire penetration (integrity), denoted E in the European classification of the resistance to fire performance.
c) Resistance to the transfer of excessive heat (insulation), denoted I in the European classification of the resistance to fire performance.

The term REI is used extensively throughout this strategy report and is suffixed with the period of fire resistance (30, 60, 120, etc).

The standards of fire resistance necessary for any specific building are based on assumptions about the severity of fires and the consequences should a particular element fail. Fire severity is estimated in very broad terms from the use of the building (its purpose group), on the assumption that the building contents (the fire loading) are similar for buildings with the specified use.

9.2 Compartment Construction

The spread of fire within a building can be restricted by sub-dividing it into compartments separated from one another by walls and/or floors of fire resisting construction. The requirements of the Building Regulations in this regard are as follows.

'Where reasonably necessary to inhibit spread of fire within a 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.' The building shall be designed and constructed so that unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited.'

The table below shows the fire resistance of the elements of structure at this building.

Element of structure	Fire resistance period - R.E.I.
Compartment floor (floor over the basement)	60
Compartment walls (each party wall and the walls enclosing each apartment)	60
Protected Hallways inside flats	30

Where an existing building is converted into flats, there should be a review of the existing construction carried out. Any retained timber floors may make it difficult to meet the relevant provisions for fire resistance, and consequently, these should be assessed by a competent person.

9.3 Fire Doors

Fire doors should either be classified in accordance with BS EN 13501-2:2023 or have evidence that they have the relevant fire resistance when tested in accordance with BS 476-22.

The fire door schedule is detailed in the table below. The fire resistances in the table relate to the recommended fire resistance of the door assembly.

Location	Fire resistance
Flat entrance doors	FD30S (self-closing)
Internal Protected Hallway doors	FD30

Fire door-sets will meet the provisions set out in Appendix C of Approved Document B, Volume 1: 2019 edition (incorporating 2020, 2022 and 2025 amendments and forthcoming 2026 and 2029 changes).

New fire rated door-sets which are not locked and require a closing device should be fitted with a controlled positive-action self-closing device. It is recommended that these devices conform to BS EN 1154: 1997 + A1:2002. This categorises door closing devices into 3 classes, of which fire-door closing devices should meet Class 3 or above. Adherence to this standard will ensure all doors have been third-party tested and certified for use on compliant fire doors.

<u>Essential Door Hardware</u>

The following are examples of items of hardware that are necessary for fire resistance:

- hanging devices:
- single axis hinges conforming to BS EN 1935;
- pivots as part of closing device assembly conforming to BS EN 1154;

- controlled closing devices conforming to BS EN 1154;
- electro-magnetic hold-open or free-swing devices conforming to BS EN 1155;
- door co-ordinators conforming to BS EN 1158;
- locking devices:
- lock cases conforming to BS EN 12209 or BS EN 179 when supplied as an assembly for emergency escape locksets;
- electro-mechanical locks conforming to BS EN 14846;
- cylinders conforming to BS EN 1303;
- bolts for inactive or slave leaves conforming to BS EN 12051;
- panic bolts and other emergency exit devices to normally locked internal fire doors on escape routes, conforming to BS EN 1125 or BS EN 179;
- intumescent fire seals.

The continuing correct performance of the above items would be critical to the achievement of the potential fire resistance of any door assembly.

Product Type	Designated Standard	Location of Assembly
Emergency Exit Hardware	EN 179	• Locked door on escape routes • Fire / smoke doors
Panic Exit Hardware	EN 1125	• Locked door on escape routes • Fire / smoke doors
Single Axis Hinges	EN 1935	• Locked door on escape routes • Fire / smoke doors
Controlled Door Closing Devices	EN 1154	• Fire / smoke doors
Electrically Powered Hold Open Devices	EN 1155	• Fire / smoke doors
Door co-ordinators	EN 1158	• Fire / smoke doors
Locks and Latches	EN 12209	• Fire / smoke doors
Electromechanically operated locks and striking plates	EN 14846	• Fire / smoke doors

The following documents are considered acceptable as evidence of suitability of building hardware for incorporation into a fire-resisting door-set or door assembly:

- third party certification of the building hardware
- fire-resisting doorsets' third-party certification data sheet
- fire test reports, or
- assessment by competent authority.

Durability of building hardware, whether for use on a fire resisting door or an emergency exit door, may be evidenced (in order of preference) by the following:

- Conformity marking (such as UKCA / CE mark) in accordance with relevant harmonised/designated product standard (where available), and
- Manufacturer's Declaration of Performance, or
- third party EN test report, or
- third party BS test report

Number and Position of Fire Door Hinges

In all cases reference should be made to the evidence from the fire door manufacturer. The necessary information (location and number) should be provided on the fire door's data sheet or field of application report.

It is usual for at least 3 hinges to be fitted on fire and escape route doors. With fire-resisting doors becoming heavier, there is a practice to fit two hinges at the top of the door with the third hinge at the bottom of the door. It is not safe or compliant to alter the 'as tested' position of a hinge on a fire-resisting door, without assessment from a suitably qualified authority.

For doors heavier than 160kg or exceeding 2,000mm in height and 1,000mm in width, a recommendation from the hinge and/or door manufacturer should be obtained.

Annex D of BS EN 1935 provides advice regarding the use of hinges on doors of excessive width (a wide door is one where the width is more than half the height).

Self-closing Devices

Within the framework of the UK Construction Products Regulations 2013 (as amended) self-closing devices have been identified as playing an essential role in the safety of buildings in the case of fire. Compliance with EN 1154 (and EN 16341 or EN 1634-2) is deemed to satisfy the requirements of the European and UK CPR in this regard. It is a legal requirement that proof of compliance be obtained for any controlled door closing device before it is specified or used, e.g. Manufacturer's Declaration of Performance.

BS EN 1154 includes a table showing the range of door closer power sizes and related parameters. This should be used as a reference point for the fire door installer.

An important factor is the closing moment: a fire-resisting door must be closed to be effective. Situations may arise which dictate that a stronger closer should be specified (e.g. air pressure, hinge friction or fitted smoke seal considerations). Whilst this deals with the requirements for a fire-resisting door, it can inevitably cause problems for the user in terms of the greater effort required to open. A door must be easy for occupants of the building to open, particularly for those with mobility issues and reduced upper and lower body strength.

Spring Hinges and Rising Butt Hinges are deemed to be uncontrolled closers and do not meet the published guidance supporting the Building Regulations.

Further information can be found in BS EN 1154 - Controlled door closing devices.

Hardware used on fire doors can significantly affect their performance in a fire. Notwithstanding the information above, guidance is available in Hardware for Fire and Escape Doors published by the Door and Hardware Federation (DHF) and Guild of Architectural Ironmongers (GAI).

NOTE 3:

- *Third party accreditation (or certification) is the best way to gain assurance when sourcing fire door installers or fire door manufacturers. It will provide peace of mind that the installer or supplier has been independently verified, regularly audited or certified and will be competent to undertake the work. It will also confirm that they work to relevant standards and best practice.*

- *Third party approval can be issued to an individual, a company or a fire door manufacturer depending on the scheme. Schemes are defined, administered and audited between professional trade bodies and experienced regulatory bodies such as UKAS and Ofqual.*

9.4 Steel Protection

Passive Fire Protection (PFP) is one of a number of fundamental components of this strategy. Its purpose is to preserve the structural integrity of the building and restrict the spread of fire and smoke. For steel-framed and composite structures, PFP systems ensure that critical elements retain their load-bearing capacity for the duration of the required fire resistance period.

<u>Methods of Steel Protection</u>

Several fire protection systems can be utilised to achieve the necessary level of fire resistance, including:

- Intumescent Coatings
  Intumescent coatings are paint-like materials that expand significantly when exposed to elevated temperatures, forming a protective char layer that insulates the steel. Thin-film or thick-film systems are selected based on environmental conditions and fire type, in accordance with test standards BS 476-21 or BS EN 13381-8.

- Spray-Applied Fire-Resistive Materials (SFRM)
  Cementitious or fibrous sprays provide a durable, insulating layer that delays heat transfer to the steelwork. These systems are effective for both cellulosic and hydrocarbon fire scenarios and are widely used in commercial and industrial settings.

- Fire-Resistant Boards
  Manufactured from gypsum, cement particle, or calcium silicate, these pre-formed boards encase structural elements, providing both fire insulation and a smooth finish. Installation must follow the tested system specifications to maintain certified performance.

- Concrete Encasement

This traditional method fully surrounds the steel in concrete, providing excellent fire resistance and mechanical protection. While robust, it increases the structure's overall mass and can limit flexibility in design.

The steel protection strategy must align with other passive fire protection provisions — such as compartmentation, cavity barriers, and fire-resisting linings — to ensure continuous fire resistance across junctions and penetrations. Co-ordination between disciplines is essential to avoid weaknesses where fire separation may be compromised.

Fire resistance periods are determined in accordance with Approved Document B, Volume 1, Section B3 (Internal Fire Spread – Structure), which sets minimum performance standards based on the building's height, use, and occupancy characteristics.

Fire Resistance Requirements are set out in the table below.

Building Type / Element	Height of Top Storey Above Ground	Minimum Fire Resistance Period
Structural Frame (Columns, Beams, Loadbearing Walls)	Up to 5m	30 minutes
	Over 5m and up to 18m	60 minutes
	Over 18m and up to 30m	90 minutes
	Over 30m	120 minutes
Floor Construction (Loadbearing)	All heights	60-120 minutes
Compartment Walls / Floors (Separating Uses or Risks)	All relevant cases	60-120 minutes
Stair Enclosures (Escape Routes)	Serving one storey	30 minutes
	Serving more than one storey	60 minutes
External Structural Elements (Fire-Resisting Frames)	Depending on proximity to boundary	30-120 minutes

Highlighted figures in the Table above apply at this development.

NOTE 4:

Specific methods may vary depending on the construction or layout of the building. Fire resistance ratings should always be verified against the latest test report for any proprietary product or material used.

All PFP systems specified must be supported by third-party test certification demonstrating compliance with BS 476 or EN 1363 / EN 13381 standards. Installation should be undertaken by approved contractors in accordance with manufacturer's instructions and verified through inspection as part of the project's quality assurance process.

9.5 Concealed Spaces

Concealed spaces or cavities in the construction of a building provide a ready route for smoke and flame spread. This is particularly so in the case of voids in, above and below the construction of a building, e.g., walls, floors, ceilings, and roofs. As any spread is concealed, it presents a greater danger than would a more obvious weakness in the fabric of the building.

The normal provisions which are needed to restrict the spread of smoke and flames through cavities are broadly for the purposes of sub-dividing:

- Cavities, which would otherwise form a pathway around a fire separating element and closing the edges of cavities, therefore reducing the potential for unseen fire spread; and
- Extensive cavities.

Cavity barriers should be provided to close the edge of cavities, including around cavities. Where fitted, the cavity barriers will be provided in accordance with Diagram 8.1 of Approved Document B, Volume 1: 2019 edition (incorporating 2020, 2022 and 2025 amendments and forthcoming 2026 and 2029 changes) reproduced below. They will provide a minimum of 30 minutes fire resistance in terms of integrity and 15 minutes fire resistance in terms of insulation.

The provision of cavity barriers in concealed spaces is recommended where an unseparated length exceeds 20m.

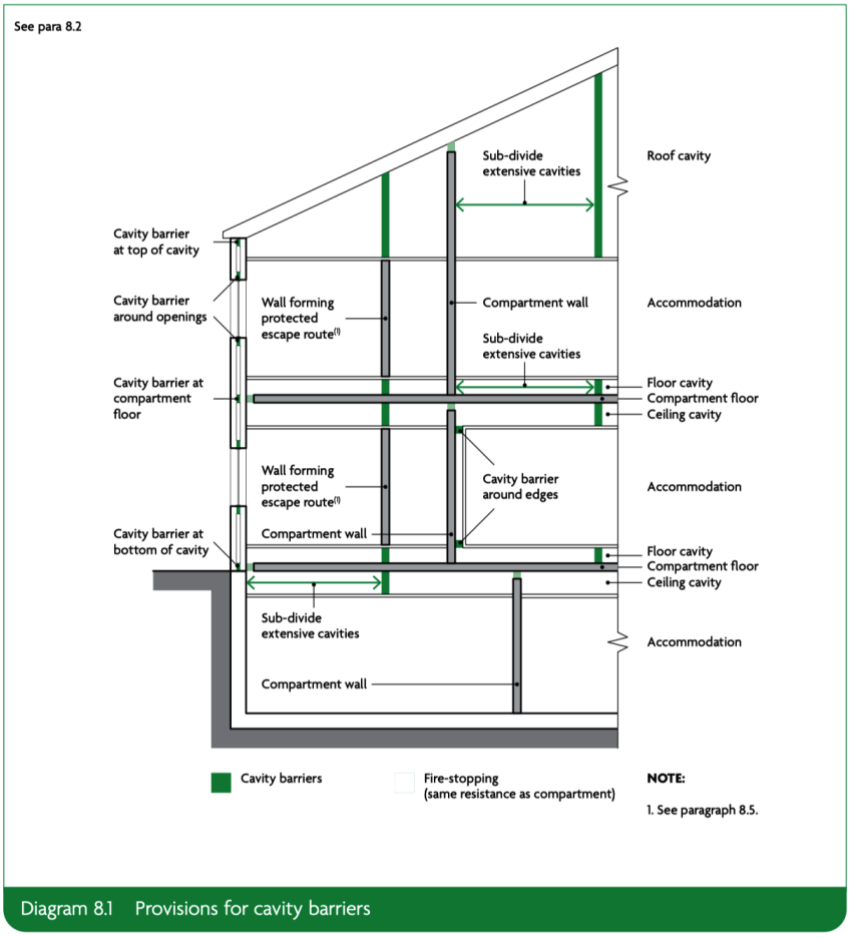


Diagram 8.1 Provisions for cavity barriers

Cavity barriers should be used to sub-divide any cavity, including a roof space, so that the distance between cavity barriers does not exceed the maximum dimensions of 20m in any direction.

Cavity barriers should be provided at all the following locations.

a) At the edges of cavities, including around openings (such as windows, doors and exit/entry points for services)
b) At the junction between an external cavity wall and every compartment floor and compartment wall
c) At the junction between an internal cavity wall and every compartment floor, compartment wall or other wall or door assembly forming a fire resisting barrier.

The above criteria do not apply where a wall meets the conditions of Diagram 8.2 of ADB1.

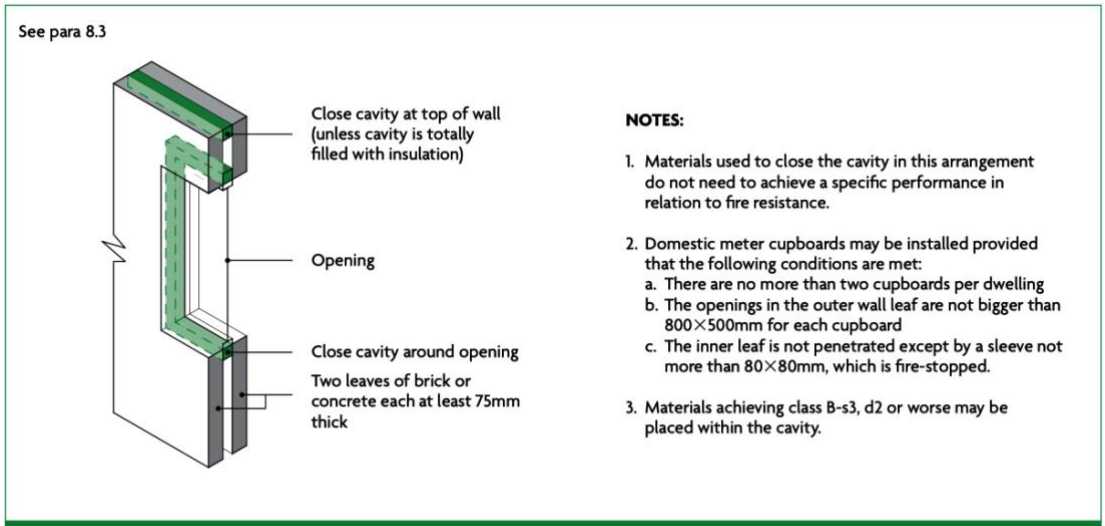


Diagram 8.2 Cavity walls excluded from provisions for cavity barriers

9.6 Pipe Penetrations

Pipes passing through a fire-separating element, unless in a protected shaft, should meet one of the alternatives A, B or C below.

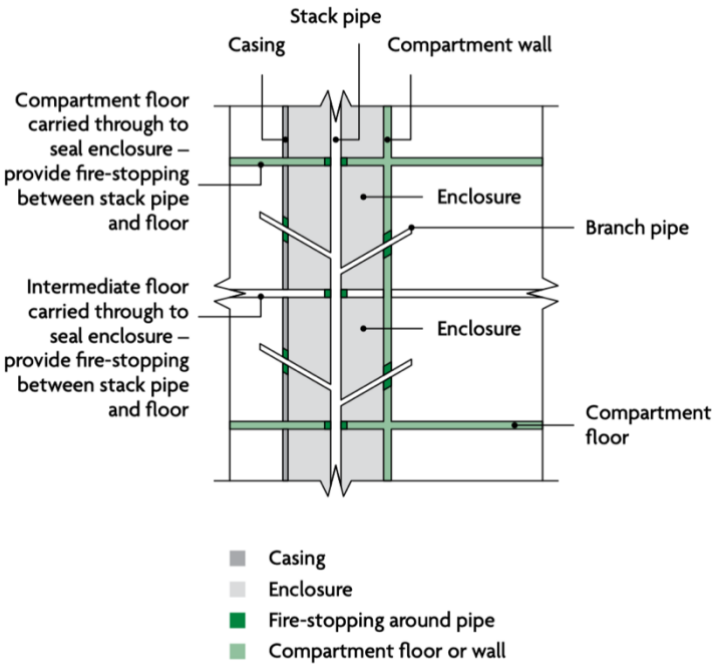
<u>A: Proprietary seals (any pipe diameter)</u>

Provide a proprietary, tested sealing system that will maintain the fire resistance of the wall, floor or cavity barrier.

<u>B: Pipes with a restricted diameter</u>

Where a proprietary sealing system is not used, then it should be fire-stopped around the pipe, keeping the opening for the pipe as small as possible. The nominal internal diameter of the pipe should not exceed the relevant dimension given in the table below.

The diameter given below for pipes of specification (b) assumes that the pipes are part of an above-ground drainage system and are enclosed as shown in this image adjacent.



If they are not, then the smaller diameter given for situation 5 in the table below, should be used.

C: Sleeving

A pipe with a maximum nominal internal diameter of 160mm may be used with a sleeve made from a high melting point metal if the pipe is made of one of the following.

a) Lead
b) Aluminium
c) Aluminium alloy
d) Fibre-cement
e) uPVC (pipes should also comply with either BS 4514 or BS 5255).

A high melting point metal means 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.

Situation	Pipe material and maximum nominal internal diameter (mm)		
	(a) High Melting Point Metal(1)	(b) Lead, aluminium, uPVC(2), aluminium alloy, 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 the image immediately above. In other cases, the maximum diameters given for situation 5 apply.

9.7 Service Penetrations through External Wall Constructions in Residential Buildings

This section is intended to assist the developer/contractor when constructing external walls with service penetrations. This supporting guidance is taken from the BCA Technical Guidance Note 26 - Service Penetrations through External Wall Constructions of Residential Buildings.

It is important to note that a distinction is made between pipe penetrations (which would be expected to be closed on the internal side and are generally of a uPVC material or something more robust) and ventilation ducts (which would be expected to be open on both sides and are often of a lightweight thermoplastic material with little fire resistance).

Assuming that the internal wall linings provide the appropriate duration of fire resistance, which is generally 30 minutes for three storey houses and two storey flats, rising to 60 minutes for taller buildings – Table B2 of Approved Document B, Volume 1: 2019 edition (incorporating the 2020, 2022 and 2025 amendments) and that fire stopping around the pipe is undertaken to a good standard (and to the same standard of fire resistance as the wall) it is considered appropriate to apply a performance criterion (in line with Table B1 of ADB1) for the service penetration of 30 minutes for integrity and 15 minutes insulation. Note, however, that this assumes that the wall cavity is closed elsewhere in line with Section 9 of Approved Document B, Volume 1: 2019 edition (incorporating the 2020, 2022 and 2025 amendments).

It is clear from research (such as the Building Research Establishment Report - BR 135) that the likelihood of a fire spreading within a wall cavity is affected by:

- The size of the opening
- The air flow within the cavity (the 'chimney' effect)
- The amount of combustibles in the cavity
- The thickness / type of duct or pipe wall

Whilst it is difficult to obtain any specific test data, and so a conservative approach should be followed, it is possible to offer the following generic guidance for the most common types of penetrations using thermoplastic pipe and duct materials. The generic guidance is included in the Table below.

Method of Construction								
	Masonry walls formed from two leaves of 75mm		Timber frame (including SIPS) with masonry outer leaf		Lightweight steel frame with masonry outer leaf		Lightweight steel frame with any other cladding finish	
	Non fire rated ventilation duct	uPVC duct to BS 4514:2001 or BS 5255:1989	Non fire rated ventilation duct	uPVC duct to BS 4514:2001 or BS 5255:1989	Non fire rated ventilation duct	uPVC duct to BS 4514:2001 or BS 5255:1989	Non fire rated ventilation duct	uPVC duct to BS 4514:2001 or BS 5255:1989
Two leaves masonry **ANY** insulation in cavity								
Inner lining of at least 1 x 12.5mm plasterboard. No combustible insulation in cavity								
Inner lining of at least 1 x 12.5mm plasterboard. Combustible insulation in cavity								

	Not Applicable		Indicates protection needed via protected sleeves or fire seal where the penetration exceeds 40mm diameter
	This scenario is limited to a maximum 110mm diameter unprotected opening		Indicates no restriction on duct size and no requirement for cavity barrier around the duct

9.8 Fire & Smoke Dampers

Ventilation ductwork provides a route for fire and smoke spread, and therefore provisions are required to limit this risk. Any ventilation equipment which is not required in fire mode will shut down on activation of the fire alarm.

Where ducts pass through fire separating elements, a fire damper will be used to protect the opening which achieves the same level of fire resistance as the element through which it passes.

Dampers on ductwork which passes into escape routes will be fire and smoke dampers. These will be actuated by smoke detector controlled automatic release mechanisms, in addition to being actuated by thermally actuated devices.

Where a damper cannot be provided, to ensure protection is maintained to ductwork penetrations, the following requirements shall be followed.

- Protection using fire resisting ductwork;
- The fire resistance of the ductwork, when tested from either side, should not be less than the resistance required for the elements of construction in the area which it passes;
- The lining of the ductwork should achieve Class A2 or better and constructed either with non-combustible materials or made of materials of limited combustibility.

All smoke extraction ducts fitted throughout the building will meet the requirements and provisions set out in BS EN 1366-8:2004.

All single compartment smoke extraction ducts fitted throughout the premises will meet the requirements and provisions set out in BS EN 1366-9:2008.

All smoke control dampers fitted throughout the building will meet the requirements and provisions set out in BS EN 1366-10:2011.

The provision of mechanical smoke and fire dampers where ducts and extract vents may pass through separating walls, should be subjected to periodic cleaning and servicing (annually).

9.9 Fire Stopping

The selection of products and materials used for fire stopping should take account of the size and nature of the gap and any anticipated differential movement.

Where fire-stopping and sealing systems (including those designed for service penetrations) are used, they should have the appropriate level of fire resistance as given in Section 9.2 above for the element of structure in which they appear.

NOTE 5:

In the case where minimum differential movement is anticipated and where the gap does not exceed 25mm, the following fire-stopping materials may be used without specific test evidence, subject to them having no deleterious effect on the construction:

- *cement mortar;*
- *gypsum-based plaster; and*
- *cement or gypsum-based vermiculite/perlite mixes.*

To maintain the physical integrity of fire stopping, it should be reinforced with (or supported by) materials classified A2-s1,d0 or better in the following circumstances:

a) *in all cases where the gap between elements that need to be provided with fire stopping is greater than 100mm; and*
b) *in any other case where non-rigid or flexible materials are used (unless substantiated by fire test evidence).*

Where services pass through the compartment floor, they should be fire stopped at the floor level, and any ducts passing through should be provided with fire dampers as per the section above.

9.10 Third-Party Installation Certifications Schemes

Third-party certification from independent UKAS-accredited bodies for installers is a process whereby the contracting company is seen to employ appropriately trained and competent staff to install the required passive fire protection system.

Their work is independently audited by site inspections from the independent third-party organisation, and a full record system is required as part of the scheme.

A record of installation is issued on completion to the main contractor for each contract.

The use of independent third-party certification and accreditation is recognised in Approved Document B, Volume 1: 2019 edition (incorporating the 2020, 2022 and 2025 amendments). The use of certified installers will reduce the incidence of firestopping materials being installed by un-skilled contractors and the use of unsuitable materials and reduce essential work and rework considerably.

These autonomous schemes raise the profile of the supply and installation chain and provide the client with evidence of compliance. Various independent third-party certification schemes are available, and the main contractor should select an appropriate scheme if the client has not already specified one.

The scheme should include:

- Verification of the skills and training of management, designers and estimators
- Use of suitable materials in accordance with approved details
- Training of operatives and supervisors in the product they are installing
- Random inspection of sites to monitor the quality of work
- Provision of a Record of Installation for completed work
- An audit trail
- UKAS accreditation

Example installer certification schemes are set out below.

Warringtonfire:
warringtonfire.com/certification-services/firecertification/firas

IFC:
ifccertification.com/certification/installercertification.html

BRE:
bregroup.com/services/certification-and-listings/

BM TRADA:
bmtrada.com/certification-services/third-partycertification-fire/q-mark-firestopping-installationscheme

Section 10 – External Fire Spread

10.1 External Fire Spread

The recommendations given in this Section are concerned with measures to restrict undue fire spread over and within external walls, and to inhibit fire spread from the building of origin to a neighbouring structure.

Table 10.1 of Approved Document B, Volume 1: 2019 edition (incorporating 2020, 2022 and 2025 amendments and forthcoming 2026 and 2029 changes) is partly reproduced below and makes the following recommendations for the reaction to fire of the external wall surfaces of the building.

Building Type	Building Height	Less than 1,000mm from the relevant boundary	1,000mm or more from the relevant boundary
All 'residential' purpose groups	11m or less	Class B-s3, d2 or better	No provisions

This recommends that the external wall construction at this building should achieve a fire performance rating of Class B-s3,d2 or better, within 1m of the relevant boundary – specifically this relates to the flank wall at the North elevation. The following exceptions when achieving this rating are shown below.

a. cavity trays when used between two leaves of masonry;
b. any part of a roof pitched at an angle of 70° or more if that part is connected to an external wall;
c. door frames and doors;
d. electrical installations;
e. insulation and water proofing materials used below ground level;
f. intumescent and fire-stopping materials where the inclusion of the material is necessary to meet recommendations;
g. membranes (these should be of class B-s3,d0 or better materials);
h. seals, gaskets, fixings, sealants and backer rods;
i. thermal break materials where the inclusion of the materials is necessary to meet regulatory requirements for thermal bridging;
j. window frames and glass;
k. the operating mechanisms for adjustable solar shading devices; and
l. external walls that comprise only masonry construction, or in which combustible materials are limited to insulation within the cavity of double-leaf masonry walls.

The client has reported the build-up of the external wall systems as masonry with a brick façade. This wall system should achieve the REI60 and the Class B reaction to fire rating.

The Fire Safety Act includes external wall systems within the holistic assessment of a building's fire safety provisions. The external walls will therefore need to be incorporated into the assessment of risk when undertaking the fire risk assessment of this building.

10.2 Space Separation

The protection of adjoining or adjacent buildings within proximity to the development will be achieved by providing adequate fire resistance to the external walls, these should achieve REI60 within 1m of the relevant boundary.

Figure 2 – GA Plan showing no openings at the North, South elevations and no openings between Flats

The front and rear elevations (East & West) are more than 6m from a relevant and notional boundary. The side elevation (North) will have no openings. Flats 1 and 2 will have no openings which face each other. As a result, there will be no risk of external fire spread from the openings at each elevation.

10.3 Re-entrant Corners

Where there is an internal angle between two facades, additional fire protection measures are required at that junction. The level of protection varies depending on the type of accommodation on each side of the internal angle. In this case, the flat roof above the ground floor units at the rear elevation and their proximity and coincidence to the first-floor properties above will mean that the glazing (to the rooflights) immediately adjacent the external façade should be fixed pane and fire rated to EI60, as a minimum. The dotted blue line in Figure 2 illustrates the openings which require fire rating.

10.4 Roof

Dependent upon the materials used in the construction there will be a minimum distance from the roof, or part of the roof, to the relevant boundary. Table 12.1 of Approved Document B, Volume 1: 2019 edition (incorporating 2020, 2022 and 2025 amendments and forthcoming 2026 and 2029 changes) sets out separation distances by the type of roof covering and the size and use of the building, this has been reproduced below.

Roof coverings refer to a construction that can consist of one or more layers of materials but does not refer to the roof structure.

Designation of covering of roof or part of roof	Distance from any point of the Relevant Boundary			
	Less than 6m	At least 6m	At least 12m	At least 20m
B_{ROOF}(t4)	Acceptable	Acceptable	Acceptable	Acceptable
C_{ROOF}(t4)	Not Acceptable	Acceptable	Acceptable	Acceptable
D_{ROOF}(t4)	Not Acceptable	Acceptable §	Acceptable §	Acceptable
E_{ROOF}(t4)	Not Acceptable	Acceptable §	Acceptable §	Acceptable §
F_{ROOF}(t4)	Not Acceptable	Not Acceptable	Not Acceptable	Acceptable §

§ not acceptable on any of the following buildings:

a. Dwellinghouses in terraces of three or more dwellinghouses.
b. Any other building with a cubic capacity of more than 1,500m^3.

The classification system, BS EN 13501-5, refers to the above classifications and four different roof tests designed to establish the performance of a roof's resistance to fire.

Given that the new flat roof section will be within 6m of a relevant boundary it should achieve a minimum classification of B_{ROOF}(t4).

10.5 PV Arrays

There will be PV solar panel arrays over the flat roof section. It is understood that these will form attachments as opposed to being integrated into the fabric of the building.

The location and fitting of the panels to this building is important. There is a requirement to confirm the electrical safety of the arrays to prevent a fire from starting in the first place, and further measures will be needed to prevent any fire from spreading at the roof level. This will mean that the installation should not be secured to a timber or combustible roof deck (the same applies to ballast which should not be combustible).

The client is advised to comply with the recommendations and good practices set out in the Fire Protection Association guidance (RC62). During the construction phase of this scheme hot work such as welding, flame-cutting, and similar activities should not take place during the installation process. Similarly, there should be no hot work in the vicinity of the PV panels after installation. If for justified reasons hot work must be undertaken, it should only be conducted under an effective Permit to Work system. See Section 11.3 regarding the PV isolation switch for firefighters.

Careful consideration should be given when it is proposed to site PV panels on combustible roofs, such as timber roofs and roof decks incorporating a combustible roof overlay. Wherever possible this should be avoided.

Mounting systems should not interfere with other functions of a structure and thus should not straddle heat expansion joints or fire compartment walls.

The layout of the panels on the roof should be such that areas of panels are separated by panel-free areas so that effective firefighting is possible. This will allow firefighters to open the roof to allow both internal and external attack on a fire.

Care should be taken that obstructions and stored materials do not reduce the level of ventilation provided for the inverter, which can produce significant heat during normal operation. This will be a matter for the Responsible Person – post occupation.

PV panel installations should be serviced and maintained in accordance with the installer's instructions. The schedule of maintenance should follow the service contract, warranty conditions and/or performance guarantees.

10.6 Waste Management

The protection against arson will be mitigated if the refuse and waste materials are managed. There should be adequate storage containers and sufficient space separation. If the refuse containers will be stored within 3m of the perimeter of the building, they should be located within a designated store. The adjacent wall will be constructed with materials affording a fire resistance of REI 60 (as a minimum).

The waste at this site should be managed in accordance with BS 5906:2005.

Section 11 – Fire Service Access and Facilities

11.1 Fire Service Access and Facilities

To assist the Fire & Rescue Service, Approved Document B, Volume 1: 2019 edition (incorporating 2020, 2022 and 2025 amendments and forthcoming 2026 and 2029 changes) recommends facilities to support the Fire & Rescue Service when attending a fire.

When designing, adapting or extending buildings, account needs to be taken of the requirements for fire and rescue service access into and around the building for firefighting purposes.

Advice should be sought from the fire and rescue service at an early stage, to enable the fire and rescue service requirements to be understood.

Firefighting facilities should be selected and designed to assist the fire and rescue service in protecting life, protecting firefighters, reducing building losses, salvaging property and goods, and minimizing environmental damage.

Firefighting facilities should include, where appropriate:

a) the provision of vehicular access for fire appliances to the perimeter of the building or site;
b) provision of easy and speedy entry to the site and/or the interior of the building for firefighters and their equipment;
c) provision of and access to sufficient supplies of an appropriate firefighting medium, as determined by a risk assessment;
d) means of enabling firefighters, once they have entered a building, to reach any point within that building in the shortest time possible, including the provision of firefighters lifts, where the building height exceeds 18m;
e) provision of facilities to release, or extract, smoke and heat from the building or site; and
f) provision for removing spent firefighting extinguishing media (e.g. drainage).

It is important to understand the level of local fire and rescue service coverage to a new development such as this, as this can vary significantly depending upon geographical area. It is known that due to increasing economic and resource pressures on fire and rescue services in many areas, the current level of coverage may be under review and subject to change. Therefore, understanding where the local fire station is situated and what resources they have could be relevant to the development of the building fire strategy in terms of what initial resources will be available and the time it will take for the fire and rescue service to attend an incident (and factoring in a suitable margin of safety, should the building fire strategy rely upon this). In this case, the nearest responding station is Caversham Fire Station (wholetime) which is a distance of 1.8 mile, and the next nearest fire station is Wokingham (wholetime) which is 1.9 miles from the development site. It is likely that one or both stations and their resources will remain and would be capable of responding with an immediate response.

11.2 Vehicle access for fire appliances

It is important that consideration is given to the number and type of FRS vehicles which need to access the site and get close enough to the building. Consequently, the size and construction of the approaching roadway will be vital to achieving rapid and effective fire and rescue operations. In this case, there is no landscaping, dead-end roads, traffic calming measures, gate barriers or building overhangs which would impede this access. The extent to which fire and rescue service vehicle access is required depends on what type of response is expected by Royal Berkshire Fire & Rescue Service.

The access for the residential units will be the public highway (Mount Pleasant). The dimensions and kerb weight for the expected ESFRS pumping appliances will be achieved to the front elevation but may not be achieved at the other elevations of the building. It should be noted that this is not a high-rise (more than 18m or 7 storeys) building and it is unlikely that a pre-determined attendance will include a high reach appliance.

The flats will allow access to within 45m of every point on the projected floor plan (all parts). Consequently, a dry rising main will not be provided for firefighters.

The size and weight of fire appliances is not standardized and Approved Document B, Volume 1: 2019 edition (incorporating 2020, 2022 and 2025 amendments and forthcoming 2026 and 2029 changes), Table 13.1 has been used as a reference point – see extract below.

Appliance Type	Min. width of road between kerbs (m)	Min. width of gateways (m)	Min. turning circle between kerbs (m)	Min. turning circle between walls (m)	Min. clearance height(m)	Min. carrying capacity (tonnes)
Pump	3.7	3.1	16.8	19.2	3.7	12.5

The recommendations for RBFRS pumping appliances will be achieved at the front elevation (Mount Pleasant). In this case, the access from the public highway - the parked location of the appliance - in terms of load-bearing capability, road width, lengths, headroom, etc. are all satisfied.

There will be no overhead obstructions, e.g. cables and branches, that would interfere with the operation of the ladders from a standard appliance.

While providing the minimum dimensions, such as those shown in the Table above, will get the fire and rescue service vehicles close to the building, it must be remembered that firefighters will require a working area to unload personnel and stowed equipment from the appliance. Therefore, it is considered best practice to allow for some additional room around the fire appliance parking position (e.g. in zones designated for perimeter access or where fire appliances will be parking near to designated building entry points or fire mains inlets) to allow for this to be done easily. In this case, Mount Pleasant allows sufficient working area for firefighters to dismount and remove their equipment from the appliance.

11.3 Access for firefighting personnel

The existing (front) elevation to which FRS access is provided will have a door which has an opening dimension of 880mm wide (the minimum width is 750mm). This is satisfactory as it exceeds the minimum dimension.

The means by which occupants leave has been considered, and people using either escape route will not impede the Fire & Rescue Service. Those escaping should locate themselves sufficiently far from the premises to minimise interference with the Fire & Rescue Service or to be in danger from falling debris.

Basic information on the location of fire protection measures may be sufficient. A plan of the building should be provided, showing all the following.

- Escape routes – these should include exit capacity (the maximum allowable number of people for the building).
- Locations of smoke detector heads, fire alarm call points, detection/alarm control boxes, emergency lighting units, and the location of nearby hydrants outside the development.

11.4 The provision of adequate water supplies

Securing an uninterrupted water supply is one of the critical actions that the fire and rescue service will complete upon arrival at an incident. Ensuring that an appropriate supply is available has been identified as part of this fire strategy. For new developments, the adequacy of existing supplies may require additional consultation with the water authority. We know that this site will not require a new fire hydrant as there are a number publicly maintained fire hydrants within 90m from the entry point of the building and one (single hydrant) of these is located within 50m from the main entrance (the location of the nearest hydrant is shown in Figure 1).

This is not a large and complex development, consequently, it is not anticipated that further or formal consultations will be required with the water authority.

Section 12 – Management Strategy

The fire safety and management of a building is crucial to its safe operation and maintenance. The effectiveness of active and passive fire protection measures may be potentially reduced without adequate management and staff supervision.

The building should be provided with policy documentation and procedures in respect to fire safety.

12.1 Fire Risk Management (common parts only)

Table 6 of BS 9999:2017 is extracted below. This table sets out some key factors which should be considered when defining and documenting a fire management strategy.

Key factors of any fire risk management strategy		
	Management factor	Sub-Clause
1	Fire Risk Assessment	8.3.2
2	Resources & Authority	8.3.3
3	Fire Safety Training	8.3.4
4	Control of Work on Site	8.3.5
5	Maintenance & Testing	8.3.6
6	Communications	8.3.7
7	Emergency Planning	8.3.8

Fire Risk Assessment

Fire risk assessments should be undertaken annually, reviewed regularly, and kept up-to date. Alterations to, or refurbishment of either property should trigger a review of the respective fire risk assessment and the adequacy of fire precautions.

Resources and Authority

The resources necessary to implement, maintain and improve the fire risk management system should be determined. In determining the necessary resources, account should be taken of the organisational hierarchy, the role of the fire safety manager and communication and collaboration with other users of the building. For the management of fire risk to be effective, those with fire safety responsibilities should be empowered and able to command sufficient resources to maintain the system.

Fire Safety Training

Contractors should be trained in the use of fire-fighting equipment, fire prevention and they should be briefed on the evacuation procedures.

Control of work on site

A work control system should include clear lines of responsibility communicated to contractors; a permit system which considers the risks to relevant persons; logging and work control audit processes; and routine checking and supervision.

Maintenance and Testing

An accurate record of fire precautions, and procedures for operating and maintaining any fire protection measures within the unit or the residential block, are necessary to enable the owner or end user to plan, document and implement control processes for maintenance and testing of fire safety systems to ensure that they operate effectively in the event of a fire. Processes should be determined for maintenance and testing of fire safety systems.

Communications

The need for internal and external communication procedures should be determined, to ensure that all of those involved in management of fire risk, or who could potentially be involved in an incident, are provided rapidly and effectively with relevant information. These procedures should include defined lines of communication of significant findings arising from fire risk assessments and should stress the importance of maintaining fire safety information.

Emergency Planning

Procedures for identifying and responding to unplanned events, potential emergencies or disasters should be established, documented and maintained. Where fire is concerned, liaison with the Fire & Rescue Service should include:

- emergency shutdown of equipment
- effective arrangements for notifying the F&RS of changes to the occupancy
- periods of abnormal occupancy
- fire growth characteristics and other relevant factors.

Section 13 – Recommendations

The following issues raised in the Fire Strategy Report should be addressed.

1. The evacuation strategy for the residential units will be Stay Put. This should be communicated to all residents on occupation.
2. For the construction of the building:
   a. the floor above should have fire resistance of REI60 (as described in BS EN 13501 Part 2)
   b. all structural and load-bearing elements should have a fire resistance of REI60 (as described in BS EN 13501 Part 2)
   c. the fire resistance of the party walls will be REI60
   d. all flats will be constructed with an internal hallway (REI 30) with 2 x doors meeting the specification of FD30
3. The designer has reported that the existing basement floor will be retained. As a result, new independent ceiling linings are proposed beneath the floor, this will include double layered 15mm 'Fireline' plasterboard – to confirm its fire resistance, the under-drawing of a floor in this way should follow a tested system and should be confirmed by the contractor as being installed in accordance with the test report or the manufacturer's instructions.
4. Flat 2 will have an inner room bedroom which will be fitted with an escape window meeting the recommendations in Section 4.2 of this report.
5. The basement will be accessed externally and will be separated from the rest of the building with materials affording a minimum of REI60. This will be a void area (out of use), except for services such as sewage pipes and low voltage electrical connections.
6. Under no circumstances should Electrically Powered Personal Vehicles (EPPVs) be stored or charged within this building.
7. If a Battery Energy Storage System is proposed then the client should seek advice from a competent person.
8. Flat 1 should be fitted with a Grade C, Category LD2 fire alarm and detection system in accordance with BS 5839-6:2019.

9. Flat 2 should be fitted with a Grade C, Category LD1 fire alarm and detection system in accordance with BS 5839-6:2019.
10. The building is not required to be fitted with fire sprinklers, however, the client should consider the life safety benefits of installing such a system within this building.
11. The internal linings within circulation space within the apartments should achieve class C-s3, d2 or better materials.
12. Fire resisting door-sets should be provided in accordance with Section 9.3.
13. The external wall systems, where adapted or extended, should be constructed with materials which achieve Class B-s3,d2 or better (within 1m of the relevant boundary) – see Section 10.1.
14. The rooflights in the flat roof above the ground floor units (in proximity to the rear façade) should be fixed pane and fire rated to EI60, as a minimum.
15. The flat roof systems should achieve a minimum classification of B_{ROOF}(t4).
16. The installation of the PV arrays should follow the advice in Section 10.5 of this report.
17. Any new construction detail and materials should be retained digitally by the client, and this will form the O&M manual which will be stored and shared digitally to satisfy the principles of the Golden Thread. During the design and construction phase of a building, it is the responsibility of the Duty Holder (e.g. the Principal Designer or Principal Contractor) to keep and manage the information. In the occupation phase of the building, this responsibility passes to the Responsible Person (e.g. the person responsible for the building). Where a building or part of a building already exists, the RP must make 'reasonable enquiries' that allows them to find historical information about the building.
18. Regulation 38 of the Building Act states that all relevant fire safety features should be made available to the Responsible Person to enable them to be able 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 (see Appendix C).

Appendix A – Floor Layouts

The floor layouts in this appendix are not to scale and replicate the plans provided by 'Hives Architects LLP'.

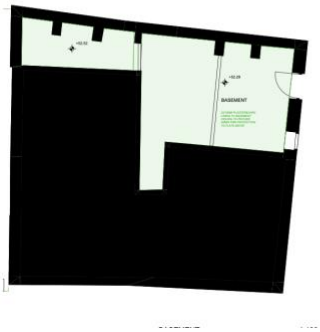


Figure 3 – Basement

Figure 4 – Ground Floor

Appendix B – Normative References

The following legislation and publications are normatively referenced in this fire safety strategy report and will be indispensable for its application.

Legislation:

- The Regulatory Reform (Fire Safety) Order 2005
- Fire Safety Act 2021
- The Construction (Design and Management) Regulations 2015
- The Building Regulations 2010
- Building Safety Act 2022
- Fire Safety (England) Regulations 2022

Guidance:

- Approved Document B, Volume 1; 2019 edition (incorporating the 2020, 2022 and 2025 amendments)
- BS 9999:2017 - Fire safety in the design, management and use of buildings - Code of practice
- BCA Technical Guidance Note 26 - Service Penetrations through External Wall Constructions of Residential Buildings
- Building Research Establishment Report (BR 187) – External fire spread: building separation and boundary distances
- BR135 - Building Research Establishment Report (BR 135) - Fire performance of external thermal insulation for walls of multi-storey buildings
- Hardware for Fire and Escape Doors published by the Door and Hardware Federation (DHF) and Guild of Architectural Ironmongers (GAI) – Issue 5, November 2024
- RC62: Recommendations for fire safety with photovoltaic panel installations – RISCAuthority

Standards:

- BS 476 (all parts) - Fire tests on building materials and structures
- BS EN 1154:1997 - Building hardware. Controlled door closing devices. Requirements and test methods
- BS EN 1155:1997 - Building hardware. Electrically powered hold-open devices for swing doors. Requirements and test methods.
- BS EN 1366-10:2020 + A1:2017 - Fire resistance tests for service installations. Smoke control dampers
- BS EN 179:2008 - Building hardware. Emergency exit devices operated by a lever handle or push pad, for use on escape routes. Requirements and test methods
- BS EN 1935:2002 - Building hardware. Single-axis hinges. Requirements and test methods
- BS 5041-2:1987 - Fire hydrant systems equipment - Specification for landing valves for dry risers
- BS 5041-4:1975 - Fire hydrant systems equipment - Specification for boxes for landing valves for dry risers
- BS 5839-6:2019 - Fire detection and fire alarm systems for buildings – Part 6: Code of practice for design, installation, commissioning and maintenance of systems in domestic premises
- BS 5906:2005 - Waste management in buildings. Code of Practice

- BS EN 13501-1:2018 - Fire classification of construction products and building elements - Classification using data from reaction to fire tests
- BS EN 13501-2:2023 - Fire classification of construction products and building elements - Classification using data from fire resistance and/or smoke control tests, excluding ventilation services

Appendix C – Building Regulation 38

Essential Information to be Provided to the Responsible Person on completion.

As-Built Plan of the Building

An as-built plan of the building should be provided, detailing all applicable elements, including:

- Escape routes, including exit capacity, indicating the maximum allowable number of occupants per storey and for the entire building.
- Location of fire-separating elements, such as lines of compartmentation and cavity barriers.
- Fire door-sets, including those fitted with self-closing devices and other doors equipped with compliant and relevant hardware.
- Locations of fire and/or smoke detector heads: Including alarm call points, detection/alarm control panels, alarm sounders, fire safety signage, emergency lighting, fire extinguishers, dry or wet fire mains, other firefighting equipment, and hydrants situated outside the building.
- Any sprinkler systems, including isolating valves and control equipment.
- The smoke control systems or ventilation systems that serve a smoke control function, including their mode of operation and the control system(s).
- Any high-risk areas, such as PV arrays including the location of the DC isolation or locations of special fire hazard.

Additional Information

In addition, the following details shall be provided:

- Specifications of the installed fire safety equipment, such as a copy of the product certificates or test reports (e.g. fire door certification to BS476-22 or EN 1634-1)
- A copy of the installation certificate from the installer of fire safety systems (e.g. commissioning certificate for the fire alarm and detection systems to BS5839 Parts 1 and 6)
- The evacuation strategy and how this will be communicated to the occupants
- Any assumptions regarding the management of the building incorporated into the design of the fire safety arrangements.
- Provisions for the evacuation of disabled individuals: to be utilised when developing suitable PEEPs, including the location and mode of operation of evacuation lifts.

This report, together with the detailed plans of the building, will provide a substantial element of the required fire safety information to be passed to the Building Control Body (BCB) and the Responsible Person on completion of the project.

Appendix D – Details of the Author

This Fire Strategy has been produced by Gary Ferrand MA EngTech FIFireE MIFSM who is a Principal Fire Safety Consultant and is a "third-party independent and qualified" individual.

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Grade of IFE membership
IFE Membership Grade: Fellow – present. 1994-2011
Year of gaining IFE Fire Risk Assessor (Life Safety) accreditation: 2020
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Member of the Fire Protection Association

Qualifications
Level 6 Fire Safety (National Safety Academy) 2025
MA (University of Exeter) 2005
Safety for Executives (IOSH) 2009
NEBOSH Diploma (IOSH) 1998
Modules A-D FSOC Fire Safety Studies (Fire Service College) 2005
Executive Leadership Programme (Warwick Business School) 2010
Incident Command Management – accredited at Level 4, 2011
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Multi Agency Gold Incident Course (MAGIC) 2012

Career details
The author has spent 30 years enforcing fire safety legislation in different Fire & Rescue Authorities. As a Principal Officer he led the NFCC Business Safety Group to consistently apply enforcement work across all FRAs in the UK. He has worked privately as a consultant with large and medium-sized clients working on small, medium, large and bespoke complex developments over the previous 6 years. He is a Fellow of the IFE and has been recognised formally by the NFCC (previously CFOA) for his contribution to fire safety.