

Alpha House

STAGE 2 FIRE STRATEGY

November 2025



Project Office:

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1 Introduction

1.1 Scope

This RIBA Stage 2 Fire Strategy is intended for discussion between the design team and to assist the design team in developing the layouts to ensure that once a Building Regulations application is made, all of the fire safety elements will be incorporated into the plans.

This report is based on the guidance in Approved Document B (ADB), 2019 edition incorporating the 2020, 2022 and 2025 amendments.

This guidance has been developed to ensure the highest standard of fire safety is designed into the building development at an early stage of design.

1.2 Building Description

The Alpha House development is a residential led project located in Manchester, also containing ancillary spaces, a car park and a communal podium space. The building consists of Ground plus 5 storeys of residential accommodation. The building height is 17.3 m to the topmost occupied floor level.



Figure 1 – Alpha House site

1.3 Fire Strategy Overview

The proposals outlined in this document demonstrate a level of fire safety equal to or greater than the general standard implied by compliance with the recommendations of the ADB. This level of safety therefore satisfies the functional requirements of the Building Regulations relating to fire safety.

The fire strategy described in this report can be summarized as follows:

- Means of escape will be based on each apartment implementing a stay-put strategy. The ancillary areas and communal podium will each have independent means of escape and shall implement a simultaneous evacuation strategy.
- The travel distances in the common corridors are in accordance with ADB.
- The fire alarm systems within the development will be.
 - Within apartments – LD1
 - Common Corridor – L5
 - Ancillary Areas – L3
 - Car Park – L5
- Structural fire protection will be provided in accordance with Table B4 of ADB. Each floor will be designed as a compartment floor.
- Sprinkler coverage will be provided to all residential accommodation in accordance with BS 9251.
- Commercial sprinkler coverage will also be provided to the car park and ancillary accommodation with areas exceeding 100 m², designed in accordance with BS EN 12845.
- The building does not exceed 18 m in height, therefore it does not require a firefighting shaft. However, dry risers will be provided in the protected stairs to achieve the hose laying distance requirement of 60 m to the furthest point of the floor plate from the dry riser outlet in a non-firefighting stair. The ancillary accommodations accessed from the ground level will be provided with a hose coverage of 45m to the furthest point of the floor plate from the parking of the fire tender.

2 Legislation

2.1 Building Regulations 2010

The development will consist of new buildings, hence, will be undergoing building works as defined in Regulation 3 of The Building Regulations 2010. All buildings will therefore have to comply with the requirements of Schedule 1 of the Regulations.

The requirements of the Schedule relating to fire safety are:

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

The principle aim of the Building Regulations is to ensure the health and safety of people in and around a building.

The 'requirements' set out broad objectives or functions, which the individual aspects of the building design and construction must set out to achieve. They are therefore often referred to as 'functional requirements' and are expressed in terms of what is 'reasonable', 'adequate' or 'appropriate'.

2.2 Approved Document B (ADB)

The Department for Levelling Up, Housing and Communities (DLUHC) has produced a number of guidance documents to assist designers in meeting the relevant requirements of the Building Regulations. These 'Approved Documents' provide guidance on different aspects of the Regulations. Approved Document B – Fire safety (ADB) provides general design guidance on ways in which the functional fire safety requirements can be satisfied.

The Building Regulations 2022 require reasonable standards of health and safety for persons in or about the building to be provided.

However, as with many "deemed to satisfy" documents, the ADB is general in its approach and cannot contain sufficient detail for the multiplicity of building designs and varieties of building fire loads and occupancies encountered in practice.

The recommendations presented in the ADB provide guidance on how to satisfy the functional requirements of the Building Regulations. However, there is no obligation to adopt any particular solution contained in the document. The document recognises this and accepts that, if the requirement can be demonstrated to have been satisfied by alternative solutions, then this is equally acceptable.

This report considers the amendments to the Approved Documents in May 2020 and June 2022 and considers Regulation 7.

2.3 Regulatory Reform (Fire Safety) Order

Once the buildings are occupied, the Regulatory Reform (Fire Safety) Order (RRO) becomes the controlling fire safety legislation.

The Order came into force on 1st October 2006 and revoked the existing Fire Precautions Act and the Workplace Regulations. Under this order it will be necessary for the owner/ occupier of the building to carry out and maintain a fire safety risk assessment.

The building management team will also be responsible under this order to ensure that the buildings' fire safety provisions are appropriately managed, maintained and tested over the whole life of the building.

2.4 Construction, Design and Management Regulations

Projects undertaken in the UK are subject to the requirements of the Construction (Design and Management) Regulations 2015 (CDM) or within the European Union, that particular country's interpretation of the European Union Directive.

This report defines the strategy for meeting the functional and performance requirements for fire safety in the finished building. It is intended to form part of the submission for approval under the Building Regulations, Part B (Fire safety). Where any conclusions or recommendations contained within this report specify particular materials, products or forms of construction these will have been assessed, in accordance with CDM Regulation 9 (duties for designers).

In the event that these involve significant residual risks or health and safety critical assumptions, this information will be made available to the client REDD Real Estate. Where the architect or other consultants use all or part of this report to specify works, they are understood to be competent in alerting the Client, Principal Designer, Designers, Contractors and Building Occupier of issues arising under the CDM Regulations.

2.5 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 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 have to be taken to meet the requirements of the Fire Safety Order.

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 propose to require physical changes to the building to meet the requirements of the Fire Safety Order, the building control body should make the applicant aware.

3 Means of Warning & Escape

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B1, Means of Warning and Escape:

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

The general principle to be followed when designing for means of escape is that any person confronted by a fire within a building can turn away from it and make a safe escape and therefore alternative means of escape should be available from most parts of the building.

3.1 Evacuation Strategy

Residential means of escape is somewhat different from many other types of buildings in that only the particular apartment that has a fire in it is immediately evacuated. The reasoning behind this is due to the level of compartmentation between each of the apartments and to reduce false alarms affecting all the people within the building. The Fire Service carries out evacuation of the other apartments if necessary.

The residential ancillary accommodations and car park on the site will be considered completely independent of the residential elements. It is proposed that these areas adopt independent simultaneous evacuation approaches. This is particularly important for areas that may have members of the public who are unfamiliar with the building and any evacuation procedures. An alarm raised within the ancillary areas will not cause the evacuation of the residential areas.

3.2 Travel Distances

The travel distances for the building should follow the recommendations of ADB, which is detailed in the table below.

Purpose Group	Accommodation	Travel within	Maximum travel distance (m)	
			In one direction	More than one direction
1(a)	Apartment	Apartment protected entrance	9m	N/A
	Common Area	Enclosed common corridor	7.5m	30m
7(a)	Storage	Stores	25m	45m
	Plant Room	In the room	9m	35m
		Enclosed escape route	18m	45m
		Escape route in open air	60m	100m
7(b)	Car park	Escape within car park	25m	45m

Table 1 – Travel Distance Requirements

3.3 Escape within Residential Accommodations

3.3.1 Escape within Apartments

Apartments which are provided with protected entrance hallways should have a maximum travel distance of 9m within the protected hallway, which will be provided as a 30-minutes protected entrance hallway with FD20 fire doors. Entrance doors should be provided with FD30S self-closing fire resisting. Bathrooms do not need to have fire doors provided that the bathroom is separated by 30 minutes fire resisting construction from the adjacent rooms.

3.3.2 Escape within Common Corridors

As the building exceeds 11 m in height, it should be provided with either a mechanical, or natural ventilation system. The stair should be equipped with an Automatically Opening Vent (AOV), and the travel distance from the furthest apartment door to the stair door is limited to 7.5 m in a single direction, and 30 m in more than one direction.

Each stair will be provided with a 1.0 m² AOV at the head of the stair. Additionally, 1.5 m² natural shafts or 1.5m² window AOV's will be provided within each common corridor.

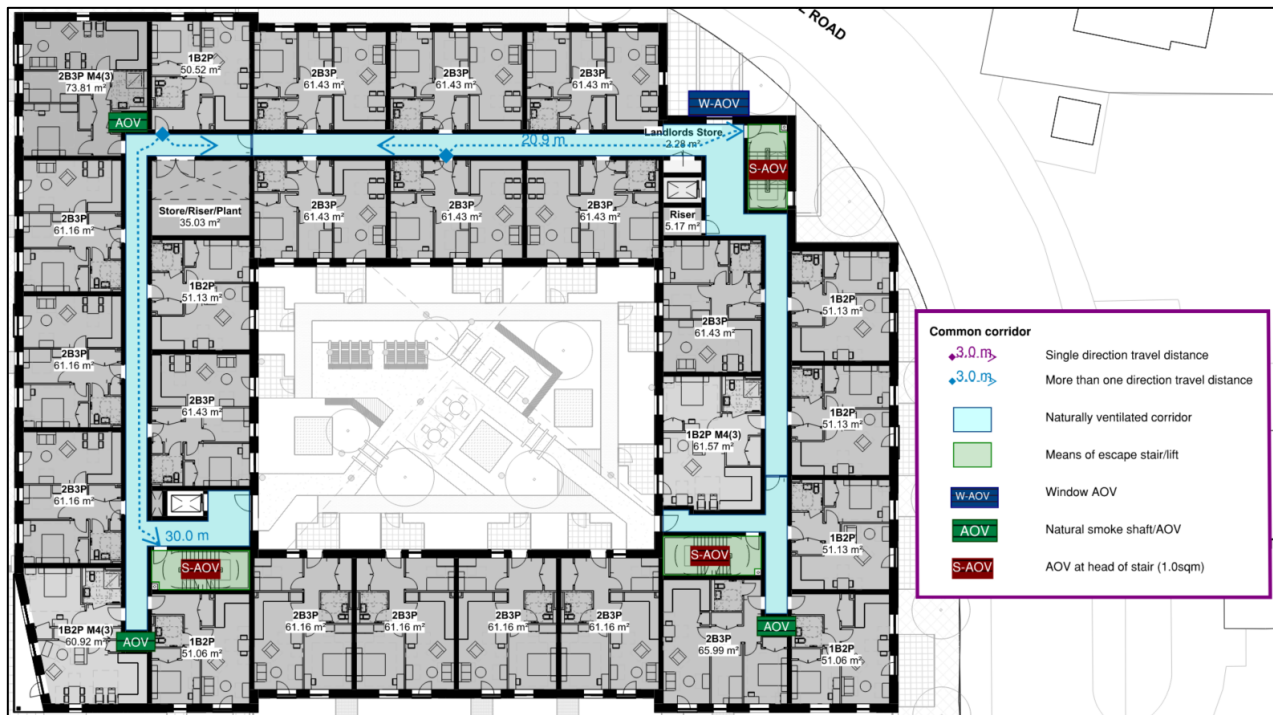


Figure 2 – Travel distances at L1

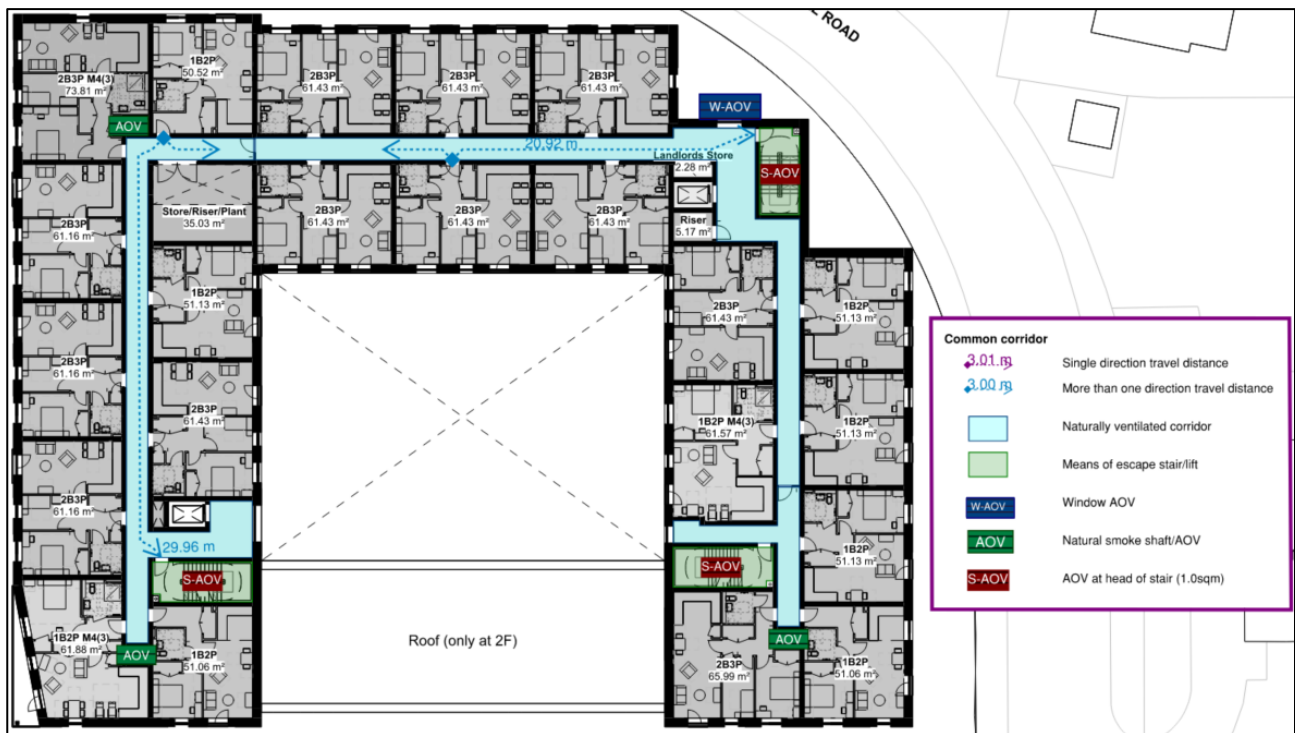


Figure 3 - Travel distances on upper floors

As seen in the figures above the travel distances are compliant with the requirements set out in Table 1.

3.3.3 Vertical Escape

The building does not exceed 18 m in height, therefore the development shall not be provided with a firefighting shaft. The minimum width of the storey exits (measured between the walls and / or balustrade) should be not less than 750 mm.

3.3.4 Final Exit Routes

Approved Document B requires that any discharge paths from the staircase that are not direct to outside must be along a protected route with any access into adjacent accommodation being by way of a protected lobby.

The final escape route is acceptable as shown in the following figure. All stair cores discharge directly to outside. The ancillary spaces are separated from any escape routes by smoke vented lobbies as discussed in section 5.2

The carer's room at ground floor will escape through the entrance lobby, this should be a sterile space. The carer's room at ground floor level will evacuate via the entrance lobby, which should be maintained as a sterile area free from combustible materials and ignition sources to ensure safe egress.

The apartments located in the north-west section of the building incorporate a secondary rear door that opens into a protected corridor. This arrangement is considered acceptable, as each flat is provided with a protected entrance hall leading directly to the main entrance door, which opens to the outside. In addition, all habitable rooms are fitted with windows suitable for escape, and the protected corridor serving the rear exits will be naturally ventilated via a 1.5 m² smoke shaft.

In the event of a fire, an occupant entering the protected corridor would be in an area of relative safety, with the means to progress towards the car park or scooter store to reach a place of ultimate safety. The corridor is expected to remain tenable and free from smoke due to the natural ventilation provision and fire-resisting construction separating it from the room of fire origin.

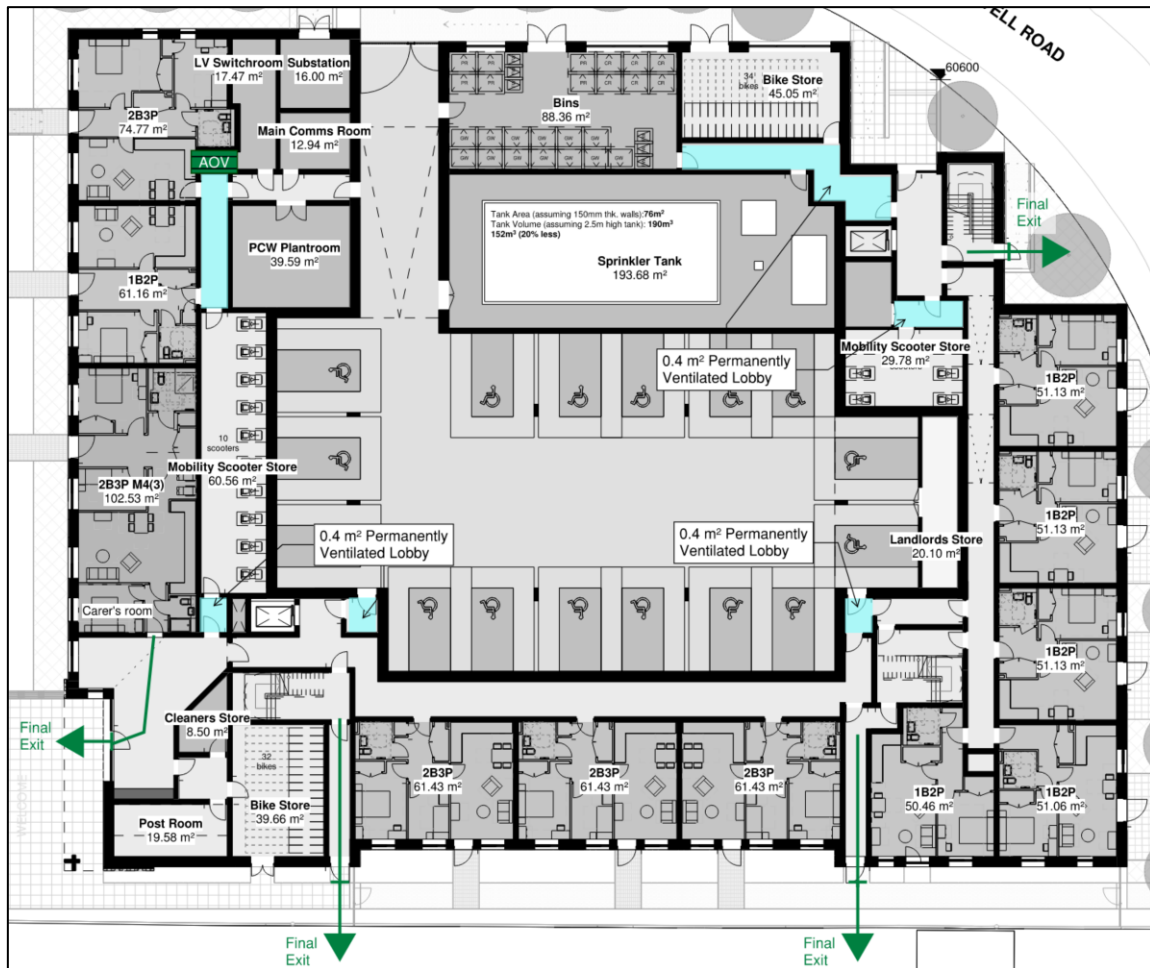


Figure 4 - Final exit of ground floor

3.4 Escape within Ancillary Accommodations

Travel distances in plant rooms should be limited to 9 m where escape is in a single direction and 35 m where escape is possible in more than one direction unless they are places of special fire hazard, in which case the travel distances where there is more than one direction of escape should be limited to 18 m.

Travel distances within storage rooms (e.g. cycle stores, mobility scooter stores, refuse stores) should be limited to 25m where escape is in a single direction or 45 m where there are two directions of escape.

Where fit-out has not been confirmed travel distances are to be taken as two-thirds of the permitted distance.

Ancillary accommodations are provided at Ground level with the travel distances as shown in the following figure. The LV switch room located at the north-west of the building (outlined in red) exceeds the maximum travel distance of 6 m ($\frac{2}{3}$ of 9 m), and it must be ensured that during fit out, the travel distance is limited to 9m.

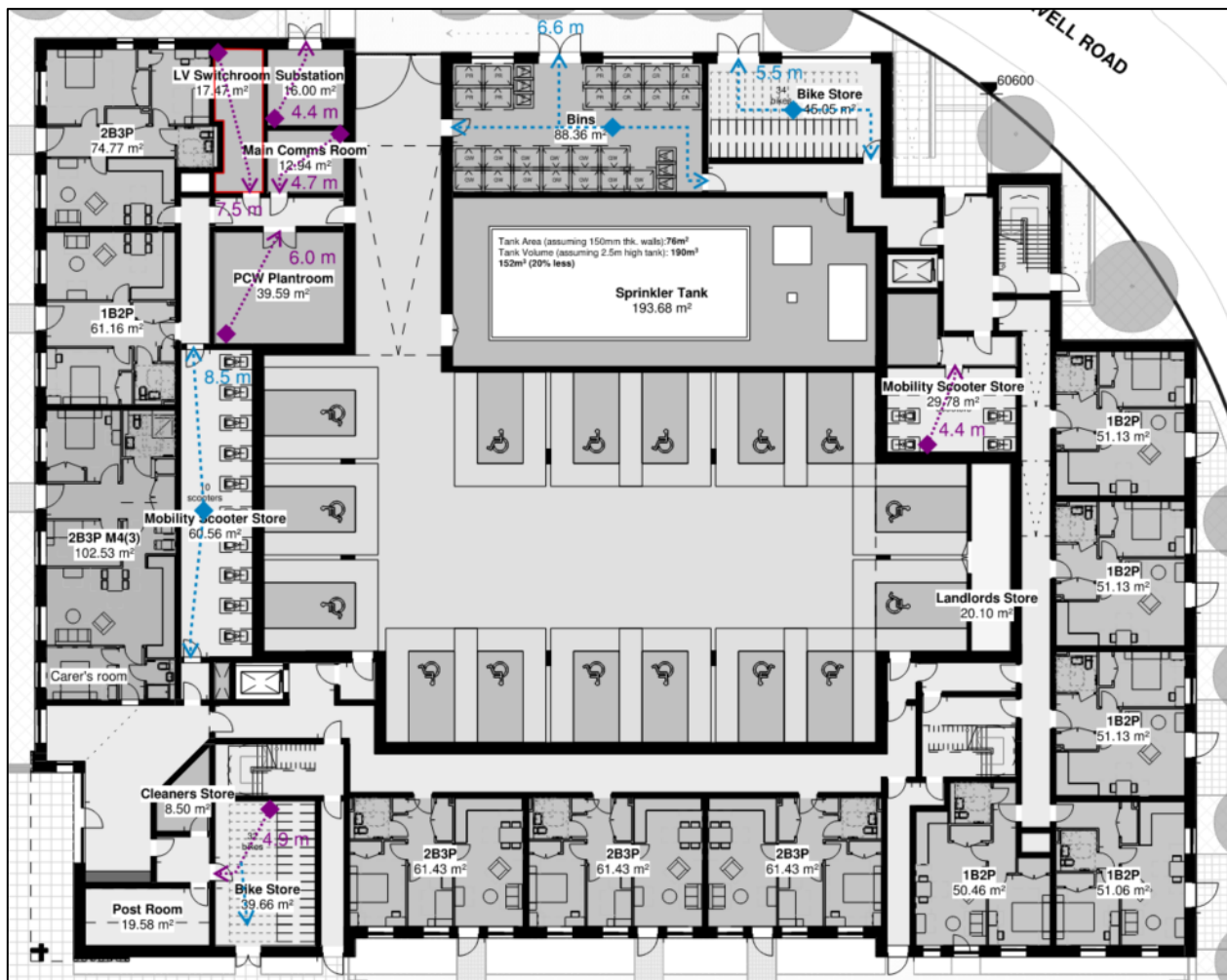


Figure 5 – Travel distances of ancillary accommodations at Ground Level

Ancillary rooms do not tend to have many occupants at any one time due to their use, therefore ADB recommends an occupancy load factor of 30m² per person in each room. Therefore, any ancillary room up to 1800m² in area can be served by a single exit door with a clear width of 750mm (subject to acceptable travel distances being achieved). Rooms larger than this requires two exits with a clear width of 850mm.

3.5 Escape within Car Park

Travel distances within the car park should be limited to 25m where escape is available in a single direction of travel and 45m in two directions. Due to the multiple cores that provide access to the car park, the travel distances are acceptable.

The car park occupancy is designed on a load factor of 2 people per car. Based on this, the car park will require the following exits.

Parking Spaces	Occupancy Load Factor	Occupancy	Minimum Required Exit widths
16	2 people per car	32	1x 750mm

Table 2 - Car park exit widths

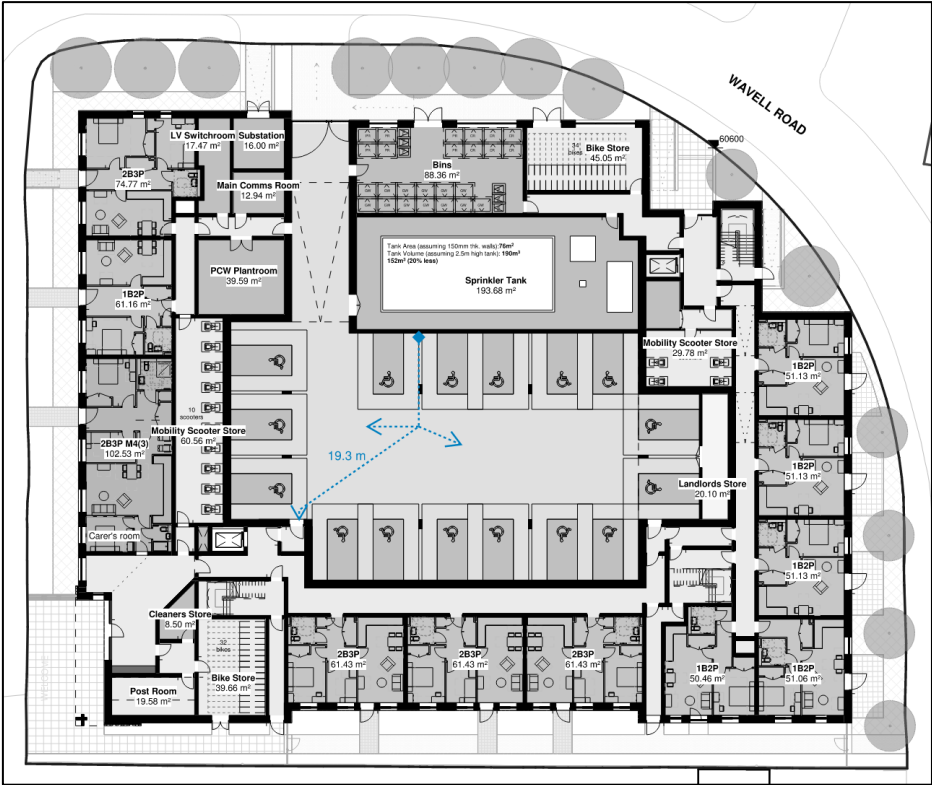


Figure 6 - Car park escape

3.6 Escape within Communal Podium

Since this space is open to the air, there is no restriction on the travel distance, provided sufficient means of escape is provided. As shown in the following figure, the podium has access to 2 stair cores which leads directly to outside at ground level.

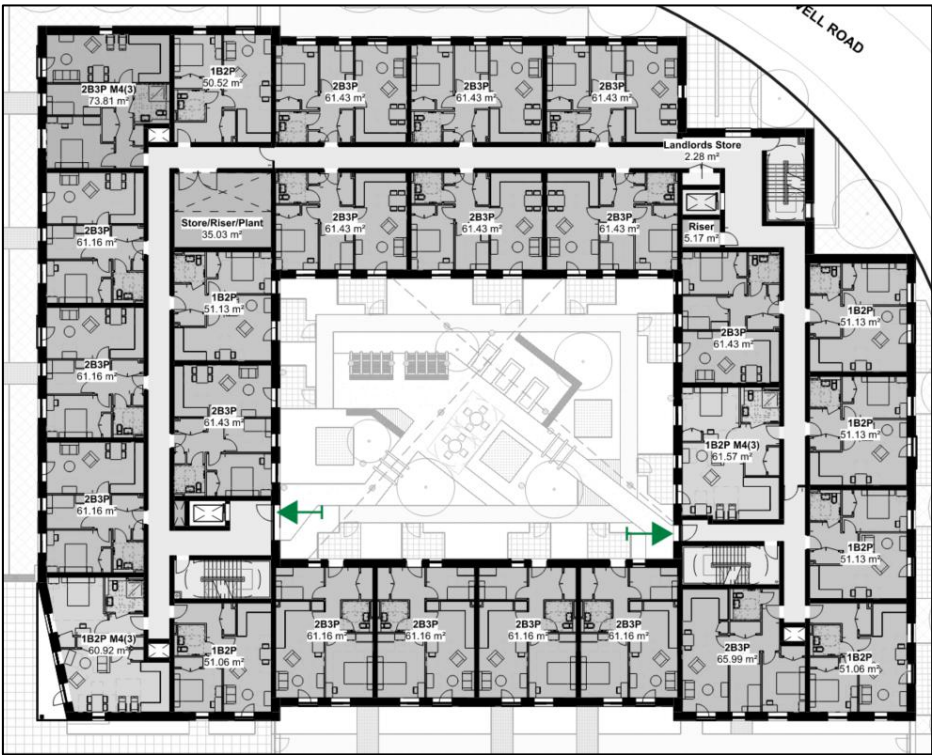


Figure 7 - Podium escape

The podium level is provided with two exits, each 850 mm wide, with all doors leading to the final exits of the same width. In accordance with the principle of discounting the largest exit, the maximum occupant capacity of the podium should therefore be limited to 110 persons.

3.7 Disabled Evacuation

In accordance with ADB, the residential accommodations on the upper levels do not require disabled refuges to be provided.

The building will not be provided with evacuation lifts in line with Approved Document B, however building management procedures will need to be in place to provide equal evacuation for all occupants.

The building will be provided with 24/7 monitoring provisions, which will form part of the building management arrangements.

The building management forms an integral part of the design and on-going functionality of the building after occupation. The building will have a management team whose responsibilities will include ensuring the fire safety strategy is adopted and enforced. One of the responsibilities of this team will be to develop a management strategy for the building. This strategy will incorporate details of how the building satisfies the requirements of the Equality Act 2010. The management strategy should include information on staff training, how disabled occupants will be evacuated in the event of a fire and identify key roles in ensuring they are assisted in a fire situation. Furthermore, the lobby and stair areas are ventilated in both blocks.

3.8 Fire Alarm & Detection System

3.8.1 Residential Accommodation

The apartments shall be provided with an LD1 Grade D fire alarm and detection system. Each apartment will be provided with a single sounder / smoke detector in each room with another one provided in the internal hall (where provided) along with a heat detector in the kitchen. The sounders will be capable of delivering 85dB(A) through the closed doorway to each room (including dwelling balconies) and be hard wired with a self-contained battery backup.

A smoke detection system should be provided in the common corridors on each floor to BS5839 Part 1 and to an L5 standard. The sole purpose of the detection system is to activate the smoke ventilation system. No sounders will be provided in the common corridor areas. A sounder will be provided on the communal podium to alert occupants of smoke detection within the common corridor at that level.

3.8.2 Ancillary Accommodation

The fire alarm and smoke detection within the ancillary accommodation (e.g. plant rooms, stores, etc.) will be designed in accordance with BS5839 Part 1 and be of type L3.

3.8.3 Car Park

The car park should be provided with an automatic fire detection and alarm system. This system should be designed and installed in accordance with BS5839 Part 1 and be a minimum of L5 standard.

Manual call points will be positioned by all exits and escape routes directly to the outside.

Fire alarm sounders and beacons will be provided to ensure an audibility level of 65dBA or 5dBA above background level (whichever is greater) is achieved in these areas. Operation of the fire alarm system will shut down all HVAC systems.

If the car park is to be provided with charging points for electrical vehicles, it is recommended the charging points should be linked to fire alarm system within the car park and the power should be cut to the charging point upon detection within the car park.

3.9 Emergency lighting

Emergency lighting as backup lighting will meet the recommendations of BS5266 Parts 1 and 7.

Final locations and routes shall be agreed during the design development.

3.10 Escape Signage

Escape signage should follow the recommendations of BS5499. Further detail will be provided during the design development.

Wayfinding signage will also be required for the fire service and will be detailed as the design develops.

4 Internal Fire Spread (Linings)

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B2, Internal fire spread (linings):

"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 which is reasonable in the circumstances.*

In this paragraph "internal linings" mean material lining any partition, wall, ceiling or other internal structure."

4.1 Surface Linings

The interior wall and ceiling surfaces in buildings can have a significant influence on how fast a fire may develop. It is particularly important that in circulation spaces including staircases, where the rapid spread of fire is most likely to prevent occupants from escaping, surface linings are restricted by making provision for them to have low rates of heat release and surface spread of flame.

The wall and ceilings linings within the building should meet the recommendations outlined in the table below.

Location	Class of Lining European Class*
Small Rooms of area less than: • 4m² in residential accommodation • 30m² in non-residential accommodation	D-s3,d2
Other Rooms	C-s3,d2
Circulations spaces within dwellings	C-s3,d2
Other circulation spaces including the common areas of block of flats, ancillary spaces and car park	B-s3,d2
Note: * The European classifications are described in BS EN 13501-1.	

Table 3 – Surface Lining Requirements

For the purpose of these requirements, a wall includes the internal surfaces of internal and external glazing as well as any part of a ceiling which slopes at an angle greater than 70 degrees to the horizontal. Doors, door frames, window frames and frames in which the glazing is fitted, architraves and skirting are also exempt from these limitations.

The class of linings can be downgraded (but not less than Class D-s3,d2) in walls of rooms providing the total area of those parts in any one room does not exceed one half of the floor area of the room and subject to a maximum of 20m² in residential accommodation and 60m² in non-residential accommodation.

5 Internal Fire Spread (Structure)

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B3, Internal fire spread (structure):

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

The requirements will be met;

- If the loadbearing elements of structure of the building are capable of withstanding the effects of fire for an appropriate period without loss of stability;
- If the building is sub-divided by elements of fire-resisting construction into compartments;
- If any openings in fire-separating elements are suitably protected in order to maintain the integrity of the element; and
- If any hidden voids in the construction are sealed and sub-divided to inhibit the unseen spread of fire and products of combustion, in order to reduce the risk of structural failure and the spread of fire, in so far as they pose a threat to the safety of people in and around the building.

The extent to which these measures are necessary is dependent on the use of the building, its size and on the location of the element of construction.

5.1 Fire Resistance of Elements of Structure

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

The period of fire resistance required in accordance with ADB is linked to the risk profile of the building taking into account the height of the top floor and whether the building is sprinklered or not. Where any element supports another the supporting element should possess at least the resistance of the other. Approved Document B defines an element of structure as:

- a member forming part of the structural frame of a building or any other beam or column;
- a loadbearing wall or loadbearing part of a wall;
- a floor;
- a galley
- an external wall; and
- a compartment wall.

The following are excluded from definition of an element of structure:

- Structure that supports only the roof, unless:
 - the roof performs the function of a floor, such as for parking vehicles, or as a means of escape, or
 - the structure is essential for the stability of an external wall which needs to have fire resistance.

The building is above 11m in height but below 18m, therefore the elements of structure will achieve 60 minutes fire resistance.

Where elements of structure support a building above, they should be provided with the structural fire resistance to at least that required for the building they support.

Any elements which only support themselves and or a roof can be non-fire rated.

5.2 Compartmentation

5.2.1 Residential Accommodation

All apartments should have 60-minute fire resistant compartment walls with FD30S self-closing front doors.

All floors should be compartment floors with a fire resistance equal to the structure.

The common corridor shall be enclosed with 60 minutes fire resistance with FD30S self-closing doors. Where risers are provided in the fire sterile lift lobby at the upper levels, the riser doors shall be provided with smoke seals.

Stair cores will be provided with 60 minutes fire resistance, with the final escape route affording the same level of fire resistance and exiting directly to the outside.

Openings in compartment walls should be limited to the passage of service ducts and access doors fitted with smoke seals. Where service ducts pass through compartment walls these will be provided with a fire barrier. All openings will be provided with a similar period of fire resistance to the wall they are provided within and the fire doors are to be locked closed.

In order to protect the final exit routes from the building all wall construction within 1.8m of the final exit points will be fire rated to 30 minutes. In general, most final exits are acceptable providing there are two directions of discharge from the exit, however where escape is only possible in a single direction and the exit route in the open air is within 1.8m of the building then any glazing present should be fire rated glazing to 30 minutes (integrity only).

5.2.2 Ancillary Accommodation

The residential cycle stores, mobility scooter stores and plant rooms should be enclosed in 30 minutes fire resistance with FD30 doors, whilst the bin stores should be enclosed in 60 minutes fire resistance with FD30 doors.

Where the ancillary accommodations are accessed from the final exit route from the stair, this should be via a protected lobby provided with 0.4 m² permanent ventilation directly to outside.

Cleaner cupboards, stores and utility rooms shall be enclosed in 30 minutes fire resistance with FD30 doors. If these rooms are accessed from the staircase lobby, this will be via a protected lobby that is ventilated via a 0.4 m² passive vent connected directly to outside

Any electrical sub-stations should be fully separated from the adjacent accommodation spaces by at least 30 minutes fire resisting construction, although these requirements are likely to be superseded by the electricity supplier's requirements, which are typical based on 4 hours fire separation.

Any rooms housing life safety equipment should be enclosed in 120 minutes fire resistance in accordance with BS8519.

5.2.3 Car Park

The car park will be separated from the rest of the accommodations by a minimum of 60 minutes fire resistance (including walls and floors).

Where the car park is accessed from the final exit route, this should be via a protected lobby provided with 0.4 m² permanent ventilation directly to outside.

5.3 Fire Stopping

Fire stopping should be provided as per the guidance in ADB.

5.4 Cavity barriers

Cavity barriers should be provided as per the guidance in ADB.

5.5 Sprinklers

5.5.1 Residential Accommodation

Sprinklers will be provided to all residential accommodation, and should be designed to BS 9251:2021.

5.5.2 Ancillary Accommodation

The ancillary accommodation could be served by the residential sprinkler if the rooms are not larger than 100m² and listed in Table 4 of BS 9251:2021 as shown below. Rooms larger than this should be served by a commercial sprinkler system in accordance with BS EN 12845. Consideration will need to be given by the sprinkler designer to ensure the system is suitable for serving the ancillary accommodation

Table 4 — Examples of classification of areas and design criteria for areas to be protected with BS EN 12259-1 sprinkler heads

Occupancy	Minimum density mm/min	Area of operation ^{A)}
Car parking ^{B)} within or beneath a block of flats	5.00	100 m ²
Bin store ^{B),C)} within or beneath the flats		72 m ²
Limited office areas (e.g. concierge or site management) ^{D)}		72 m ²
Residents' storage sheds/tenant stores ^{B)}		4 heads
PTSN/CCTV/electrical rooms		72 m ²
Plant rooms		100 m ²
Laundry (with storage and processing of linen, e.g. institutional, care home)		100 m ²
Laundry (communal facility)		72 m ²
Hairdressing room		72 m ²
Retail (e.g. shop)		100 m ²
Bar/restaurant/cafe		72 m ²
Kitchens in student hub accommodation (e.g. self-catering)		72 m ²
Kitchens ^{E)} in residential care or similar premises (e.g. care home) ≤50 m ²		72 m ²
Kitchens ^{E)} in residential care or similar premises (e.g. care home) >50 m ²		72 m ²

^{A)} If the compartment (fire) area is less than 50 m², a maximum of four heads is required as the area of operation. Where greater than 50 m², refer to area of operation or compartment (fire) area, whichever is the lesser.

^{B)} Attention is drawn to the need to consider protection from frost damage.

^{C)} On the basis of the bin store building or compartment (fire) being of at least a minimum of 1 h fire resisting construction from the rest of the buildings.

^{D)} See also [Table 3](#). Conduct a hazard evaluation to determine which option is most appropriate.

^{E)} Kitchens with deep oil cookers should be fitted with an appropriate local application system in addition to the sprinkler protection identified in this table (e.g. LPS1223, see [BS 5306-0](#)).

Figure 8 - Table 4 of BS9251:2021

5.5.3 Car Park

As the car park is provided under blocks of flats, these will require a sprinkler system in accordance with BS EN 12845.

6 External Fire Spread

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B4, External fire spread:

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

The objective of this requirement is to ensure that there is sufficient separation between buildings to prevent fire spread and to ensure that fire does not spread up the building façade.

6.1 Unprotected Areas

The unprotected areas are the areas of the façade that are not fire rated (i.e. glazing, etc.), which should be sized so that fire spread is unlikely to occur to buildings on the adjacent site or to separate fire compartments on the same site.

An external wall assessment shall be undertaken at the detailed design stage, however at this stage no consideration should be given to the unprotected areas.

6.2 External Wall Construction

The external envelope of the building should not be a medium for fire spread.

The building both below and above 11m, with an external wall more than 1000mm from the boundary can have unprotected openings dependent on the unprotected areas calculations.

Based on Regulation 7(2), all materials which become part of an external wall, should achieve European Classification A2-s1,d0 or Class A1, classified in accordance with BS EN 13501-1:2018. This does however not apply to the following:

- a) cavity trays when used between two leaves of masonry;
- b) any part of a roof 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 materials is necessary to meet the requirements of Part B of Schedule 1;
- g) membranes (should achieve Class B-s3,d0);
- h) seals, gaskets, fixings, sealants and backer rods;
- i) thermal break materials where the inclusion of the materials is necessary to meet the thermal bridging requirements of Part L of Schedule 1; or
- j) window frames and glass.

In order to protect the staircase from a fire on the floor plate any wall construction perpendicular to the stair core within 1.8m of the staircase should be fire rated equal to that of the fire protection to the stairs.

6.3 Roofs

Roof coverings for all blocks should be designed in accordance with BS EN 13501-5 as highlighted in Table 12.1 of ADB as shown in the following figure.

Table 12.1 Limitations on roof coverings

Designation ⁽¹⁾ of covering of roof or part of roof	Distance from any point on relevant boundary			
	Less than 6m	At least 6m	At least 12m	At least 20m
B _{roof} (t4)	●	●	●	●
C _{roof} (t4)	○	●	●	●
D _{roof} (t4)	○	● ⁽²⁾⁽³⁾	● ⁽²⁾	●
E _{roof} (t4)	○	● ⁽²⁾⁽³⁾	● ⁽²⁾	● ⁽²⁾
F _{roof} (t4)	○	○	○	● ⁽²⁾⁽³⁾

● Acceptable.
○ Not acceptable.

NOTES:

Separation distances do not apply to the boundary between roofs of a pair of semi-detached dwellinghouses and to enclosed/covered walkways. However, see Diagram 5.2 if the roof passes over the top of a compartment wall.

Polycarbonate and uPVC rooflights that achieve a class C-s3, d2 rating by test may be regarded as having a B_{roof}(t4) designation.

- The designation of external roof surfaces is explained in Appendix B.
- Not acceptable on any of the following buildings.
 - Dwellinghouses in terraces of three or more dwellinghouses.
 - Any other buildings with a cubic capacity of more than 1500m³.
- Acceptable on buildings not listed in (1) if both of the following apply.
 - Part of the roof has a maximum area of 3m² and is a minimum of 1500mm from any similar part.
 - The roof between the parts is covered with a material rated class A2-s3, d2 or better.

Figure 9 - Limitations on Roof Coverings

7 Access & Facilities for the Fire Service

Schedule 1 of the Building Regulations requires the following functional requirement to be met in respect of B5, Access and facilities for the fire service:

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

The following discusses the implications of these requirements on the proposed design with regard to access and facilities for the Fire Service within and around the building.

7.1 Vehicle Access

Fire Service access is required to provide access for fire personnel and a water supply to within a reasonable distance of the building entrances. Due care should be given to ensure that the vehicle access route meets the requirements for a pump appliance as shown in the table below (which is taken from Approved Document B).

Appliance Type	Minimum width of road between kerbs	Minimum width of gateways	Minimum turning circle between kerbs	Minimum turning circle between walls	Minimum clearance height	Minimum carrying capacity
Pump	3.7 m	3.1 m	16.8 m	19.2 m	3.7 m	12.5 t

Table 4 – Vehicle Access Requirements

The fire service access route throughout the site is shown in the following figure.

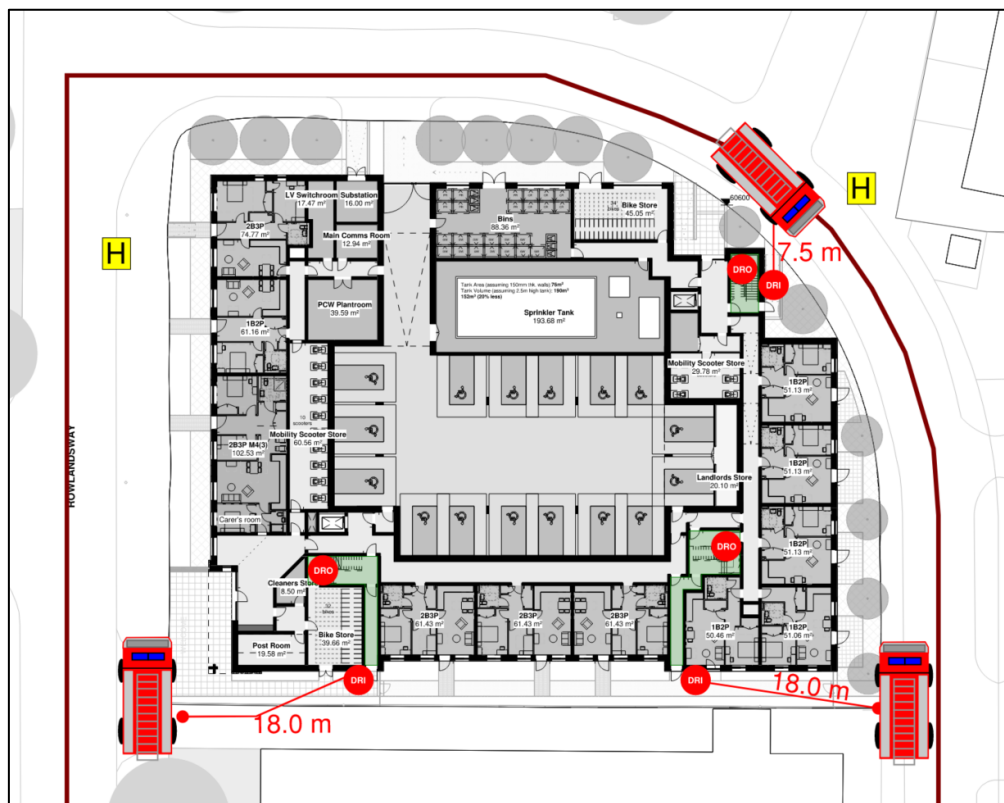


Figure 10 - Fire service site plan

Any access / security measures in and around the site (especially any bollards preventing vehicle access) should be bypass-able by the fire service. The details of the bypass arrangements should be developed and agreed with the fire service as applicable.

The ancillary accommodations accessed from the ground level will be provided with 45 m hose coverage to the furthest point of the floor plate from the parking of the fire tender.

7.2 Internal Fire Service Access

Since the residential accommodation does not contain a floor over 18 m, it does not require to be provided with a firefighting shaft. A dry riser outlet will be provided within each stair, ensuring that the hose distance to the furthest point of each floor plate does not exceed 60 m.

7.3 Dry Risers

The dry riser inlets will be located adjacent to the building entrances and be visible from the fire appliance (plus accessible within 18m of the fire appliance parking location).

All parts of the floor plates should be covered within 60 m when measured along a route suitable for laying a hose from a dry riser outlet within a non-firefighting stair.

7.4 Smoke Venting

7.4.1 Residential Accommodations

The smoke venting requirements for the residential areas are discussed in detail as part of the common areas means of escape section earlier. No further provisions beyond this are needed for firefighting.

7.4.2 Car Park

Ventilation will be provided within the car park and loading for two purposes. The first purpose is to provide a suitable environment for the daily use of the car park. The second is to provide protection to the building and the fire fighters in the event of a fire. It is normal practice for both purposes to be satisfied by a single unified system operating in two modes.

In this case, the car park shall be provided with a smoke clearance system designed in accordance with BS7346 Part 7 consisting of a combined mechanical and natural ventilation (hybrid) system that will be designed to achieve natural openings that are 2.5% of the floor area, split equally between the car park façade opening and ceiling to the podium. Additionally, impulse fans shall also be provided to assist with the distribution of air in the car park and to provide 3 air changes per hour to provide a suitable environment for the daily use of the car park.

7.5 Hydrants

ADB requires that buildings with dry fire mains should be within 100m from an existing fire hydrant. Where the existing hydrants cannot achieve this, then a private hydrant should be provided within 90m to the dry riser inlet.

The coverage of the existing hydrants is in Figure 10.

7.6 Emergency Power Supplies

Each life safety system provided within the building will have an independent power supply which would operate in the event of a failure of the main supply.

Secondary power supply should be provided to the following life safety systems:

- Automatic opening vents,
- Smoke ventilation system,
- Fire Alarm System,
- Emergency lights and signs,
- Residential sprinkler system,
- Commercial sprinkler system.

8 Fire Safety Management

8.1 General

Given the use and likely occupancy of the building, management procedures will assist in the prevention and control of fires and the evacuation of occupants.

Good housekeeping standards will be enforced to ensure that the effectiveness of the fire safety provisions is not affected.

Maintenance procedures will be developed to ensure that all equipment and services within the building are able to operate effectively.

A full Fire Risk Assessment should be carried out by the occupier of the building nearer to the development completion and be in place on occupation to meet the Regulatory Reform Order (RRO). The assessment should be maintained and act as a record of the provision and measures, passive and active, used to minimize fire risk within and around the building.

8.2 Key Management Issues

This section describes each of the key management areas that will need to be implemented and maintained during the lifetime of the building:

- All necessary fire safety systems must be regularly maintained and tested.
- The building management will regularly monitor and control the specification and use of combustibles within the escape routes and circulation areas. These areas will generally be maintained free of all combustibles and the escape routes will be unobstructed at all times.
- A full Fire Risk Assessment will be developed for the building.
- All building staff will receive regular training including roles and responsibilities for key members of staff.

8.2.1 Control of Evacuation and Fire Safety Planning / Implementation

A detailed fire safety plan will be drawn up by the building management, which will provide clear simple advice for the occupants in the event of an emergency.

The fire safety plan will be prepared, maintained and implemented by the fire personnel responsible for the building in question and will include:

- The procedures to be adopted in the event of a fire signal being given
- Procedures for evacuation of occupants (including disabled occupants)
- Procedures for equipment maintenance
- Frequency and nature of fire drills
- Staff training
- Procedures for recording and monitoring equipment maintenance and any fire incidents

Expanding on the information given above the fire strategy includes a number of risk critical areas resulting in the need to formalize the fire safety management in the building. In order to develop and maintain the safety of the building, the building management should formulate a policy statement appropriate to the building configuration, location, occupation, and if relevant, to the building users. The policy statement should include:

- General safety issues related to the use of the building
- Possible fire scenarios
- Aims and objectives of the proposed management system and its methodology

This policy should be endorsed by the highest level of management.

8.3 Regulation 38

To satisfy Regulation 38 to the Building Regulations it is proposed that a full package of building design information is passed to the end users. It is therefore proposed that the following information is provided to the end users:

- The fire strategy report
- Any management information proposed in addition to that contained in this strategy
- Details of all passive fire safety measures (including compartmentation, cavity barriers, fire doors, self-closers and duct dampers)
- Details of the fire alarm and detection systems, emergency lighting, emergency signage, access controls, door hold open devices
- Details of all active fire safety measures
- Details of the wet / dry risers, fire hydrants
- Any high risk rooms and equipment present
- As built plans for the building
- O&M Manuals for the building systems, including commissioning information and certification
- Any provision incorporated into the building to facilitate the evacuation of disabled people

This information will be transferred as a package of information by the main contractor at handover of the building.

9 Conclusions and Recommendations

This report outlines the fire safety strategy proposals for Alpha House and demonstrates compliance with the Building Regulations (generally in the form of the recommendations of Approved Document B).

The travel distances of the residential cores are as per the requirements set out by ADB.

Automatic smoke ventilation will be provided to the common residential corridors and escape stairs. 1.5m² natural smoke shafts and window AOV's have been provided. 1.0m² AOV's have been provided at the head of the evacuation stair cores.

Elements of structure will achieve 60 minutes fire resistance for the building.

All residential blocks will be provided with sprinklers in accordance with BS 9251. The car park and certain ancillary accommodation will be provided with sprinklers in accordance with BS EN 12845.

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

