

Avondale Drive Estate

DETAILED FIRE STRATEGY

November 2021



ELEMENTA

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1 Introduction

1.1 Scope

This Fire Statement has been prepared by Elementa in support of a Hybrid Planning Application submitted to the Hillingdon Council by the Applicant, London Borough of Hillingdon (hereafter referred to as 'the Applicant') for the redevelopment of Avondale Drive Estate in Hayes (hereafter referred to as 'the Site').

This Detailed Fire Strategy should be read in conjunction with other supporting documents submitted with the planning application, including the Planning Statement and Development Specification Statements prepared by Savills and the Design and Access Statement prepared by PTE which explain the Proposed Development in more detail and relate it to the surrounding context and planning policy framework for the Site.

This Detailed Fire Strategy covers the detailed area of the proposed development, which covers Phase 1A. Phase 1B and Phase 2 are considered in the Outline Fire Strategy report.

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.

The Greater London Act is to implement The London Plan. 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. Items highlighted with blue text are requirements for compliance with the London Plan.

1.2 Building Description

The detailed area discussed in this strategy covers Phase 1A, which consists solely of Block A.

Block A is a residential building, which has 4 floors above ground level. The stair exits at ground floor level direct to outside.

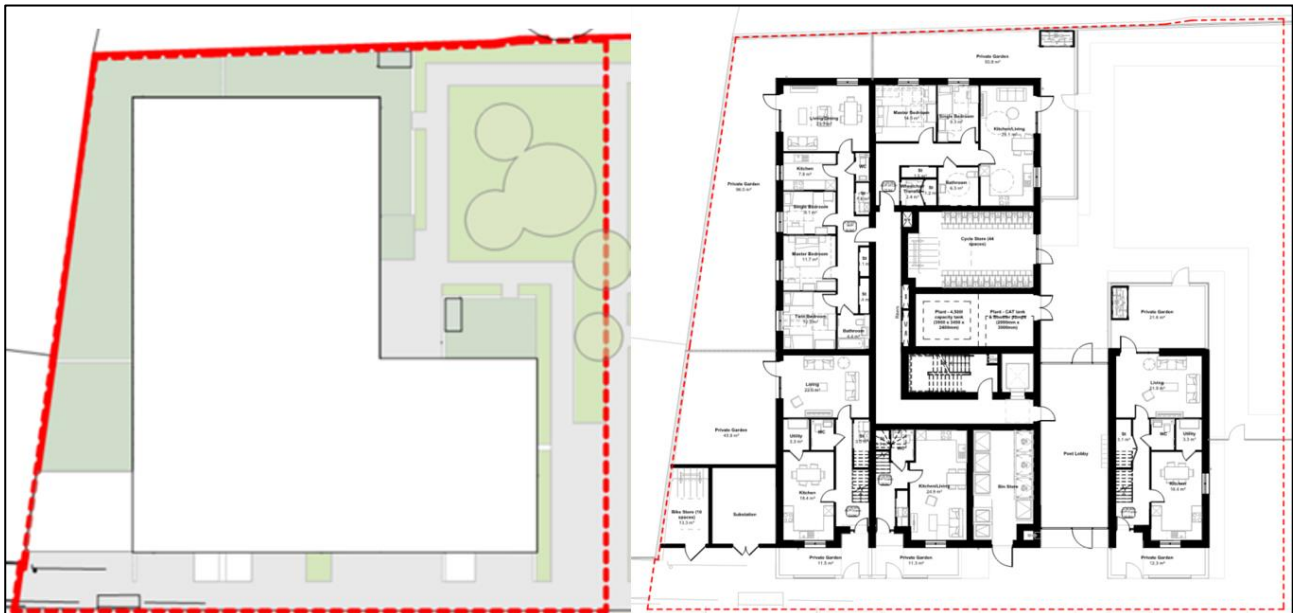


Figure 1: General Blocks Layout



1.3 Competency and Qualifications of Assessors

Camille Waharte – Fire Engineer

Camille Waharte is a Fire Engineer with 1 year' experience.

She has detailed knowledge of Approved Document B (ADB) and BS9991 with a good understanding and experience of multi-storey residential developments including early stage and construction design stages.

Andrew Kennedy – Fire Engineer

Andrew Kennedy is a Fire Engineer with 4 years' experience, is an Associate Member of the Institution of Fire Engineers (AIFireE) and registered with the Engineering Council.

He has detailed knowledge of Approved Document B (ADB) and BS9991 with a good understanding and experience of multi-storey residential developments including early stage and construction design stages. Andrew has worked on many similar schemes in the past, incorporating elements such as natural smoke control and firefighting facilities into designs, as well as extensive experience working on buildings over 18m in height.

Simon Burch – Senior Fire Engineer

Simon is a Senior Fire Engineer at Elementa registered with the Engineering Council and a Member of the Institution of Fire Engineers (MiFireE) with a wealth of experience on a variety of high-rise residential developments for major housing clients across London and the South East. He is the lead author of fire strategies and responsible for all stages of the fire engineering design from the initial client contact through the tendering phase, across construction and the ongoing management and maintenance of fire safety systems and passive fire protection.



1.4 Policy D12 Fire Safety Statement

In the interests of fire safety, the proposed design aims to satisfy the recommendations of Policy D12 of the London Plan dated March 2021 as summarised below:

1.4.1 The Building's Construction Method and Products and Materials Used

Structural fire protection will be provided in accordance with Table B4 of ADB. Each floor will be designed as a compartment floor. Further information is provided in Sections 5.1 and 5.2.

All materials within the external wall construction will be non-combustible as discussed in Section 6.2.

For the specific materials that shall be used, this will be outlined in the architect's specification at the later design stages.

1.4.2 Means of Escape for All Building Users and Evacuation Strategy

The residential apartments and ancillary accommodations will evacuate independently of one another. The residential apartments will implement a stay-put policy, whilst the ancillary accommodations on site will adopt independent simultaneous evacuation approaches.

To assist with the evacuation of disabled occupants as recommended in the London Plan dated March 2021, one evacuation lift will be provided alongside the firefighting lift to provide a dignified escape for disabled occupants within the building. This is discussed further in Section 3.4.

1.4.3 Passive and Active Fire Safety Measures

The apartments will be provided with an automatic fire alarm and detection system in accordance with BS5839 Part 6.

The residential common corridors at the upper levels will be provided with a mechanical smoke ventilation system (MSVS) as discussed in Section 3.3.2.

The ancillary spaces, stores, plant and refuse rooms will be provided with an automatic fire alarm and detection system in accordance with BS5839 Part 1.

Sprinkler coverage is provided to all the residential apartments and shall be extended to cover the ancillary accommodations.

The apartments shall all be enclosed in fire rated construction with fire doors, as will the staircases, lifts and risers. This is discussed in detail in Section 5.2.1. The ancillary accommodation shall also be enclosed in fire rated construction and when accessed via the residential accommodation, this shall be via a protected ventilated lobby as discussed in Section 3.5.5.

Any penetrations through the compartment walls shall be fire stopped.

1.4.4 Access and Facilities for the Fire and Rescue Service

The building is under 18m in height and does not need to be provided with a firefighting shaft.

A dry riser inlet will be located on the facade of each block and adjacent to the entrance. It will also be within 18m of the fire appliance parking location.

All parts of the floor plates will be covered within 45m when measured along a suitable route for laying a hose from a dry riser outlet or within 60m of the fire appliance parking location at the fire tender access level as discussed in Section 7.

Hydrants will be provided within 90m of the dry riser inlet in accordance with ADB.

1.4.5 Site Access for the Fire and Rescue Service

Fire tender access will be provided in accordance with the ADB and LFB guidance as discussed in Section 7.



1.4.6 Future Development of the Asset and the 'Golden Thread' of Information

A Regulation 38 pack shall be submitted to the end users upon handover. This will contain all of the details of the building fire safety / protection measures. Any changes to the building following its construction will need to maintain the original design intent of this fire strategy and be assessed by a suitable competent person.

1.5 Tall Buildings Assessment

The height of this building is under 18m and so there is no requirement for a firefighting core which would comprise of a firefighting stair and lift. A dry riser will be provided in the stair as discussed in Section 7.

The lift will be designed as an evacuation lift to comply with the London Plan as detailed in Section 1.4 and Section 3.4.

Restrictions on materials used in the construction of the building façade are as noted in Section 6.2.

Due to the provisions as detailed in this strategy, the design will ensure the safety of all occupants in accordance with London Plan Policy D9 and the Local Plan Part 2 Policy DMHB10.

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 Ministry for Housing, Communities and Local Government (MHCLG) 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 2010 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.

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 Regulations 11 and 18 (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 CDM Coordinator. 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, CDM Coordinator, 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 proposes 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.

2.6 The London Plan

The London Plan is the statutory Spatial Development Strategy for Greater London prepared by the Mayor of London ("the Mayor") in accordance with the Greater London Authority Act 1999 (as amended) ("the GLA Act") and associated regulations.

The London Plan was published by the Mayor in March 2021. It forms the statutory spatial development strategy for Central London. This report addresses the recommendations in Policy D5 (Inclusive Design) and Policy D12 (Fire Safety) and includes a policy D12 statement in Section 1.4. Policy D9 has also been assessed in Section 1.5.

2.7 London Borough of Hillingdon Local Plan

The Local Plan Part 2 (LPP2) details requirements for high buildings and structures in Policy DMHB10. This strategy sets out the requirements for the building and it will therefore comply with this policy, which requires the design to 'demonstrate consideration of public safety requirements as part of the overall design, including the provision of evacuation routes.'

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 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 to 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.

Ancillary accommodation such as bike storage, refuse stores and plant facilities will be considered completely independent of the residential elements. It is proposed that these areas adopt an independent simultaneous evacuation approach. Evacuation of these units will not cause evacuation of other areas.

3.2 Travel Distances

For the apartments and common corridors within the blocks, the guidance of ADB will be followed as follows.

Purpose Group	Area	Travel within	Maximum travel distance (m)	
			In one direction	More than one direction
1(a)	Apartment	Within apartment / hallway	9m	N/A
	Common Area	Within common corridor	7.5m	30m
7(a)	Plant	Escape within room	9m	35m
	Bike store, refuse and storage	Escape within room	25m	45m

Table 1 - Residential travel distance requirements



3.3 Escape within Residential Block

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 fire resisting construction from the adjacent rooms.

In the case of multi-storey flats, an internal stair should be protected with 30 minutes fire rated walls, and FD20 doors.

There are currently no open plan apartments present in the development, however for completeness, guidance for open plan apartments should they be required, is included below. Since ADB does not provide specific guidance on the design of open plan apartments, supplementary guidance can be taken from BS9991, which states that they are acceptable should they conform to the following:

- The size of the open plan flat should not exceed 16m x 12m.
- Open-plan flats should be situated on a single level only.
- The ceilings within the open plan flat should have a minimum height of 2.25m.
- The kitchen should be enclosed in open-plan flats having an area exceeding 8m x 4m. Cooking appliances in open-plan flats having an area smaller than 8m x 4m should not be adjacent to the entrance of the flat.
- In addition to the above, the open plan apartments should be provided with an LD1 fire alarm and detection system in accordance with BS5839 Part 6 as well as a sprinkler system in accordance with BS9251.

It should be noted that in open plan apartments, occupants should not have to make their escape past a kitchen, therefore the kitchen shall be placed in a location remote from the means of escape route from the apartment. Where this is not possible an assessment will be made on the escape route and the proximity to the kitchen. The minimum distance between the hob and the escape route should be 1.8m, with a minimum width of 750mm for the escape route.

3.3.2 Escape within Common Corridors

Travel distances within the common corridors are greater than 7.5m. A mechanical smoke venting system (MSVS) will be provided with a smoke extract shaft serving the concerned side of the corridor a minimum of 0.6m² in size.

The stair door will open into the common corridor on each level from the stair to provide the make-up air to the system.



Figure 2: Common corridor

3.3.3 Vertical Escape

The staircase for the building is up to 18m in height and shall not be designed for firefighting, and therefore the minimum width (measured between the walls and / or balustrade) should be not less than 750mm.

3.3.4 Final Exit Route

ADB requires that any discharge paths from the staircase must be along a protected route with any access into adjacent accommodation being by way of a protected lobby. Cupboards and stores should not be provided in the entrance lobby.

The final exit route will be separated from the apartments at this level by a protected lobby served by the smoke control system as shown on the following image.

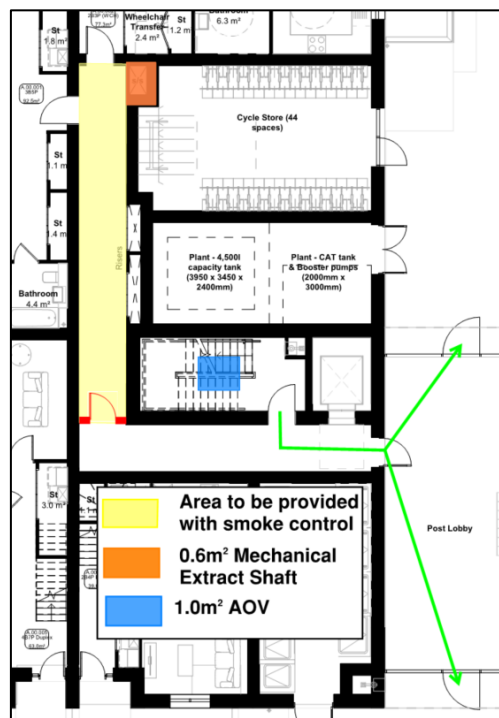


Figure 3: Final exit route



3.3.5 Ancillary Accommodation

Travel distances in the plant rooms should be limited to 9m where escape is in a single direction and 35m 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 18m.

Travel distances within the cycle stores and refuse stores should be limited to 25m where escape is in a single direction or 45m where there are two directions of escape.

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, require two exits with a clear width of 850mm.

3.4 Disabled Evacuation

The residential accommodation on the upper levels do not require disabled refuges to be provided.

Policy D5, Inclusive design, in the London Plan requires developments to incorporate safe and dignified emergency evacuation for all building users, by as independent means as possible. Where lifts are installed, Policy D5 Inclusive design requires a minimum of one lift per core to be a fire evacuation lift, which incorporates suitable levels of fire resistance to elements of construction forming refuges, evacuation lift enclosures and lobbies.

As part of the Policy D5 it is a requirement to provide a dignified means of escape for all occupants. A fully compliant evacuation lift (in accordance with Annex G of BS9999) will require a full team of staff to operate. However, this is impractical for a residential scheme where there may not be sufficient permanent staff at all times.

Therefore, it is considered reasonable to provide an evacuation lift that has dual power supply and allows a disabled occupant to descend to ground floor under fire service control should they see fit to utilise the lift for evacuation. This lift will be a minimum 1100mm x 1400mm in size (lift provided is in excess of this) in all blocks.

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.

3.5 Fire Alarm & Detection System

3.5.1 Residential Accommodation

Apartments with protected entrance halls should be provided with a minimum LD2 automatic fire detection and alarm system with a minimum grade D power supply, designed, installed and maintained in accordance with BS5839 Part 6.

Open plan and studio apartments should be provided with an LD1 automatic fire detection and alarm system with a minimum Grade D power supply, designed, installed and maintained in accordance with BS 5839 Part 6.

The private balconies are not required to have an additional sounder as they are accessed from one access room, and the sounder in the access room will be able to alert balcony occupants to a fire.

A smoke detection system should be provided in the common corridors. The sole purpose of the detection system is to activate the smoke ventilation system. No sounders or manual call points will be provided in the common areas.

3.5.2 Ancillary Accommodation

The fire alarm and smoke detection within the ancillary spaces, stores, plant and refuse stores should be designed in accordance with BS5839 Part 1 and be of type L3.

3.6 Emergency Lighting

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

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

3.7 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.

3.8 Manual Fire Fighting Equipment / Fire Extinguishers

Manual firefighting equipment will not be installed within the residential accommodation.



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 building 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	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	B-s3,d2
Note: * The European classifications are described in BS EN 13501-1.	

Table 2 – 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.



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;

- a) 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;
- b) If the building is sub-divided by elements of fire-resisting construction into compartments;
- c) If any openings in fire-separating elements are suitably protected in order to maintain the integrity of the element; and
- d) 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

The building is under 18m in height and requires 60-minute structural 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. Where an internal corridor/internal stair is provided it should be 30-minutes fire resisting with FD20 doors.

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

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

Plant and refuse stores should achieve 30 minutes fire resistance with FD30 doors.

Cleaner cupboards, stores and utility rooms should be enclosed in 30 minutes fire resistance with FD30 doors as a minimum, or 60-minutes where they are accessed from the common corridors.

Any rooms that contain life safety equipment should be enclosed in 120 minutes fire resisting construction in accordance with BS8519. Any electrical sub-stations are likely to be superseded by the electricity supplier's requirements, which are typically based on 4 hours fire separation.

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 as per the May 2020 amendment to ADB, which requires sprinklers for all residential apartments over 11m in height. This will be extended to cover the ancillary accommodation as long as the rooms are not larger than outlined in Table 4 of BS9251. The sprinkler system will be designed in accordance with BS9251:2021.

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:

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

The 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.

Looking at the worst-case scenario for the residential accommodation, the largest apartment elevation is 18m long x 3m high, therefore considering that the apartments shall be provided with an automatic sprinkler system (as discussed in Section 5.5) which allows for the boundary distances can be halved, the required boundary distance is 2.0m. Since all of the residential apartments are more than this distance from the boundary, there are no limits to the amount of unprotected openings.

More detailed calculations of each elevation will be undertaken at the detailed design stage.

6.2 External Wall Construction

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

As the building is under 18m in height, the relevant provisions are as follows:

- For areas less than 1000mm from the relevant boundary: B-s3,d2 or better.
- For areas more than 1000mm from the relevant boundary: no provisions.

However, it is expected that this block is designed as if it is over 18m with regards to external fire spread, to maintain the consistency between this and the future phases which may be over 18m.

In this case, all of the materials which become part of an external wall, should achieve European Classification A2-s1, d0 or Class A1, classified in accordance with BS EN 13501-1:2007+A1:2009. This does however not apply to the following

- cavity trays when used between two leaves of masonry;
- any part of a roof if that part is connected to an external wall;
- door frames and doors;
- electrical installations;
- insulation and water proofing materials used below ground level;
- intumescent and fire stopping materials where the inclusion of the materials is necessary to meet the requirements of Part B of Schedule 1;
- membranes;
- seals, gaskets, fixings, sealants and backer rods;
- thermal break materials where the inclusion of the materials is necessary to meet the thermal bridging requirements of Part L of Schedule 1; or
- window frames and glass.

The requirements apply to specified attachments which include balconies, solar shading and solar panels.



In order to protect the staircases 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 stair.

6.3 Roofs

Roof coverings for both blocks should be designed in accordance with Table 12.1 of ADB as shown in Figure 4.

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 4 - 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 London Fire Brigade – Guidance Note 29).

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	3.7m	3.1m	16.8m	19.2m	3.7m	14.0t

Table 3 – Vehicle Access Requirements

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.

Access for the fire service will be down Avondale Drive which is a through road and will conform with the requirement of the previous table.

7.2 Internal Fire Service Access

As building is under 18m in height, it is not required to be provided with a firefighting shaft however all parts of the floor plate should be within 45m of the dry riser outlet located within each stair.

7.3 Dry Riser

The dry riser inlet should ideally be adjacent to the building entrance and be visible from the fire appliance (plus accessible within 18m of the fire appliance parking location).

All parts of the floor's plates should be covered within 45m (when measured along a route suitable for laying hose) from a dry riser outlet provided within the staircase.



7.4 Smoke Venting

7.4.1 Residential Accommodation

The smoke venting requirements for the residential areas are discussed in detail as part of the common areas means of escape section earlier.

7.4.2 Ancillary Accommodation

In the current design, no ancillary accommodation is accessed from the final exit routes.

7.5 Hydrants

ADB recommends that hydrants should be provided as necessary to ensure that the dry riser inlet is within 90m of a fire hydrant. Where the existing hydrants cannot achieve this, then a private hydrant should be provided.

It is proposed that a site survey confirms whether the above criteria is achieved based on any existing hydrant provisions. If this survey establishes that the existing hydrants are inadequate it is recommended that an additional private hydrant is included on the site.

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 Venting system,
- Fire Alarm System,
- Emergency lights and signs,
- Residential Sprinklers.

8 Conclusions and Recommendations

This report outlines the detailed fire safety strategy proposals for the Avondale Drive estate and seeks to demonstrate compliance with the Building Regulations (generally in the form of the recommendations of ADB).

The travel distances within the block are over 7.5m and will be provided with a mechanical smoke venting system in the common corridors.

Elements of structure will achieve a 60minutes fire resistance.

A dry riser will be provided in the staircase. No firefighting shaft is required.

Based upon the above proposals it is considered that adequate measures are provided to meet the functional requirements of the Building Regulations, as well as the London Plan Policies D5, D9, D12 and the LPP2 Policy DMHB10.



