LENNOX ESTATE

Full Planning Application

SD13a: Fire Safety Strategy

November 2025

Homes for Wandsworth

Wandsworth

Developed for:
Airey Miller

Detailed Fire Safety Strategy
Lennox Estate regeneration
Tower Block and Gallery Block

London

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Draft - Detailed Fire Safety Strategy

Lennox Estate regeneration

Tower Block and Gallery Block

London

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The checker has provided an internal review of the technical content of the report.

The approver confirms the report has received quality assurance in accordance with the principles of ISO 9001 and authorises external release of the document on behalf of Ashton Fire.

EXECUTIVE SUMMARY

Ashton Fire has been commissioned by Airey Miller to provide fire safety consultancy services for the proposed residential development located in London. This report is specific to the Tower Block and Gallery Block of the development only.

This document details the fire safety strategy as developed for the scheme, intended to assist the design team in progressing the detailed fire safety design of the project through to construction. This report may also be submitted to the building control body in support of the projects' Building Regulations submission and/or safety regulator submission.

This fire safety strategy details the minimum fire safety provisions required for the proposed development to meet the functional requirements of the Building Regulations 2010 (as amended). This has been achieved by applying the prescriptive recommendations for life safety contained within Approved Document B Volume 1, (ADB Vol 1) and Approved Document B Volume 2, (ADB Vol 2) 2019 inc. 2020, 2022 & 2025 amendments in the first instance. The strategy has not been developed to include specific measures for the protection of property. However, certain features included for life safety will to some extent contribute to property protection and continuity of use following a fire.

Apart from where noted in this report, the design will be in accordance with the recommendations of ADB. The key fire safety challenges and / or variations from the prescriptive guidance documents are identified in Summary Table 1. These items constitute a project risk until they are discussed and agreed with the relevant authorities having jurisdiction (AHJs).

The project comprises the development of a new mixed-use residential led scheme, which consists of two blocks. This report discusses the fire strategy for Tower Block and Gallery Block only.

The Tower Block building is a fourteen storey (G+13) residential block comprising single-storey flats on each level with a basement for plant and a rooftop plant area on top. Each flat is accessed from a common corridor and escape from the upper storeys will be facilitated by two fire fighting stairs with an associated firefighting lift and evacuation lift or a hybrid lift which is designed for firefighting and evacuation purposes.

The Tower Block has an overall height of 48.4m and a top floor height of 41.3m, when measured from the adjacent ground level to the finished floor level of the topmost occupied storey are detailed in the section, Figure 18, and indicative layouts are detailed in Figure 2 to Figure 9- Indicative level 13 (Tower Block).

The Gallery Block is a six storey (G+5) residential block comprising single storey flats with rooftop plant area above. The ground floor has maisonette dwellings and storeys 2 – 5 comprise of single storey flats accessed via two protected stairs, which are connected from level 2-5 via an external balcony.

The Gallery Block has an overall height of 20.3m and a top floor height of 15.9m, when measured from the adjacent ground level to the finished floor level of the topmost occupied storey are detailed in the section, Figure 19 and layouts are as detailed in Figure 12 to Figure 17.

A defend-in-place evacuation regime is utilised for each residential unit, while a simultaneous evacuation is adopted for the ancillary areas. The flats will be provided with an automatic fire detection and alarm system, while the common and ancillary areas will feature central fire detection in support of the smoke control system.

Natural/mechanical smoke ventilation systems will be provided to the residential corridors and lift lobbies to protect the escape stairs and evacuation lifts. A 1.0m^2 AOV will be provided at the head of the stairway.

An automatic suppression system will be provided throughout all areas of each of the buildings, as they have a top storey more than 11m above ground level.

All elements of structure will be designed to achieve a fire resistance as per Table 10 and Table 11, i.e. Tower to be 120 mins and Gallery Block 60 mins fire resistance and all floors will be designed as compartment floors (except for internal floors within multi-storey flats).

External elevations of the Tower building will be designed to comply with Regulation 7(2), as it will incorporate residential storeys more than 18m above ground level.

Vehicular access for the fire and rescue service will be provided via Upper Richmond Road and Ludovick Walk to the development to within 18m and within sight of a dry riser inlet located on the face of the building.

Access will be provided internally via the general circulation routes, escape stairs and firefighting shafts will be provided with a firefighting lift, dry fire main and a firefighting stair. Sufficient coverage will be provided internally to within 60m of all areas on the floorplate, when measured on a hose laying route from a fire main outlet located within the escape stairs and firefighting shafts. Access to the ground floor ancillary spaces will be provided externally, via perimeter doors.

Suitable water supplies to support firefighting operations will be provided via fire hydrants sited such that they are within 90m of a building entry point and within 90m of a dry riser inlet.

To facilitate ease of review, the proposed fire safety systems are outlined in Summary Table 2.

Summary Table 2 – Fire safety systems

Item	Description	Ref.
Fire detection and alarm systems	Residential: Grade D1, Category LD2 to BS 5839-6 within flats. Common residential areas (e.g. lift lobbies and common corridors) provided with a Category L5 system within the corridors is in accordance with the recommendations for a category L4 system to BS 5839-1. Ancillary and non-residential areas: provided with a minimum L2 system conforming to BS 5839-1. Assembly unit: (Community space) An L2 system confirming to BS 5839-1 should be provided in accordance with ADB Vol. 2. External plant areas: All external plant areas will be provided with sounders and beacons linked to the fire detection and alarm system anywhere on same Level.	3.1
Evacuation alert systems	An evacuation alert system will be provided in accordance with BS 8629 will be provided to the Tower Block.	3.2
Sprinkler systems	A category 4 sprinkler system will be provided to the Tower Block and a category 2 sprinkler system to the Gallery Block, conforming to BS 9251. Non-residential areas in excess of the maximum floor areas detailed in Tables 3 and 4 of BS 9251, will be provided with a sprinkler system in accordance with BS EN 12845.	3.2.1
Smoke control systems	Automatic smoke ventilation will be provided to the lift lobbies, protected lobbies separating stairs from ancillary areas, common residential corridors, and escape/firefighting stairs. The stair will be provided with a 1.0m^2 AOV at the head of the staircase.	3.4 & 3.6
Emergency lighting	Emergency lighting will be provided through occupied areas and escape routes, conforming to BS 5266-1, BS EN 1838, and BS EN 60598-2.	3.7
Fire safety signage	Fire safety signage will be provided in accordance with Clause 3.45 of ADB Vol.1. Firefighting wayfinding signage will be provided in accordance with Clauses 15.13 to 15.16 of ADB Vol.1.	3.9,3.10
Lifts – Evacuation/Firefighting/Hybrid lift	The Tower Block will be fitted with one firefighting lift, and one evacuation lift in one core, and one hybrid lift in a separate core. The Gallery Block will be fitted with two evacuation lifts, one in each protected stair core. For firefighting purposes, the lift will conform to BS EN 81-72 and for evacuation purposes the lift will conform to BS EN 81-70.	3.12
Emergency voice communication systems	Each temporary waiting area/refuge space within the Tower and Gallery Blocks will be provided with an EVC system with a Type B outstation.	3.13
Stand-by power	Suitable back-up supplies will be provided to all fire safety systems in accordance with BS 8519.	3.15
Rising mains	A dry riser main provided within the escape stair/firefighting shaft designed in accordance with BS 9990.	8.3.1
Water supplies	Hydrants to be provided within 90m of the dry riser inlet.	8.5

CONTENTS

1. INTRODUCTION

1.1 General

1.1.1 Airey Miller has commissioned Ashton Fire to provide fire safety consultancy services for the proposed Lennox Estate regeneration residential development in Wandsworth, London. This fire safety strategy report is specific to the Tower Block and Gallery Block of the development only and documents the proposed fire strategy to date.

1.1.2 This document is confidential and for the exclusive benefit of Airey Miller. It may not be assigned to or relied upon by a third party without the agreement of Ashton Fire in writing. Ashton Fire retains all copyright and other intellectual property in the document and its contents, unless transferred by written agreement between Ashton Fire and the Client.

1.1.3 Following full coordination and implementation, this strategy report may be used to support the end user of the building in the development of any fire safety management procedures and plans considered necessary to fulfil their responsibilities under the Regulatory Reform (Fire Safety) Order 2005 (FSO) and any other applicable fire safety legislation.

1.1.4 This document is not intended to portray detailed design information for fire safety systems or construction specifications. As a strategic document supporting and informing the wider design, it should be read in conjunction with the wider project design documentation.

1.1.5 It should be noted that any alternative design solutions proposed within this report are subject to agreement and subsequent approval by the relevant authorities having jurisdiction (AHJs).

1.2 Legislation and basis of design

1.2.1 Fire safety in buildings is governed by two primary pieces of legislation in the UK. The Building Regulations 2010, Part B (fire safety) applies to building design, whilst for fire safety management in buildings, compliance with the Regulatory Reform (Fire Safety) Order 2005 (FSO) is required, including new duties introduced as part of the Fire Safety (England) Regulations 2022 (FSR).

1.2.2 This strategy has been developed to meet the level of fire safety expected under the Building Regulations 2010 (as amended), which are set out under Part B, namely:

- 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 and rescue service

The tower building will have a top storey more than 18m above ground and will contain one or more dwellings, and it will therefore be classified as a 'relevant building' under Regulation 7(4).

1.2.3 The fire safety strategy will be developed to satisfy the requirements for fire safety as set out by the Building Regulations. The strategy has not been specifically developed to address property protection or insurer's requirements. However, the features that are included for life safety, as required by the Building Regulations 2010, will contribute in some extent to business continuity and property protection.

1.2.4 In general, the necessary level of life safety will be achieved utilising the guidance in Approved Document B Volume 1, (ADB Vol 1) and Approved Document B Volume 2 (ADB Vol 2), 2019 inc. 2020, 2022 and 2024 amendments in the first instance.

1.2.5 Fire engineering principles may be employed to support alternative solutions where strict adherence to the guidance would conflict with the wider aspirations for the scheme. Unless otherwise stated, it is expected that all aspects of the design will be in accordance with Approved Document B, applicable British Standards, and codes of practice.

1.2.6 On the basis that recommendations made within the guidance documents are followed, it is considered that the life safety requirements of the Building Regulations 2010 (as amended) will be satisfied, and that an adequate level of safety will be achieved throughout the premises.

1.2.7 Where departures from the guidance documents are identified, alternative proposals (including associated analyses) are documented for facilitating review with the AHJs. In accordance with the fire safety engineering principles detailed in the PD 7974 codes of practice, it is considered appropriate that all fire precautions are determined based on there being one seat of fire (i.e. accidental fires).

1.2.8 Unless specifically covered in this report please refer to the adopted design guidance for further details.

1.3 Construction, Design and Management (CDM) Regulations 2015

1.3.1 The strategy has been developed in cognisance of the Construction (Design and Management) Regulations 2015 (CDM 2015) [1], which sets out what designers are required to consider protecting anyone involved in the construction or ongoing use of a project. A summary of management and maintenance issues are provided in Section 9.

1.3.2 This strategy does not provide a comprehensive assessment of site fire safety during the building works or the phasing of these works, though a designer's review of construction site fire safety issues is recommended to be conducted during technical design. The Fire Protection Association [2] and the Health and Safety Executive (HSE) [3] issue guidance on identifying and managing fire precautions during the works, which should be consulted by the contractor or their specialist advisor when developing their construction fire safety plan.

1.4 Product and material selection

1.4.1 When selecting products and materials for use in construction, meticulous attention to the correct selection is paramount. Not only does the choice of materials significantly impact the performance during fire incidents, but it also plays a pivotal role in the long-term durability of the structure.

1.4.2 Careful consideration must be given to selecting products that not only meet the necessary fire safety standards but also have the resilience to endure for the entire lifespan of the building. This is particularly crucial for materials that are impractical or economically unfeasible to change once the building is operational (e.g. intumescent paint or cavity barriers etc.). Ensuring the longevity of these materials not only promotes sustainability but also safeguards the occupants and assets within the building, guaranteeing a secure environment for years to come.

1.5 The London Plan 2021

1.5.1 The London Plan sets out various planning requirements to be applied to new and refurbished buildings. It contains relevant policies for fire safety that are considered further within this report, such as Policy D5 and Policy D12.

1.5.2 A separate document has been prepared as the Fire Statement that is referenced in Policy D12 and has been submitted as part of the planning application.

1.5.3 In accordance with Policy D5 (Inclusive Design) of the London Plan, safe and dignified emergency evacuation is required to be incorporated into the building for all building users. As this building has a passenger lift installed, the aforementioned policy stipulates that the lift should be suitably sized for evacuation and should be provided in addition to any firefighting lift installed in a core.

1.5.4 Evacuation lifts and associated provisions will be appropriately designed and constructed and should include the necessary controls suitable for the intended purposes. Furthermore, the operation of the lifts will be supported by appropriate management procedures. The end client will need to understand and provide a suitable management plan for the evacuation lifts within the building.

1.5.5 This document is a performance-based strategic document which is used to inform other members of the design team. As such, when reviewing the Policy D12 requirements, this document should be read in line with other supporting documentation produced by other members of the design team. The exact planning requirements are to be discussed between the planning consultant and the planning authority.

1.5.6 The relevant experience of the authors and authorisers of this document are indicated in the table below.

Table 1 - Qualifications and relevant experience

Name	Role	Academic qualifications	Membership of professional bodies	Relevant experience
Daniel Mois	Associate Fire Engineer	BSc in Civil Engineering MSc in Civil Engineer, Building Structures	Associate Member with the Institute of Fire Engineers (AIFireE)	Over 5 years in the design of fire strategies for residential buildings including high-rise buildings.
Oisín Roulstone	Principal Fire Engineer	BSc in Architectural Technology MSc in Fire Safety Engineering	Associate Member with the Institute of Fire Engineers (AIFireE) Member with the Institute of Fire Safety Managers (MIFSM)	Over 10 years in the design of fire strategies for residential buildings including high-rise buildings.
Adrian Hamilton	Senior Fire Engineer	BSc in Construction, Engineering and Management MSc in Fire Safety Engineering	Member with the Institution of Fire Engineers (MIFireE) Chartered Building Engineer and Member of the Association of Building Engineers (C. Build E MCABE) Member with the Institute of Fire Safety Managers (MIFSM)	Over 15 years experience in Building Control and over 18 months experience in the design of fire strategies for residential buildings including high-rise buildings.

1.6 Referenced information

1.6.1 This strategy is based on information provided by the design team to Ashton Fire as listed in Table 2. Additional contradictory information or subsequent design variations to the information supplied may render the findings and recommendations of this report invalid.

1.6.2 The figures used within this report are indicative and whilst intended to convey the principles of the fire safety strategy, they may not be representative of the final arrangement. The fire safety principles contained within this report are required to be maintained through any design amendments during the lifetime of the building.

Table 2 – Referenced project documentation

Description	Drawing No.	Revision / Date	Author
GA Plan – LB1	LEN-PTE-ZZ-B1-DR-A-99028	P08 / 22.07.25	Pollard Thomas Edwards
GA Plan – L00	LEN-PTE-ZZ-00-DR-A-99015	P16 / 22.07.25	
GA Plan – L01	LEN-PTE-ZZ-01-DR-A-99016	P13 / 22.07.25	
GA Plan – L02	LEN-PTE-ZZ-02-DR-A-99017	P13 / 22.07.25	
GA Plan – L03	LEN-PTE-ZZ-03-DR-A-99018	P06/ 22.07.25	
GA Plan – L04-L05	LEN-PTE-ZZ-XX-DR-A-99021	P12 / 22.07.25	
GA Plan – L06-L12	LEN-PTE-ZZ-XX-DR-A-99022	P12 / 22.07.25	
GA Plan – L13	LEN-PTE-ZZ-13-DR-A-99031	P07 / 22.07.25	
GA Plan – L14	LEN-PTE-ZZ-14-DR-A-99029	P08 / 22.07.25	
GA Plan – L15	LEN-PTE-ZZ-15-DR-A-99023	P010 / 22.07.25	
Site plan	LEN-PTE-ZZ-XX-DR-A-99015	P03 / 22.07.25	
AI – Building Sections	LEN-PTE-VA-ZZ-DR-A-99200	P03/08.01/25	
A2 – Building Sections	LEN-PTE-VA-ZZ-DR-A-99201	P03/08.01/25	

2. PROJECT OVERVIEW

2.1 Building description

2.1.1 The project comprises the development of a new residential led scheme, which consists of two separate blocks. This report discusses the fire strategy for Tower Block and Gallery Block only.

2.1.2 A summary of the accommodation for each block is provided in Table 3.

2.1.3 Both blocks in relation to the wider site are shown in Figure 1, the Tower Block is highlighted in orange and Gallery Block highlighted in blue. Indicative floorplans for the Tower Block are represented in Figure 2 to Figure 9, and indicative layouts for the Gallery Block are indicated in Figure 12 to Figure 17.

Tower Block

2.1.4 The proposed Tower Block building is a fourteen-storey building (G+13) residential block comprising single-storey flats on each level with a basement and rooftop plant area above.

2.1.5 Basement level consists of ancillary rooms such as sprinkler tank rooms and electrical plant.

2.1.6 Ground floor consists of ancillary spaces such as cycle store, LV sub-station, refuse store and a maisonette having independent access, and within the overall footprint of the building there is an independent two storey community space.

2.1.7 The building is arranged with two escape routes i.e. two firefighting stairs from the upper storeys leading to separate exits at ground floor level.

2.1.8 The building will have an approximate footprint of 506 m^2 and an overall height (including roof top plant) of approx. 47.6. The top floor height of the building, when measured from the adjacent ground level to the finished floor level of the topmost occupied storey is 41.3 m.

Gallery Block

2.1.9 The proposed Gallery Block building is a six storey (G+5) residential block comprising flats with rooftop plant area above.

2.1.10 Each flat is arranged with a protected stair leading to balcony approach and final escape. Escape from the upper storeys will be facilitated by two protected escape stairs.

2.1.11 The building will have an approximate footprint of 530 m^2 and an overall height of 19.1m. The top floor height of the building, when measured from the adjacent ground level to the finished floor level of the topmost occupied storey is 15.9 m.

2.1.12 The ground floor consists of four maisonettes and ancillary spaces such as cycle stores and refuse storage areas.

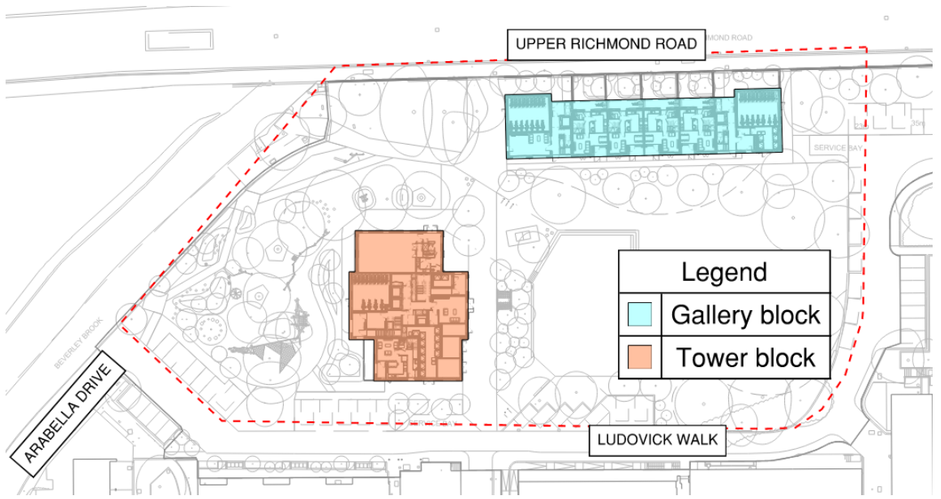


Figure 1 - Site plan

Table 3 - Summary of accommodation

Plot	Level	Accommodation
Tower Block	-01	Sprinkler tank room, Tank room, plant rooms
	00	Residential: single-storey flat, maisonette flat (lower floor). Ancillary: refuse store, switch rooms, sub-station, cycle store, bin store Assembly: community space. (ground floor) Amenity: entrance lobby, post lobby
	01	Residential: single storey flats, maisonette flat (upper floor) Assembly: community space (upper floor)
	02-13	Residential: single storey flats
	06	Ancillary: maintenance terrace, PV
	13	Ancillary: ASHP plant
	14	Ancillary: plant (ASHP, pumping plant room, generators, smoke extract fans)
Gallery Block	00	Ancillary: refuse store, cycle stores , bin store Residential: maisonette flat (lower floor). Amenity: entrance lobby, post lobby
	01	Residential: maisonette flat (upper floor), single storey flats.
	02-05	Residential: single storey flats.
	06	Ancillary: PV

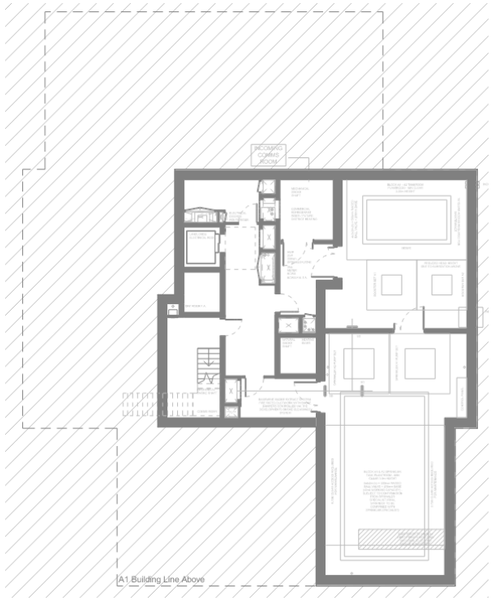


Figure 2 - Indicative level -01 (Tower Block)

Figure 3 - Indicative level 00 (Tower Block)

Figure 4 - Indicative level 01 (Tower Block)

Figure 5 - Indicative level 02 (Tower Block)

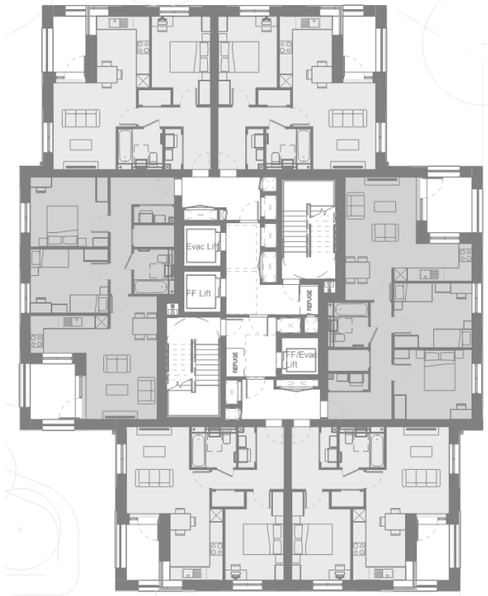


Figure 6 - Indicative level 03 (Tower Block)

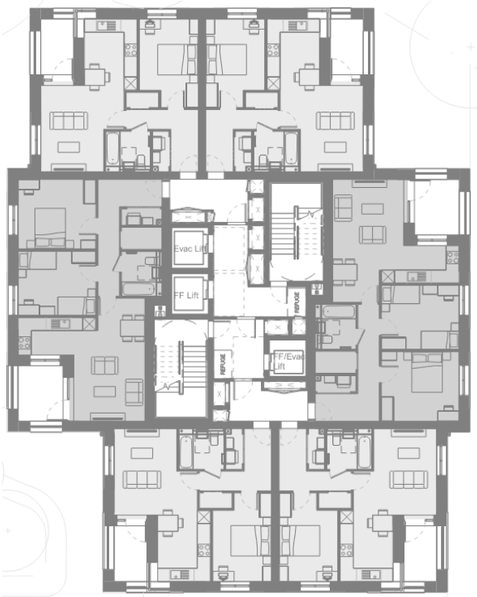


Figure 7- Indicative level 04-05 (Tower Block)

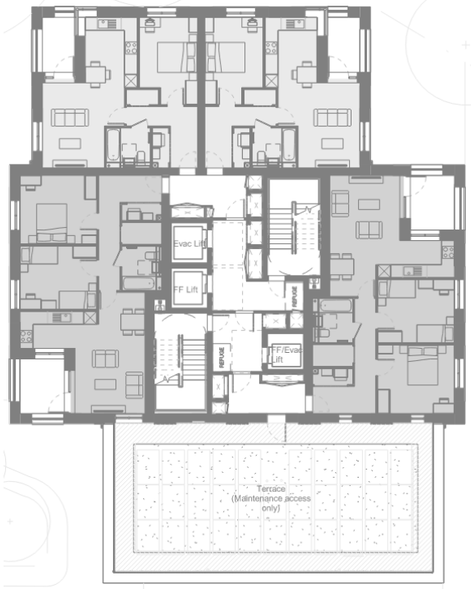


Figure 8- Indicative level 06-12 (Tower Block)

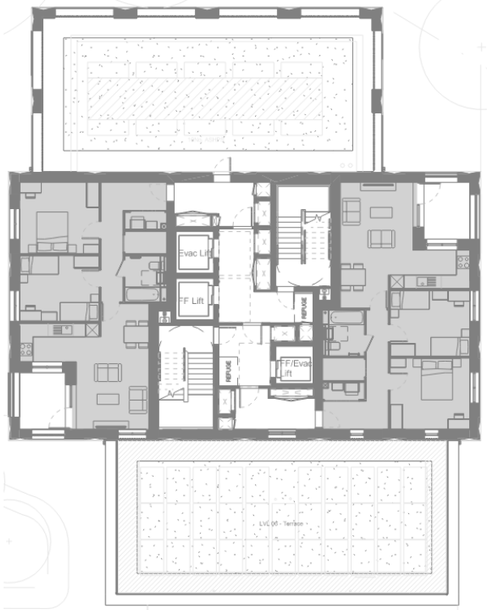


Figure 9- Indicative level 13 (Tower Block)

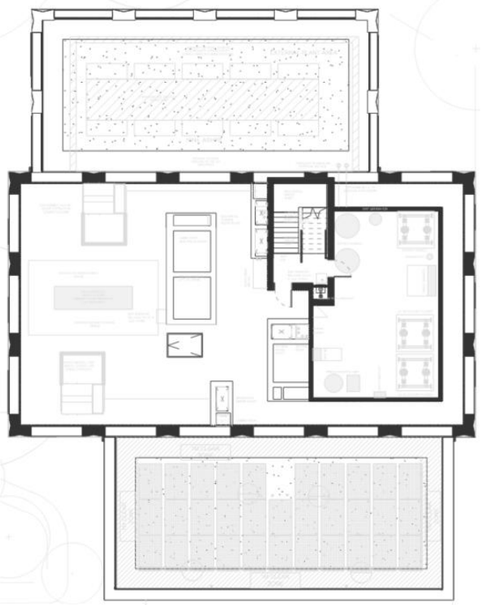


Figure 10 - Indicative level 14 (Tower Block)

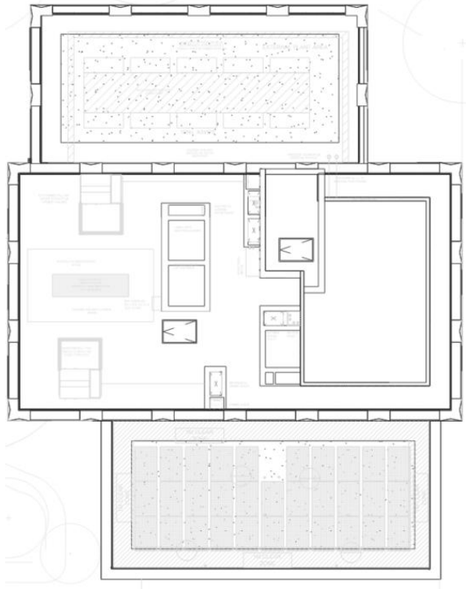


Figure 11 - Indicative level 15 (Tower Block)

Figure 12 - Indicative level 00 (Gallery Block)

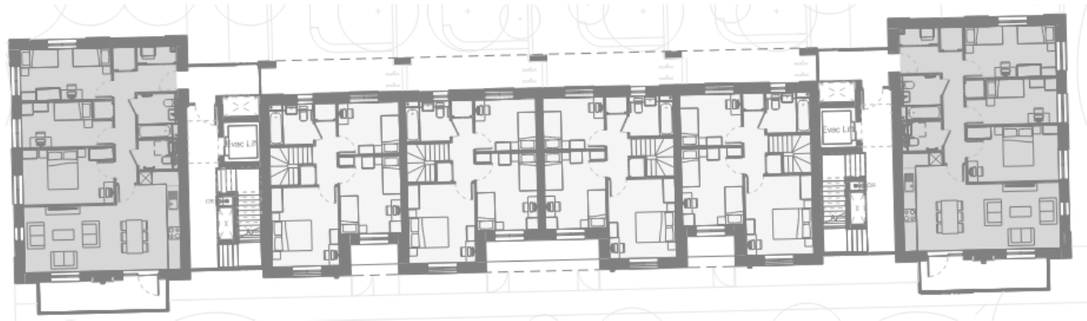


Figure 13- Indicative level 01 (Gallery Block)

Figure 14- Indicative level 02 (Gallery Block)

Figure 15- Indicative level 03 (Gallery Block)

Figure 16 - Indicative level 04-05 (Gallery Block)

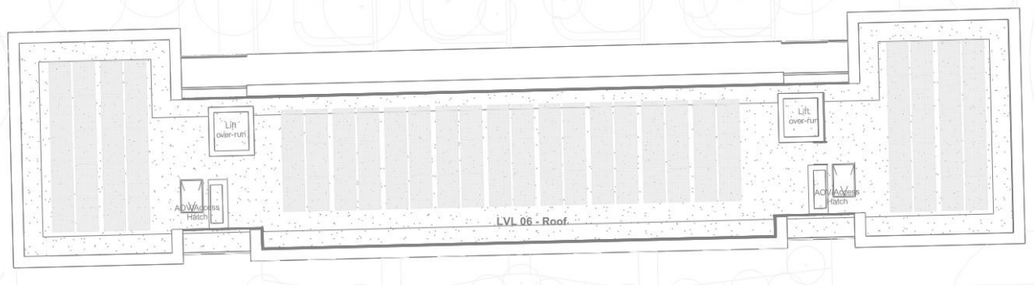


Figure 17- Indicative level 06 (Gallery Block)

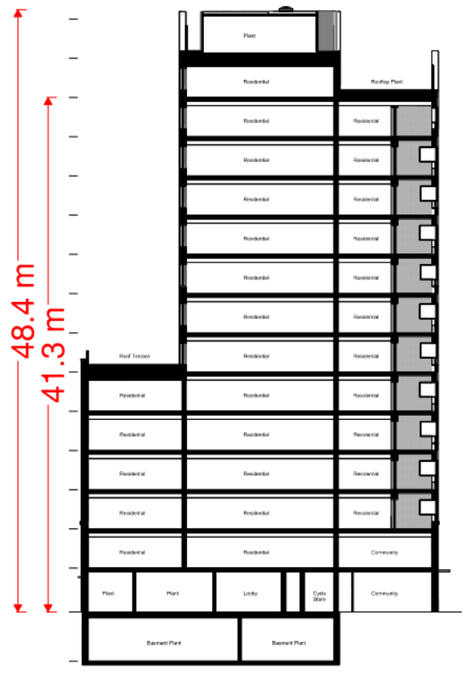


Figure 18 - Indicative section through Tower Block

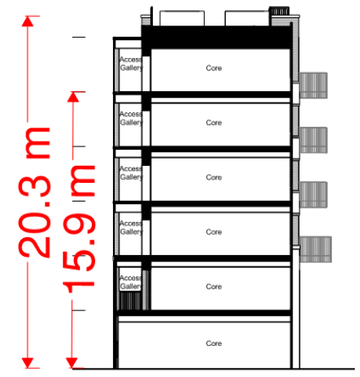


Figure 19 - Indicative section through Gallery Block

2.2 Use and classification

2.2.1 The main use of the building will be residential and will therefore be classified in Purpose Group 1(a) – 'Residential(dwellings) – flat', in accordance with Table 0.1 of ADB Vol.1.

2.2.2 The assembly unit to the Tower Block, will be classified as Purpose Group 5 – 'Assembly & recreation', in accordance with Table 0.1 of ADB Vol.1.

2.2.3 The plant room will be classified as Purpose Group 7 (a) – 'storage and other non-residential, in accordance with Table 0.1 of ADB Vol.1.

2.3 Design occupancy

2.3.1 The means of escape provisions from the individual flats are not dependant on the number of occupants within the residential areas of the building, as only the occupants of the affected flat are expected to initially evacuate.

2.3.2 The estimated number of occupants expected within the non-residential ancillary areas has been estimated in order to ensure that sufficient exits of appropriate capacity have been provided for means of escape purposes.

2.3.3 Plantrooms and similar ancillary spaces will be occupied infrequently and therefore the escape arrangements have been premised on a transient occupancy. However, for design purposes, the capacity of these spaces will not exceed more than 60 people.

2.3.4 The Tower Block contains an assembly unit (Community space) and has only one means of escape from ground and first floor. For design purposes, the capacity of this space will not exceed 60 people.

3. FIRE SAFETY SYSTEMS

3.1 Means of detection and alarm

3.1.1 The fire detection and alarm system requirements across the development are summarised in Table 4.

Table 4 - Minimum fire detection and alarm system

Accommodation	Minimum requirements
Rented residential flats / maisonette *	Grade D1, Category LD2 conform to BS 5839-6 [4] . In line with supplementary guidance from Annex E of BS 9991, 2024, an alarm system should be provided on the balcony.
Residential communal areas	Residential communal areas should be provided with an L5 system conforming to BS 5839-1 [5]. The purpose of this system is to activate the smoke ventilation systems within the communal corridors only. It is recommended that the detector head spacing for the L5 system within the corridors is in accordance with the recommendations for a category L4 system. All external plant areas will be provided with sounders and beacons linked to the fire detection and alarm system anywhere on same level.
Ancillary Accommodation	An L2 system conforming to BS 5839-1 should be provided to all ancillary accommodation, in accordance with ADB Vol. 2.
Assembly unit – (Community space)	An L2 system confirming to BS 5839-1 should be provided to the assembly unit, in accordance with ADB Vol. 2.
External plant areas	Roofs are accessible for maintenance only and all external plant areas will be provided with sounders and beacons linked to the fire detection and alarm system anywhere on same Level.
Note *: It has been confirmed that all flats would have same tenure (Rented) therefore Grade D1, is required, if owner occupied D2 installed in accordance with BS583-6 would suffice.	

Residential areas

3.1.2 The system in each flat will incorporate sufficient traditional sounders to be clearly audible throughout the flat. Heat detection will be provided in areas where there is a risk of false alarms due to steam or fumes (e.g. kitchens and bathrooms) and smoke detection throughout other habitable areas.

3.1.3 Where private balconies are provided with a single escape route via the open plan kitchen, the alarm system will be extended such that it is clearly audible from the balcony or alternatively, flashing beacons will be provided.

Non-residential and ancillary areas

3.1.4 An automatic fire detection and alarm system to be designed and installed in accordance with BS 5839-1 will be provided in the ancillary spaces as Table 4

3.1.5 Table 4 (e.g. Sprinkler tank rooms, cycle stores, refuge storage rooms).

3.1.6 An automatic fire detection and alarm system to be designed and installed in accordance with BS 5839-1 will be provided in the Assembly unit (Community space) as per Table 4.

3.1.7 Manual call points in accordance with BS EN 54-11 [6] will be provided adjacent to all storey exits and final exits within the ancillary spaces.

3.1.8 Visual beacons will be provided in rooms covered by the BS 5839-1 system where the background sound level could be louder than an audible fire alarm (e.g. plantrooms) or where people with a hearing impairment may be in isolation (e.g. accessible toilets).

3.1.9 All external plant areas (PV, ASHP etc.) will be provided with sounders and beacons linked to the fire detection and alarm system anywhere on same Level.

3.1.10 It is recommended that the BS 5839-1 system is analogue and fully addressable, allowing early identification and investigation of an activated detector head. The main fire alarm panel will be installed at an accessible location next to the main entrance point into each building.

3.1.11 In accordance with the recommendations of BS 5839-1 and BS 5839-6, the fire alarm and detection engineer must submit the design certificate for the scheme to the approving authority prior to commencement of the installation on site.

3.2 Evacuation alert systems (EAS)

3.2.1 In line with ADB, residential buildings with a top storey over 18 m above ground level should be provided with an Evacuation Alert System in accordance with BS 8629 [7]. An EAS should be provided in Tower Block and should be located on the ground floor reception area.

3.3 Automatic suppression systems

3.3.1 The buildings are more than 11 m in height; therefore, a sprinkler system should be provided as follows:

Tower Block

3.3.2 A Category 4 sprinkler system conforming to BS 9251:2021 [8] should be provided throughout

3.3.3 All assembly and ancillary areas within the Tower Block are configured as so that all compartment areas are less than 100 m^2. Therefore, the residential sprinkler system may be extended to cover those areas. BS 9251:2021 recommends a maximum compartment size of 100 m^2.

Gallery Block

3.3.4 A Category 2 sprinkler system conforming to BS 9251:2021 [8] should be provided throughout the residential blocks of flats. Residential sprinkler system can be extended in the ancillary areas subject to a maximum compartment size of 100m^2.

3.3.5 The design of the sprinkler system including specification of the system category is subject to specialist designer input & design.

3.4 Smoke ventilation systems – Residential areas

Residential Staircase - Tower Block and Gallery Block

3.4.1 The communal stairs serving the residential accommodation on the upper floors within the development are required to be provided with a 1.0 m^2 AOV at the head of the stairway. The AOV should conform to BS EN 12101-2 [9].

Residential communal corridors & evacuation lift lobby to Tower Block

3.4.2 In accordance with ADB, the lobbies / portion of corridor in front of the stair should be provided with a smoke ventilation system. As such, the proposals are to follow the guidance within Approved Document B, with the following additional considerations:

- The lobby in front of the stair and lift will be used as a waiting area, whilst occupants await the lift.
- Following on from the point above, the lobby will be protected from the ingress of smoke. This will be facilitated by the provision of smoke shafts in the communal corridors in addition to the smoke ventilation system in the lobby, provided via an inlet shaft .

3.4.3 Smoke ventilation requirements for each block of flats is detailed in Table 5, the information provided here is based on the current design layouts, the method of ventilation can be mechanical or natural.

3.5 Smoke shafts

3.5.1 The mechanical smoke shafts/associated ducts should comply with the following recommendations:

- The top of the lobby or corridor vent should be located as close to the ceiling of the lobby or corridor as is practicable and should be at least as high as the top of the door connecting the lobby or corridor to the stairwell.
- When in a closed position, vents to shafts should conform to BS EN 12101-8:2011 [23]. They should be tested in accordance with BS EN 1366-10:2022+A1:2024 [24] and classified in accordance with BS EN 13501-4:2016 [25] to achieve the level of fire resistance recommended within this fire safety strategy;
- All shafts/ducts should be constructed from Class A1 materials.
- All shafts/ducts should leak not more than 3.8 $m^3/h/m^2$ of the surface area of the shaft/duct at 50 Pa negative pressure and should be smooth and flush internally.
- The design of the MSVS should limit pressure differentials such that door opening forces do not exceed 100 N at the door handle at any stage while the system is in operation.
- All fans should be designed and tested in accordance with BS EN 12101-3:2015 [26]. The fans should be capable of handling gas temperatures of 300 °C for a continuous period of not less than 60 minutes.
- Fans, ducts, and AOVs to outside should be sited at a distance away from each other which is sufficient to limit the prospect of smoke recirculation.
- Power supplies (including a standby provision) should be provided for all parts of the system in accordance with BS EN 12101-10:2005 [27];
- The power and control cables for the system should be categorised and achieve a fire survival time in accordance with BS 8519:2020 [14];
- Where firefighters' manual override switches are provided, these should be positioned within the protected stair core;
- It is recommended that fan sets be provided with a standby fan that operates automatically upon failure of the duty fan, offering 100% redundancy;
- No services other than those relating to the smoke shaft should be contained within the smoke shaft.

Natural smoke shaft – passive inlet shaft

3.5.2 The passive inlet shaft should comply with the following recommendations:

- All shafts/ducts should be constructed from Class A1 materials.
- All shafts/ducts should leak not more than 3.8 $m^3/h/m^2$ of the surface area of the shaft/duct at 50 Pa negative pressure and should be smooth and flush internally.
- The smoke shaft should be fully open to the external air at the top and closed at the base.
- The cross-sectional area (free area) of the smoke shaft should be sized according to the requirements of the MSVS but should be not less than 0.6 -0.8m^2, with a minimum dimension of 0.6m in any direction.
- NOTE The cross-sectional area can vary depending on the height of the shaft and the potential for resistance to flow.
- The top of the lobby or corridor vent should be located as close to the ceiling of the lobby or corridor as is practicable and should be at least as high as the top of the door connecting the lobby or corridor to the stairway.
- Vents or AOVs opening to outside should be natural smoke ventilators be in accordance with BS EN 12101-2 [22];
- AOVs opening into shafts or ducts should be smoke control dampers Where they enter
- vertical shafts, they should be multi-compartment and should have at least the same level of fire resistance as the compartment barrier in which they are fitted
- No services should be contained within the smoke shaft (including control devices for the smoke shaft, other than actuators and final cable connections).

Table 5- Ventilation requirements

Block	Top floor height / location	Mechanical / Natural ventilation[3][4]	Comments
Tower	41.3 m	AOV to head of stairs.	1.0m^2 AOV to be provided at the head of the stair.
		Passive natural inlet shafts in the evacuation/firefighting lift lobby and passive shaft in hybrid lift lobby.	1 x natural inlet shaft in each lift lobby [1]
		Mechanical smoke shafts in communal corridor.	1 x mechanical smoke shaft in each common corridor [2]
		AOV to entrance lobby on ground floor	0.4m^2 AOV to be provided in entrance post lobby
		Permanent vent to bin store lobby	0.2 m^2 Permanent vent to lobby
Tower	Basement	Passive natural inlet shafts in the evacuation/lift lobby	1 x natural inlet shaft in lift lobby [1]
		Mechanical smoke shafts in communal corridor.	1 x mechanical smoke shaft in each lobby [2]
		Mechanical ventilation	Designed to give at least 10 air changes per hour, as per section 3.6
Gallery	15.9 m	AOV to head of stairs.	1.0m^2 AOV to be provided at the head of the stair.
		AOV to entrance lobby on ground floor	0.4m^2 AOV to be provided in entrance post lobby
		Permanent vent to bin store lobby	0.2 m^2 Permanent vent to lobby

Notes:

[1] Natural inlet shafts are provided in accordance with mechanically ventilated lobbies, they can be approximately 0.6m^2 – 0.8m^2, actual size to be determined by CFD modelling.

[2] Size of mechanical shaft to be determined by CFD modelling.

[3] As there are no connecting residential or ancillary spaces, no mechanical or natural ventilation to be provided to the ground level lobbies.

Ground Floor

3.5.3 The final escape route to outside (i.e. corridors from stairway/ evacuation lifts leading to outside) should be separated from any accommodation via mechanically ventilated lobbies in order to provide the final escape route with the same level of protection as per the upper floors.

3.5.4 Automatic smoke ventilation will be provided to the lift lobbies, protected lobbies separating stairs from ancillary areas, common residential corridors, and escape/firefighting stairs to basement and on all upper levels none is provided on the ground floor due to there being no ancillary connecting spaces.

3.5.5 As the blocks will be provided with evacuation lifts, the lift lobbies will be designed to protect the lift shafts and provide a place of relative safety for escaping occupants to seek refuge and wait for the lift car's arrival.

Tower Block - Mechanical ventilation

3.5.6 The lift lobbies will within the Tower Block to be served by a separate mechanical smoke control system, which will operate as below:

- To provide inlet air: In case of a fire on a residential floor (e.g. in a flat), smoke will be ventilated and cleared by the ventilation system serving the residential corridor. The smoke shaft serving the lift lobby will be intended to provide inlet air and not act as an exhaust; and
- The lift lobby will be provided with inlet air via a passive natural shaft.

3.5.7 Residential corridors connecting to the lift lobby will be provided with smoke ventilation systems intended to perform the following functions (see further details in Section 4 of this report):

3.5.8 Corridors with a travel distance less than 7.5m in a single direction: ventilation provided via a single mechanical smoke shaft intended to protect the stair/lift lobby.

3.5.9 Mechanical smoke ventilation systems will be provided with smoke shafts, which are typically expected to achieve a cross-sectional area of 0.6-0.8m^2. All mechanical smoke control systems will be designed and substantiated by means of CFD modelling. A separate CFD report will document the cause and effect of the various systems and set out the performance criteria.

Tower and Gallery Block - Natural ventilation

3.5.10 A 1.0m^2 automatic opening vent (AOV) will be provided at the head of all stairs. The AOV will conform to BS EN 12101-2 [9].

3.5.11 An automatic opening vent (AOV) achieving a free aerodynamic area of 0.7m^2 will be provided at the head of the firefighting stairs. The AOV will conform to BS EN 12101-2 [9].

3.5.12 Gallery Block will have open balcony approach from level 1 to 5.

3.5.13 A 0.4m^2 automatic opening vent (AOV) will be provided at high level within the entrance lobbies. The AOV will conform to BS EN 12101-2 [9].

3.5.14 A 0.2m^2 permanent vent will be provided to refuse bin store lobbies where they connect to the internal accommodation.

3.6 Smoke ventilation systems – Basements

3.6.1 Mechanical ventilation will be provided to the basement level in accordance with Section 16 of ADB Vol.1 from each basement compartment. The ventilation system will be supported by an automatic sprinkler system, as indicated in Section 3.2.1.

3.6.2 The system will be independent from any other systems (other than any system providing day-to-day ventilation) and be designed to operate to give at least 10 air changes per hour.

3.6.3 The extraction system will be capable of handling gas temperatures of 300°C for at least one hour and it will be activated by activation of either the sprinkler system or of the automatic fire alarm and detection system as per Table 4.

3.6.4 The firefighting lift core, smoke shaft and natural passive inlet shafts will be extended to the basement level, with fire rated ductwork then distributing to serve the sprinkler room, tank room and comms rooms to achieve 10 air changes (smoke & make-up air) in accordance with AD B.

3.6.5 Smoke dampers will be installed between zones, so only the room activated by the fire alarm system will be smoke cleared and other dampers will close. The basement smoke system will operate automatically on activation of the fire detector within either plantroom zone, with a separate fireman smoke switch provided at the fire alarm panel.

3.6.6 The smoke and natural passive inlet shafts located within firefighting lift core will also be extended to basement to provide protection to the firefighting lobby.

3.6.7 The MSVS can be used on a day-to-day basis for environmental temperature and ventilation control to the building via temperature sensors and will switch to firefighting on activation of fire detection system.

3.6.8 A separate CFD report will document the cause and effect of the various systems and set out the performance criteria.

3.7 Electromagnetic locking / hold-open devices

3.7.1 Where doors are provided with electromagnetic locking or hold-open devices, these devices are to operate (either release the door to close normally, or release the door to be opened) upon:

- Activation of the detection and alarm system.
- Failure of the power supply.
- Operation of a hand operated switch located to the side of the door.
- Malfunction.

3.8 Emergency lighting

3.8.1 Emergency lighting (within the common areas only) will be installed to provide temporary illumination in the event of failure of the primary power supplies to the normal lighting system. As part of the emergency lighting system, escape lighting will be provided to ensure the escape routes (including external escape routes) are illuminated at all material times. Adequate artificial lighting will be provided in all common escape routes and will be of a sufficient standard to enable persons to see to escape.

3.8.2 Emergency lighting will be installed in accordance with the recommendations of BS 5266-1 [11], BS EN 1838 [12] and BS EN 60598-2-22 [13] and Table 5.1 of ADB Vol.2. It will also illuminate a safe exit route including fire exits, fire alarm call points, changes in level or direction and firefighting equipment.

3.8.3 Lighting to escape stairs will be on a separate circuit from that supplying any other part of the escape route.

3.8.4 Primary and emergency lighting will be required for any external escape routes that will not be lit by surrounding street lighting.

3.8.5 Discharge lighting installations may operate at voltages that are a hazard to firefighters. An exterior discharge lighting installation, or an interior discharge lighting installation operating unattended or operating at a voltage exceeding low voltage (as defined in Statutory Instrument number 1018, part of the Building Regulations), will be controlled by a firefighter's emergency switch.

3.9 Fire safety signage

3.9.1 Fire safety signs will be installed where necessary (common areas and ancillary spaces) to provide clear identification of fire precautions, fire equipment and means of escape in the event of fire. All parts of the development will be fitted with appropriate fire safety signage to comply with The Health and Safety (Signs and Signals) Regulations 1996 [14], i.e. signage to be specified in according to BS ISO 3864-1 [15], BS 5499-4 [16] and BS 5499-10 [17].

3.9.2 The purpose of fire signs is to direct persons towards fire exits, or to provide specific information or warning about particular equipment, doors, rooms, or procedures.

3.9.3 Fire notices will be permanently displayed in conspicuous positions throughout the building, including storey exits, and will be specific to it.

3.9.4 All fire doors, other than doors to and within flats and dwellinghouses, bedroom doors in purpose group 2(b) – 'Residential other' and lift landing doors, will be marked with the appropriate fire safety sign, according to whether the door is:

- to be kept closed when not in use ('FIRE DOOR - KEEP SHUT').
- to be kept locked when not in use ('FIRE DOOR - KEEP LOCKED SHUT'), or
- held open by an automatic release mechanism ('AUTOMATIC FIRE DOOR KEEP CLEAR').

3.9.5 Any emergency securing device fitted to doors on escape routes are to be provided with instruction notices, adjacent to the device, indicating the method of operation.

3.10 Wayfinding signage

3.10.1 The buildings will have a top storey more than 11m above ground and will therefore be provided with appropriate signage to assist the fire service to identify each floor and flat.

3.10.2 Wayfinding signage will be provided throughout the building in accordance with Clauses 15.13 to 15.16 in ADB Vol.1, including:

- Floor identification signs at each landing of the protected stair and each common corridor accessed from the firefighting lift, formatted in accordance with Clauses 15.14 and 15.15 in ADB Vol.1.
- Flat indicator signs, located beneath the floor indicator signs and indicating the flats present and each level. These will be formatted in accordance with Clause 15.16 in ADB Vol.1.

3.11 Evacuation for people with reduced mobility and evacuation lifts

3.11.1 Following recent updates of London Plan, in accordance with D12 & D5 Policy recommendations, consideration should be given on how all building occupants, including those with reduced mobility / wheelchair users can evacuate in an emergency. As it can be difficult for people with reduced mobility (PRM) to navigate the escape stairs, it is typically recommended that occupants are provided with use of suitable lifts in an emergency.

3.11.2 The lift should be designed and installed in accordance with relevant provisions of BS EN 81-20 [18] and BS EN 81-70 [19]. A Type 2 evacuation lift in accordance with Table 3 of BS EN 81-70:2021 should be provided. One evacuation lift will be provided per core.

3.11.3 Tower Block is provided with 3 lifts. One lobby (Stair 1) will be provided with a lift that has dual functionality both for fire-fighting and evacuation purposes. The other lobby (Stair 2) will be fitted with 2 lifts; one for fire-fighting and the other for evacuation purposes.

3.11.4 Gallery Block will include two lifts within each protected stair to facilitate evacuation.

3.11.5 Firefighting lift installations should conform to BS EN 81-20 and BS EN 81-72 [19]. Firefighting lift landing doors should be within 7.5m of firefighting stair door.

3.11.6 As per BS EN 81-70, minimum car dimensions for a Type 2 lift are 1100 mm width and 1400 mm. This car accommodates one wheelchair user and an accompanying person.

3.11.7 Based on the evacuation philosophy, i.e., defend in place or "stay-put," only the flat of fire origin is required to evacuate. Therefore, the evacuation lift could accommodate one wheelchair user evacuating from the flat of fire origin at a time.

3.11.8 The evacuation lift requires to be provided with a secondary power supply.

3.11.9 Confirmation from the client/end user on the preferred operating sequence is required. The operation requirements and cause and effect arrangements may require consultation with a specialist vertical transport consultant.

3.11.10 BS 9991 [20] provides further guidance on for the design of evacuation lifts in residential developments see Appendix C

3.12 Firefighting/Evacuation/Hybrid lifts

3.12.1 The Tower Block will have a top storey more than 18m above ground and will therefore be provided with 3 lifts: one firefighting lift, one evacuation lift and one hybrid evacuation/firefighting lift.

3.12.2 The firefighting and evacuation lift will be served by a common lift lobby, and the hybrid lift will have its own separate lobby.

3.12.3 The hybrid lift should be designed so that it has the capability to operate in both modes, the lifts should be designed to meet the following recommendations:

3.12.4 The Gallery Block will be provided with two evacuation lifts one within each protected stair serving each storey.

Firefighting mode

3.12.5 To be designed and installed in accordance with BS EN 81-20 and BS EN 81-72 [21]. The lift landing doors will be within 7.5m of the firefighting stair door and the lift will be enclosed in 120 minutes fire resistance construction provided with FD60 fire doors. A firefighting lobby will be provided at ground level to separate the firefighting lift from the firefighting stair.

Evacuation mode

3.12.6 Evacuation lifts will be designed and installed in accordance with the relevant provisions of BS EN 81-20 [22] and BS EN 81-70 [23] and provided with a secondary power supply. A type 2 evacuation lift car is recommended, as outlined in Table 3 of BS EN 81-70. Refer to section 4.8 for further information into the operation of the evacuation lift.

3.13 Emergency voice communication systems (EVC)

3.13.1 All evacuation lifts require a designated area for occupants to wait until the lift car arrives. In this case, the 1500mm x 2100mm temporary waiting space should be provided in front of the evacuation lifts, with EVC provision to meet the requirements.

3.13.2 The temporary waiting spaces / refuge spaces located in the lift lobbies within the Tower Block and Gallery Block, will be provided with an emergency voice communication system (EVC system). The system will comply with BS 5839-9 [24] and will consist of a Type B outstation which communicates with a receiving station (typically located next to the main fire alarm panel or a concierge desk).

3.14 Fire mains

3.14.1 Tower Block and Gallery Block have a top floor below 50m therefore, a dry riser should be provided as per ADB recommendations. Dry riser should have outlets on the full landing of each stairway. Dry riser inlets should be located near the entrance point and on the face of the building and within 18m of FRS vehicle parking position. The horizontal distance for the connecting pipe from dry riser inlet to outlet to be a maximum of 18m in length.

3.15 Emergency (life-safety) power supply

3.15.1 All life-safety systems will be provided with robust power supplies in accordance with BS 8519 [25].

3.15.2 The following fire safety systems will comply with their respective British Standards regarding secondary power supplies:

- Automatic fire detection and alarm systems.
- Evacuation alert systems.
- Sprinkler systems.
- Automatic smoke ventilation systems.
- Emergency lighting and signage.
- Evacuation lifts.
- Firefighting lifts.
- Emergency voice communication systems (EVCs).

3.15.3 There must be minimal delay in change over if the main power fails and it must occur automatically.

3.15.4 A back-up generator will be located on the rooftop of tower building as indicated on Figure 9.

3.15.5 Internal batteries may be used to provide back-up power supply to systems with a low power demand (i.e. emergency lighting and automatic detection and alarm systems). These batteries will be capable of a continuous stand-by supply in accordance with the relevant design standard and be fully rechargeable within a period of 24 hours.

4. MEANS OF WARNING AND ESCAPE

Building Regulations requirement B1:

"The building will 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."

4.1 Evacuation philosophy

4.1.1 A defend-in-place strategy, otherwise known as a 'stay-put' strategy will be implemented in all residential units, whereby, in the event of a flat fire, only the unit of fire origin will receive a signal to evacuate. No other flats will receive an alert notification, though should residents become aware of a fire they may leave the building if they wish to do so.

4.1.2 In the unlikely event of a fire that spreads beyond the flat of fire origin, the wider evacuation of the building may be initiated and managed by the fire service should this be deemed necessary by means of the evacuation alert system within the Tower Block.

4.1.3 Areas of ancillary accommodation within the building (e.g. Sprinkler tank rooms, cycle stores, refuge storage rooms) will feature a simultaneous evacuation regime, whereby upon activation of the fire detection and alarm system, only the ancillary accommodation/area of fire origin will receive a signal to evacuate. All other areas will not receive a signal to evacuate.

4.1.4 The assembly unit (Community space) will operate completely independently from the rest of the building. Evacuation from these areas will be based upon a local simultaneous evacuation regime, whereby, upon activation of the detection system, all areas within the relevant unit will receive a signal to evacuate.

4.1.5 The fire detection and alarm system will be configured to support this strategy (see Section 3.1 for reference).

4.2 Horizontal means of escape – Internal flat design

4.2.1 Across the plots, two different flat typologies are provided as follows: flats with entrance halls and maisonette apartments. Fire safety provisions for each different typology are discussed below.

4.2.2 There is currently no guidance within ADB relating to the minimum separation distances of cooking facilities from escape routes therefore BS9991:2024 has been used. In all flats, an internal escape route of 900mm wide should be provided in front of all cooking hobs which should be located at least 1.8m away from the cooking hob as per Figure 20.

4.2.3 In line with supplementary guidance from Annex E of BS 9991 [26], an alarm system should be provided on the balconies.

4.2.4 The flats have an unenclosed kitchen which are considered acceptable as per Appendix A.

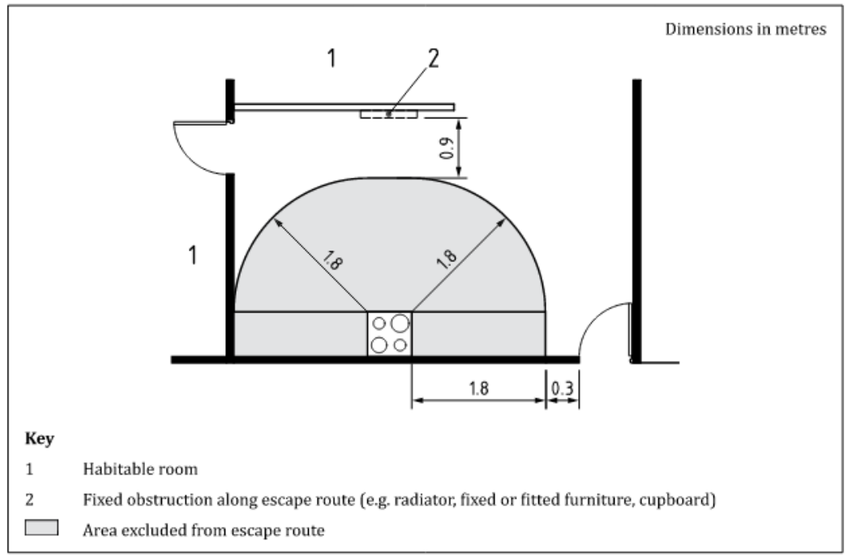


Figure 20 - Minimum separation distances of cooking facilities

Single storey flats with entrance halls

4.2.5 The buildings will comprise single-storey flats more than 4.5m above ground level. Each flat will be provided with a protected entrance hall enclosed in 30-minute fire resisting construction, such that the maximum travel distance within the entrance hall will not exceed 9m, in accordance with Diagram 3.2 of ADB Vol.1. refer to Figure 21 below.

Maisonette apartments

4.2.6 The maisonette apartments should be provided with a protected stairway which will be separated from any accommodation by 30-minute fire resistance and should serve each habitable room. Bathrooms can be included within the protected entrance hall.

4.2.7 At ground level, the maisonette apartments have an independent access direct to outside.

4.3 Private balconies and terraces

4.3.1 Private balconies and terraces will be designed in accordance with the supplementary guidance in Annex E of BS 9991 [26]. Balconies more than 4.5m above ground will meet the following recommendations:

- The escape route from the balcony will not pass through more than one access room.
- The interior of the access room will be visible from all parts on the balcony unless provided by an automatic fire detection and alarm system.
- Any cooking risks within the access room will be enclosed in fire resisting construction unless:
    - the open cooking risk is remote from the balcony escape route (i.e. 1.8m away); and
    - An automatic fire detection and alarm system in accordance with BS 5839-6 is provided to the access room with sounders or visual beacons provided on the balcony.
- Where the maximum travel distance from the balcony access door to the furthest point on the balcony exceeds 7.5m either a separate exit into a different room will be provided or automatic smoke detection will be provided within the access room.

4.3.2 Balconies less than 4.5m above ground will either be provided with escape doors or windows or meet the recommendations in para. 4.3.1 above.

4.3.3 All balconies will be guarded by a protective guarding conforming to BS 6180 [27].

4.3.4 Terraces provided with multiple directions of escape which are open to external air are not limited in terms of travel distances, but all areas will be within 60m from a fire main outlet measured on a hose laying route – see Section 8 for further details.

4.3.5 Further guidance on the combustibility of materials forming part of balconies and terraces is provided in Section 7.

4.4 Horizontal means of escape – Common residential areas

4.4.1 Escape from any part of the roof should be directly into a protected stairway. Travel distance on the roof within open to air should not exceed 60 m in the single direction.

4.4.2 On the upper floors, the staircases and lift lobbies should be separated from accommodation by mechanically ventilated corridors/lobbies.

4.4.3 The travel distance limits applicable within the different parts of the building are summarised in Table 6 and are indicatively indicated on Figure 21.

Table 6 - Permitted travel distance

Part of the building	Single direction limit	Multi-direction
Communal corridor (1)	7.5 m	N/A
Evacuation lifts lobby (2)	7.5 m	N/A
Notes: 1) Measured from flat entrance door to the evacuation lift lobby door. 2) Measured from the evacuation lift lobby door to the staircase door.		

4.4.4 The final escape route from each staircase at the final exit level should be considered as part of the staircase; it should be protected to the same standard as the stair itself and thus kept fire sterile.

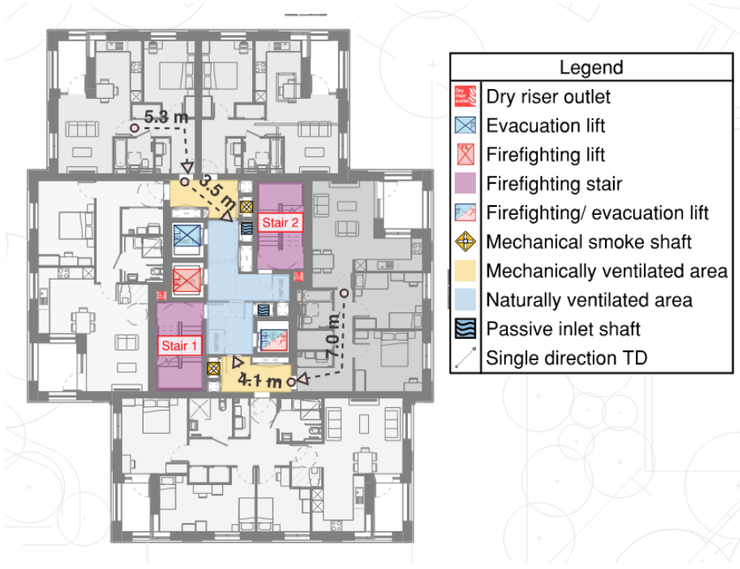


Figure 21 - Indicative means of escape Level 02 (Tower Block)

Open deck approach - Gallery Block

4.4.5 Escape from each flat will be via a communal external deck providing means of escape in both directions connecting to protected stairs serving the escape stair and evacuation lifts. Refer to Figure 22 for indicative layout.

4.4.6 Escape from both flats on level 01, will be via an external deck serving the individual flat and approached via the protected stair. Refer to Figure 23 for indicative layout.

4.4.7 Clause 3.29 of ADB Vol.1 recommends that the design of the external balcony approach deck should be in accordance with Clause 7.3 of BS 9991 as summarised below:

- The balcony/deck construction should have the same fire resistance as the floors within the building. For buildings of any height, balconies and decks should be constructed from materials classified as A2-s1,d0 or better.
- The walking surface should be imperforate, i.e. there should be no holes or perforations in the structure so that users are protected from the effects of heat or smoke from below.
- The sectional profile should be such that any fire plume breaking out of a flat or maisonette is directed upwards and outward and should be arranged such that smoke does not leak laterally along the balcony/deck soffit. Soffits should be flat with no edge downstand or other feature that would obstruct the outwards plume flow. Where the balcony or deck has a width of more than 2 m, downstands at 90° to the face of the building should be placed on the line of separation between individual flats or maisonettes. These should project not less than 0.3m below the soffit or any other downstand, unless otherwise determined by calculation.
- To allow for adequate dispersal of smoke that enters an open balcony or deck, the outside wall of the balcony or deck, from 1.1m above the walking surface up to the soffit of the balcony or deck above, should have not less than 50% evenly distributed free vent area. Wherever possible, openings in the outside wall provided for smoke vent

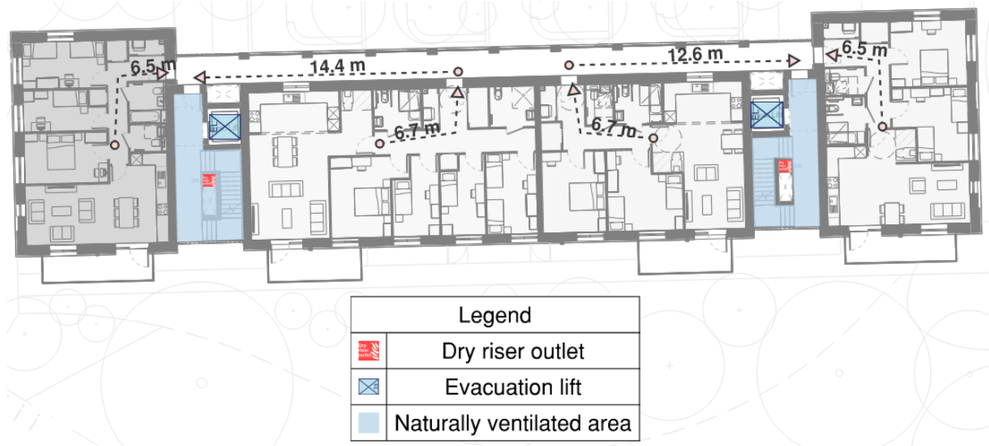


Figure 22 - Indicative means of escape from Level 02 - Gallery Block

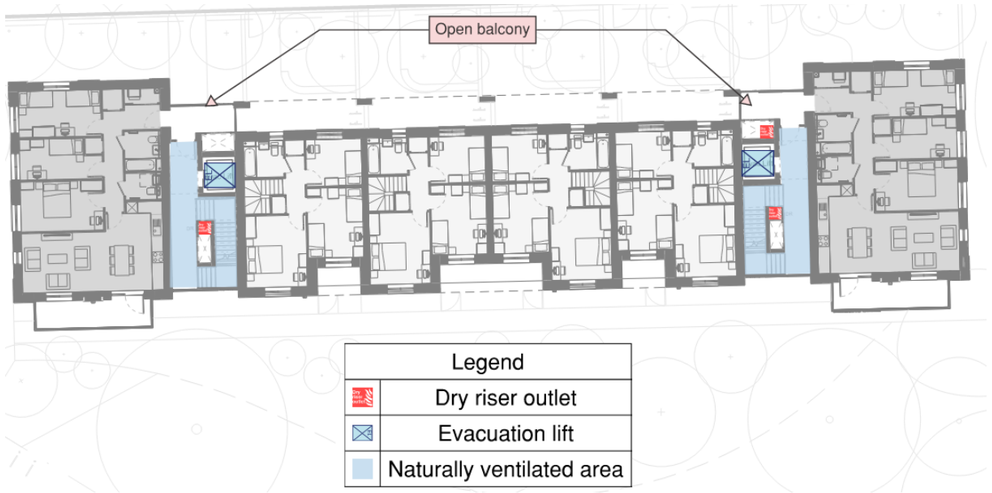


Figure 23 - Indicative means of escape from Level 01 - Gallery Block

4.5 Horizontal means of escape – Ancillary and non-residential areas

4.5.1 The design of the ancillary areas will follow ADB Vol.2. guidance. In accordance with the recommendations, a purpose group of 5 will be assigned to the assembly unit, plant rooms, storerooms etc. will be considered as ancillary accommodation to the main use.

4.5.2 The maximum permitted travel distances are detailed in Table 7. The required width of each exit depends upon the number of occupants required to use them and are indicated in Table 8.

4.5.3 Areas served by a single exit (including assembly area – Community space) will not accommodate more than 60 persons. Where multiple exits are available, the largest exit will be discounted in the event that it is blocked by a fire, when estimating the total available exit capacity.

4.5.4 Area within sprinkler tank room is considered as normal hazard storage

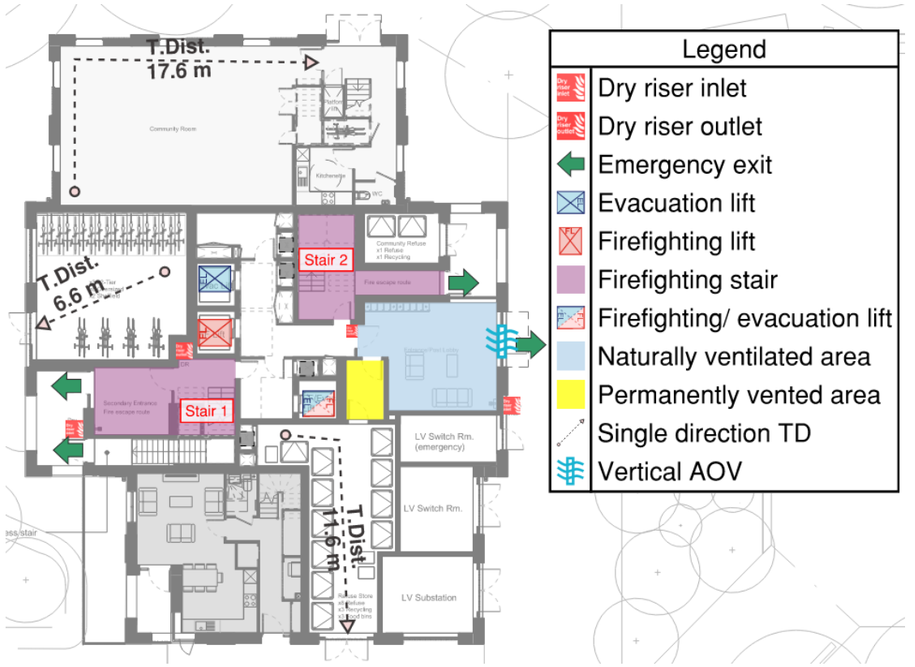


Figure 24 - Indicative layout indicating means of escape from Level 00 - Tower Block

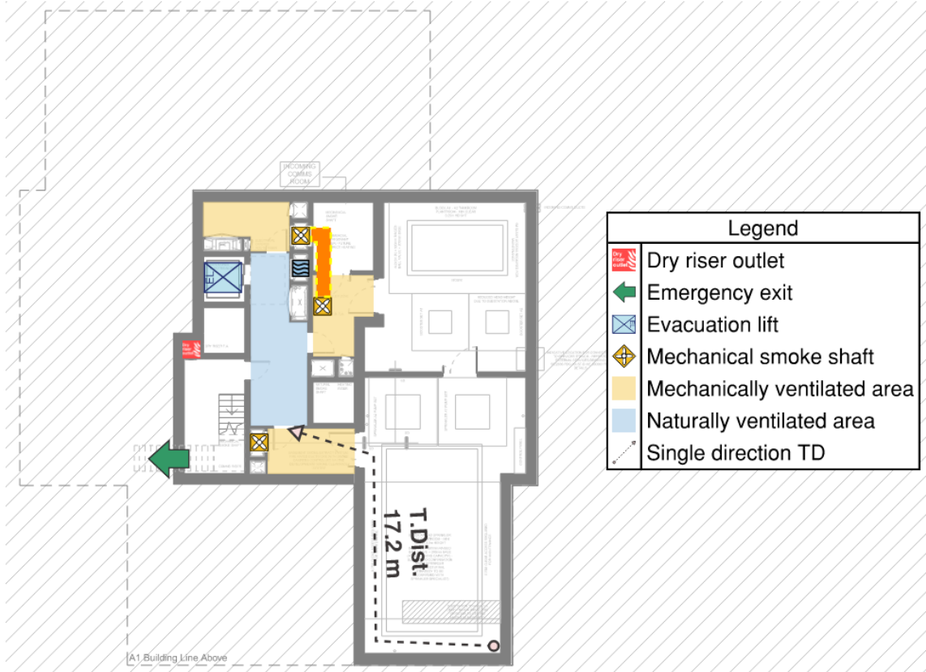


Figure 25 - Indicative layout indicating means of escape from Level LB1- Tower Block

Figure 26 - Indicative layout indicating means of escape from Level 14- Tower Block

Table 7 – Travel distance limitations

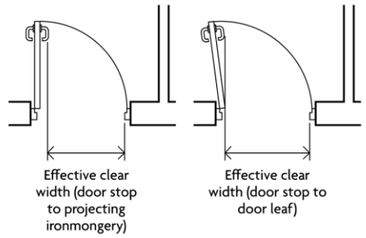
Area	Recommended maximum travel distance	
	Single direction (m)	Multi-direction (m)
Assembly & recreation	18	45
Storage and other non-residential – normal hazard	25	45
Plant room or rooftop plant: distance within room escape route not in open air escape route in open air	 9 18 60	 35 45 100
Note: Where the internal layout of partitions, fitting etc. is unknown, direct distances, rather than travel distances, should be assessed and should not exceed 2/3 of the limits above.		

Table 8 – Width of escape routes and exits

Number of people served	Minimum width (mm)
60	750
110	850
220	1,050
More than 220	5 per person

Note:

1) Doors hung to swing against the flow of escaping occupants are to serve a maximum of 60 people, irrespective of the available clear exit width.
2) Exit widths may ned to be increased to meet the guidance in ADM.
3) 5mm/person does not apply to a door serving less than 220 persons.
4) Exit widths are for clear widths measured in accordance with Diagram D1 in ADB Vol.2 as indicated below:



4.6 Doors on escape routes

4.6.1 Doors on escape routes will not be fitted with locks, latch or bolt fastenings or will only be fitted with simple fastenings that can be readily operated (without the use of a key) from the side approached by occupants making an escape without needing to manipulate more than one mechanism.

4.6.2 Doors will generally be hung to open in the direction of escape and will always do so where it is expected that the number of persons expected to use the door at the time of a fire is more than 60.

4.6.3 Vision panels will be provided where doors on escape routes sub-divide corridors, or where doors are hung to open in both directions. Further guidance on vision panels in doors across accessible corridors is provided in ADM and guidance on safety of glazing is contained in Approved Document K (ADK) [28].

4.6.4 Any fire doors fitted with automatic locking or hold-open devices will be designed as indicated in Section 3.7.

4.6.5 Where doors on escape routes need to be secured against unauthorised use by electrically powered access control measures (e.g. keypads, swipe or proximity card, biometric data etc.) when the building or part of the building is occupied, they will also be provided with a security mechanism override from the side approached by occupants making an escape.

4.6.6 Electrically powered locks will return to the unlocked position in the following situations:

- On operation of the detection and alarm system.
- On loss of power or system error.
- On activation of a manual door release unit (Type A) that is designed to BS EN 54-11 [6] and is positioned at the side of the door that is approached by people making their escape. Where the door provides escape in either direction, a unit will be installed on both sides of the door.

4.7 Vertical means of escape

4.7.1 Vertical means of escape should be supported by an evacuation lift in accordance with London Plan policy requirement. The final escape route from the evacuation lift should have the same level of protection at ground floor as the evacuation lift on the upper floors.

4.7.2 The residential entrance lobbies through which the stair and evacuation lift discharge should be fire sterile. Where post boxes are located within the residential entrance lobby, the post boxes will be designed out of non-combustible materials specified to achieve a 30-minute fire resistance and will be limited in size (e.g. only letters and not parcels) with sloped tops to prevent the storage of items on top. An additional fire door will be provided to separate the post boxes from the escape stair and evacuation lifts. This space will be provided with signage to prevent the use of the staircase/lobby space for delivering/storing parcels or combustibles of any kind.

4.7.3 Occupants within each block do not have to escape through the lobby containing the post-boxes and have a separate escape route either into the fire fighting stair or directly out.

4.7.4 All stair lobbies should include waiting / refuge areas.

Tower Block

4.7.5 The Tower Block will have a topmost occupied storey height above 18 m. Therefore, in accordance with ADB guidance, a firefighting shaft should be provided.

4.7.6 In accordance with ADB, where the floor area of one or more storeys above 18m exceeds 900 m^2, at least two firefighting shafts should be provided. The block does not feature a floor area above 900 m^2, however for robustness and to allow for potential downtime(maintenance) of the FF lift both stairs are to be designed as firefighting stairs.

4.7.7 Communal staircases will have a minimum clear width of 1100 mm.

4.7.8 Where the handrails intrude 100 mm or less, these can be ignored when assessing the clear width of the stair. The stair width should be kept clear for a vertical distance of 2 m.

4.7.9 The flights and landing of all escape stairs in the building should be constructed of materials achieving class A2-s3, d2 or better

4.7.10 Escape from the upper residential levels will be facilitated by protected stairs, which connect to the ventilated lift lobbies on each level and discharge directly to outside via a protected passageway.

4.7.11 A stair of acceptable width for everyday use will generally be sufficient for escape purposes. As the stair will also be designed as a firefighting stair, it will be at least 1,100mm wide.

4.7.12 The basement stair will be constructed as a protected stair and lead directly to external air at ground floor/fire service access level.

Gallery Block

4.7.13 The Gallery Block will have a topmost occupied storey height less than 18 m. Therefore, in accordance with ADB guidance, a firefighting shaft is not required.

4.7.14 Stairs within Gallery Block to be constructed as protected stairs with evacuation lift and be provided with AOV at top of stair as per 3.4.

4.7.15 A stair of acceptable width for everyday use will be sufficient for escape purposes.

4.8 Evacuation of disabled and mobility impaired persons (MIPS)

Residential areas

4.8.1 To ensure an inclusive design, evacuation lifts are provided within or adjacent to the protected stair. Firefighting, evacuation, and hybrid lifts are being provided within the buildings as per section 3.12.

4.8.2 The evacuation lifts will be designed in accordance with Section 3.12 and any associated temporary waiting/refuge area will be provided with an Emergency Voice Communication (EVC) system as discussed in Section 3.13

4.8.3 As occupants using the evacuation lift will be required to wait for a short period of time for the lift to be called and land at the respective floor, adequate protection to the lift and refuge / waiting area is required to be provided. Therefore, the evacuation lift will be provided with a protected lobby which gives access to both the evacuation lift and the stair and an adequate method of preventing smoke ingress into the lobby is provided. Further information on the ventilation requirements is given in Section 3.4.

4.8.4 Generally, evacuation lifts in non-residential developments should be manually operated by a suitably trained, competent person, as indicated in Annex G of BS 9999. There is currently no guidance regarding the operation of evacuation lifts in residential buildings that does not rely on building management operating the lift cars in person. The majority of residential buildings, will not be provided with building management that are continually onsite, making such evacuation lift operations unfeasible and impractical to implement.

4.8.5 In light of this, to facilitate the evacuation process, the evacuation lifts will continue operating in general circulation mode during an evacuation. The evacuation lifts will:

- Respond to landing calls for each floor and;
- Respond to calls to go to given floors made within the lifts themselves.

4.8.6 This will allow people to use the lift to evacuate as they would during normal usage when leaving the building. This evacuation lift operation strategy is enabled through the fire protection measures for the lift system, which will:

- Prevent smoke from entering the lift lobby through a mechanical/natural smoke ventilation system in the common corridor and;
- Prevent fire from influencing the evacuation lifts through multiple levels of fire compartmentation for the flats, common corridors, and protected cores.

4.8.7 While people attempting to use the evacuation lifts may be required to wait due to others in the building using the lift for general circulation, they will do so within a fire/smoke-protected lobby, providing protection from the potential effects of fire/smoke while they wait.

4.8.8 As such, the activation of smoke detectors in the common corridors will not initiate the evacuation lifts to ground. However, if smoke detectors activate in the protected lobbies, the evacuation lifts for the core where the smoke is detected will ground.

4.8.9 All areas at ground floor will be provided with step-free, or ramp access.

Assembly area (Community space)

4.8.10 It should be noted that under the Regulatory Reform (Fire Safety) Order 2005, it is the duty of the responsible person along with their appointed safety assistants to assist everyone to a place of ultimate safety outside the building in the event of an emergency.

4.8.11 The building operator should develop adequate procedures to assist with the evacuation of disabled persons in the event of fire.

4.8.12 It is envisaged that most persons will be able to escape to a place away from danger without requiring assistance. However, there may be a certain proportion of building occupants, such as those who are non-ambulant disabled (e.g. wheelchair users), who will not be able to negotiate stairs unaided. For these instances, refuge positions will be provided within the escape stairs or associated lobbies, in which their safety can be assured for a period of time prior to being assisted to ultimate safety outside the building.

4.8.13 The refuge areas will have a clear area of at least 900 x 1,400mm and will be located so as not to impede the movement of occupants onto stairways or escape routes and will be clearly identified. Each refuge space will be provided with an emergency voice communication system as recommended in Section 3.

4.8.14 Areas served by a single exit will not accommodate more than 60 persons. Where multiple exits are available, the largest exit will be discounted in the event that it is blocked by a fire, when estimating the total available exit capacity.

4.8.15 Any disabled member of staff with specific needs will have a Personal Emergency Evacuation Plan (PEEP) and the procedures should be practiced. A Generic Emergency Evacuation Plan (GEEP) will need to be written for members of the public who would need assistance to escape.

4.8.16 Any ramps will be designed in accordance with Approved Document M.

4.9 Final exits and onward escape

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

4.9.2 In general, the building will be provided with escape routes, upon exiting the building that are either directly away from the building, have alternate path along the building façade or have alternative exits via a second stair or alternative exits at different levels.

4.9.3 Where the external escape route continues in a single direction along the façade, the external wall adjoining the escape routes will have a minimum of 30 minutes fire resistance (integrity and insulation).

4.9.4 Final exits from Tower Block will need to avoid outlets from basement smoke vents and openings to transformer chambers, refuse chambers, boiler rooms and similar risks.

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

5. INTERNAL FIRE SPREAD – LININGS

Building Regulations requirement B2:

"(1) 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, either a rate of heat release or a rate of fire growth, which is reasonable in the circumstances.

(2) In this paragraph 'internal linings' means the materials or products used in lining any partition, wall, ceiling or other internal structure."

5.1 Internal wall and ceiling linings

5.1.1 During the development of a fire in a building, the choice of material for the lining of walls and ceilings can significantly affect the spread of fire and its rate of growth.

5.1.2 Restrictions are placed on the wall and ceiling lining materials within certain areas of buildings to limit the spread of fire and production of smoke in these areas.

5.1.3 It is particularly important that in circulation spaces, where the rapid spread of fire is most likely to prevent occupants from escaping, the surface linings are restricted, by making provision for them to have low rates of heat release and surface spread of flame.

5.1.4 All wall and ceiling linings within the building will meet the recommendations of Section 4 of ADB Vol.1 and Section 6 of ADB Vol.2 when tested under the European Classification (in accordance with BS EN 13501-1 [29]) as summarized in Table 9.

Table 9 – Classification of linings

Location	Classification
Small rooms of maximum internal floor area: ≤ 4m² (residential accommodation) ≤ 30m² (non-residential accommodation)	D-s3, d2
Other rooms (including garages)	C-s3, d2
Circulation spaces (within dwellings)	
Other circulation spaces (communal)	B-s3, d2 (1)
Note 1: Wallcoverings which conform to BS EN 15102 [30], achieving at least class C-s3, d2 and bonded to a class A2-s3, d2 substrate will also be acceptable.	

5.1.5 The surface linings of walls and ceilings will generally conform to the classification recommended above for the appropriate location. However, parts of walls in rooms may be of lower performance, but not worse than class D-s3, d2 provided that the total area of those parts in any one room does not exceed half of the floor area of the room, subject to a maximum area of 20m² in residential areas and 60m² in non-residential areas.

5.2 Rooflights and thermoplastic materials

5.2.1 Any non-plastic rooflights are to meet the recommendations of Table 9 above.

5.2.2 Where thermoplastic materials (e.g., rooflights, glazing, suspended ceilings, and lighting diffusers) are used in the building, these are to comply with the various recommendations provided in Clause 4.7 and Clauses 4.12 to 4.17 of ADB Vol.1.

6. INTERNAL FIRE SPREAD – STRUCTURE

Building Regulations requirement B3:

"(1) The building shall be designed and constructed so that, in the 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. For the purposes of this sub paragraph a house in a terrace and a semi-detached house are each to be treated as a separate building.

(3) Where reasonably necessary to inhibit the spread of fire within the building, measures shall be taken, to an extent appropriate to the size and intended use of the building, comprising either or both of the following:

(a) sub-division of the building with fire resisting construction;

(b) installation of suitable automatic fire suppression systems.

(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."

6.1 Structural fire resistance

6.1.1 The required period of fire resistance of the structural elements has been based upon the recommendations in ADB and are summarised in Table 10 below.

Table 10 - Structural fire resistance

Plot	Top floor height (approx.)	Structural fire resistance
Tower Block	41.3m	120-minute
Gallery Block	15.9m	60-minute

6.1.2 Where a construction element with lower fire resistance supports or provides stability to another element of structure, then the protection to the supporting structure should be at least the same as the structure it is supporting.

6.1.3 Elements of structure that only supports a roof do not require fire resistance. The structure is considered to support more than only a roof it if supports a load other than the roof itself (e.g., rooftop plant) or is essential to the stability of a fire-resisting wall (internal or external), or other fire resisting element such as the ceiling over a protected stair. In these cases, the structural elements are required to achieve the minimum required structural fire resistance.

6.2 Compartmentation and fire-resisting construction

6.2.1 All floors within the residential section of the building are required to be built as compartment floors and should achieve the same fire resistance as the structure of the building.

6.2.2 Residential and non-residential parts of the building should not connect and should be separated by compartment walls and floors achieving at least the same fire resistance as the structure of the building.

6.2.3 All shafts (e.g., service risers, lifts, shafts) are to be constructed as protected shafts achieving the same fire resistance as the structure of the building.

6.2.4 ADB Vol 1 does not provide specific guidance therefore as detailed in BS9991:2024, re-entrant corners of the external walls between different fire compartments (e.g. two flats) to be fire rated for a distance of 1.0 m on one side of the re-entrant corner as per compartment wall.

6.2.5 Re-entrant corners of the external walls between the protected stairway and the rest of the building should be fire rated for a distance of 1.8 m on one side of the re-entrant corner as per compartment wall.

6.2.6 Where a firefighting shaft forms a re-entrant corner, the façade should be fire rated from the inside for a distance of 5.0 m to same fire resistance as the shaft.

6.2.7 Glazing should not be located within 500 mm of the junction of external walls with the firefighting shaft walls, otherwise it would be required to be fire rated and fixed shut.

6.2.8 The non-residential areas should be separated from the rest of the building by compartment walls and floors achieving at least the same fire resistance as the structure of the building.

6.2.9 The maisonette apartments should be provided with a 30-minute fire rated internal stairway connecting to the entrance door.

6.2.10 The following fire resistance requirements apply to the development, indicated in Table 11.

Table 11 - Periods of fire resistance for fire-separating elements (in minutes)

Part of Building	Minimum Fire Resistance rating when tested to the relevant part of BS EN 13501		Methods of Exposure
	Tower Block	Gallery Block	
Structural elements, beam, or column	120 R	60 R	Exposed faces
Loadbearing wall	120 R	60 R	Each side separately
Compartment floor	120 REI	60 REI	From underside
Compartment walls separating flats	60 REI	60 REI	Each side separately
Compartment walls separating residential from non-residential areas	120 REI	60 REI	Each side separately
External walls: Any part more than 1,000 mm from the relevant boundary Any part adjacent to an external escape route	 120 RE 15I 30 RE	 60 RE 15I 30 RE	 From the inside From the inside
Protected Shafts (risers, lifts, etc.)	120 REI	60 REI	Each side separately
Firefighting shaft (stairways lifts)	120 REI 60 REI	60 REI 60 REI	From side remote of the shaft From shaft side
Protected Internal hallway/ stairway	30 REI	30 REI	Each side separately
Smoke shaft	120 REI	60 REI	Each side separately
Cavity barriers	30E 15I	30E 15I	Each side separately
Notes: Loadbearing (R), Integrity (E) , Insulation (I)			

Table 12 - Ancillary accommodation fire protection requirements

Ancillary accommodation	Minimum fire resistance
Storage areas not greater than 450 m^2	30 minutes
Transformer, switchgear, and battery rooms for LV equipment	
Service installation rooms	60 minutes
Places classified as high fire risk areas	
Transformer and switchgear rooms for equipment above low voltage	120 minutes
Refuse storage areas	
Boiler rooms	
Fuel storage spaces	
Any area that contains plant associated with life safety systems and fire protection systems and sub-stations	

6.3 Fire doors

6.3.1 Fire doors are to be provided in accordance with the recommendations of Appendix C of ADB Vol.1, and as summarised in Table 13.

6.3.2 All fire doors will be self-closing except for doors within flats or dwellinghouses, fire doors to cupboards or doors which are normally locked shut, such as to places of special fire hazard or service risers, which may also need to be provided with appropriate signage.

6.3.3 Fire doors assemblies will comply with:

- BS 476-22 [31] or BS EN 1634-1 [32] for fire resistance and where applicable
- BS 476-31 [33] or BS EN 1634-3 [34] for smoke leakage.

Table 13 – Provision for fire doors

Enclosing ancillary accommodation	As per the wall it is fitted in	As per the wall it is fitted in
Enclosing smoke shaft	FD120S	E 120 Sa
Enclosing a protected shaft/riser	Half of the wall it is fitted in and with suffix 'S'	Half of the wall it is fitted in and with suffix 'Sa'
Enclosing a firefighting stair	FD 60 S	E 60 Sa
Enclosing an evacuation/ firefighting lift	Half of the wall it is fitted in	Half of the wall it is fitted in
Enclosing an evacuation lift lobby	FD 60S	E 60 Sa
Flat entrance doors	FD 30 S	E 30 Sa
Internal protected stairways/ halls	FD30	E 30
Notes: Smoke seals are indicated by the suffix 'S' (to BS 476-31) or 'Sa' (to BS EN 1634-3) and are required in all doors which form the enclosure to protected escape routes. The ratings shown above are for integrity only. Doors should not have a fire rating less than FD30 where providing half the period of fire resistance as the wall its fitted.		

6.4 Fire-stopping and penetrations through fire-resisting construction

6.4.1 Fire-stopping will be provided at the junction of fire-separating walls and external walls in order to maintain the fire resistance period of fire-separating walls and thereby prevent a fire from travelling around the junction and into the neighbouring space. Penetrations through lines of fire-resisting separation will be fire-stopped using a system which will achieve the same fire resistance rating as the penetrated wall or floor.

6.4.2 In order to maintain the fire resistance of separating construction, any pipe or cable penetrations through lines of fire-resisting separation will be fire-stopped in accordance with one of the following methods set out in Section 9 of ADB Vol.1, unless located within a protected shaft. Figure 27 is provided to assist in the interpretation of the recommendations below.

- For pipes of any diameter, a proprietary tested sealing system which will maintain the fire-resistance rating of the wall, floor, or cavity barrier.
- For pipes with a restricted diameter, keeping the opening as small as possible and fire-stopping around the pipe. The nominal interior diameter of the pipe will not be more than the relevant dimensions given in Table 9.1 of ADB Vol.1, also reproduced in Table 14.
- Sleeving – a pipe of lead, aluminium, aluminium alloy, fibre-cement, or uPVC, with a maximum nominal internal diameter of 160mm, may be used with a sleeving of a high melting point metal. The opening in the structure should be as small as possible and the sleeve will be class A1 rated and extend no less than 1,000mm on either side of the structure.

6.4.3 Any gas supply pipe in a protected shaft will be of a screwed-steel or all-welded steel construction, installed in accordance with the "Pipelines Safety Regulations 1996" [35] and the "Gas Safety (Installation and use) Regulations 1998" [36].

Table 14 - Maximum nominal internal diameter of pipes

Situation	Pipe material and maximum nominal internal diameter (mm)		
	High melting point metal (1)	Lead, aluminium, aluminium Alloy, uPVC (2), fibre cement	Any other material
Structure enclosing a protected shaft which is not a stairway or lift shaft	160	110	40
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 conforming to either BS 4514 [37] or BS 5255.			

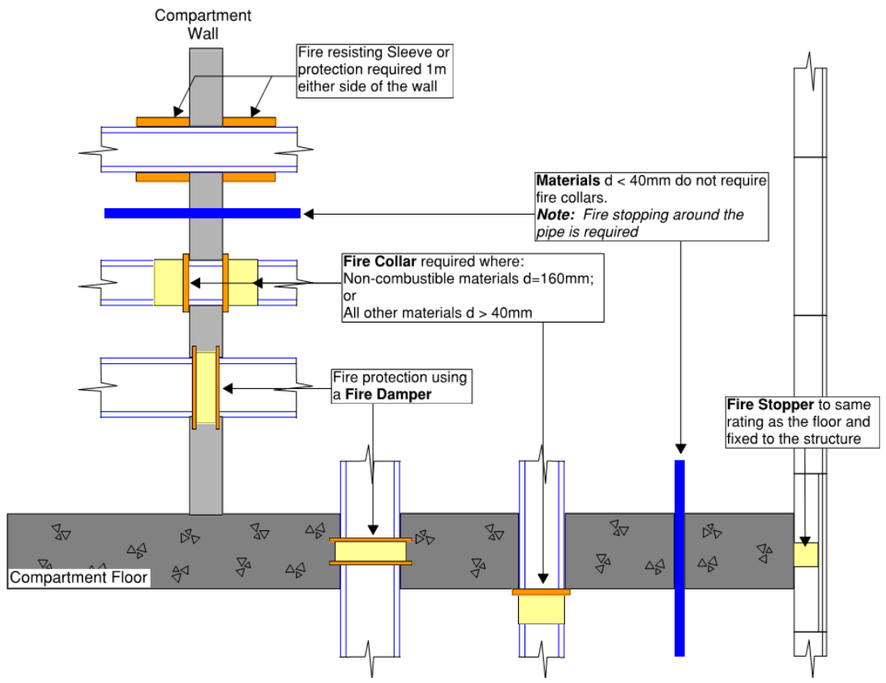


Figure 27 – Fire-stopping expectations

6.5 Protection of ductwork

6.5.1 One of the following methods will be implemented where a ventilation duct passes through a fire resisting element to maintain the integrity of the element being breached:

- Thermally activated dampers (not suitable where passing through the enclosure of a protected escape route).
- Protection using fire and smoke dampers activated by smoke detectors (ES-type dampers).
- Protection using a fire-resisting enclosure achieving a fire resistance rating equivalent to the highest rated compartmentation that is penetrated.
- Protection using fire-resisting ductworks achieving a fire resistance rating equivalent to the highest rated compartmentation that is penetrated.

6.5.2 If dampers are the preferred form of ductwork protection, smoke detector operated fire and smoke dampers (ES-type) will be provided where the ductwork enters fire-separated or smoke-separated sections of escape routes and where it enters in each dwelling.

6.5.3 Fire dampers will conform to BS EN 15650 [38] and achieve an 'E' classification equal to or greater than the resistance of the element that it penetrates, but not less than 60 minutes in accordance with BS 13501-3 [39].

6.5.4 Fire and smoke dampers will conform to BS EN 15650 and achieve an 'ES' classification equal to or greater than the resistance of the element that it penetrates, but not less than 60 minutes in accordance with BS 13501-3.

6.5.5 The fire resistance of ducts and dampers will be equal to the fire-resistance required for the element that is penetrated. All ducts will be fire-stopped where they penetrate compartments and fire-resisting enclosures of escape routes.

6.5.6 Any air transfer grilles required as part of the ventilation system will not be provided within any wall, door, floor, or ceiling enclosing protected entrance halls, protected corridors, firefighting stairways and lobbies, protected shafts and compartment walls or floors. Air transfer grilles located within fire hazard rooms will be provided with both fire and smoke containment. Any transfer grilles fitted in doors will need to be accompanied by a test certificate provided by the door manufacturer.

6.5.7 Any extraction ductwork serving a kitchen is recommended to avoid passing through fire-resisting construction where possible. If this cannot be avoided, then the ductwork will not be fitted with dampers, and will instead be fire-resisting or be enclosed within fire-resisting construction.

6.6 Cavity barriers and concealed spaces

6.6.1 Cavity barriers will be provided in order to prevent the rapid spread of unseen fire or smoke within voids, and to prevent the spread of fire around compartmentation via voids. Cavity barriers will be provided in accordance with Section 8 of ADB Vol.1 and Section 9 of ADB Vol.2 where appropriate:

- To close the edges of cavities, including the top of the cavity wall and around openings (windows, doors, and exit/entry points for services) in the external wall.
- At the junction between an external cavity wall (except where the cavity wall is twin-leaf masonry/concrete constructed in accordance with Diagram 8.2 of ADB Vol.1) and every compartment floor or compartment wall.
- At the junction between an internal cavity wall (except where the cavity wall is twin-leaf masonry/concrete constructed in accordance with Diagram 8.2 of ADB Vol.1) and every compartment floor, compartment wall or other wall or door assembly which forms a fire resisting barrier.

6.6.2 Figure 28 is provided to assist with the interpretation of these requirements.

6.6.3 Extensive internal concealed cavities (e.g. roof voids or the void between suspended ceilings and the soffit of the floor above) generally require cavity barriers to sub-divide them. In general, cavity barriers will be at 20m centres in cavities with exclusively class C-s3, d2 linings or better. For other linings, the spacing between cavity barriers will be reduced to 10m. Various exceptions are provided in Clause 9.10 of ADB Vol.2 with respect to extensive cavities in non-domestic premises.

6.6.4 All cavity barriers will have a fire resistance rating of at least 30 minutes for integrity (E) and 15 minutes for insulation (I) and will be tightly fitted to a rigid construction and mechanically fixed into position.

6.6.5 Cavity barriers in a stud wall or partition, or provided around openings may be formed of:

- Steel at least 0.5mm thick.
- Timber at least 38mm thick.
- Polythene-sleeved mineral wool, or mineral wool slab, under compression when installed in the cavity.
- Calcium silicate, cement-based or gypsum-based boards at least 12mm thick.

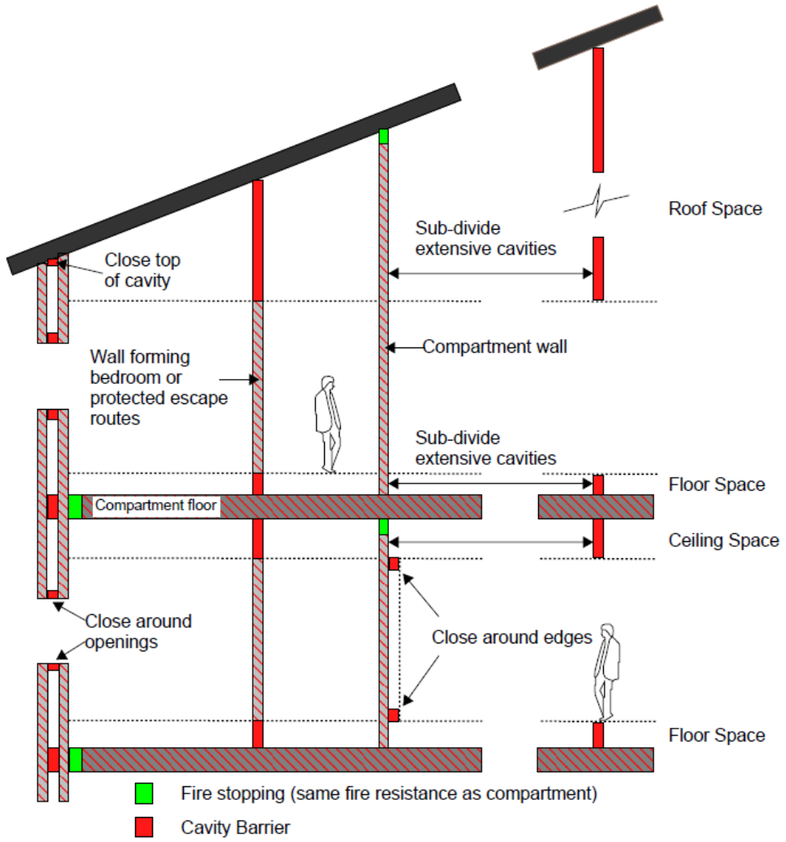


Figure 28 – Cavity barrier and fire-stopping locations

7. EXTERNAL FIRE SPREAD

Building Regulations requirement B4:

"(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 the 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."

7.1 General

7.1.1 To prevent the spread of flame across the external surfaces of the building, materials forming part of the external wall of the building will be in accordance with Section 10 of ADB Vol.1. Further restrictions are placed on buildings classified as 'relevant buildings.'

7.1.2 The definition of external walls contained within the Building Regulations also includes windows and doors within the wall and any decorations applied to the external surface of the walls.

7.1.3 In relation to buildings of any height or use, ADB recommends that consideration should be given to the choice of materials (including their extent and arrangement) used for external walls or attachments, to reduce the risk of fire spread over the wall.

7.2 External wall construction – 'Relevant buildings'

Tower Block

7.2.1 As the building will contain one or more dwellings, an institution or a room for residential purposes and will have a floor at a height greater than 18m above ground level, it will be classified as a 'relevant building' under Regulation 7(4) of the Building Regulations.

7.2.2 The building will comply with the requirements of Regulations 7(1) and 7(2), which state that:

[…] "(1A) building work shall be carried out so that relevant metal composite material does not become part of an external wall, or specified attachment, of any building."

"(2) building work shall be carried out so that materials which become part of an external wall, or specified attachment, of a relevant building are of European Classification A2-s1, d0 or A1 (classified in accordance with the reaction to fire classification)."

7.2.3 The definition of a relevant metal composite material is given in Regulation 2(6)(c) as any panel or sheet, having a thickness of no more than 10mm which is composed of a number of layers two or more of which are made of metal, alloy or metal compound and one or more of which is a substantial layer made of a material having a gross calorific value of more than 35MJ/kg when tested in accordance with BS EN ISO 1716 [40]. A substantial layer is defined as a layer which is at least 1mm thick or has a mass per unit area of at least 1kg/m^2.

7.2.4 In accordance with Regulation 7(3) the following items are exempt from Regulation 7(2):

- Cavity trays when used between two leaves of masonry.
- Any part of a roof (other than any part of a roof which falls within paragraph (iv) of regulation 2(6)) if that part is connected to an external wall.
- Door frames and doors.
- Electrical installations.
- Fibre optic cables.
- Insulation and water proofing materials used below ground level or up to 300mm above that 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.
- Components associated with a solar shading device, excluding components whose primary function is to provide shade or deflect sunlight, such as the awning, curtain, or slats.
- Thermal break materials where the inclusion of the materials is necessary to meet the thermal bridging requirements of Part L of Schedule 1.
- Window frames and glass.
- Materials which form the top horizontal floor layer of a balcony which are of European classification A1fl or A2fl-s1 (classified in accordance with the reaction to fire classification) provided that the entire layer has an imperforate substrate under it.

7.2.5 In addition to the recommendations set out by Regulations 7(1) and 7(2) above, the building will also comply with requirement B4 of the Building Regulations and the external walls of the building will meet the following recommendations:

- External surfaces to meet the recommendations in Table 10.1 of ADB Vol.1 reproduced in Table 15 below.
- Cavity barriers to be provided in accordance with Section 6.6 of this report.

Gallery Block

7.2.6 As the building will contain one or more dwellings, an institution or a room for residential purposes but will not have a floor at a height greater than 18m above ground level, it is not considered to be a 'relevant building' under Regulation 7(4) of the Building Regulations.

7.2.7 The external walls within buildings with a height more than 11m above ground will achieve either of the following:

- Meet the performance criteria given in the BRE report BR 135 [41] for cladding systems using full-scale test data from BS 8414-1 [42] or BS 8414-2 [43]; or
- Meet the following recommendations:
    - External surfaces to meet the recommendations in Table 10.1 of ADB Vol.1 reproduced in Table 12 below; and
    - Cavity barriers to be provided in accordance with Section Table 12 of this report.

7.2.8 External surfaces to meet the recommendations in Table 10.1 of ADB Vol.1 reproduced in Table 12 below;

Table 15 – Reaction to fire performance of external surface of walls

Building type	Building height [1]	Less than 1m from boundary	More than 1m from boundary
Tower Block - Relevant buildings as defined in Regulation 7(4)	48m	Class A2-s1, d0[2] or better	Class A2-s1, d0[2] or better
Gallery Block – All 'residential' purpose groups	16m	Class A2-s1,d0 [2] or better	Class A2-s1,d0 [2] or better
Note 1: Except in the case of 'relevant buildings', the building height should be measured in accordance with Appendix D of ADB Vol.1. Note 2: The restrictions for these buildings apply to all the materials used in the external wall and specified attachments.			

7.2.9 Any balconies will be specified to meet either of the following conditions:

a) Only contain materials achieving class A1 or A2-s1, d0, except for any of the following:

- Cavity trays when used between two leaves of masonry.
- Intumescent and fire-stopping materials where the inclusion of the materials is necessary to meet the requirements of Part B of Schedule 1 to the Building Regulations 2010.
- 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 of the Building Regulations 2010.
- Any material achieving class A1fl or A2fl-s1 when it forms the top horizontal floor layer of a balcony and is provided with an imperforate substrate under it which extends to the full size of the class A1fl or A2fl-s1 material.
- Electrical installations.
- Fibre optic cables.

7.2.10 Regulation 7(1A) prohibits the use of relevant metal composite materials in the external walls of all buildings of any height. The definition of a relevant metal composite material is given in Regulation 2(6)(c) as any panel or sheet, having a thickness of no more than 10mm which is composed of a number of layers two or more of which are made of metal, alloy or metal compound and one or more of which is a substantial layer made of a material having a gross calorific value of more than 35MJ/kg when tested in accordance with BS EN ISO 1716 [40]. A substantial layer is defined as a layer which is at least 1mm thick or has a mass per unit area of at least 1kg/m^2.

7.2.11 Balconies and terraces are to be provided in accordance with the recommendations in BS 8579 [44]. As the building has a floor more than 11m above ground, stacked balconies will be constructed from materials achieving class A1 or A2-s1, d0 in accordance with BS EN 13501-1.

7.3 Roof coverings

7.3.1 Roof coverings are recommended to be resistant to the spread of fire where either close enough to a boundary to be at risk of ignition from a fire in other buildings or where needed to avoid fire spread between compartments via the roof covering.

7.3.2 The relevant test and classification standard for the external fire performance of roof systems is BS EN 13501-5. Roof coverings refer to a construction that can consist of one or more layers of material but does not refer to the roof structure as a whole.

7.3.3 Table 16 below summarises the required separation distances from the relevant boundary according to the type of roof coverings, as described in Table 12.1 of ADB Vol.1.

Table 16 – Limitations on roof coverings

Distance from relevant boundary	Designation of roof covering		
	B_{ROOF}(t4)	C_{ROOF}(t4)	D_{ROOF}(t4)
Less than 6m	✓	×	×
At least 6m	✓	✓	×
At least 20m	✓	✓	✓

7.3.4 As the building will have a minimum relevant boundary distance of at least 6m, all roof covering will be specified as achieving a class C_{ROOF}(t4).

7.3.5 The building features accessible terraces which are considered as occupied roofs under BS 8579 [44] guidance and are expected to meet the following:

- Terrace floor build-ups should resist fire spreading onto the terrace or between compartments. These will feature a B_{ROOF}(t4) or better deck covering where located within 3m of an extensive external façade.
- Balustrades located within 3m of an extensive vertical façade are recommended to be constructed from Class A1 of Class A2-s1, d0 materials to BS EN 13501-1.

7.4 Space separation and unprotected areas of the façade

7.4.1 Should a fire occur in a building, heat will radiate through non-fire resisting openings in the external walls. This heat can be sufficient to set fire to nearby buildings and in order to mitigate the risk of external fire spread, ADB places limits on the area of the external elevation with no fire resistance, known as the unprotected area.

7.4.2 The relevant boundaries are the reference points at which the potential for fire spread will be assessed, being:

- The site boundary.
- The centreline of a space where further development is unlikely, such as a road, railway, canal, or river; or
- A notional boundary between two buildings on the same site where either of the following is met:
    - One of both of the buildings are in the 'residential' or 'assembly and recreation' purpose groups (purpose groups 1, 2 or 5).
    - The buildings will be operated/managed by different organisations.

7.4.3 In this instance, the relevant boundaries have been taken as centre of adjoining roads or site boundary as indicated on Figure 30.

7.4.4 In accordance with Clause 11.11 of ADB Vol.1, only small, unprotected areas in an otherwise protected façade do not contribute to the extent of unprotected area. These are shown in Figure 29, however, no external walls are located at less than 1m from a relevant/ site boundary.

7.4.5 The allowable unprotected areas have been assessed using the enclosing rectangle method of the BRE report BR 187 [45], taking into account the compartment dimensions and specified emitter radiation intensities.

7.4.6 Two radiation intensities have been adopted as recommended in ADB Vol.1, corresponding to a standard and reduced fire load density, depending on the different occupancy types, as follows:

- 84 kW/m^2 for residential spaces; and
- 168 kW/m^2 for ancillary spaces (e.g. cycle stores, refuge storage rooms).

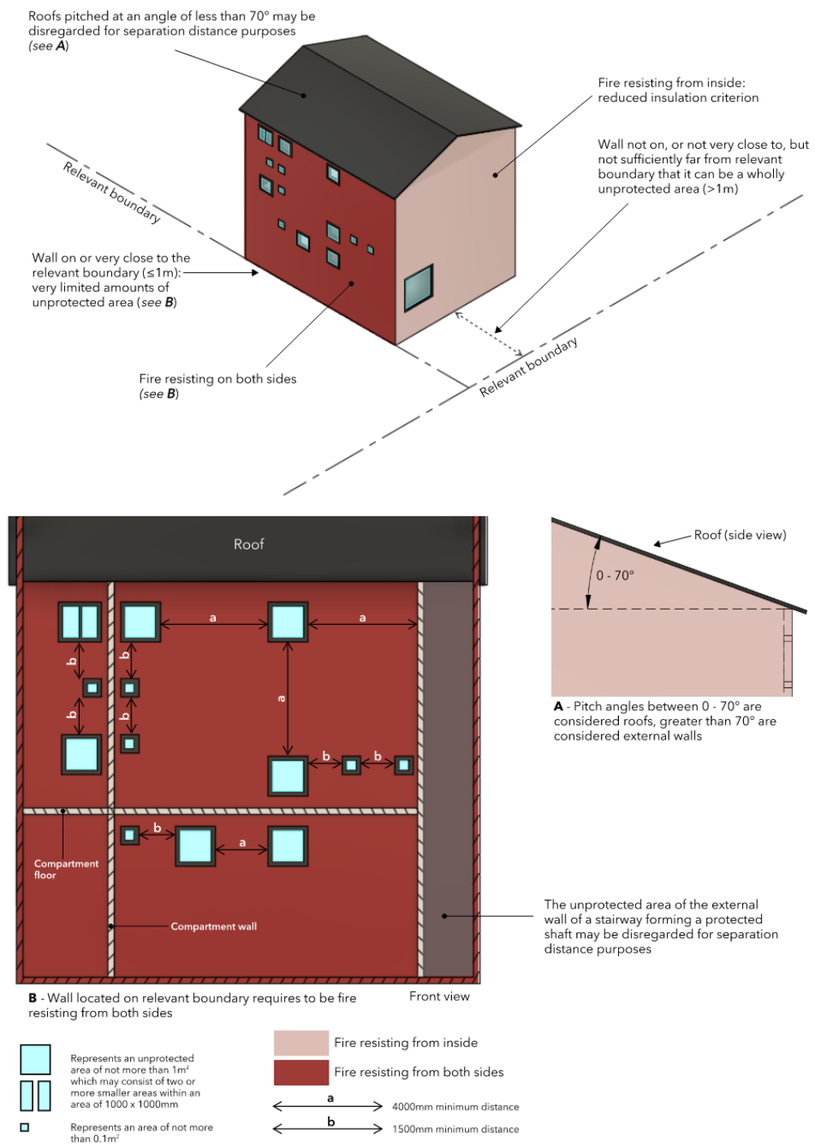


Figure 29 - Exclusion from unprotected area calculations

7.4.7 The benefit of the automatic sprinkler system has been considered in the external fire spread assessment, as recommended in Clause 11.21 of ADB Vol.1, namely the distance to the boundary for a given amount of unprotected area has been halved (up to a minimum distance of 1m).

7.4.8 In accordance with BR 187, the height and width of the enclosing rectangle are measured to the nearest compartment wall/floor. Therefore, the worst-case scenario situation (corresponding to the largest compartment coinciding with each elevation) has been assessed.

7.4.9 Where an external wall is within 1.0m from the relevant boundary, that external wall will have a 0% unprotected area (with the exception of areas shown in Figure 29) and is required to achieve the fire resistance detailed in Table 10.

7.4.10 Where a fire resisting external wall which has a surface material that is worse than class B-s3, d2 and is more than 1mm thick, that part of the wall will be classified as an unprotected area equating to half of its area.

7.4.11 Indicative measurements between the building elevations and associated relevant boundaries are shown in Figure 30.

7.4.12 The results of the analysis representing the worst-case scenarios are presented in Table 17 below. This table indicates the allowable unprotected area for the fire compartments on each elevation in relation to their distance from the relevant boundary.

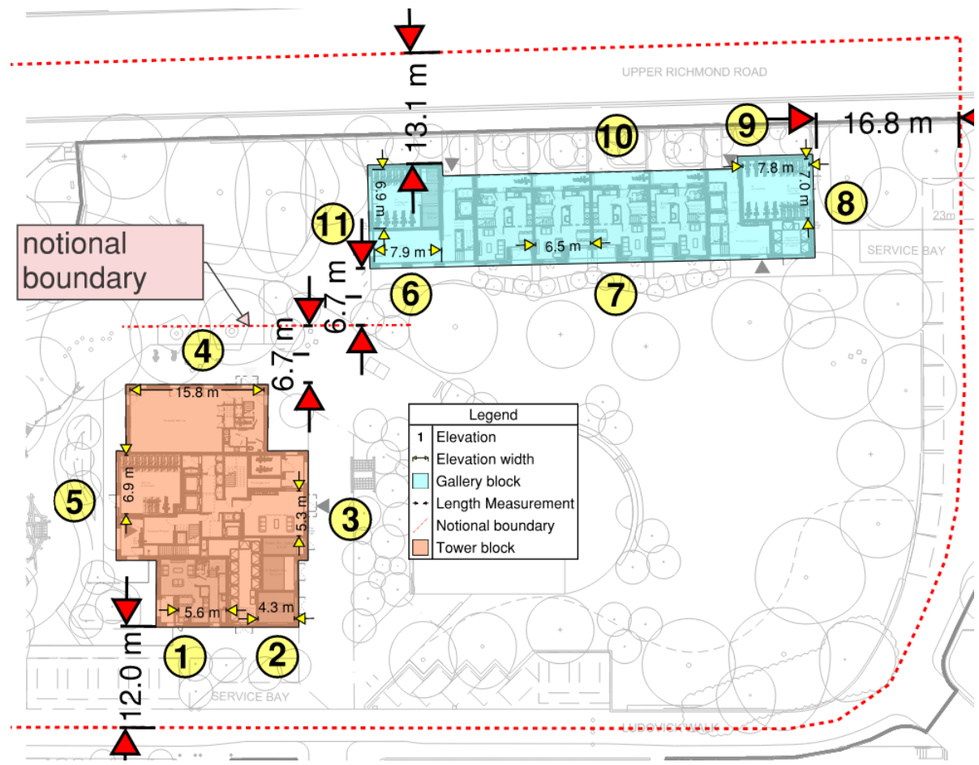


Figure 30 – Indicative measured distances to relevant boundaries

Table 17 – Summary of external fire spread assessment

Elevation	Enclosing rectangle [m]		Radiation intensity [kW/m^2]	Sprinkler considered	Distance to boundary [m]	Allowable unprotected area (%)
	W	H				
Tower Block (A1) – (ground floor)						
1	5.6	3.5	84	Yes	12.0	100
2	4.3	3.5	168	Yes	12.0	100
3	5.3	6.5	168	Yes	>3[(1)]	100
4 Assembly unit	15.8	3.5	168	Yes	6.7	100
5	6.9	3.5	168	Yes	>8[(1)]	100
Gallery Block (A2) – (ground floor)						
6	7.9	3.5	168	Yes	6.7	100
7	6.5	3.5	84	Yes	>2[(1)]	100
8	7.0	3.5	168	Yes	16.8	100
9	7.8	3.5	168	Yes	13.1	100
10	6.5	3.5	84	Yes	15.1	100
11	6.9	3.5	168	Yes	>4[(1)]	100
Note 1: distance to boundary is greater than the minimum dimension noted to provide 100% allowable unprotected area.						

8. ACCESS AND FACILITIES FOR THE FIRE AND RESCUE SERVICE

Building Regulations requirement B5:

"(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 provision shall be made within the site of the building to enable fire appliances to gain access to the building."

8.1 Means of notifying the fire and rescue service

8.1.1 In the event of fire, the fire and rescue service (FRS) will be notified by a resident of the building, a member of the general public or, where applicable, by a member of management staff. No automatic fire rescue service notification system is proposed to be used at the development.

8.2 Vehicle access to and around the site

8.2.1 Vehicle access to the site will be provided via Upper Richmond road and Ludovick walk to the site.

8.2.2 The access routes for the fire appliances will meet typical values noted in Table 18, as recommended by London Fire Brigade in document GN29 [46]. The parameter noted in table below are to be agreed with the local fire and rescue service and FRS vehicle are not standardised. The acceptability of the access route should be agreed with the local fire and rescue service.

8.2.3 Access and hardstanding areas will be provided for a pump appliance around the site within 18m and within sight of each dry riser inlet located on an external wall and within 60m of all points within the floor plan on each floor.

8.2.4 The appliance will not be required to reverse more than 20m.

Table 18 – Typical firefighting appliance access requirements

Minimum access route specification	Appliance type	
	Pump	High reach
Width between kerbs (m)	3.7	3.7
Width between gateways (m)	3.1	3.1
Turning circle between kerbs (m)	16.8	26.0
Turning circle between walls (m)	19.2	29.0
Clearance height (m)	3.7	4.0
Carrying capacity (tonnes) TBC by fire service	14.0	17.0

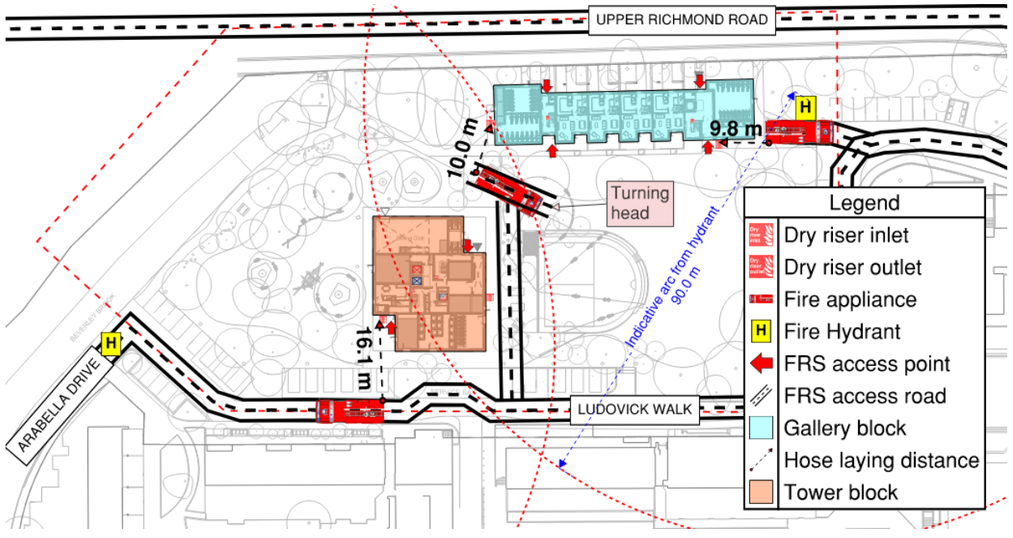


Figure 31 – Indicative fire service access to the site

8.3 Access into and through the building

8.3.1 The Gallery Block does not feature a top storey more than 18m above fire service access level and therefore firefighting shafts are not required. Access to the upper levels will be facilitated by protected stairways, which connect to an open balcony approach on each level.

8.3.2 The Tower Block has a top storey height greater than 18m above fire service access level and will have two fire-fighting shafts.

8.3.3 Firefighting crews will enter the building at ground level via perimeter doors which lead via a protected passageway to the protected stair/firefighting stair. The passageway / access corridor will be maintained fire sterile and be designed to achieve the same level of protection as the stair (e.g. 120-minute in case of firefighting stairs), as indicated in Figure 20b of BS 9999.

8.3.4 Access to the upper levels will be facilitated by a firefighting stairway, achieving a clear width of 1,100mm. The stair will connect to a ventilated lobby which provides access to the common corridors.

8.3.5 Within the Tower Block, the firefighting shaft passageway will be kept fire sterile.

8.3.6 Ancillary spaces associated to the residential core (e.g. refuse store, switch room) located at ground floor will either be accessed externally via perimeter doors or internally via the residential core. All other assembly spaces will be accessed externally and will not communicate to any residential areas.

8.3.7 All access doors into the building will achieve a minimum width of 750mm.

8.4 Firefighting provisions

8.4.1 Tower Block has a top floor above 18m, therefore will be provided with a firefighting shaft. The floor area of storeys above 18m is below 900m^2, as such ADB recommends a minimum of one firefighting shaft. However, due to the height of the building, two firefighting shafts are recommended including a firefighting stair, firefighting lift, and fire main.

8.4.2 The firefighting stairs should achieve a minimum clear width of 1100 mm and achieve 120-minute fire resistance.

8.4.3 Each of the residential cores will be provided with a firefighting lift. Firefighting lift installations should conform to BS EN 81-20 and BS EN 81-72.

8.4.4 Both stairs within the Gallery Block will be provided with a dry fire main serving each storey (including ground level).

8.4.5 Both stairs within the Tower Block will be provided with a dry fire main serving each storey (including ground level).

8.4.6 A dry main to be provided to protected stair providing access to basement within Tower Block.

8.4.7 Outlets from the dry riser main will be located within the stairway on the full landing at each level. The dry-rising main will be designed and installed in accordance with BS 9990 and the maximum horizontal pipe run between the fire main inlet and dry rising main will not exceed 18m.

8.4.8 The two firefighting cores will also be provided with a single-entry firefighting lift, designed and installed in accordance with Section 3.12. The lift landing doors will be within 7.5m of the firefighting stair door and the lift will be enclosed in 120 minutes fire resisting construction provided with FD60 fire doors.

8.4.9 The two firefighting shafts within the tower building serving the residential area will be protected by providing ventilation to the lobbies and any adjacent residential corridors which connect to these lobbies as described in Section 3.4.

8.4.10 As both the Tower and Gallery Blocks are fitted with sprinklers, the hose laying route to all areas on the building floorplate will be within, 60m of a fire main outlet.

8.4.11 As the Tower Block has a top storey more than 18m above ground, an evacuation alert system will be provided, as indicated in Section 3.2.

8.4.12 As the buildings have a top storey more than 11m above ground, a secured information box will be provided on site to store information about the building to be used by the fire service during an incident. Each box will be weather protected and be easily located and identified by the fire service, such as being located in the main reception within each block. Best practice guidance is provided in 'Code of practice for the provision of premises information boxes in residential buildings' published by the Fire Industry Association.

8.4.13 As the tower building has a basement storey with a floor area greater than 200m^2, means for smoke clearance will be provided as indicated in Section 3.6 above.

8.5 Water supplies

8.5.1 Hydrants will be required in the vicinity of the building to support firefighting operations. The location of any existing fire hydrants near the building should be investigated on-site and confirmed with the fire and rescue service. Additional hydrants will be required if both of the following apply to the building:

- It has a compartment with an area of more than 280m^2 and
- It is being erected more than 100m from an existing hydrant.

8.5.2 Any new hydrants will be located not more than 90m of the dry riser inlet.

8.5.3 Private hydrants will be designed and installed in accordance with BS 9990 [47]. All hydrants will have signage in accordance with BS 3251 [48].

8.5.4 If new fire hydrants are to be installed, they will be included as part of a fire ring main system. They should preferably be sited immediately adjacent to roadways or hard-standing facilities suitable for fire and rescue service appliances. To ensure that they remain usable during a fire, they should be sited with consideration of the effect that falling debris and other possible occurrences during a fire might have on the continuing viability of the location and as such will be sited not less than 6m from the building.

8.6 First-aid firefighting

8.6.1 First-aid firefighting provisions will be assessed and provided as part of the fire risk assessment for the building, including consideration for the day-to-day management of these provisions. Suitable first-aid firefighting provisions can help with the extinguishment of small fires, preventing these from growing into significant fires.

8.6.2 Fire extinguishers are not generally expected to be provided within common parts of blocks of flats, in accordance with available guidance on purpose-built blocks of flats [49]. Such equipment should only be used by those trained in its use, and it is not practicable for residents in a block of flats to receive such training. Furthermore, placing an extinguisher within common areas would require an occupant to return to their flat to fight a fire which is not considered an appropriate procedure. This does not preclude residents from providing their own firefighting equipment such as extinguishers or fire blankets within their own flat.

8.6.3 In general, fire points should be provided within general areas of the building and within specific areas presenting a significant fire ignition risk, such as plantrooms, communal facilities, kitchen areas etc. The fire risk assessment that will be undertaken upon occupation of the building (see Section 9) may assist with the placement of suitable fire extinguishers.

8.6.4 The type and size of extinguisher(s) at each fire point will be chosen in accordance with the guidance given in BS 5306 [50], as summarised by Table 19 and the classification of fire fuel hazards are listed below:

- Class A – fires involving solid materials, usually of an organic nature (general hazards).
- Class B – fires involving liquid or liquefiable solids (such as liquid fuels, lubricants, paints, etc.).
- Class C – fires involving gases.
- Class D – fire involving metals.
- Class F – fires involving cooking media (vegetable or animal oils or fats).

8.6.5 For general areas, each floor should have a fire extinguisher at a rate of approximately 1x fire point for every 200 m^2 of floor area. These would generally be recommended to be located adjacent to storey exits. Fire points are recommended to consist of either a 9L water and 2L CO_2 extinguisher, or a single 6L AFFF Foam extinguisher where covering electrical devices which would not exceed the 35 kV (dielectric test) limitation.

8.6.6 Plant rooms should be provided with extinguishers suitable for their risks. In general, it would be expected that CO_2 extinguishers would be provided for electrical risks, where this may be for higher voltage equipment. Powder extinguishers should not be used within these confined spaces, where breathing in the powder may be harmful.

8.6.7 Wet chemical extinguishers are typically provided for kitchens having a risk of oil-based fires. Fire blankets should also be provided for extinguishing cooking fires within kitchen areas.

Table 19 – Fire extinguisher types and application guidance

Medium	Colour code	Application	Do NOT use for
Water	Red	Class A fires	Liquid, electrical, metal or cooking fires
Powder	Blue	Class A, B or C fires	Metal or cooking fires
Foam	Cream	Class A or B fires	Electrical*, metal or cooking fires
CO_2	Black	Class B fires	Metal or cooking fires
Wet chemical	Yellow	Class A or F fires	Liquid, electrical or metal fires
* AFFF Foam extinguishers may be used for electrical fires up to 35 kV (dielectric test) and where operated from a distance of at least 1m.			

9. FIRE SAFETY MANAGEMENT

9.1 Overview

9.1.1 Management procedures have a pivotal role to play in fire prevention, control and evacuation of occupants should a fire incident occur. This management is the responsibility of the responsible person, supported by the building fire safety design and handover of fire safety information. In all other areas, the Regulatory Reform (Fire Safety) Order 2005 (FSO) places legal obligations on management.

9.1.2 This section is intended to introduce the FSO, its obligations and provide initial guidance in fulfilling these duties. It is the responsibility of the landlords/ building management to ensure that all fire safety systems are tested and maintained to ensure their continuous effectiveness. Building management need to be aware of all fire safety features provided and their purpose.

9.1.3 It is important that management are aware of their responsibilities detailed in this document and agree that they are sufficiently capable of adequately performing them. Effective arrangements will be put in place to manage all aspects of fire safety in the premises, and the details of those arrangements need to be recorded, e.g. within a fire safety management plan.

9.1.4 In accordance with BS 9999 [51], there are two management system levels, one of which should be implemented, and these are summarised in Table 20.

Table 20 – Management levels

Level	Management	Robustness	Minimum assurance	Conformity
1	Enhanced	Best Practice	High level of assurance	Conformity with a management level such as BS 9997 [52]
2	Adequate	Good Practice	Adequate level of assurance	Conformity with requirements of legislation

9.2 Regulatory Reform (Fire Safety) Order 2005

9.2.1 The Regulatory Reform (Fire Safety) Order (FSO) applies to all non-domestic premises in England and Wales, including the common parts of blocks of flats or houses in multiple occupation.

9.2.2 The 'responsible person' as defined within the FSO has a duty to make the premises safe and must undertake regular fire risk assessments. It is the responsible person who will be held accountable under legislation for any breaches in fire safety. It is expected that the building is managed and maintained to a standard in accordance with the expectations of the FSO and the FSR.

9.2.3 In workplaces, the responsible person is the employer. In other cases, the owner or person in control of the premises is the responsible person, e.g. landlord, building management company.

9.2.4 Under the Order, the 'responsible person' must carry out a fire safety risk assessment and implement and maintain a fire management plan. The assessment should be kept under regular review and reassessed if the use of the building has been varied or a material alteration has been made. The significant findings must then be recorded, along with the measures taken to address the risks identified. A competent person should carry out the fire risk assessment.

9.3 Fire Safety Act 2021

9.3.1 The Fire Safety Act 2021 came into force on 16th May 2021 which amended the Regulatory Reform (Fire Safety) Order 2005.

9.3.2 The Fire Safety Act 2021 applies in England and Wales and clarifies where a building contains two or more sets of domestic premises the Regulatory Reform (Fire Safety) Order 2005 applies to:

- The building's structure and external walls (including windows, balconies, cladding, insulation, and fixings) and any common parts.
- All doors between domestic premises and common parts such as flat entrance doors (or any other relevant door).

9.4 Fire Safety (England) Regulations 2022

9.4.1 Under Article 24 of the Regulatory Reform (Fire Safety) Order 2005, The Fire Safety (England) Regulations 2022 (FSR) was introduced, in England only, and came into force on 23rd January 2023.

9.4.2 The Fire Safety (England) Regulations make it a requirement for the Responsible Persons of a high-rise residential buildings (at least 18m or 7 storeys in height) to provide the following information (via electronic means) on their buildings to their local fire and rescue service.

- Details of the design of the external walls of the building including the materials used in their construction.
- Up-to-date floor plans, alongside a single page building plan which identifies key firefighting equipment.
- Information on known faults with key firefighting equipment.

9.4.3 Responsible Persons also have a legal requirement to provide additional safety measures.

All multi-occupied residential buildings, with two or more sets of domestic premises

- Fire safety information to residents: provide fire safety information to their residents on how to report a fire and what a resident must do once a fire has occurred.
- Fire door information: provide residents with information relating to the importance of fire doors in fire safety.

Multi-occupied residential buildings of over 11 metres in height

- Carry out annual checks of flat entrance doors.
- Carry out quarterly checks of all fire doors in the common parts.

High-rise residential buildings (at least 18m or 7 storeys in height)

- Secure information boxes: Install and maintain a secure information box in their building. The box must contain the name and contact details of the Responsible Persons and hard copies of the building and floor plans.
- External wall systems: prepare a record of the design of the external walls of the building including the materials used in their construction. The record must provide information on the level of fire risk associated with the externals and any mitigating steps that have been taken.
- Building plans: prepare up-to-date floor plans, alongside a single page building plan which identifies key firefighting equipment.
- Lifts and other key fire-fighting equipment: undertake routine monthly checks of lifts intended for use by firefighters, evacuation lifts, and other key pieces of firefighting equipment.
- Wayfinding signage: install floor identification signs and flat indicator signs. The signage is intended to assist responding firefighters and should be visible in low light or smoky conditions.

9.5 Management responsibilities in support of the fire strategy

9.5.1 Management of fire safety must be integrated with all other management systems. If this management is lacking, then there is a danger that all the other areas such as security measures and alarm systems will be ineffective. To ensure there is no doubt as to where the responsibility for fire safety rests, and to enable consistency of approach, it is important that each establishment appoints a designated Fire Safety Manager. It may be possible to appoint a professional to take on this role but that will depend on the size of the premises, costs, etc.

9.5.2 The appointed person should have the necessary authority and powers of sanction to ensure that the standards of fire safety are maintained. The main duties of the Fire Safety Manager include:

- Management to minimise the incidence of fire, e.g. good housekeeping and security.
- Producing an Emergency Fire Plan.
- Being aware of all of the fire safety features provided and their purpose.
- Being aware of any particular risks on the premises (e.g. issues relating to hot work).
- Being aware of their responsibilities towards disabled people.
- Attendance at the premises when members of the public are present, or the building is occupied. It is acceptable for a competent person other than the fire safety manager to be in attendance, provided that this person has been delegated in writing and that cover is not interrupted.
- Liaising with, and where necessary seek the advice of, the fire authority, the licensing authority and other relevant enforcing authorities.
- Having powers to deal with individuals who sabotage or tamper with safety systems, who ignore any smoking policy or who block exits.
- Liaising with other fire safety managers in a multi-occupancy arrangement.
- Ensuring that tenants, concessionaires, and caretakers are appropriately briefed.
- Ensuring that appropriate communication systems are in place to deal with any fire incident.
- Checking the adequacy of firefighting equipment and ensuring its regular maintenance.
- Ensuring fire escape routes and fire exits are unobstructed and doors operate correctly.
- Ensuring that fire detection and protection systems are maintained, tested, with records kept.
- Ensuring any close down procedures are followed.

9.5.3 Good housekeeping is to ensure that the effectiveness of the fire safety provisions is not adversely affected, including the adequate provision for the disposal of waste and / or rubbish. Maintenance procedures are to be enacted so that equipment will operate effectively. Maintenance staff are to be trained in the importance of the fire safety systems and planned maintenance.

9.5.4 Suitable assembly points outside the building should be identified. These should be remote from the access routes used by the FRS.

9.5.5 Internal escape routes will generally have wall and ceiling linings achieving a European class B-s3, d2 surface spread of flame standard, apart from permitted exceptions noted in this report. These finishes must be maintained for the lifetime of the building. Display features or items such as posters, artwork pieces, etc. may be included with appropriate consideration, justification, and on-going control.

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APPENDIX A - OPEN PLAN FLATS AND UNENCLOSED KITCHENS

A.1 Research summary

A.1.1 In 2020, Hopkin et al. [53] undertook a review of the fire safety design of open plan flats. Part of the review included a discussion on open flats incorporating unenclosed kitchens. The text written in this section has therefore been reproduced and summarised from this paper.

A.1.2 For flats design, the recommendations of ADB Vol.1 pose a significant limitation on the conditions for adopting bedrooms as inner rooms. In recognition of this, the National House Building Council (NHBC) commissioned the Building Research Establishment (BRE) to undertake a study (NF19) [54] into the risk from fires associated with open plan flat arrangements. NF19 included computational modelling of several flat arrangements (up to dimensions of 16m by 12m) and fire and evacuation scenarios where the relative level of safety achieved in traditional (i.e., ADB protected entrance hall) and open plan layouts were assessed via comparative analyses.

A.1.3 From NF19 it was determined that open plan flat arrangements could achieve an equivalent or improved level of safety relative to guidance recommendations. This was reliant on the additional measures of residential sprinkler protection and the inclusion of an enhanced automatic detection and alarm system. With respect to detection and alarm, NF19 recommended that smoke detectors / alarms be included in all habitable rooms (excluding bathrooms) and heat detectors / alarms provided in kitchens. This aligns with a Grade D, Category LD1 system designed to BS 5839-6.

A.1.4 In 2014, BRE were commissioned to undertake additional research into whether unenclosed kitchens posed an elevated risk to occupants in open plan flats. The research also considered the use of concealed sprinkler heads compared to NF19 which adopted quick response pendent heads. The outcomes of this research were not made publicly available until 2016, where Davis et al. discuss the work [55]. In the study, a single three-bedroom flat layout was assessed again but for an unenclosed kitchen. The procedure, inputs, personnel, modelling tools, etc., were identical to that originally reported in NF19.

A.1.5 The results of the updated 2014 BRE study were compared against the original NF19 study, and it was found that the risk to occupants in the cases where the kitchen was not enclosed was lower than in the case for an enclosed kitchen (even when subject to quick response sprinkler heads). According to Davis et al., this was attributed to providing earlier smoke detection, and therefore a quicker time to the initiation of evacuation. In addition, an open plan flat with an unenclosed kitchen was also demonstrated to provide a better level of safety to occupants than a flat with a protected entrance hall not afforded sprinklers (per ADB), inclusive of cases where concealed heads were adopted. This assessment indicated that adopting unenclosed kitchens in open plan flat design can be considered acceptable for flats up to a floor area of 16m by 12m, noting that "although it cannot be categorically confirmed without further simulations, it is likely that the conclusions of this study would [also] extend to a two-bedroom case".

A.1.6 Based on their review of NF19 and subsequent publications, Hopkin et al. [53] concluded that:

- Open plan flats can be considered acceptable, subject to certain limitations, when provided with a sprinkler system designed in accordance with BS 9251 [6] and a Grade D, Category LD1 enhanced early warning detection and alarm system in accordance with BS 5839-6 [3].
- Unenclosed kitchens are acceptable in open plan flats, irrespective of the flat floor area (up to a given limit), but the cooking facilities should be located remote from both the final exit and occupant escape routes.
- The maximum dimensions of an open plan flat should not exceed 16m by 12m, or 192m^2 in floor area, as this is the maximum flat size which has been studied to date.

APPENDIX B - LONDON PLAN POLICY D12 – INFORMATION ON THE FIRE SAFETY PROVISIONS

B.1 General

B.1.1 The Policy D12 states:

B.1.2 In the interest of fire safety and to ensure the safety of all building users, all developments proposals must achieve the highest standards of fire safety and ensure that they:

1) *Identify suitably positioned unobstructed outside space:*
   a) *For fire appliances to be positioned on;*
   b) *Appropriate for use as an evacuation assembly point;*
2) *Are designed to incorporate appropriate features which reduce the risk to life and the risk of serious injury in the event of a fire; including appropriate fire alarm systems and passive and active fire safety measures;*
3) *Are constructed in an appropriate way to minimise the risk of fire spread;*
4) *Provide suitable and convenient means of escape, and associated evacuation strategy for all building users;*
5) *Develop a robust strategy for evacuation which can be periodically updated and published, and which all building users can have confidence in;*
6) *Provide suitable access and equipment for firefighting which is appropriate for the size and use of the development.*

All major development proposals should be submitted with a Fire Statement, which is an independent fire strategy, produced by a third party, suitably qualified assessor. The statement should detail how the development proposal will function in terms of:

1) *The building's construction: methods, products and materials used, including manufacturers' details;*
2) *The means of escape for all building users: suitably designed stair cores, escape for building users who are disabled or require level access, and associated evacuation strategy approach;*
3) *Features which reduce the risk to life: fire alarm systems, passive and active fire safety measures and associated management and maintenance plans;*
4) *Access for fire service personnel and equipment: how this will be achieved in an evacuation situation, water supplies, provision and position of equipment, firefighting lifts, stair and lobbies, any fire suppression and smoke ventilation systems proposed, and the ongoing maintenance and monitoring of these;*
5) *How provision will be made with the curtilage of the site to enable fire appliances to gain access to the building;*
6) *Ensuring that any potential future modification to the building will take into account and not compromise the base build fire safety/ protection measures.*

B.1.3 The following provides information with regards how the above points have been addressed.

B.2 Policy D12 (1)

The building's construction: methods, products and materials used, including manufacturers' details

B.2.1 The buildings will be constructed following the recommendations of contemporary guidance provided in ADB to achieve the life safety requirements of the Building Regulation 2010 (as amended).

B.2.2 The fire resistance requirements for the construction are provided in line with ADB requirements (see Table 11 for reference).

B.2.3 The block of flats should be constructed in line with Regulation 7(2) which allows only materials achieving class A2-s1, d0 or better within the external wall, except for the exempt elements as set out under Regulation 7(3).

B.3 Policy D12 (2)

The means of escape for all building users: suitably designed stair cores, escape for building users who are disabled or require level access, and associated evacuation strategy approach

B.3.1 The means of escape for occupants in the blocks of flats have been developed in line with ADB. The evacuation philosophy is detailed in Section 0 of this report.

B.3.2 The vertical evacuation is supported by two staircases. In addition to the staircases, evacuation lifts are provided in each core. The evacuation lifts are in addition to the firefighting lifts.

B.3.3 Adequate emergency lighting and fire safety signage should be provided in line with the contemporary guidance.

B.4 Policy D12 (3)

Features which reduce the risk to life: fire alarm systems, passive and active fire safety measures and associated management and maintenance plans

10.1.1 The proposed design includes active and passive fire safety provisions in line with recommendations in ADB. The active and fire safety provisions are summarised in Table 21 below.

Table 21 - Fire Safety Provisions

Active Fire Safety Systems	Passive Fire Safety Systems
Automatic fire detection and alarm systems	Fire safety signage
Automatic suppression systems (sprinklers)	Structural fire resistance
Automatic opening vents at the head of the staircases	Fire rated compartmentation
Automatic smoke ventilation system in the communal corridors	Fire stopping of penetrations
Emergency lighting	Non-combustible external walls to limit the fire spread
Firefighting & evacuation lifts	Cavity barriers to limit the fire spread
Fire mains for firefighting operations	
Secondary power supplies	

B.5 Policy D12 (4)

Access for fire service personnel and equipment: how this will be achieved in an evacuation situation, water supplies, provision and position of equipment, firefighting lifts, stair and lobbies, any fire suppression and smoke ventilation systems proposed, and the ongoing maintenance and monitoring of these

B.5.1 Fire service access across the site to the blocks of flats is provided in line with ADB recommendations.

B.5.2 The blocks of flats have a top floor above 18 m and will include two firefighting shafts in support of the firefighting operations. The firefighting shafts should include a firefighting stair with a wet riser main and a firefighting lift. The firefighting facilities are protected in line with ADB with regards to fire resisting construction and smoke protection.

B.5.3 FRS vehicle access should be provided within 45 m of all points on the floor plans of areas accessible from outside only.

B.5.4 Water supplies for the firefighting operations will be provided via hydrants.

B.6 Policy D12 (5)

How provision will be made with the curtilage of the site to enable fire appliances to gain access to the building

B.6.1 Fire service appliance access to the blocks of flats is provided in line with ADB and supplement by recommendations within BS 9999:2017 where required. The fire service access to the building is illustrated in the report, see Section 8 of this report for reference.

B.7 Policy D12 (6)

Ensuring that any potential future modification to the building will take into account and not compromise the base build fire safety/ protection measures

B.7.1 This report has been prepared in support of the planning application. The principles set out in this report should be retained in the following stage of the design and further developed into a Detailed Fire Strategy for Building Regulation submission.

B.7.2 This strategy report may be used to support the end user of the building in the development of any fire safety management procedures and plans considered necessary to fulfil their responsibilities under the Regulatory Reform (Fire Safety) Order 2005 (FSO) and any other applicable fire safety legislation. Furthermore, fire safety information should be given to the responsible person under Regulation 38.

B.8 Conclusion

B.8.1 This fire report summarises the RIBA Stage 3 fire strategy design information and demonstrates how the building should satisfy the functional requirements of the Building Regulations through further design development.

B.8.2 The RIBA Stage 3 fire strategy design is considered to be in accordance with the London Plan requirements.

B.8.3 In Ashton Fire opinion, the fire strategy report prepared for planning submission complies with relevant requirements of London Plan Policy D12 and D5.

APPENDIX C DESIGN AND OPERATION OF EVACUATION LIFTS

C.1 General

C.1.1 BS 9991 [20] provides further guidance on for the design of evacuation lifts in residential developments and currently refers to the draft standard BS EN 81-76 [56]. It is expected that once this document has been published, it will provide clarity on the requirements for evacuation lifts.

C.1.2 In accordance with BS 9991, where passenger lifts are provided in buildings, they should be suitably designed to be used for evacuation. At least one evacuation lift should be provided for each escape stair or more, if required by a capacity assessment.

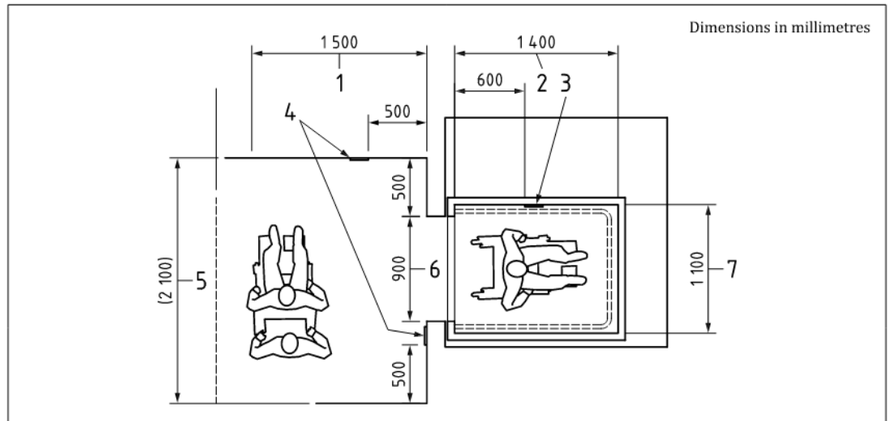
C.2 Design and operation

C.2.1 The design and operation of evacuation lifts should be in accordance with BS EN 81-20 [22].

C.2.2 The enclosure of the lift will be constructed as a protected shaft providing the same level of fire resistance as the building structure.

C.2.3 A temporary waiting space will be provided in front of each evacuation lift design in accordance with Figure 14 of BS 9991:2024, which will also feature a communication system in accordance with BS 5839-9, with communication points located at least 500mm from any wall.

C.2.4 The communication system described above is separate from the evacuation lift communication system which will be covered in BS EN 81-76.



Key

1 Width of lobby
2 Depth of car
3 Location of controls
4 Alternative positions for emergency voice communication system
5 Length of lobby
6 Nominal door width
7 Width of car

Figure C1 – Evacuation lift and lobby minimum dimension (reproduced from BS 9991:2024)

C.2.5 The walls of the lift landing and temporary waiting space and the lift door, and the landing floor and lift floor will be designed to contrast visually. A visually contrasting floor surface (1,500mm x 1,500mm) should be provided outside the lift door area. Further guidance on the visual contrast is given in BS 8300-2 [57].

C.2.6 Evacuation lifts will be clearly signed at the evacuation exit floor.

C.2.7 Primary and secondary power supplies should be provided to the evacuation lift, associated EVC system and lighting to both the lift car and temporary waiting space as discussed below:

- For buildings with no storey at 18m or more above ground level: Secondary power will be provided either via a separately fused circuit fed directly from the main incoming electrical supply to the building, located in a fire-protected enclosure; or an independent power supply. The recommendations in BS 8519 [25] should be adopted for other aspects of protection to the circuit. For alternative supply routes described above, the lift will be provided with automatic rescue operation, that in the event of power failure, will move the lift car to the final exit level and open the doors. The lift will be removed from service until power is restored.
- For buildings with a storey at 18m or more above ground level: independent power supplies will be provided in accordance with BS 8519.

C.2.8 It is expected that BS EN 81-76 will provide a classification for lift types as follows: Clas A and Class B. Where an independent power supply is provided, Class A lifts are not considered suitable, and a Class B lift will be required.

C.2.9 A full specification evacuation lift is defined as Class B and may be specified in most cases as it features a larger car size to include additional control requirements for automatic evacuation operation. Class A evacuation lifts may be specified in the certain situations where:

- One evacuation exit floor is required; and
- The evacuation strategy does not require prioritisation of evacuation lift service for specific landings; and
- A secondary power supply is not available, and the evacuation strategy can accommodate an evacuation lift with automatic rescue operation.

C.2.10 Evacuation lifts will include driver-assisted evacuation operation. This will be supplemented with automatic evacuation operation as a minimum, in buildings that do not feature 24h staff on site.

C.2.11 For automatic evacuation operation there should be means to:

- Recall the lift.
- Provide the automatic evacuation signal; and
- Where landing calls are to be accepted only from the priority floors, signal the priority floors to the lift operator.

C.2.12 The majority of residential buildings, will not be provided with building management that are continually onsite, making such evacuation lift operations unfeasible and impractical to implement prior to BS EN 81-76 being published.

C.2.13 In light of this and to facilitate the evacuation process, the evacuation lifts will continue operating in general circulation mode during an evacuation. The evacuation lifts will:

- Respond to landing calls for each floor and;
- Respond to calls to go to given floors made within the lifts themselves.

C.2.14 A fire detection and alarm system in accordance with BS 5839-1 which covers the lift spaces (lift well, machine and pulley rooms, machinery spaces) and lift lobbies, should provide the suspend service signal. Similarly, before any UPS serving an evacuation lift is fully discharged, a signal from the UPS equipment should provide the suspend service signal.

C.3 Lift access

C.3.1 The route from any dwelling to all evacuation lifts will be step-free. There will be no changes in level unless a suitable ramp is provided in accordance with BS 8300-2.

C.3.2 A lift landing with entrance into an evacuation lift will be provided with a temporary waiting space, located either within an escape stair enclosure or a lobby serving the stair. Where the waiting space is located within a lobby enclosure, the lobby should only provide access to the following:

- The evacuation lift and other passenger or firefighting lifts.
- The adjoining corridor (either ventilated or unventilated).
- Service risers (that do not contain motorized equipment or similar with a potential to malfunction and cause fire) and distribution boards.

C.3.3 Where evacuation lifts are designed as dual entrance, only one lift car door should open at any level.

C.3.4 At the final exit level, the evacuation lift should discharge either directly to a final exit or via a protected route leading to a final exit. Where the lift and stair are entered from a common lobby, separate discharge routes are not required at final exit level.

C.3.5 Any protected corridor / discharge route leading to a final exit will achieve the same standard of protection (fire resistance and lobby protection) as the stair and evacuation lift that it serves. The level of protection will be no less than on the other storeys served by the lift and/or stair.

C.3.6 Where exits passageways from two or more evacuation lifts providing alternative means of escape adjoin, they should be separated by imperforate construction (e.g. no doors).

C.4 Protection of evacuation lifts from smoke

C.4.1 The evacuation lift shaft and evacuation lift lobby will be provided with the same level of protection as the adjoining stair. As occupants using the evacuation lift will be required to wait for a short period of time for the lift to be called and land at the respective floor, adequate protection to the lift and refuge / waiting area is required to be provided. Therefore, the evacuation lift will be provided with a protected lobby which gives access to both the evacuation lift and the stair and an adequate method of preventing smoke ingress into the lobby is provided. Further information on the ventilation requirements is given in Section 3.4.

C.4.2 This will allow people to use the lift to evacuate as they would during normal usage when leaving the building. This evacuation lift operation strategy is enabled through the fire protection measures for the lift system, which will:

- Prevent smoke from entering the lift lobby through a mechanical/natural smoke ventilation system in the common corridor; and
- Prevent fire from influencing the evacuation lifts through multiple levels of fire compartmentation for the flats, common corridors, and protected cores.

C.4.3 While people attempting to use the evacuation lifts may be required to wait due to others in the building using the lift for general circulation, they will do so within a fire/smoke-protected lobby, providing protection from the potential effects of fire/smoke while they wait.

C.4.4 As such, the activation of smoke detectors in the common corridors will not initiate the evacuation lifts to ground. However, if smoke detectors activate in the protected lobbies, the evacuation lifts for the core where the smoke is detected will ground.

C.5 Firefighters' lifts used for evacuation

C.5.1 In case of buildings featuring a stay put evacuation strategy, any firefighting lift in a firefighting shaft may be used as an evacuation lift, until it is recalled using the firefighter's lift switch.

C.5.2 For buildings featuring evacuation strategies other that stay put, firefighting lifts should not be used for evacuation and dedicated evacuation lifts should be provided.

C.5.3 Evacuation lifts will not open directly onto a firefighting stair.

APPENDIX D LONDON PLAN POLICY D5 – INFORMATION ON EVACUATION LIFT

D.1 General

D.1.1 The fire strategy report has been developed including the recommendations of London Plan Policy D5.

D.1.2 London Plan Policy D5(B5) states that where a lift is installed in a development, at least one lift per core or more) should be a suitably sized evacuation lift. This planning requirement for evacuation lifts is in addition to the requirements for firefighters' lifts, where required by Building Regulations.

D.1.3 Following the *London Plan Guidance Fire Safety* document published in February 2022 by the Mayor of London, further information is provided regarding the evacuation lifts regarding the design, number, size, and operation of the evacuation lifts.

D.2 Design consideration

D.2.1 The evacuation lift should be designed and installed in accordance with relevant provisions of BS EN 81-20 [18] and BS EN 81-70 [19]. It is recommended that the minimum lift car size should be Type 2 in accordance with Table 3 of BS EN 81-70:2021 in residential cores.

D.2.2 The evacuation lift should be provided with a protected lobby which gives access to both the evacuation lift and the stair. The lobby affording access to the evacuation lift should not provide direct access to accommodation.

D.2.3 The lobby should be provided with an Emergency Voice Communication (EVC) system conforming to BS 5839-9 [24].

D.2.4 The assembly unit arranged over two storeys has the capacity to include a lift. However, the current proposal is for shell and core only.

D.3 Capacity assessment

D.3.1 An evacuation lift should be provided in each core of the development. The evacuation lift should be provided in addition to the firefighting lift to Tower Block.

D.3.2 Based on the evacuation philosophy, i.e. defend in place or "stay-put," only the flat of fire origin is required to evacuate. Therefore, the evacuation lift could accommodate one wheelchair user evacuating from the flat of fire origin at a time.

D.3.3 As per BS EN 81-70, minimum car dimensions for a Type 2 lift are 1100 mm width and 1400 mm. This car accommodates one wheelchair user and an accompanying person.

D.4 Evacuation Strategy

D.4.1 The proposed evacuation strategy for the building is defend in place or "stay-put," where only the flat of fire origin is required to evacuate. This is in line with ADB recommendations.

D.4.2 In order to meet the requirements of London Plan Policy D5, an evacuation lift should be provided in each core of the development. The evacuation lift should be provided in addition to the firefighting lift.

D.4.3 In support of the evacuation lift arrangement, the following should be included in the design:

D.4.4 The communal corridor serving the flats should be provided with a smoke ventilation system in accordance with Section 3 of this report.

D.4.5 The evacuation lift should be accessed from a protected lobby. The protected lobby providing access to the evacuation lift should not access anything other than:

- The staircase;
- The lifts;
- The adjoining unventilated corridor;
- Service risers (unless the risers contain electrical equipment, motors, etc. which pose a higher ignition risk than cables alone).

D.4.6 The protected lobby should be provided with a smoke ventilation system in accordance with Section 3 of this report.

D.4.7 The protected lobby should include an emergency voice communication system.

D.4.8 As occupants using the evacuation lift will be required to wait for a short period of time for the lift to be called and land at the floor, consideration on adequate protection to the lift and refuge / waiting area is required. This report is primarily concerned with ensuring suitable protection to the evacuation lift and associated refuge area(s). The evacuation lift should be provided with a protected lobby which gives access to both the evacuation lift and the stair. A method of preventing smoke ingress into the lobby is provided. The lobby providing refuge space should also include an Emergency Voice Communication system.

D.4.9 Escape to outside from the evacuation lift should be provided via a fire sterile lobby who will be provided level access to outside.

D.5 Evacuation lift management

D.5.1 Generally, evacuation lifts should be manually operated by a suitably trained, competent person, however it is recognised that a competent person may be absent in residential premises. In this instance, one of the following operation methods may be adopted:

- Automatic evacuation operation (where a suitable Building Management System (BMS) is in place).
- Remote assisted evacuation.
- Remote building management evacuation (remote assisted evacuation operation).

D.5.2 When the evacuation lift lobby, lift well or machinery space of the evacuation lift becomes unsafe, e.g. due to smoke or fire, the evacuation operation should be suspended.

D.5.3 The cause and effect of any evacuation lift is to be discussed and agreed. Confirmation from the client / end user on the preferred operating sequence is required. The operation requirements and cause and effect arrangements may require consultation with a specialist vertical transport consultant.

D.6 Conclusion

D.6.1 The fire strategy report has been developed including the recommendations of London Plan Policy D12 and London Policy D5.

D.6.2 Evacuation lifts in accordance with BS EN 81-20 and BS EN 81-70 should be provided in each core of the building.

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