

Fire Strategy Report
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Project
22 Shad Thames, London
RIBA Stage 4 Fire Safety Strategy Report

Client
Arc Developments
Shad Thames Partnership LLP
22 Shad Thames
London
SE1 2YU

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TRIGON
FIRE SAFETY ENGINEERING

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Amendments

Issue No.	Date	Author	Reviewer	Comment
Issue 01	01-Jul-21	F. Lee	K. Wallasch	RIBA Stage 4 issue
Issue 02	17-Jul-21	F. Lee	K. Wallasch	Updates following SQP comments
Issue 03	30-Jul-21	F. Lee	K. Wallasch	Updates following LFB comments
Issue 04	7-Nov-22	F. Lee	K. Wallasch	Updates to include a fire engineered assessment in support of the final exit route from the South Stair.
Issue 05	14-Nov-22	F. Lee	K. Wallasch	Update to Figure 3.2

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Contact

Trigon Fire Safety Ltd
3 The Square
Richmond
TW9 1DY

info@trigonfire.com
+44 (0) 20 3923 7979

Executive Summary

The fire safety strategy presented in this report has been developed for the proposed refurbishment of the 22 Shad Thames office building in London. The fire safety strategy presented is for Cat B Fit-out design and follows the guidance presented in Approved Document B Volume 2 (2019, with amendments of May 2020)^{A.1.1} in order to meet the functional requirements of the Building Regulations 2010^{A.1.2}.

A summary of the general recommendations to meet B1 to B5 of the Building Regulations is set out below.

Report ref.	Fire Safety Provision
B1: Means of Warning and Escape	
3.1.1	In the event of an alarm, all parts of the building will evacuate simultaneously.
3.2.2 & 3.2.3	In accordance with the recommendations of the guidance, automatic fire detection will be provided to all areas to at least a Category L2 in accordance with BS 5839-1. Manual call points will be provided adjacent to each storey exit in accordance with BS5839-2.
3.3.3 and Table 3.1	The expected building occupancy has been assessed based on floor area and the floor space factors, and the total number of occupants expected at any one time is not expected to exceed 262 persons.
3.4.2	Travel distances will meet the recommendations of ADB for office spaces: 18m in a single direction, and 45m where travel is possible in more than one direction.
3.4.12	The exit widths will be sufficient for the expected occupancy load.
3.5.12 and 3.5.13	The expected number of people (262 pers.) is not expected to exceed the maximum capacity of the North Stair (310 pers.), and therefore the stair widths will be sufficient for the expected occupancy load of the building.
3.5.27	Alterations will not be made to the external wall and therefore a fire engineered assessment has been provided for the protection afforded to the final exit route from the South Stair
3.6	The existing building does not include any disabled refuge spaces, however the fire strategy proposes at least one disabled refuge space at each floor level.
B2: Internal Fire Spread (Linings)	
4.1.1	All wall and ceiling lining will meet the recommendations of ADB as set out in Table 4.1.
B3: Internal Fire Spread (Structure)	
5.2.1	Elements of structure will achieve at least 60 minutes fire resistance.
5.3.3	All floors will be designed as a compartment floors and will achieve 60 minutes fire resistance (excluding fifth floor level).
Table 5.1 and 6.1.5	The existing North wall separating 22 Shad Thames and the neighbouring building should be a compartment wall, and therefore it will be assessed to ensure it achieves at least 60 minutes from both sides separately .
B4: External Fire Spread	
6.1.2	The external facades of the existing building will not be altered (except where glazed openings will be replaced) as part of the proposed refurbishment works and therefore

Report ref.	Fire Safety Provision
	the external fire spread will be made no worse in line with the requirements of Regulation 4(3).
B5: Access and Facilities for Fire Service	
7.2.1	Fire vehicle access will be available off Shad Thames with an existing fire hydrant in close proximity to the building.

1. Introduction

1.1. Overview

- 1.1.1. This report documents the proposed fire safety strategy for the Cat B fit-out design for the proposed refurbishment of the 22 Shad Thames office building in London. The building is an existing office building consisting of seven floor levels (basement, ground, first - fifth floor levels). The proposal is to refurbish the existing building, increasing the net internal area (NIA) of the office space at fifth floor level, and extending the north stair by one level to serve the fifth floor.
- 1.1.2. The proposed development will continue to provide office use on ground and all floor levels above. Basement level will be provided with plant space, cycle parking facilities, refuse storage, and staff lockers with shower rooms.
- 1.1.3. The purpose of this report is to outline the fire safety provisions for the proposed shell and core works that will be provided to satisfy Part B of Schedule 1 of the Building Regulations 2010.

1.2. Building Description

- 1.2.1. The existing building is located on Shad Thames, close by to Tower Bridge in London.
- 1.2.2. The proposed design includes for Cat B fit-out of all areas, whereby basic flooring, ceiling, M&E services and shared toilets and lifts are installed.
- 1.2.3. The topmost storey is greater than 11m above ground floor level, but less than 18m. As part of this refurbishment the existing height of the building will not be changed.
- 1.2.4. The building will be provided with two escape stairs, that for the basis of this report will be referred to as the "North Stair" and the "South Stair".
- 1.2.5. In the existing building, currently an accommodation stair at fourth floor level is the only means of access from the fifth floor level. The accommodation stair serves fourth and fifth floors only, and rises through a void linking both fourth and fifth floor level. Within the proposal, this accommodation stair will be designed as an extension of the South Stair. The accommodation stair will be enclosed at fourth floor level, but remains open to office space at fifth floor level.
- 1.2.6. The existing building is provided with an alternative means of escape route from fifth floor level onto the neighbouring building. As part of this refurbishment works, this alternative route will be omitted; and the extension of the North Stair will be introduced as an alternative protected means of escape route from this level.
- 1.2.7. The North Stair will be extended and will serve Ground Floor and all upper levels (first to fifth floor). The South Stair will remain as existing, serving ground, first – fourth floor levels. The lift core within the South Stair will continue to basement level.
- 1.2.8. Part of the basement level will also remain with level access directly to the outside.

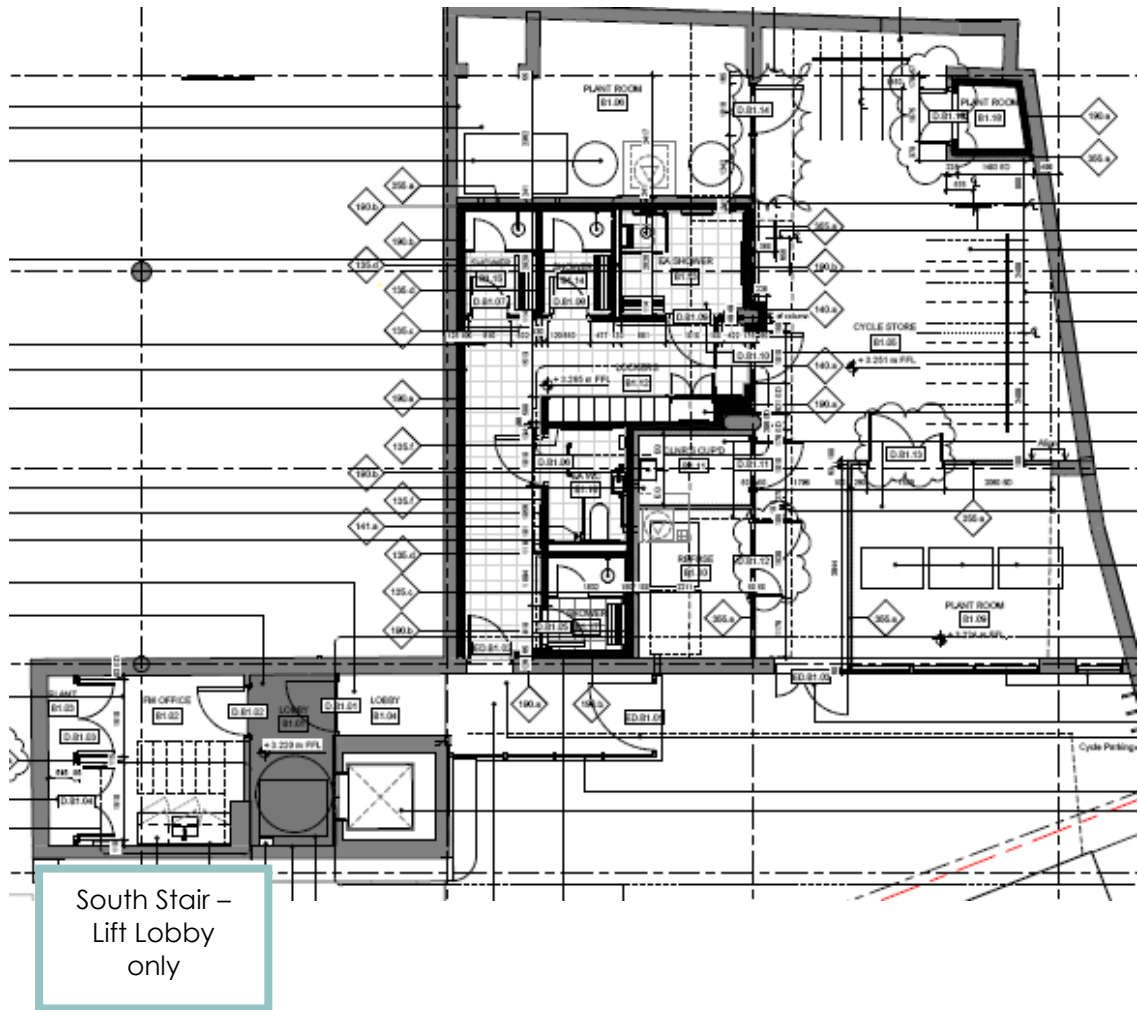
1.3. Architectural Drawings

1.3.1. The following drawings produced by Squire & Partners have been used to produce this RIBA Stage 4 fire safety strategy report. The figures included in this report are indicative and reference should be made to the architect's drawings.

Table 1.1 - Drawings by Squire & Partners

Title	Project No.	Drawing No.	Date	Rev
General Arrangement Basement Plan Proposed	20029	SQP-01-B1-DR-A-20099	28/10/22	C4
General Arrangement Ground Floor Plan Proposed	20029	SQP-01-00-DR-A-20100	28/10/22	C4
General Arrangement Level 01 Floor Plan Proposed	20029	SQP-01-01-DR-A-20101	28/10/22	C4
General Arrangement Level 02 Floor Plan Proposed	20029	SQP-01-02-DR-A-20102	28/10/22	C4
General Arrangement Level 03 Floor Plan Proposed	20029	SQP-01-03-DR-A-20103	25/03/2020	P3
General Arrangement Level 04 Floor Plan Proposed	20029	SQP-01-04-DR-A-SK285	28/10/22	C4
General Arrangement Level 01 Floor Plan Proposed	20029	SQP-01-05-DR-A-SK286	28/10/22	C4
General Arrangement Roof Plan Proposed	20029	SQP-01-RF-DR-A-20106	28/10/22	C4

Figure 1.1: Proposed Basement Level



South Stair -
 Lift Lobby
 only

Figure 1.2: Proposed Ground Floor Level

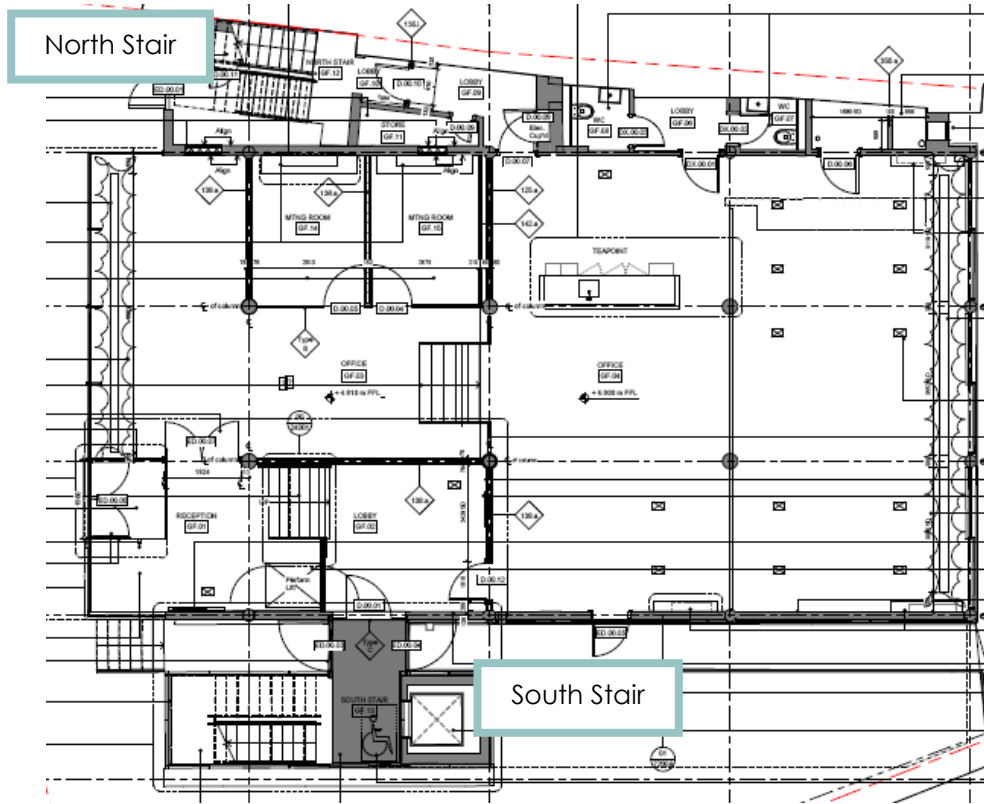


Figure 1.3: Proposed Typical Upper Floor Level (First-Third)

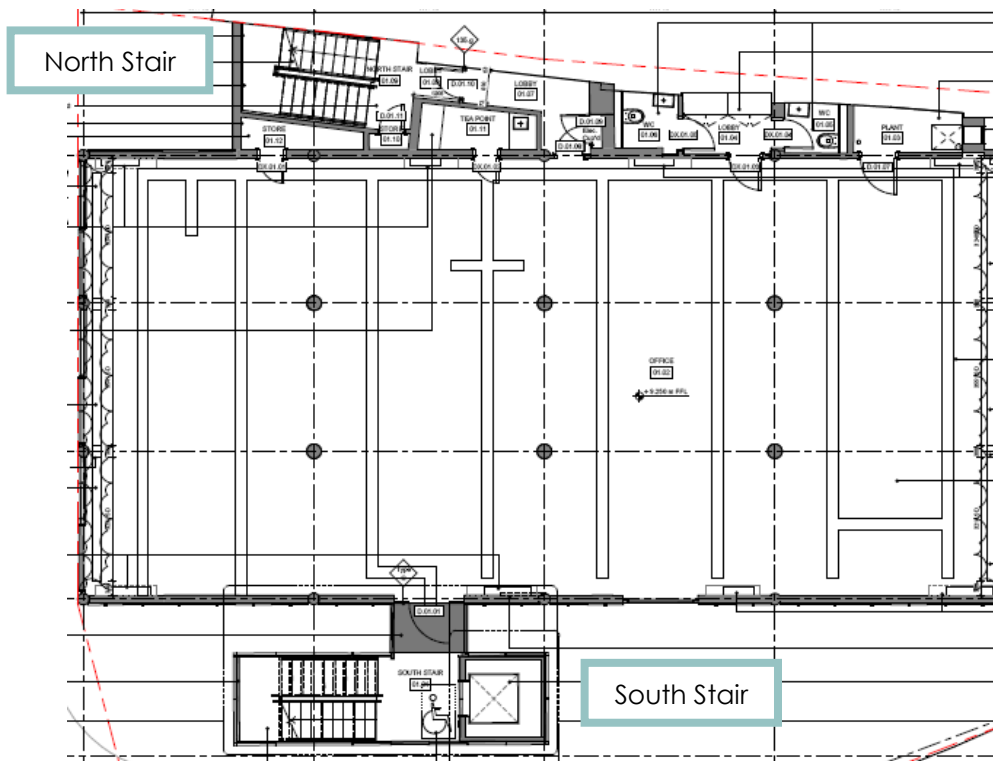


Figure 1.4: Proposed Fourth Floor Level

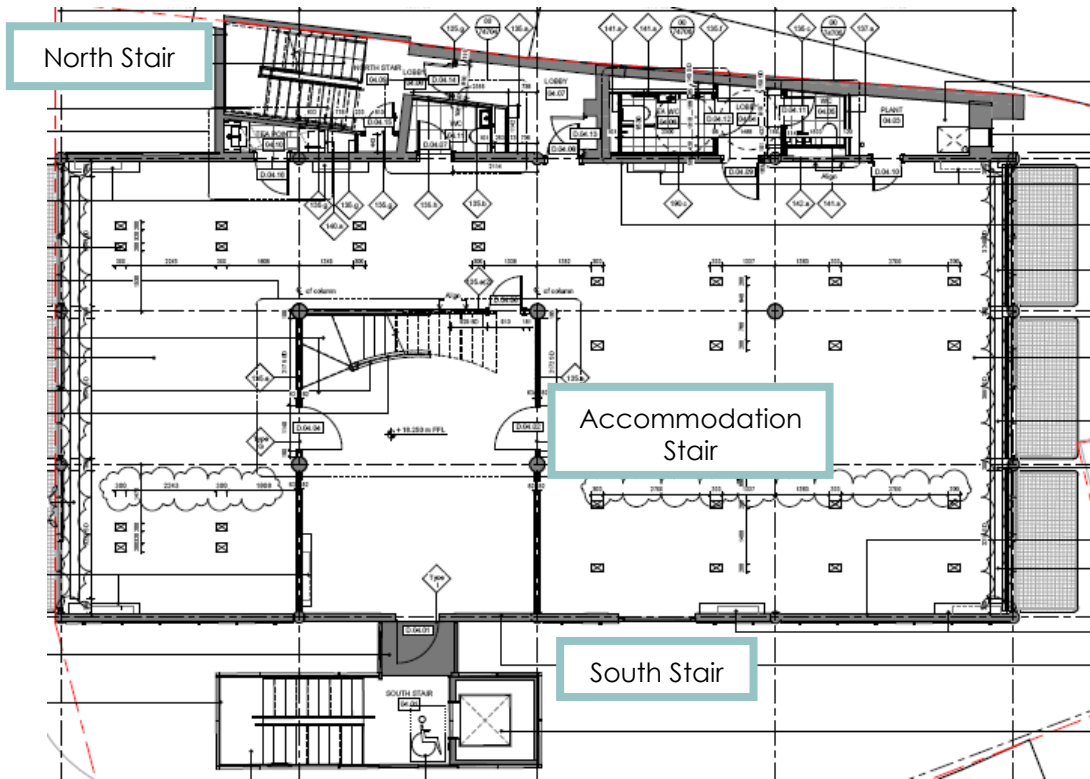
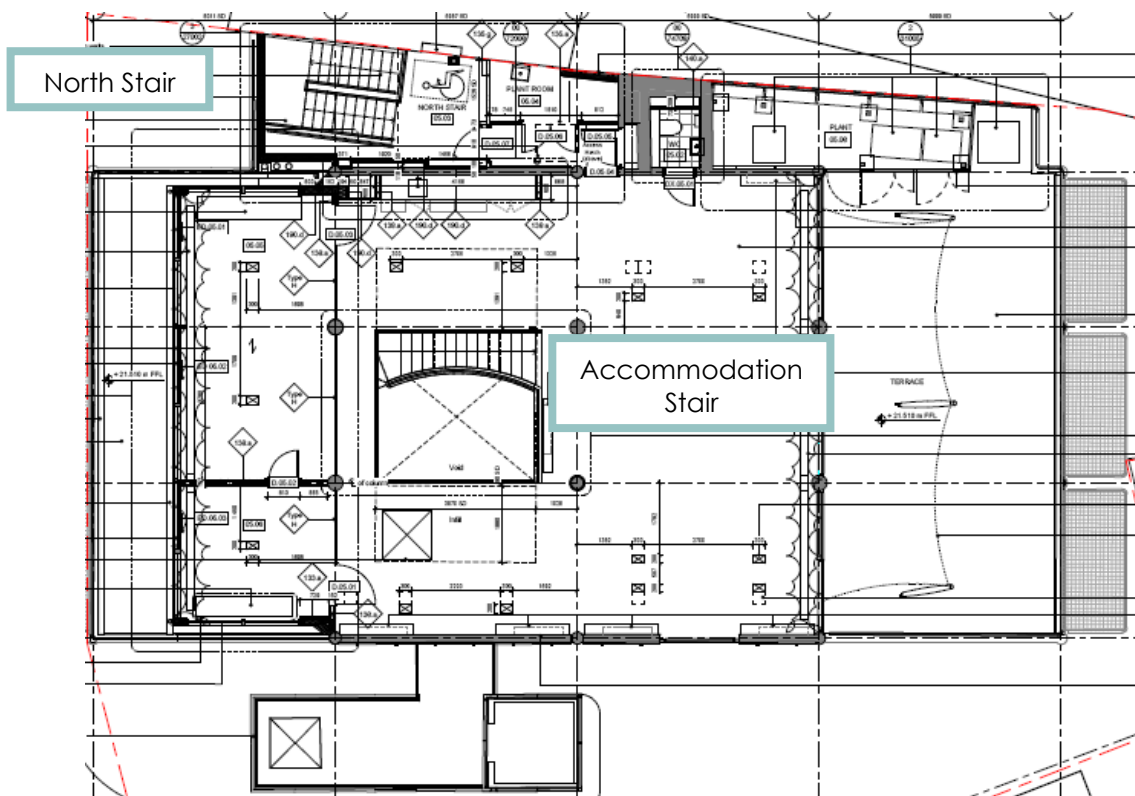


Figure 1.5: Proposed Fifth Floor Level



2. Statutory Controls

2.1. The Building Regulations 2010

2.1.1. The building works are subject to the requirements of the Building Regulations 2010, which apply across England and Wales. For fire safety, the functional requirements of Part B of Schedule 1 to the Building Regulations 2010 are set out under the following headings:

- Requirement B1 – Means of Warning and Escape.
- Requirement B2 – Internal Fire Spread (linings).
- Requirement B3 – Internal Fire Spread (structure).
- Requirement B4 – External Fire Spread.
- Requirement B5 – Access and Facilities for the Fire Service.

2.1.2. The existing building will be altered and refurbished, therefore Regulation 4(3) of the Building Regulations require that the works are carried out such that the building complies with the applicable requirements of Schedule 1 to the Building Regulations or, where it did not comply with any such requirement, is no more unsatisfactory in relation to that requirement than before the work was carried out.

2.1.3. Statutory Guidance

2.1.4. Approved Document B (ADB) provides guidance how the Requirements of Part B of the Building Regulations can be satisfied. ADB makes reference to other standards and guidance documents with supplementary recommendations (such as specific clauses in BS 9999^{A.1.3}).

2.1.5. As the requirements of the Building Regulations are functional in nature, there is no obligation to follow the standard guidance of ADB if compliance can be demonstrated in some other way. Where recommendations of ADB have not been met, a fire engineered justification has been included.

2.1.6. Unless otherwise stated in this report, detailed aspects of the design and construction should be in accordance with the recommendations of ADB, relevant British Standards and codes of practice.

2.1.7. Purpose Group

2.1.8. In accordance with ADB, the purpose groups applied for the building will be:

- Office (Group 3).

2.2. The Regulatory Reform (Fire Safety) Order 2005

2.2.1. Responsibility for compliance with the Regulatory Reform [Fire Safety] Order 2005^{A.1.4} (FSO) will rest with the "responsible person". In a workplace this will usually be the employer together with persons who may have control of other parts of the premises. In other cases, the person(s) who has control of the premises will be the "responsible person".

2.2.2. Where building work and fire protection measures comply with Part B of the current Building Regulations, additional physical measures should not normally be required under the FSO unless high-hazard materials or processes are introduced into the building.

-
- 2.2.3. The FSO places on the "responsible person" specific duties such as carrying out a fire risk assessment and providing first-aid firefighting equipment in accordance with the recommendations of BS 5306 Part 8^{A.1.5}. More detailed guidance is available in a series of Fire Safety Risk Assessment Guides published for HM Government^{A.1.6}.
- 2.2.4. A fire risk assessment should be carried out prior to the building being occupied. This fire risk assessment should then be updated once the building is occupied to identify any risks that may have been introduced.
- 2.2.5. This fire safety strategy has been developed on the assumption that the buildings will be suitably managed. This includes documenting the basis on which the fire safety design was planned, the type of management organisation envisaged for running the buildings, and the consequential staff responsibilities. Guidance on fire safety management is provided in ADB.

2.3. Regulation 7

- 2.3.1. As per Regulation 7 (1) of the Building Regulations 2010 (As Amended), all building work should be carried out with adequate and proper materials which are:
- appropriate for the circumstances in which they are used,
 - adequately mixed or prepared, and
 - applied, used or fixed so as adequately to perform the functions for which they are designed; and in a workmanlike manner.
- 2.3.2. The Building Regulations 2010, as amended by the Building (Amendment) Regulations 2018, restrict the use of combustible materials in the external walls of 'relevant buildings' over 18m in height.
- 2.3.3. This development will not be a 'relevant building' i.e. a building with a storey at least 18m above ground and which contains one or more dwellings; an institution; or a room for residential purpose. Therefore, the requirements of Regulation 7(2) do not need to be applied.
- 2.3.4. Section 6 of this report sets out the recommendations for the external façade and the materials recommended within the external walls.

2.4. Regulation 38

- 2.4.1. Regulation 38 of the Building Regulations requires fire safety information for new or altered buildings to be passed to the responsible person at completion of the project or on occupation, whichever comes sooner.
- 2.4.2. The aim of this requirement is to provide the responsible person with appropriate information to assist to operate and maintain the building in reasonable safety. This information can therefore assist the responsible person in undertaking a Fire Risk Assessment to meet the requirements of the Regulatory Reform [Fire Safety] Order 2005 (FSO).

2.5. Property Protection

- 2.5.1. Property protection is not a requirement of the Building Regulations and therefore is not explicitly considered in this report. However, it should be noted that many of the fire safety provisions will afford some degree of property protection to the building.

3. B1: Means of Warning and Escape

Functional Requirement:

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

3.1. Evacuation Strategy

- 3.1.1. The evacuation strategy for the entire building will be simultaneous. The fire alarm will be a single-stage system, where, in the event of a fire alarm activation anywhere in the building (single call point or detector), all occupants of the building will evacuate simultaneously.

3.2. Fire Alarm and Fire Detection Systems

- 3.2.1. ADB states that every building, or part of a building, should be assessed individually, as it refers to Table A1 of BS 5839-1:2017^{A.1.7} for guidance on the category of fire detection systems that may need to be provided within a building. In general, Table A1 of BS 5839-1 states that common places of work, such as offices, only recommend manual call points.
- 3.2.2. ADB also states that, other than for small buildings/premises, an electrically operated fire alarm system should be provided. In some situations, the alarm should be operated by a fire detection system. Therefore, an automatic fire detection and fire alarm system will be provided to a Category L2 type system in accordance with the recommendations of BS 5839 1:2017, installed throughout the office levels. The fire alarm will be an addressable system in which signals from detectors, manual call points, or any other devices, are individually identified at the control and indicating equipment.
- 3.2.3. Manual call points will be provided adjacent to the final exits and storey exits at every level. Call points for electrical alarm systems will comply with a type A system to BS EN Part 11^{A.1.8}, installed in accordance with BS 5839-1.
- 3.2.4. The control panel will be provided at ground floor level.
- 3.2.5. Traditional sounders will be provided to ensure all occupants within all areas of the building can hear the alarm. A suitable method of warning will be provided (e.g. a visual alarm) where persons with impaired hearing may be in relative isolation (e.g. toilet facilities) unless another suitable method of warning is provided.

3.3. Design Occupancy

- 3.3.1. ADB recommends that the number of occupants of a room, storey, building or part of a building should be based on either of the following:
- The maximum number of people it is designed to hold; or
 - The number of people calculated by dividing the area of a room or storeys by a floor space factor.
- 3.3.2. ADB recommends a floor space factor of 6m²/person for office spaces.
- 3.3.3. The occupancy in the building post fit-out is currently unknown, therefore the likely occupancy has been assessed on the basis of floor space factors. This has been summarised in Table 3.1 below.

Table 3.1 – Occupancy based on floor space factors

Floor level	Use	Area (m ²)	Floor space factor (m ² /person)	Expected occupancy based on floor space factor
Basement	Office cycle store/plant	148	Based on the assumed occupancy	5
Ground	Office	252	6	42
First	Office	280	6	47
Second	Office	280	6	47
Third	Office	280	6	47
Fourth	Office	270	6	45
Fifth	Office	174	6	29
Total				262

3.4. Horizontal Means of Escape

3.4.1. Travel Distances

Office areas

- 3.4.2. The guidance in ADB recommends a maximum travel distance of 18m in a single direction for offices and 45m where travel is possible in more than one direction.
- 3.4.3. As the general arrangement plans do not include the proposed layouts for office desks and other internal fixtures and fittings, direct distances, rather than travel distances, should be assessed. The direct distance should be measured at two-thirds (2/3rds) of the actual travel distance. Thus, travel distances for the base build fit-out for building should not exceed 12m in a single direction, and 30m where escape is available in more than one direction. The proposed design will meet with the travel distance recommendations set out in ADB.

Plant

3.4.4. In accordance with ADB, the maximum travel distances within plant rooms will be limited to 9m in a single direction; and 35m where travel is possible in more than one direction. The proposed design will meet with the travel distance recommendations set out in ADB.

Roof

3.4.5. Where the escape route will be open to air (i.e. on the roof) then in accordance with ADB, travel distances will be limited to 60m in a single direction; and 100m where travel is possible in more than one direction. The proposed design will meet with the travel distance recommendations set out in ADB.

3.4.6. Number of Storey Exits

3.4.7. The recommended minimum number of escape routes and exits from a room or storey are outlined below:

Table 3.2 - Minimum number of escape routes and exits from a room / storey.

Maximum number of persons	Minimum number of escape routes/exits
60	1
600	2
More than 600	3

3.4.8. Where there is more than one storey exit, the largest exit will be discounted assuming one exit will be blocked due to fire.

3.4.9. Exit Widths

3.4.10. Means of escape will be available in two directions, with two storey exits available at Basement, ground floor, and first – fourth floor levels.

3.4.11. Fifth floor level will be provided escape in a single direction via the North Stair. Although it is considered that the occupants from fifth floor level will be able to use the accommodation stair which will lead directly to the South Stair and is separated from office space at fourth floor level via fire resisting construction, only one exit (North Stair) has been considered for maximum occupancy load.

3.4.12. Where more than one exits are provided, one exit has been discounted due to possible location of a fire. All exit doors on escape routes will have a clear width of at least 750mm and therefore sufficient for up to 60 persons.

3.4.13. Doors

3.4.14. As per guidance in ADB, where a door on an escape route needs to be secured against entry when the building is occupied it will be fitted with a device that is readily operated, without a key, from the side approached by persons making their escape.

3.4.15. The door of any doorway or exit should be hung to open in the direction of escape whenever reasonably practicable. It should always be hung to open in the direction of escape if more than 60 people might be expected to use it during a fire.

3.4.16. Inner rooms

3.4.17. An inner room is a normally occupied room from which the only escape route is through another room.

3.4.18. The drawings indicate that there will be inner rooms. An inner room can be at risk if a fire starts in the access room. Therefore, an inner room arrangement is acceptable if all of the following conditions are met:

- The occupant capacity of the inner room does not exceed 60 people (30 where the occupants require assistance escaping);
- The inner room is not a bedroom;
- The inner room is entered directly from the access room;
- The escape route from the inner room does not pass through more than one access room;
- The travel distance from any point in the inner room to the exit from the access room does not exceed the recommended single direction travel distance (18m);
- The access room is not a place of special fire hazard and is in the control of the same occupier as the inner room; and
- The access room is protected by an automatic smoke detector that operates an alarm that is audible in the room.

3.4.19. Void

3.4.20. In accordance with ADB. Escape routes should not be within 4.5m of openings between floors, unless either of the following applies:

- The direction of travel is away from the opening; or
- An alternative escape route is provided which does not pass within 4.5m of the open connection.

3.4.21. Where inner rooms are formed at fifth floor level, the escape routes are expected to pass the void within 4.5m. To limit the risk to the occupants, the doors serving the inner rooms should be positioned more than 4.5m away from the void to meet the recommendation of ADB. Thus doors serving the inner rooms will be positioned as far away from the void as reasonably practicable.

3.4.22. To further limit the risk, the accommodation stair will be enclosed at fourth floor level in construction achieving at least 30 minutes fire resistance. Further guidance on the accommodation stair can be found under paragraph 3.5.32 and 3.5.38.

3.4.23. Escape from Basement

3.4.24. The existing basement level is currently provided with two exit doors that lead directly to the outside. The proposed works include provision of a link between one final exit door and the basement level access into the South Stair lift lobby. The South Stair will not descend to basement level, however the lift shaft within the stair core will. Thus forming a link between the South Stair and basement level.

3.4.25. By forming the link between the lift lobby and the basement accommodation, a possible pathway for smoke to spread from a fire at basement level to the stair will be created.

3.4.26. ADB recommends that where multiple escape stairs serve the upper storeys, only one needs to end at ground level. Other stairs may connect with the basement storey if there is a protected lobby or a protected corridor between the stair and accommodation at

basement level. The South Stair itself does terminate at ground floor level, however the lift shaft within the stair core does continue to basement level.

- 3.4.27. Considering a protected lobby will be provided between the South Stair and the basement accommodation, the proposal is expected to meet the recommendations of the guidance.
- 3.4.28. ADB recommends that where a protected lobby is provided between an escape stair and a place of special fire hazard to protect from the ingress of smoke. The lobby should have a minimum 0.4m² of permanent ventilation, or be protected by equivalent mechanical smoke control system.
- 3.4.29. It is deemed acceptable not to provide smoke ventilation to the protected lobby between the South Stair and the basement accommodation on the following basis:
- The proposed protected lobby between the stair and the basement level will be provided with a final exit door directly to outside, and therefore occupants at basement level can be expected to achieve a place of ultimate safety without needing to enter lift lobby. The lift will not be used for evacuation purposes and therefore escape from the basement area towards the lift lobby is considered unlikely.
 - Escape at basement level can be achieved in multiple directions which includes one exit from basement directly to the outside.
 - The South Stair has been discounted for vertical escape occupancy purposes, and therefore occupants from the upper levels above can be expected to make safe egress from the building via the North Stair in the event of fire at basement level.

3.5. Vertical Means of Escape

3.5.1. Escape Stairs

- 3.5.2. In accordance with ADB, if more than one stair is provided and one of which is not provided with a protected lobby, a stair should be discounted for the vertical occupancy calculation.
- 3.5.3. The North Stair will serve ground and all upper floor levels. The South Stair will remain as existing, whereby serving ground floor, and first – fourth floor levels.
- 3.5.4. The North Stair will be provided with a protected lobby at every level, whereas the South Stair will not. Therefore, the South Stair will be discounted as part of the vertical escape occupancy calculation.

3.5.5. Vertical Escape Capacity

- 3.5.6. The existing North Stair has a clear width of 1,000mm. Pinch points have been identified on the stair (full and half) landings caused by the balustrade and its footplate. The balustrade has been found to intrude into the stair width by 130mm. Thus reducing the clear width to 870mm in some locations.
- 3.5.7. ADB recommended that on escape routes and stairs, handrails and strings intruding into the width by a maximum of 100mm on each side may be ignored.
- 3.5.8. The existing 130mm intrusion into the stair width is from one side only and only at low level, and therefore on the basis that 100mm intrusions from two sides are deemed acceptable

in accordance with the recommendations of the guidance, the risk associated with the existing is considered low and unlikely to compromise the escape routes.

- 3.5.9. The balustrades floor plates constitute c.40mm of the intrusion. On the basis that the floor plates are not expected to impact the clear width of the stair, the balustrades do not intrude into the width by greater than 100mm and therefore are expected to meet the guidance set out in ADB.
- 3.5.10. Therefore, the clear width of the North Stair has been assessed as 1,000mm.
- 3.5.11. For occupancy calculations the South Stair will be discounted as the stair will not be provided with protected lobbies, and therefore the maximum occupancy has been assessed using the North Stair only with a clear width of 1,000mm.
- 3.5.12. The guidance in ADB states that 310 persons could be served by a single 1,000mm stair serving five storeys first to fifth floor levels). Therefore, the maximum stair capacity for the North Stair is 310 persons.
- 3.5.13. The buildings proposed occupancy load is 262 persons, which is less than 310 persons. Thus, the stair widths will be sufficient for the expected occupancy load of the building.

3.5.14. Final Exits

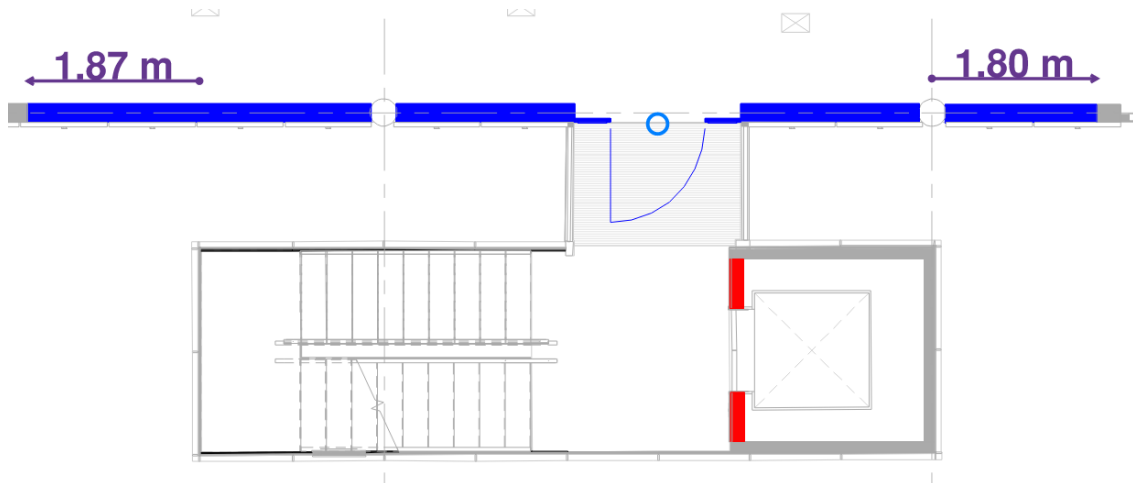
- 3.5.15. In accordance with the recommendations of the guidance, the width of the final exit should be at least the same as the minimum required width of the means of escape stairs.
- 3.5.16. The existing final exit door from the North Stair has been confirmed to achieve an 890mm clear width. However, alterations to the final exit route are not being made, and therefore the width of the exit is expected to be made no worse, and therefore meets the requirements of Regulation 4(3).
- 3.5.17. Though the North Stair will undergo an extension to serve the fifth floor level, the building conditions are expected to remain the same and the number of occupants into the stair are not expected to change. The extension to the stair only serves as an alternative escape route from the fifth floor level, as opposed to occupants passing through the fourth floor to achieve final exit into the North Stair.
- 3.5.18. The final exit from the South Stair will be provided at ground floor level via the door within the stair that leads directly to outside, achieving a clear width of not less than 1,000mm, therefore the same as the South Stair.

3.5.19. South Stair

- 3.5.20. The South Stair has been constructed with external walls on three sides.
- 3.5.21. To protect the escape route against fire from inside the building, the guidance set out in ADB for external walls adjacent to protected stairways will be followed.
- 3.5.22. Where a protected stairway projects beyond, is recessed from or is in an internal angle of the adjoining external wall of the building, then the minimum distance between an unprotected area of the building enclosure and an unprotected area of the stair enclosure should be 1,800mm.
- 3.5.23. Thus, the portions of the wall shown blue in the figure below should be constructed to achieve at least 30 minutes fire resistance. The figure indicatively shows the extent of

construction that is expected to achieve a fire resistance to protect the escape stair at the upper levels.

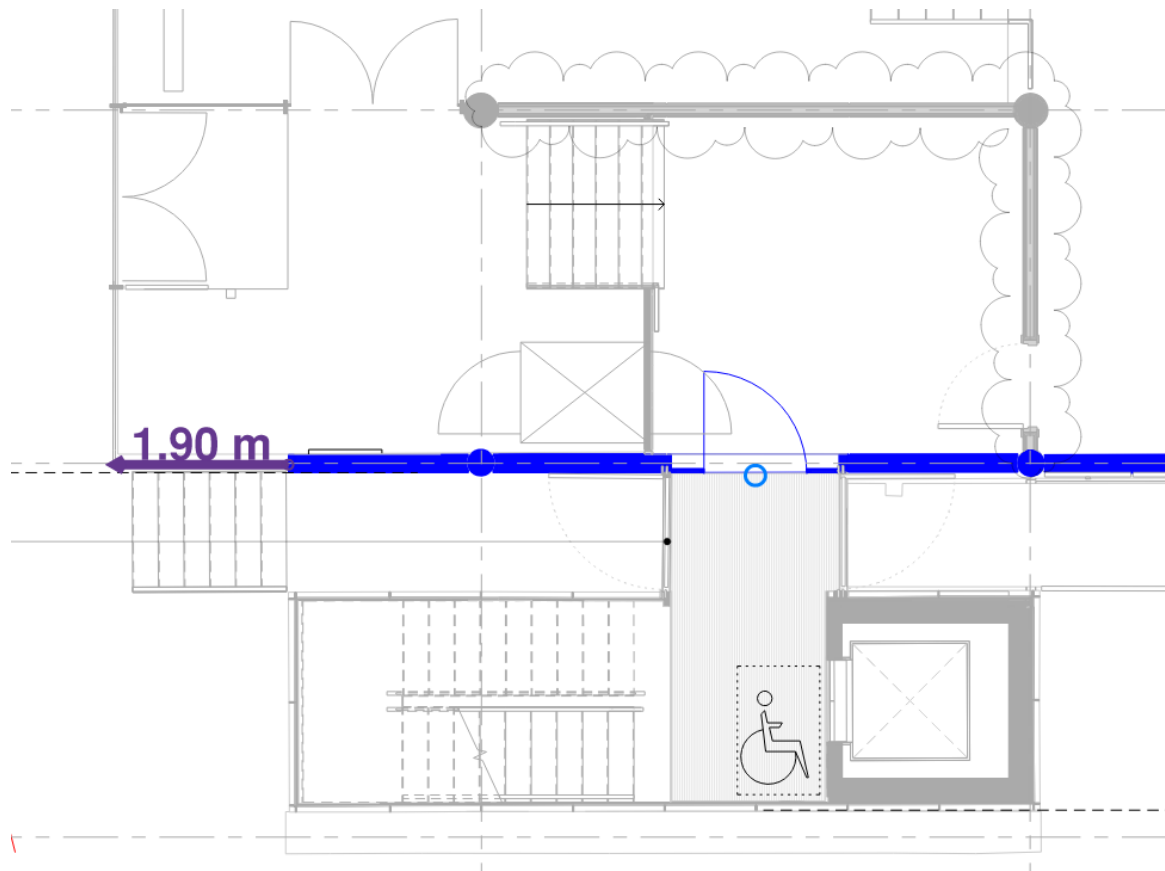
Figure 3.1: Expected 30-minutes fire resisting construction to protect the escape route (indicatively shown blue) – Upper Levels



- 3.5.24. Doors within the 30-minutes fire resisting wall should achieve at least E 30S classification.
- 3.5.25. The final exit route from the foot of South Stair at ground floor level should be protected to the same level of fire protection to ensure the escape to a place of ultimate safety can be achieved.
- 3.5.26. The 22 Shad Thames building is a Grade II listed building and therefore alterations to the external wall (i.e., the glazing at ground floor level) are not feasible.
- 3.5.27. The proposed fire resisting protection afforded to the final exit route at ground floor has been illustrated in Figure 3.2 below, whereby the portion of wall shown blue is expected to achieve at least 30 minutes fire resistance (from inside only). 1.90m of the façade separating internal entrance from external means of escape is not provided with any fire resisting construction. This is deemed acceptable and is expected to meet the functional requirements of the Building Regulations on the following basis:
- ADB would permit a ground floor reception within the stair as the South Stair is not the only stair serving the building. The existing wall, though not completely fire resisting, will be expected to provide a certain level of protection to the final exit route.
 - Reception area will be occupied during typical office hours, therefore a fire is unlikely to start unnoticed at the early development of a fire.
 - The building will be fitted throughout with an automatic fire detection and alarm system that will detect smoke and raise the alarm in the early stages of fire development.
 - If there is a fire in the reception, the building occupants have an alternative escape route via the North Stair.
 - The reception area will remain relatively sterile and is unlikely to have a total area greater than 10m².

- The South Stair will be protected against fire and smoke by the portion of the wall achieving the period of fire resistance recommended in paragraph 3.5.23. Therefore occupants using the South Stair for means of escape will be able to identify a fire in the reception area and will be able to turn their back on it and move towards the North Stair if the final exit route is compromised.
- The proposed protection afforded to the South Stair only enhances the existing conditions and therefore in accordance with Regulation 4(3), where the design of the building did not previously comply with the applicable requirements of the Building Regulations, the proposals will not be any more unsatisfactory in relation to the requirements than before.

Figure 3.2: Protection afforded to the South Stairs final exit route at ground floor level



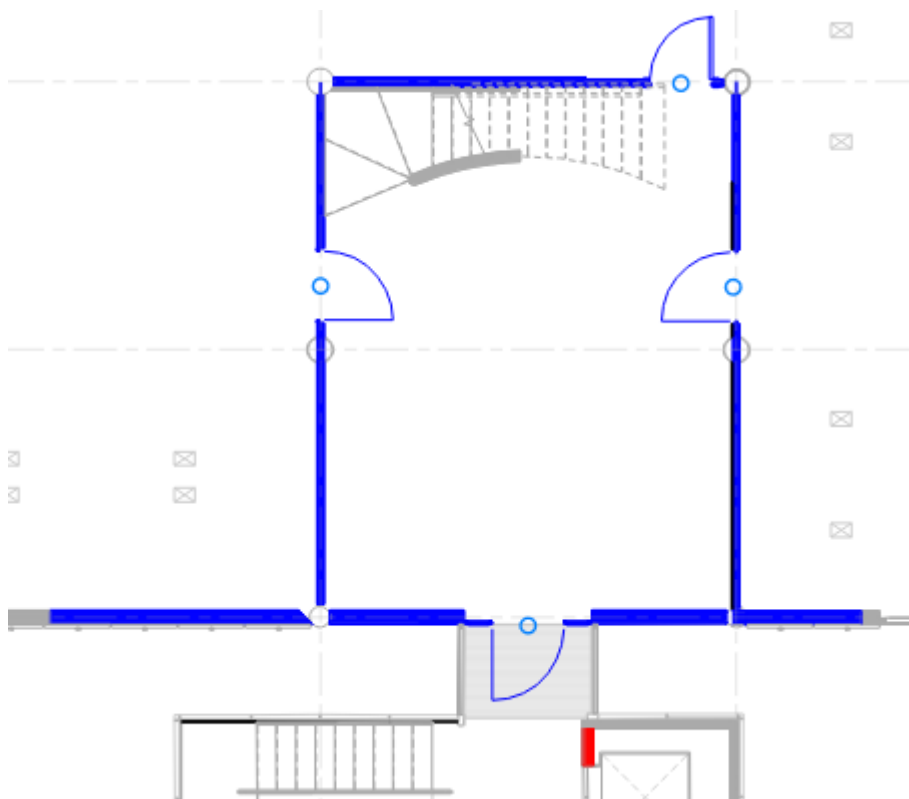
3.5.28. Use of Space within Protected Stairways

3.5.29. In accordance with guidance of ADB, a protected stairway may only include any of the following.

- Sanitary accommodation washrooms, as long as the accommodation is not used as a cloakroom. A gas water heater or sanitary towel incinerator may be installed in the accommodation, but no other gas appliance.
- If the protected stairway is not a firefighting stair; a lift well.
- If the protected stairway is not the only stair serving the building or part of the building: a reception desk or enquiry office area at ground or access level. The reception or enquiry office area should have a maximum area of 10m².
- If the protected stairway is not the only stair serving the building or part of the building: cupboards enclosed with fire resisting construction.

- 3.5.30. The South Stair will not function as a firefighting stair and therefore it is deemed acceptable for the existing lift well to continue to be located in the stairwell.
- 3.5.31. Small storage cupboards will be provided within, and accessed directly from, the North Stair in the existing arrangement. The proposed design will maintain these cupboards within the stair. However, the existing cupboards and any new cupboards should be enclosed in construction achieving at least 60 minutes fire resistance with fire doors achieving at least an FD30S classification (e.g. the data cabinet and boiler cupboard).
- 3.5.32. Accommodation stair**
- 3.5.33. An open accommodation stair is provided linking fourth and fifth floor levels in the existing arrangement.
- 3.5.34. The proposal is to keep this accommodation stair and link to South Stair at fourth floor.
- 3.5.35. Furthermore, as part of the works, the North Stair will be extended by one level to serve fifth floor level and provide an alternative storey exit from fifth floor.
- 3.5.36. The 30-minutes fire resisting enclosure to the accommodation stair at fourth floor will be retained, to provide a protected route to the South Stair, and create a barrier against smoke spread between fourth and fifth floor levels.

Figure 3.3: 30-minutes fire resisting construction enclosing the accommodation stair to be retained (indicatively shown blue).

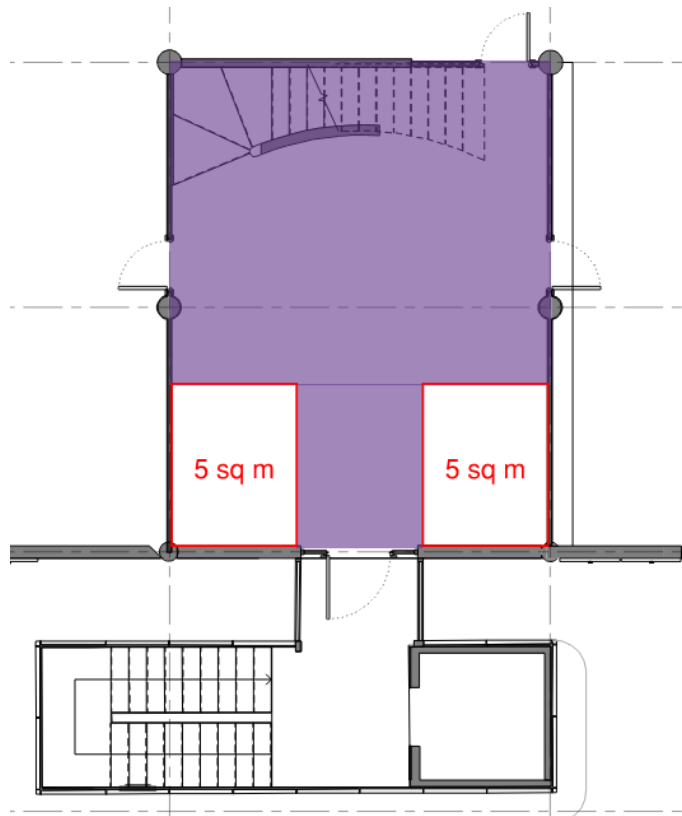


- 3.5.37. The horizontal floor separation between fourth and fifth floor level will not be changed and is not considered to have constructed as a compartment floor, therefore both storeys are considered as one compartment.

3.5.38. Reception Desk within the Accommodation Stair (Fourth Floor)

- 3.5.39. In accordance with standard guidance ADB, if a protected stairway is not the only stair serving the building or part of the building, then a reception desk or enquiry office area at ground floor access level is deemed acceptable in accordance with ADB, provided the reception or enquiry office area has a maximum area of 10m².
- 3.5.40. A reception desk and waiting area is proposed at fourth floor level within the accommodation stair.
- 3.5.41. Though a reception desk is proposed within the accommodation stair at fourth floor level, the risk of fire blocking this stair is considered no worse than if it was provided at ground floor level, and is deemed significantly better than a code compliant ground floor reception area on the basis that occupants on the levels below (ground to third floor) are unlikely to be affected by the reception within the stair enclosure at fourth floor level.
- 3.5.42. Occupants from fifth floor level will be able to overlook the reception prior to use the accommodation stair and will have an alternative escape route from fifth floor level via the North Stair.
- 3.5.43. The reception area will be separated from the South Stair via fire resisting construction, and the South Stair being not included in the vertical means of escape calculation. The occupants at fourth and fifth floor can escape towards the North Stair, should the South Stair or accommodation stair become compromised by a fire in the reception area.
- 3.5.44. It is recommended that the circulation areas within the accommodation stair at fourth floor level remain sterile and clear of obstruction. The circulation space has been indicatively shown in the figure below, shaded purple.

Figure 3.4: 10m² reception area shown outside of the circulations space (shaded purple)



- 3.5.45. Areas that have not been shaded indicate where a reception is likely to be located. As shown in the figure below, the overall reception area that will likely contain a fire load is split into two zones, each 5m² in size and separated by a circulation route. The combined area for the reception area has been limited to 10m² in accordance with the recommendations of the standard guidance.
- 3.5.46. It is understood that the reception space on the right will include the following:
- A desk,
 - A set of drawers,
 - A chair,
 - A computer with screens, and
 - Other reception/office desk equipment.
- 3.5.47. For the space on the left, it is understood that two chairs and a small coffee table, will be provided as a waiting area.
- 3.5.48. In general the reception area will be managed and trained staff will be present during office hours.
- 3.5.49. It is our opinion that the proposal as outlined above is considered a low risk provided that the electrical appliances are well managed and regularly checked and PAT tested.
- 3.5.50. On the basis of the above, the proposed reception area within the accommodation stair at fourth floor is deemed acceptable and is expected to satisfy the functional requirements of the Building Regulations.

3.6. Mobility Impaired Person

- 3.6.1. Refuges form part of the management plan and offer relatively safe areas for people to wait for a short period only. Refuges should meet the following conditions:
- Refuges should be provided on every storey (except ones consisting only of plant rooms) of each protected stairway providing exit from that storey.
 - Refuges should be located in a protected enclosure which could be a lobby to the stair or within the stair.
- 3.6.2. Therefore, disabled refuge spaces should be provided within each protected stairway.
- 3.6.3. The disabled refuge space should be 900mm x 1,400mm and should be provided within each stair and not reduce the width of escape route. The refuge should also be accompanied by a blue mandatory sign worded "refuge – keep clear".
- 3.6.4. An emergency voice communication (EVC) system within the refuges will not be provided at this stage.
- 3.6.5. However, the future tenant of the building will be expected to develop their management procedures to ensure all mobility impaired persons can be safely evacuated. This should include the development of Personal Emergency Evacuation Plans (PEEP) for building occupants who may need assistance.
- 3.6.6. Following the development of the PEEP's, the provision of EVC systems within refuges may be proposed. Should such a system fall part of the tenants PEEP's, then the system should consist of Type B outstations which communicate with a master station located adjacent to the fire panels.
- 3.6.7. The existing provisions for the building do not include disabled refuge spaces in the stairs or protected lobbies to either the North or the South Stair.
- 3.6.8. In accordance with Regulation 4(3), where the design of the building did not previously comply with the applicable requirements of the Building Regulations, then the proposals should be no more unsatisfactory in relation to the requirements than before the works was carried out.
- 3.6.9. However, to enhance the existing conditions, the following provisions should be met:
- Disabled refuge spaces should be provided in front of the lift doors within the South Stair at ground floor and every level above.
 - Where the South Stair does not extend to the fifth floor level, a disabled refuge space should be provided within the North Stair to ensure at least one disabled refuge is located at every level where level access/escape is not available.
- 3.6.10. The provision of a single disabled refuge space per floor is deemed accepted on the following basis:
- The maximum number of occupants for each floor will be less than 60 persons, similar to that of a single stair building.
 - Occupants will be awake and familiar with the building and evacuation procedures.
 - Travel distances on each office floor will be short and within 18m for escape in a single direction, or in multiple directions.

-
- Automatic fire detection and alarm (Category L2 system) will allow for early warning of fire, and occupants can be expected to exit towards the escape routes in the early stages of fire/smoke development.
 - Evacuation management plan in place.

3.7. Emergency Lighting and Signage

- 3.7.1. As per guidance of ADB, all escape routes should have adequate artificial lighting. Windowless accommodation and open plan areas more than 60m² should have escape lighting which illuminates the route if the main supply fails.
- 3.7.2. Escape lighting will be installed in accordance with BS 5266 Part 1^{A.1.9}.
- 3.7.3. All means of escape routes will be distinctively and conspicuously marked by emergency exit signs of adequate size complying with the Health and Safety (Safety signs and signals) Regulations^{A.1.10} and the FSO. The signs will be in accordance with the guidance in BS 5499 Part 1^{A.1.11}.

4. B2: Internal Fire Spread (Linings)

Functional Requirement:

*“B2 – ‘To inhibit the spread of fire within the building, the internal linings shall –
 (a) adequately resist the spread of flame over their surfaces; and
 (b) have, if ignited, a rate of heat release or a rate of fire growth, which is reasonable in the circumstances.”*

4.1. Wall and Ceiling Linings

4.1.1. Any new wall and ceiling linings will meet with the surface spread of flame classification as set out in the table below.

Table 4.1 – Classification of linings

Location	European Class
Small rooms not exceeding 30m ²	D-s3, d2
Other rooms;	C-s3, d2
Circulation spaces (excluding large rooms such as open plan offices which need not to be regarded as circulation spaces even though there are circulation routes in them)	B-s3, d2

4.2. Roof Lights and Lighting Diffusers

4.2.1. Any new thermoplastic materials that are been used in windows, roof lights and lighting diffusers in suspended ceilings will meet the recommendations of Clauses 6.13 – 6.18 and Table 6.2 in ADB.

5. B3: Internal Fire Spread (Structure)

Functional Requirement:

“(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.”

5.1. Sprinklers

- 5.1.1. The existing building is not provided with sprinkler protection and sprinklers will not be provided as part of the refurbishment. Sprinklers are not expected to meet the recommendations of ADB.

5.2. Structural Fire Resistance

- 5.2.1. The building has a height greater than 5m, but less than 18m, therefore all load bearing elements of structure should achieve at least 60 minutes fire resistance.

5.3. Compartmentation

- 5.3.1. The following elements will be provided with the stated period of fire resistance for loadbearing, integrity and insulation:

Table 5.1 – Fire resisting elements

Elements	Fire resistance (minutes)
Compartment floors	60
Enclosure to North Stair	60
External wall near the South Stair (integrity and insulation)	30
Enclosure of accommodation stair (fourth floor)	30
Enclosure of service risers that pass through compartment floors	60
Enclosure to any places of special fire hazard	30
Enclosure to any refuse stores	30
External walls required to meet external fire spread recommendations	60
Compartment walls between neighbouring buildings	60

- 5.3.2. There is no limit on the maximum compartment size in an office building, therefore compartment walls are not required to subdivide the building.
- 5.3.3. All floors (excluding the fifth floor) will be constructed as a compartment floor to reduce the risk of external fire spread. The separation between floor levels should achieve at least 60 minutes fire resistance (as per Table B4 in ADB).
- 5.3.4. Fourth and fifth floor levels will be designed as one compartment and therefore the fifth floor is not expected to achieve the specification that would be expected of a compartment floor.
- 5.3.5. The walls surrounding the plant space at roof level will not be constructed to achieve a fire resistance performance on the basis that the roof cover above the plant space is greater than 50% open, and is therefore considered external space and open to fresh air (unenclosed).

5.4. Fire Doors

- 5.4.1. In accordance with ADB, doors will be provided with the following fire resistance.

Table 5.2 – Fire resistance of fire doors

Doors	Required fire resistance (minutes)
North and South Stairs	E30S (FD30S)
Protected lobbies	E30S (FD30S)
To places of special fire hazard	E30 (FD30)

5.5. Concealed Spaces (Cavities)

- 5.5.1. Cavity barriers will be provided within concealed voids in accordance with Section 9 of ADB. Cavity barriers should be provided as followings:
 - To subdivide any cavity such that the distance between cavities does not exceed 10m. This distance can be increased to 20m where the surface and product exposed in the cavity is either Class 0 or Class 1.
 - To close the edges of cavities, including around openings.
 - At the junction between an external cavity wall and compartment walls and floors.
 - At the junction between an internal cavity wall and every compartment wall and floor, or other fire resisting barrier.
- 5.5.2. Cavity barriers will provide 30-minutes fire resistance for integrity and 15-minutes fire resistance for insulation and penetrations through cavity barriers should be suitably fire stopped.
- 5.5.3. Further guidance is provided in Section 9 of ADB which provides further detail and allows variations to the above recommendations.

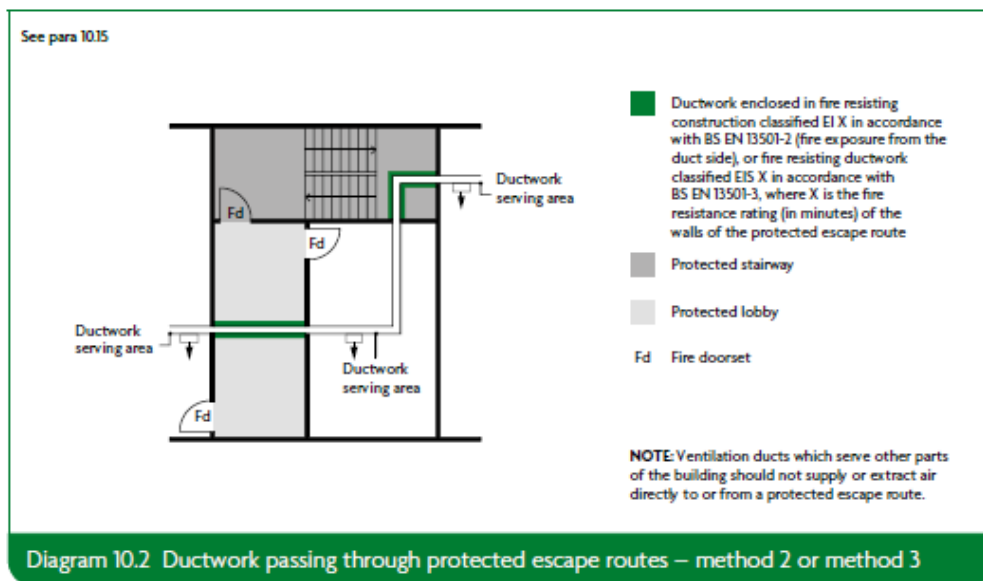
5.6. Fire Stopping and Protection of Openings

- 5.6.1. All services that breach enclosures to protected means of escape, or any compartmentation (i.e. compartment floors if adopted to demonstrate compliance with

the external fire spread requirements of Regulation B4), will be suitably fire stopped in accordance with Section 10 of ADB.

- 5.6.2. Pipes with a restricted diameter not exceeding the dimensions below will be provided with fire stopping around the pipe keeping the opening as small as possible:
- Non-combustible material – 160mm
 - Any other material – 40mm
- 5.6.3. Ventilation ducts serving protected escape routes will not also serve other areas. If ductwork passes through the enclosure of a protected escape route it should be fire resisting.
- 5.6.4. Where ductwork passes through the protected escape routes (i.e. the North Stair), it should be enclosed in fire resisting fire-resisting construction classified EI60 in accordance with BS EN 13501-2^{A.1.12} (fire exposed from the duct side), or fire-resisting ductwork classified EIS60 in accordance with BS EN 13501-3^{A.1.13}, in accordance with Diagram 10.2 of ADB.

Figure 5.1: Guidance on ductwork passing through protected escape routes, taken from ADB



- 5.6.5. If the fire resisting construction of a protected escape route is either of the following.
- Not carried to full storey height; or
 - At the top storey, not carried to the underside of the roof covering.
- 5.6.6. Then the cavity above or below the fire resisting construction should be either fitted with cavity barriers on the line of the enclosure, or for cavities above the fire resisting construction, enclosed on the lower side by a fire resisting ceiling (minimum EI 30) that extends throughout the building, compartment or separated part.

5.7. Ventilation Ductwork

- 5.7.1. If air handling ducts pass through fire-separating elements, the loadbearing capacity, integrity and insulation of the element should be maintained through passive fire

protection in accordance with the recommendations the guidance. The standard guidance typically outlines the following four methods:

- Method 1 – thermally activated fire dampers
- Method 2 – fire resisting enclosures
- Method 3 – protection using fire resisting ductwork
- Method 4 – automatically activated fire and smoke dampers triggered by smoke detection.

5.7.2. However, Method 1 and 4 should not be used extract ductwork serving kitchens. The likely build-up of grease within the duct can adversely affect dampers.

6. B4: External Fire Spread

Functional Requirement:

“(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.”

6.1. Space Separation Analysis

- 6.1.1. To limit the risk of external fire spread, it is necessary to reduce the possibility of fire spreading from this development to other buildings or vice versa. ADB provides two simple methods for calculating the acceptable amount of unprotected area in an external wall that is minimum of 1,000mm from any point on the relevant boundary. More precise methods are described in BRE report BR 187 "Building separation and boundary distances" (2014)^{A.1.14}.
- 6.1.2. In general, the compartmentation strategy within the building and the fire protection to the external facades of the existing building will not be altered as part of the proposed refurbishment works and therefore the external fire spread will be made no worse. Therefore, the proposal meets the requirements of Regulation 4(3).
- 6.1.3. Where parts of the wall are expected to achieve protection and are greater than 1,000mm from the relevant boundary, they will be constructed to achieve 60 minutes fire resistance for loadbearing capacity and integrity, and 15 minutes fire resistance for insulation, from inside the building only.
- 6.1.4. Where any part of wall falls within 1,000mm of the relevant boundary, the wall will achieve at least 60 minutes fire resistance (loadbearing capacity, integrity and insulation), from each side separately.
- 6.1.5. The existing North wall that is shared with the neighbouring building is a compartment wall and therefore will be assessed to ensure it achieves at least 60 minutes fire resistance (loadbearing capacity, integrity and insulation), from each side separately.
- 6.1.6. South Elevation – Fourth and Fifth Floors**
- 6.1.7. Any new construction to the south elevation should be constructed to achieve at least 60 minutes fire resistance from inside only. Any small unprotected areas may be ignored where they are less than 1m² and separated from any other opening by more than 4m.
- 6.1.8. Any existing construction is not expected to change and therefore the fire protection to the external facades is expected to be unaltered by the proposed works. Thus, the external fire spread will be made no worse and the proposals meet the requirements of Regulation 4(3).

6.2. External Wall Construction

- 6.2.1. The external envelope of a building should not provide a medium for fire spread if it is likely to be a risk to health and safety.
- 6.2.2. The construction of the external walls of the existing building will not be altered as part of the proposed refurbishment works and therefore will be made no worse. Therefore, the proposal meets the requirements of Regulation 4(3). However, where new walls are being constructed, the recommendations of the guidance below should be followed.
- 6.2.3. In accordance with the recommendations of ADB all materials which become part of an external or specified attachment should achieve Class B-s3, d2 or better (European class) if within 1,000mm of the site boundary.
- 6.2.4. Where the distance between façade and the site boundary is greater than 1,000mm, then the portion of the building up to 18m height will be Class C-s3, d2 or better (European class); while the façade above 18m in height should achieve Class B-s3, d2 or better (European class).
- 6.2.5. Notwithstanding the above, it is recommended that all new materials which become part of an external wall or specified attachment achieve European Class A2-s1, d0 or Class A1 to BS EN 13501-1^{A.1.15}.

6.3. Roof construction

- 6.3.1. The minimum separation distance to the adjacent site boundary is less than 6m, therefore where alterations to the roof construction are being made, any new roof coverings will be designated to be at least $B_{ROOF(14)}$ in accordance with BS EN 13501-5^{A.1.16} to meet the recommendations of the standard guidance.
- 6.3.2. Where alteration are not being made, then the design and construction of the roof is expected to be made no worse, and therefore meets the requirements of Regulation 4(3).

7. B5: Access and Facilities for Fire Service

Functional Requirement:

“(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.”

7.1. Fire Vehicle Access

- 7.1.1. In accordance with Regulation 4(3), the provisions for fire vehicles will not be altered as part of the refurbishment works, and therefore will be made no worse.
- 7.1.2. In accordance with ADB, vehicle access for a pump appliance should be provided in accordance with Table 15.1 that recommends that for buildings with a total floor area <2000m², and a top storey height greater than 11m, vehicle access for a high reach pumping appliance should be provided to at least 15% of the perimeter.
- 7.1.3. The fire service vehicle access routes for the building can be achieved via Shad Thames and is provided with access to more than 15% of the perimeter. The access road should meet the recommendations as set out in Table 15.2 of the Approved Document B for 'Typical fire and rescue services vehicle access route specification', as summarised below.

Table 7.1: Access Route Specifications for Fire Service Vehicles

Appliance Type	Pump	High reach
Minimum width of road between kerbs (m)	3.70	3.70
Minimum width of gateways (m)	3.10	3.10
Minimum turning circle between kerbs (m)	16.80	26.00
Minimum turning circle between walls (m)	19.20	29.00
Minimum clearance height (m)	3.70	4.00
Minimum carrying capacity (tonnes)	12.50 ¹	17.00

Note 1: It should be noted that LFB states that 14t is recommended as per GN29^{A.1.17}.

7.2. External Hydrants

- 7.2.1. An existing external fire hydrant has been identified within close proximity to the existing building.
- 7.2.2. In accordance with ADB, an existing fire hydrant should be sited within 100m of the entrance to a building.
- 7.2.3. Figure 7.3 below shows the building location in brown and the existing hydrant location on Shad Thames, identified by the red 'H'. Approximately 10m from the entrance into the building and access to the North Stair. This should be confirmed by the design team.

Figure 7.1: Existing hydrant location



7.3. Venting of Heat and Smoke from Basement

- 7.3.1. As per guidance in ADB, any basement with a size of more than 200m² or deeper than 3m, should be provided with smoke ventilation i.e. natural or mechanical. The overall size of the existing basement area is 147m² and therefore, smoke outlets to the basement are not required. However, large access doors directly to outside are provided to existing basement which can be used for ventilation purpose upon firefighting attendance.

8. Conclusions

- 8.1.1. The RIBA Stage 4 fire safety strategy presented in this report has been developed for the proposed refurbishment of the 22 Shad Thames office building in London. The fire safety strategy follows the guidance presented in ADB Volume 2 and is intended to meet the functional requirements of the Building Regulations 2010.
- 8.1.2. The proposed fire safety strategy will need to be discussed and agreed with Building Control.
- 8.1.3. It is a requirement of Regulation 38 of the Building Regulations to provide fire safety information to the responsible person at the completion of this project. This should include the fire safety strategy report once approved by the Building Control body.

A.1. References

The following documents have been referred to in this report.

- A.1.1 Approved Document B: Fire Safety – Volume 2: Buildings other than dwellings, 2019 edition. The Stationery Office Limited. 2019 (with May 2020 amendments).
- A.1.2 Building Regulations 2010, Her Majesty's Stationery Office (HMSO), England and Wales. September 2010.
- A.1.3 BS 9999: 2017, Fire safety in the design, management and use of buildings - Code of practice. The British Standard Institution, 2017.
- A.1.4 Regulatory Reform (Fire Safety) Order 2005, SI 2005 No. 1541, Published by The Stationery Office Limited.
- A.1.5 BS 5306 Part 8: 2012, Fire extinguishing installations and equipment on premises. Selection and installation of portable fire extinguishers. The British Standard Institution, 2012.
- A.1.6 Fire Safety Risk Assessment guides published by H M Government 2006.
- A.1.7 BS 5839 Part 1: 2017, Fire detection and fire alarm systems for buildings. Code of practice for system design, installation, commissioning and maintenance of systems in non-domestic premises. The British Standard Institution, 2017.
- A.1.8 BS EN 54 Part 11: 2001, Fire detection and fire alarm systems. Manual call points. The British Standard Institution, 2001.
- A.1.9 BS 5266 Part 1: 2016, Emergency lighting. Code of practice for the emergency lighting of premises. The British Standard Institution, 2016.
- A.1.10 Health and Safety Regulations: Safety signs and signals, 1996.
- A.1.11 BS 5499 Part 1:2002, Graphical symbols and signs, Safety signs including fire safety signs. Specification for geometric shapes, colours and layout. The British Standard Institution, 2002.
- A.1.12 BS EN 13501 Part 2: 2016, Fire classification of construction products and building elements. Classification using data from fire resistance tests, excluding ventilation services. The British Standard Institution, 2016.
- A.1.13 BS EN 13501 Part 3: 2019, Fire classification of construction products and building elements. Part 3. Classification using data from fire resistance tests on products and elements used in building service installations and electrical cables. The British Standard Institution, 2019.
- A.1.14 BRE report BR187 (2014) External fire spread. Building separation and boundary distances. Second Edition, 2014.
- A.1.15 BS EN 13501 Part 1:2018, Fire Classification of construction products and building elements. Classification using data from reaction to fire tests. The British Standard Institution, 2018.
- A.1.16 BS EN 13501 Part 5: 2016, Fire classification of construction products and building elements. Classification using data from external fire exposure to roofs tests. The British Standard Institution, 2016.

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- A.1.17 GN29: Access for Fire Appliance, Fire Safety Guidance Note, London Fire Brigade.
- A.1.18 BS 5306-8: 2012, Fire extinguishing installations and equipment on premises. Selection and positioning of portable fire extinguishers. Code of practise. The British Standard Institution (BSI), 2012.

A.2. Fire Safety Management

A.2.1.1 It is a fundamental assumption that features described in this fire strategy report will require management and maintenance throughout the life of the building.

A.2.1.2 The following section outlines general consideration for fire safety management that should be considered and developed by building management. However, these are not intended to be exhaustive and this should be developed in line with the building management as the design progresses.

A.2.2 Fire Risk Assessment

A.2.2.1 As detailed in Section 2.2 the 'Responsible Person' must ensure a Fire Risk Assessment is carried out to comply with the requirements of the FSO. It is recommended that the fire risk assessment is carried out prior to occupation of the building. The Fire Risk Assessment should then be updated once the building is occupied to reflect any additional hazards or risks that may be presented by the occupants.

A.2.3 Firefighting equipment

A.2.3.1 As part of the Fire Risk Assessment and fire management plan it should be established what fire extinguishers (type and numbers) are required to the premises (see also guidance in BS 5306 Part 8: Fire extinguishing installations and equipment on premises – Part 8: Selection and installation of portable fire extinguishers – Code of practice)^{A.1.18}.

A.2.3.2 Disabled refuges, the evacuation of mobility impaired occupants and any additional evacuation devices that may be required to support this will form part of the management plan.

A.2.4 Management procedures

A.2.4.1 Fire safety management procedures should be developed to support the successful management of the building. ADB outline recommendations for fire safety management for office buildings.

A.2.4.2 Specific management measures should be developed to support the fire safety strategy. This will include, but not limited to:

- Ensure riser doors are kept locked shut at all times and are not used for storage,
- Ensuring the maintenance, testing and operation fire alarm and detection systems.
- Ensuring escape routes are kept clear.
- Ensuring fire doors are well maintained and not held open.
- Ensuring there is no fire load within common areas and ensuring these areas are suitably managed such that the recommendations of this fire strategy are met.
 - Where the reception desk has been proposed within the enclosure of the stair at fourth floor level, it is expected that the fire load is kept as low as reasonably practicable and meets the recommendations set out in Section 3.5.38.
- Ensuring access is always available to fire service vehicles as set out in this report.
- The management and maintenance of the emergency signage and emergency lighting.
- The control of the occupancy numbers at each floor level to comply with this fire safety strategy.

A.2.5 Fire Safety Manual

- A.2.5.1 To support the management of the building a Fire Safety Manual should be developed as set out in Annex H of BS 9999.