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Travelodge Covent Garden

Fire Strategy Report

Planning Stage

Issuing consultant: Ben Rogerson **Issue:** 02 **Date:** 07/02/2023
Project No: 220247.036 **Document No:** MZ-220247-036-FSS-01-ISS02

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Executive Summary

Travelodge London Covent Garden is an existing hotel building located at 10 Drury Lane in central London.

The existing building contains 12 floors refenced as Level 1 to Level 12, with plant space at Level 13. The main entrance from Drury Lane leads up steps to the reception area at Level 3, which opens to the restaurant and bar area. Hotel bedrooms are located at Level 2 up to Level 12 with effectively three wings off a central area which each have a stair at the end to provide two means of escape from the bedroom corridors. Level 1 contains staff areas, plant rooms, and a double height undercroft car park, which is accessible from the service road at the west of the building which leads from High Holborn at the north down a ramp to provide vehicle access to Level 1 and exits up another ramp to the south side at Shorts Gardens. An image of the hotel is shown in the following figure looking from Drury Lane:

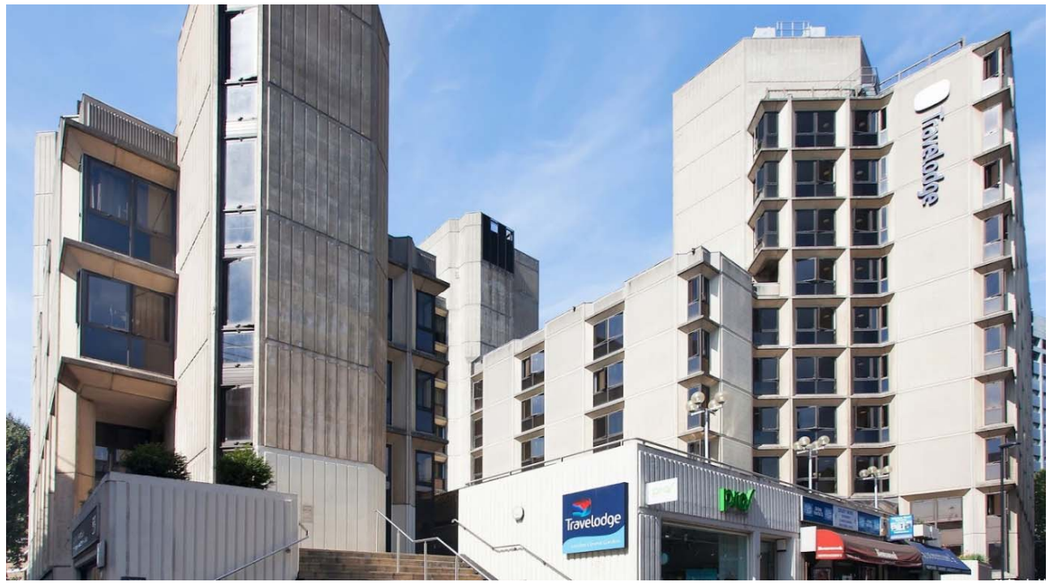


Figure 1: Image of the hotel taken from the Travelodge website

Work is proposed at the hotel which will include the following changes to the building:

- Extension of the reception, bar and café area at Level 3, with a remodelled entrance from Drury Lane, including a new lift providing access to Levels 1, 2 and 3.
- The provision of 55 new windowless bedrooms at Level 1 and Level 2 in the space previously used for the double height undercroft car park. 10 bedrooms which previously had windows looking into the car park will become windowless bedrooms.

This fire strategy report primarily covers the new and remodelled areas at Levels 1, 2 and 3 to ensure the new areas are compliant with the required fire safety guidance, and any impact these areas have on the existing building. Additionally, this report documents the existing building and outlines the fire safety provisions within the building as a whole, as understood based upon existing drawings and a familiarisation visit carried out on 27/01/23. There was not previously an existing fire strategy report for the building and the exact construction date(s) are unknown, so this report aims to document the existing provisions in the existing parts of the building which are not impacted by the proposed works, as best as possible from the limited information available.

Summary of Building Provisions

The following table provides a summary of the fire safety provisions in the building.

No.	Fire Safety Measure	Performance Standard
1	Evacuation Philosophy	The building will adopt a simultaneous evacuation strategy; this means that upon sounding of the alarm, all occupants within the building should begin their evacuation. No delay between alarm activation and evacuation is proposed.
2	Fire Detection system	A Category L1 detection and alarm system is installed throughout the existing building and will be installed in the new and remodelled areas at L1, L2 and L3. This level of alarm system is in line with the recommendations of BS 5839-1 for a Residential (other) development.
3	Audible Alarm system	Audible warning is provided to the existing building and will be provided to the new and remodelled areas using sounders in accordance with BS 5839-6.
4	Back-up Power Supply	Where such systems are required for life safety systems (firefighting lifts, evacuation lifts, automatic smoke control systems, etc.), power and control cables should be installed in accordance with BS 8519:2020.
5	Internal Fire Spread (Linings)	All internal linings shall limit the surface spread of flame when tested under the European classifications in accordance with BS EN 13501: Part 1.
6	Sprinkler System	No sprinklers are to be provided within the development. An old sprinkler system previously covered the undercroft parking area, but this will be removed as the parking space is removed and the area is converted to bedrooms at L1 and L2.
7	Loadbearing Elements of Structure	As the building is classified as 'Residential (other) - Hotel' with a height more than 30m, in accordance with Table B4 of ADB it will require 120 minutes fire resistance applied to the structural elements.
8	External Fire Spread	The existing external walls and external wall systems are of concrete construction over the large portion of the building. The main external walls of the building are to remain unchanged. New external walls of the bedrooms to be added at L1 and L2 and the external walls of the extension of the reception, bar, café area at L3 will be of non-combustible materials to at least A2-s1,d0 as per BS EN 13501-1, in accordance with Regulation 7. Unprotected areas on the new sections of façade shall not exceed the maximum calculated area permissible.
9	Fire Service Access	The existing building has two firefighting shafts serving the upper floors of the building. Fire mains are provided to the two firefighting shafts. Fire service vehicle access is available to the perimeter of the building with public road access from Drury Lane, High Holborn and Shorts Gardens to Level 3, and private vehicle access via the service road to access Level 1. The base of each FF shaft where the dry riser inlet is located can be reached by a fire service vehicle within 18m. At L1 and L2 where new bedrooms will be provided there will be fire service vehicle access from the service road at L1. To assist with hose coverage, it is proposed that a dry riser will be included in the new stair which links L1 and L2.
10	Firefighting Shaft	Two Fire Fighting shafts are provided in the existing building which include the following: • Stair, lobby, and FF lift • Dry riser in lobbies • Ventilation to the lobbies (open louvres or windows to outside) • Vent at head of stair (open louvre)
11	Fire Mains	The dry riser outlets are within the lobbies of the two firefighting shafts in the existing building which are accessible at each floor. It is proposed that a dry riser will be included in the new stair which links L1 and L2 to provide hose coverage to L1 and L2.
12	Private Fire Hydrants	Existing street hydrants are within 90m of the dry riser inlets.
13	Emergency Lighting and Exit Signage	Emergency lighting installed in the new and remodelled areas should be in accordance with BS 5266-1. Emergency lighting must be automatic and provide a minimum of 3-hour illumination. Exit signage installed in the new and remodelled areas should be located and operated in accordance with BS 5499-4. The signs designated as E001 and E002 in BS EN ISO 7010:2012+A5 should be used with the appropriate directional arrow in accordance with BS 5499-4.
14	Portable Fire Extinguishers	Portable fire extinguishers should be provided as per the recommendations of BS 5306-8 and may be dependent upon a fire risk assessment of the building.
16	Smoke Management Systems	In the existing building there are existing smoke control systems as follows: - Smoke vents to the firefighting lobbies and stairs in the two firefighting shafts. - In the main plant room at L1 there are luxcrete panels which open out at street level above which are provided for smoke clearance. This area will not be impacted by the works and will be maintained. - There is an existing louvered vent from the undercroft car park at L1-L2 which leads up to Drury Lane pavement. This will be replaced with a mechanical extract to serve the remaining undercroft areas at L1-L2 following the works.

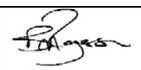
Outstanding Risks

The development is considered to comply with the Codes and Standards as listed within this document, provided that the recommendations within this report are adopted and the deviations from the prescriptive code requirements as listed below are accepted by the approvals authority.

Note: The deviations from the prescriptive code requirements have been discussed with the Design Team. However, should the prescriptive code deviations not be accepted by the approvals authority, then the proposed design will need to be revised to ensure prescriptive code compliance can be achieved.

Risk No.	Project Component	Deviation	Proposed Design Solution	Status	Comments inc if approvals authority have approved
1	The new lift accessing L1, L2, L3 from the Drury St entrance is an evacuation lift as required by the London Plan 2021. Egress is via the exit at L3 through the entrance lobby.	The exit at L3 from the evacuation lift is via the double height entrance lobby which is open to the reception above.	It is proposed that at L3 there will be a safe protected route from the lift to outside created by a fire/smoke curtain/shutter in the lobby so that the exit route from the lift does not pass through the double height entrance space.	Open	Approach to be confirmed with Building Control

Quality Management

Issue No.	Date			
01	27/02/2023	Reason for issue:	First issue for comment	
		Prepared by:	Ben Rogerson Principal Consultant	
		Reviewed By	Alex Manning Associate	
02	07/02/2024	Reason for issue: Updated to include latest layouts with minor amendment to front entrance at L3		
		Prepared by:	Ben Rogerson Associate	
		Reviewed By	Alex Manning Associate	

Validity

This report is formulated on the basis of the information and experience available at the time of preparation. It is applicable to the above-mentioned project only in accordance with the client's instructions. It is only valid provided no other modifications are made other than those for which a formal opinion has been sought and given by Maze Fire Consulting Limited.

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Contents

1. Introduction

1.1 Client and Project

Maze Fire Consulting Limited (referenced throughout This Report as 'Maze Fire') has been appointed by Wakemans on behalf of Falkerstone Limited and Travelodge as a specialist fire and life safety consultant for the works at Travelodge Covent Garden in London.

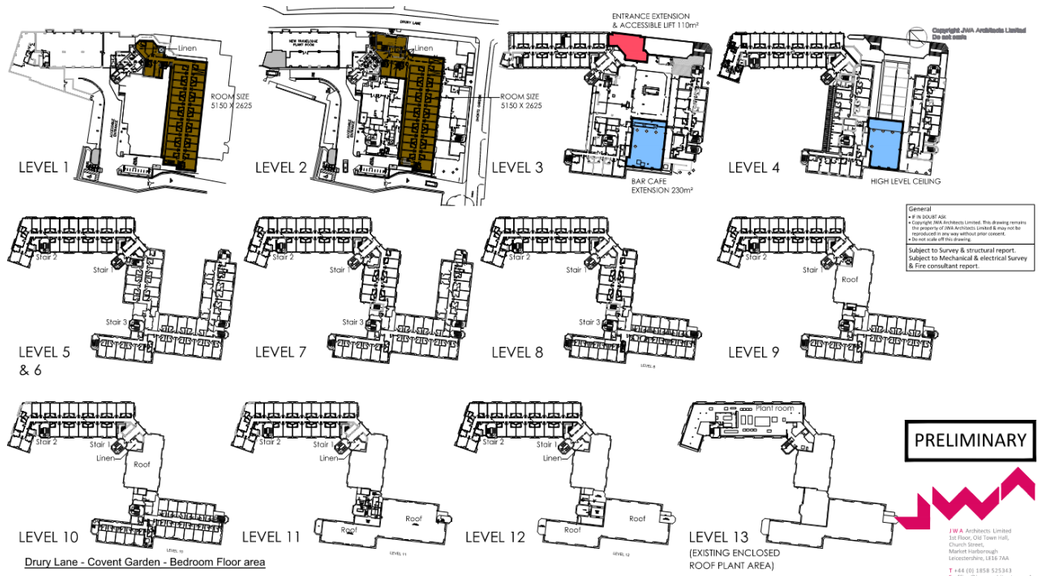
1.2 Project Address

10 Drury Ln, High Holborn, London, WC2B 5RE, London, UK.

1.3 Project Description

The project entails building work constituting an 'alteration to an existing building'.

Travelodge Covent Garden features a hotel building in the 'Residential (other)' purpose group with 12 occupied floor levels (referenced as L1 – L12), no basement and an enclosed plant area at Level 13. An indicative layout showing the various levels of the building is copied in the Figure below, with the areas of proposed work shown highlighted in brown, pink and blue as per the key.



	Level 1	Level 2	Level 3
ENTRANCE / SEATING & ACCESSIBLE LIFT			110m²
BAR CAFE EXTENSION			230m²
ADDITIONAL DOUBLE SQUEEZE WINDOWLESS ROOMS	28 657m²	28 756m²	

Figure 2: Existing floor levels with proposed works shown highlighted in pink, blue and brown.

The building is located on a sloping site with access at the lowest Level 1 from the west where there is an access road and courtyard type space with 6 parking spaces and bike parking. Access from the street (Drury Lane and Shorts Gardens to the east) is at a higher level and enters the building at Level 3 via a half flight of steps which leads to the main entrance, reception, check-in and seating for the café/bar.

Above Level 3 there are effectively three 'wings' to the existing building which contain bedrooms from L4 to L12, although the floorplate reduces in area a few times at L8, L9 and L11 as can be seen in the above figure.

The proposed work at the hotel will be at Levels 1, 2 and 3 (shown highlighted in Figure 2) which will include:

- The extension of the reception, bar, and café area at Level 3, with a remodelled entrance from Drury Lane, including a new lift providing access to Levels 1, 2 and 3.
- The provision of 55 new windowless bedrooms at Level 1 and Level 2 in the space previously used for the double height undercroft car park. 10 bedrooms which previously had windows looking into the car park will become windowless bedrooms.

1.4 Description of Work

This fire safety strategy (hereby referenced as 'This Report') primarily covers the fire safety design of the remodelled areas at L1, L2 and L3 but also documents the existing provisions in the existing building and any impact of the works on the existing areas.

Services during this early concept and planning stage will focus on preparing the design for fire safety, developing the fire safety measures in more detail and facilitating the fire safety design aspects of the planning process.

As the project is in London and requires a London Planning Statement a separate document has been prepared to satisfy the requirements of the London Plan, ref: *MZ-220247-036-LNP-01-ISS02.*

This Report presents a performance specification of the fire safety measures provided in the design in order to satisfy the fire regulations. For the purposes of This Report, the fire safety objectives are for the design to meet the regulatory requirements described in Section 1.8

1.5 Approval Authority

The approval authority for the project will be Stroma Building Control, who will consult with London Fire Service Control as a statutory consultee.

1.6 Stage of Project

The project follows the RIBA Plan of Work to coordinate the overall brief, design, construction, and operation of the building.

This Report has been based on the design information provided by others, as described in Section 1.9 The project is currently at the concept and planning stage (approximately RIBA Stage 2-3) and This Report represents a fire safety strategy to a Planning stage of works.

1.7 Limits of Report

It is important to note that This Report does not represent a detailed design or specification of all aspects of a building; it is a series of recommendations that others may consider and relate to the design of the scheme. The information contained herein constitutes a performance specification and therefore does not address detailed aspects of design, such as system design (active or passive) nor construction details.

This Report has been developed with reference to statutory guidance documents and their impact on the strategic aims of the Fire Strategy. This Report will reference relevant design standards however it is not practical to reproduce all details contained within those documents.

Where a detailed design has to be developed by others, on the basis of this performance specification, it would be appropriate for the reader to refer to, and read in conjunction with, those documents referenced in This Report.

Any diagrams incorporated into This Report are illustrative and intended to further convey specific aspects of the fire safety strategy only. Diagrams are not a substitute for the architectural general arrangement, fire strategy drawings or the detailed systems drawings and specifications, which should be referred to in conjunction with This Report.

This Report is primarily concerned with life safety. Property protection is not specifically considered although the fire safety provisions described herein will offer some inherent degree of property protection by nature. Unless otherwise specified, the information herein does not specifically address:

- Insurance requirements
- Property protection or loss of operation
- Fire safety during construction
- Detailed management procedures or duties under the Regulatory Reform (Fire Safety) Order (RRO).

It is noted that This Report addresses so far as necessary, the evacuation of persons with restricted mobility. This Report however does not address the requirements of any specific accessibility issues (outside of those directly related to means of escape) and separate advice should be sought from others on this topic accordingly.

While arson as a single point of ignition will be incorporated in the analysis, simultaneously multiple ignition sources, use of accelerants, sabotage of fire protection systems or terrorism are not included as part of This Report scope.

It is recommended that the building owners or occupiers liaise with their relevant insurers as to the fire safety design contained herein.

This Report has been developed for RIBA Stage 2-3 and represents a fire safety strategy to a 'Planning' stage of works. It is limited to the scope of works as defined in our fee proposal dated 07 Dec 2022.

1.8 Regulatory Framework

1.8.1 General

The following legislation has been considered in the preparation of this fire safety strategy.

1. The Building Regulations 2010
2. The Building (Amendment) Regulations 2018
3. The Regulatory Reform (Fire Safety Order) 2005
4. The Construction (Design and Management) Regulations 2015

1.8.2 The Building Regulations

The building will be subject to the operation of the Building Regulations 2010 (as amended) and will therefore need to comply with the requirements of Schedule 1 Part B of The Regulations relating to, the following areas.

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

The Ministry of Housing, Communities and Local Government (MHCLG) has produced a number of guidance documents to assist designers in meeting the relevant requirements of the Building Regulations; these 'Approved Documents' provide guidance on different aspects of the Regulations.

Approved Document B – Volumes 1 and 2 (ADB) provide design guidance on ways in which the functional fire safety requirements can be satisfied. However, the document is intended to provide guidance on the more common building situations and there is no obligation to adopt any particular solution contained in an Approved Document if the relevant requirement can be met in some other way for example by using the following, as applicable:

- the guidance contained within British Standard 9999 Fire Safety in the design management and use of buildings – Code of practice (BS 9999)

Material Change of Use / Alteration

Regulation 5 defines a 'material change of use' in which a building or part of a building that was previously used for one purpose will be used for another.

The Building Regulations then set out requirements in Regulation 6 that must be met before a building can be used for a new purpose. To meet the requirements, the building may need to be altered to comply with the new purpose of the building. As applicable, these changes form part of the fire safety strategy described herein.

The existing undercroft car park area of the building will be changed with new bedroom accommodation provided in the old car parking space at L1 and L2. Additionally, the reception, café and bar at L3 will be extended and remodelled

If an existing building is subject to building work, the work is considered a material alteration where the work would result in either:

1. the building or controlled service or fitting not complying with parts B1, B3, B4 or B5 of the building regulations, where previously it did or
2. the building or controlled service or fitting which before the work commenced did not comply with parts B1, B3, B4 or B5 of the building regulations, being more unsatisfactory.

It is noted that the building works described herein relate to an existing building, therefore compliance with the Building Regulations is sought so as to not make the existing fire safety conditions any worse. Where it is identified that any such condition is being made worse, compliance is sought by satisfaction of the functional requirements as described in Section 1.8.3.

External Wall Construction - Regulation 7

Changes to Regulation 7 were introduced by the Building (Amendment) Regulations 2018 and make prescriptive requirements for the external wall materials such that where relevant buildings are greater than 18m these materials shall be of European Classification A2-s1, d0 or A1, classified in accordance with BS EN 13501-1:2007+A1:2009.

Regulation 7 is now applicable to Hotels over 18m and is applicable to the new parts of external wall to be added to this building.

The regulations also note specific material exceptions. Where relevant, the requirement of Regulation 7 is detailed further in the External Fire Spread section of This Report.

Regulation 38

Regulation 38 of the Building Regulations states that, where building work involves the erection or extension of a relevant building or relevant change of use of a building which affects fire safety, it is necessary that the fire safety information for the building shall be given to the Responsible Person at the completion of the project or when the building or extension is first occupied. This is to be provided to the Responsible Person by the person carrying out the work.

This information will facilitate the production of the fire risk assessment which is a requirement of the Regulatory Reform (Fire Safety) Order, outlined below. The list of information considered in the preparation of This Report should be provided with This Report as detailed in Section 1.9.

The fire safety information in this fire safety strategy may be used to supplement the information required to be given to the responsible person. As a minimum it will be necessary for the occupier of the building to be given this fire safety strategy and all 'as built' fire strategy plans.

1.8.3 Applied Guidance to the Building Regulations

This fire safety strategy adopts the following guidance as the basis of design for the project, noting the scope and limits of This Report outlined in this chapter.

Approved Document B (ADB)

ADB Volume 2 gives guidance on each of the technical parts of the regulations with respect to buildings other than dwellings.

The Approved Documents provide guidance for common building situations. In addition to guidance, some approved documents include or refer to provisions that must be followed exactly, as required by regulations or where methods of test or calculation have been prescribed by the Secretary of State. See notes on Regulation 38 above as an example. Each approved document relates only to the particular requirements of the Building Regulations 2010 that the document addresses. However, building work must also comply with all other applicable requirements of the Building Regulations 2010 and all other applicable legislation.

This fire safety strategy has adopted the guidance of Volume 2 of ADB as the basis of the design.

BS 9999: 2017

British Standard 9999: 2017 Fire Safety in the design management and use of buildings – Code of practice uses a risk-based approach to fire safety in buildings. It defines a number of 'Risk Profiles' depending on the type of occupancy, building contents and the provision of automatic fire detection and / or suppression. The recommended fire safety measures for a building, including specifications for means of escape and fire resistance ratings, depend on the Risk Profile.

For a given Risk Profile, the standard lays down a “minimum package” of fire safety measures, including specifications for fire detection and warning systems and provisions for the protection of escape routes. Certain additional measures – notably enhanced fire detection and warning systems – will allow relaxations (within defined limits) of some of the requirements for means of escape.

Where the ADB is silent on a particular aspect of fire safety design, BS 9999 will be referred to in this strategy if appropriate.

Performance Based Design

Where aspects of the design deviate from the above design guidance, fire safety engineering analyses are carried out to demonstrate compliance with the functional requirements of the building regulations or equivalence to the prescriptive guidance.

1.8.4 The Regulatory Reform (Fire Safety) Order 2005

The operation of the building will be subject to The Regulatory Reform (Fire Safety) Order 2005, (FSO).

Responsibility for complying with the FSO rests with the “responsible person” as defined by Article 3, reproduced as follows:

(1) *in relation to a workplace, the employer, if the workplace is to any extent under his control;*

(2) *in relation to any premises not falling within paragraph (a)—*

a. *the person who has control of the premises (as occupier or otherwise) in connection with the carrying on by him of a trade, business, or other undertaking (for profit or not); or*

b. *the owner, where the person in control of the premises does not have control in connection with the carrying on by that person of a trade, business, or other undertaking.*

If there is more than one responsible person in any type of premises, all must take reasonable steps to work with each other.

Under the FSO, the Responsible Person must carry out an assessment of the risks stemming from the possibility of fire in the premises and must implement fire precautions where necessary to the extent that is reasonable and practicable to control those risks.

On occupation of the building, or part thereof, the ‘responsible person’ as defined in the FSO is required by law to undertake a ‘suitable and sufficient’ fire risk assessment. This fire safety strategy will not satisfy this obligation; instead, it should be used as a basis for understanding the fire safety provisions provided in the building in order to undertake the risk assessment.

The fire risk assessment will help identify risks that can be removed or reduced and to decide the nature and extent of the general fire precautions that need to be taken to protect people against the fire risks that remain. It should pay particular attention to those at special risk, such as the disabled and those with special needs, and must include consideration of any dangerous substance likely to be on the premises.

1.8.5 Construction (Design and Management) Regulations 2015

The Construction (Design and Management) Regulations 2015 (CDM) are applicable for the design and construction stages of this project. The CDM aims to integrate health and safety into the management of the project and to encourage everyone involved to work together to

- Improve the planning and management of projects from the very start.
- Identify hazards early on, so they can be eliminated or reduced at the design or planning stage and the remaining risks can be properly managed.
- Target effort where it can provide the most benefit in terms of health and safety.
- Discourage unnecessary bureaucracy.

These Regulations are intended to focus attention on planning and management throughout construction projects, from design stage and onwards. The aim is for health and safety considerations to be treated as an essential, but normal part of a project's development - not an afterthought or bolt-on extra.

Guidance on fire safety for construction sites is given in the HSE publication HSG 168 however does not form part of this fire safety strategy. Where our role on the project involves the preparation or modification of designs, this will be undertaken in conjunction with the project’s principal designer and CDM Coordinator to ensure that any foreseeable risks during construction and the maintenance and use of the building are sufficiently controlled. These risks will typically be summarised in the principal designer’s or principal contractor’s risk register.

1.9 Information Considered

The following information has been considered in the preparation of this fire safety strategy.

- Architectural drawings prepared by JWA Architects as listed in the table below
- Fire Risk Assessment report prepared by Veteran: *TL London Central Covent Garden FRA 2021*
- List of existing room types per floor and occupancy: *016 Covent Garden Room Types*
- Site familiarisation visit carried out by Ben Rogerson of Maze Fire on 27/01/23.

Table 1: Referenced Architectural Drawings

Drwg No	Title	Revision	Date
J9348 - 01C	Proposed Extension All Floors - desktop feasibility	C	14/06/2021
J9348 - 20	Proposed Level 1 Plan	E	31/01/2024
J9348 - 21	Proposed Level 2 Plan	G	02/02/2024
J9348 - 22	Proposed Level 3 Plan	E	31/01/2024
J9348 - 25	Proposed Front Elevation	H	31/01/2024
J9348 - 27	Proposed Rear Elevation	B	17/01/2024

Any change in the information listed above to suit future re-organisation will require further assessment to confirm compliance with the intent of the design objectives, and a potential revision of This Report or a subsequent Fire Strategy may be required.

1.10 Record of Statutory Consultation

At the date of issue of this document, informal consultation has taken place with Stroma Building Control with respect to the building regulations application in the form of an initial Teams call to discuss the project with Stroma and the design team.

It is common practice for the building control body to consult with the relevant fire authority, being the Fire Service, noting formal consultation has not been advised to have taken place. A key part of the purpose of statutory consultation with the fire authority is to allow observations to be made in regard to the proposals for the scheme with respect to the functional requirements of the Building Regulations and provide for an opportunity to make the applicant aware of actions that may have to be taken to meet the subsequent requirements of the FSO.

The consultation period should allow for agreement that the functional requirements of the Building Regulations are being met, and where possible via a collaborative process with all stakeholders involved where possible.

The following consultation feedback has been received or will documented in future revisions of this fire safety strategy.

Table 2: Summary of Statutory Consultation Feedback Received

Ref.	Feedback Type	Authority	Date
	No feedback received to date		

1.11 Reference Documents

Figure 3 outlines the key codes and standards that will be used as a basis of design. This list is not exhaustive. Where referenced in This Report, codes and standards will follow the guidance of the editions outlined.

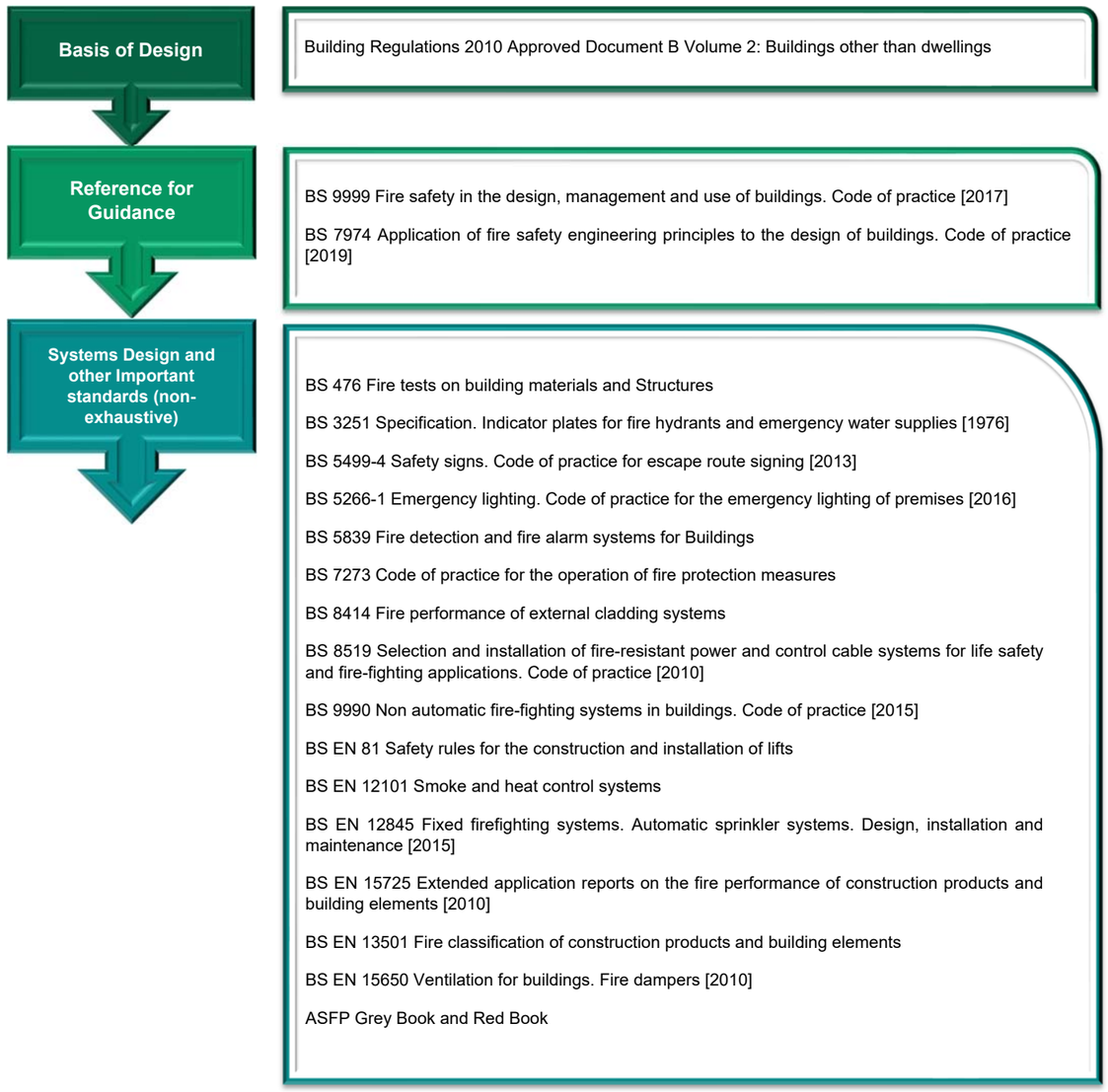


Figure 3: Design Basis

1.12 Project Stakeholders

This Report has been developed with the relevant project stakeholders as identified in the table below:

Table 3: Project Stakeholders

Organisation	Role
Stroma Building Control	Authority Having Jurisdiction
JWA Architects	Architecture and Planning
TBC	MEP Engineer
TBC	Structural Engineer
Maze Fire Consulting Ltd.	Fire and Life Safety Engineer
Travelodge Hotels Ltd / Falkerstone Limited	Client
Wakemans	Project Manager

2. Building Characteristics

2.1 General Site Description

The building is an existing hotel located at 10 Drury Ln, High Holborn, London, WC2B 5RE, London, UK.

The drawing copied in Figure 2 above shows a layout of each floor in the building, which is summarised below:

- Level 1 contains plant rooms, bin stores, staff ancillary areas and in the existing building there is an undercroft car park. The proposed works will remove the car park and provide 28 new bedrooms and 2 linen stores at L1.
- Level 2 contains bedrooms and some ancillary areas such as linen rooms and plant rooms. The proposed works will provide 27 new bedrooms and 2 linen stores at L2 in what was the upper section of the double height undercroft car park.
- Level 3 contains the reception, café/bar, kitchen, as well as bedrooms and some ancillary plant and storerooms. The proposed works will extend the reception and café/bar at L3 and create additional seating.
- Above Level 3 there are effectively three 'wings' to the existing building which contain bedrooms from L4 to L12, although the floorplate reduces in area a few times where the floorplate steps back at L8, L9 and L11.
- Level 13 contains plant only.

2.2 Building Particulars

The following building particulars have been used in the development of this fire safety strategy:

- Number of Storeys: 0 basement and 12 above grade (inc ground) plus plant at L13
- Height of the building: approx. 40m
- Height of floor of top storey above ground level: approx. 37.5m
- Approximate Floor Area: 2000m²

2.3 Function or Use of the Building

2.3.1 Approved Document B

Building uses are classified within different purpose groups, which represent different levels of hazard (as described in Table 0.1 of ADB). A purpose group can apply to a whole building or to a compartment within the building and should relate to the main use of the building or compartment.

The building is primarily considered to be of **Group 2b - Hotel.**

2.4 Materials of Construction and Structural Characteristics

The existing building is of concrete construction with concrete floors and concrete structure throughout the whole building.

We have been advised that the general construction materials for the new and modified areas are as set out below:

Table 4: Primary Materials of Construction in New / Modified areas

Element	Materials
Floor	Concrete floors
Internal Walls	Primarily lightweight plasterboard walls to bedrooms and corridors.
External Walls	External wall materials are required to be non-combustible to at least A2-s1,d0 as per BS EN 13501-1, in accordance with Regulation 7.

2.5 Fire Hazards

2.5.1 Activities

Activities are considered to be consistent with a building containing mainly Residential (other) occupancies. No processes or activities have been identified that indicate excessive fire risks.

The areas of the hotel which present the highest fire risk are the plant rooms, kitchen, bin stores and general storerooms. There are parking spaces at L1 which presents a risk of a vehicle fire.

ADB specifies that the following rooms are considered 'places of special fire hazard' and will be dealt with accordingly in the strategic design.

- Refuse storage rooms (bin stores)
- Boiler room

As good practice all plant rooms, linen rooms, kitchens, and stores are also to be treated as places of higher fire risk and enclosed in fire resisting construction to at least EI30 (kitchens to be EI60).

2.5.2 Ignition Sources

Typical ignition sources comprise the following:

- Cooking appliances – Generally the kitchens within a Travelodge only contain ovens and microwaves for reheating for the primary food preparation so open flames, deep fat fryers and grills/toasters are avoided. This is to be confirmed for this site.
- Central and water heating appliances
- Electrical distribution - batteries, generators, Wiring, cabling, plugs, Heating equipment etc
- Electric lighting - lights, Fluorescent lights, Spotlights etc
- Other domestic style appliance - Audio equipment, Battery charger, Dishwasher, Kettle, TV, Vacuum cleaner, Washing Machine, Personal Computer etc.

The potential ignition sources are expected to be consistent with well managed Residential (other) building types.

3. B1 – Means of Warning and Escape

3.1 Functional Requirement of the Building Regulations

The functional requirement contained within Schedule 1 Part B1 of The Building Regulations states that:

(1) *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.*

3.2 General Philosophy

The general principle to be followed when designing for means of escape is that when occupants are confronted by fire within a building they can turn away and walk to a place of safety in a different direction by their own unaided efforts. Escape in a single direction is only allowed when the distances are short, and people could be expected to escape before the fire becomes large enough as to block the escape route.

3.3 Evacuation Policy

The building will adopt a simultaneous evacuation strategy; this means that upon sounding of the alarm, all occupants within the building should begin their evacuation. No delay between alarm activation and evacuation is proposed.

3.4 Classification of Occupancy

The building is considered to be primarily a Hotel. It will also contain ancillary occupancies as outlined below:

- Office: Offices
- Assembly and Recreation: Restaurant, Bar, Commercial Kitchen, Coffee Stations, Staff Room
- Industrial: Plant Rooms
- Storage and other non-residential: Cleaners' room, Linen store, Waste Room

3.5 Means of Warning

In accordance with ADB, the minimum standard of fire alarm should be based on the type of occupancy and the means of escape strategy for the building. BS 5839-1 Fire detection and fire alarm systems for buildings, is consulted to provide guidance on the system to be used.

A Category L1 detection and alarm system is appropriate, in line with the recommendations of BS 5839-1 for an alteration to existing building - Residential (other) development and considered suitable to provide the highest level of coverage and detection.

An L1 category is specified as the level of system installed throughout the existing building and to be installed in the new and modified parts of the building.

The objective of a Category L1 system is to offer the earliest possible warning of fire, so as to achieve the longest available time for escape.

3.6 Audible Warning

Audible warning will be provided to the development using sounders in accordance with BS 5839-6 and the previous sections of this chapter.

3.7 Horizontal Means of Escape

The horizontal means of escape considers the escape from any point on a level to a storey exit on that level.

The means of escape design depends on the occupancy, occupancy numbers, number of escape routes, escape route widths and travel distances.

3.7.1 Occupancy Load Factors

The occupancy numbers for each floor are based on the numbers of person per bedroom, the capacity of the restaurant/bar area or the floor space factor as given in ADB Table D1 for other areas. For the hotel, the occupant load factor has been calculated as follows for the different types of bedrooms in the building:

Table 5: Main Occupant load requirement - Bedrooms

Occupancy	Area	Occupant Load
Hotel	Bedrooms – - Single - Double - Accessible - Small Family - Family	1 / bedroom 2 / bedroom 2 / bedroom 3 / bedroom 4 / bedroom
	Bedroom Corridors -	0
	Elsewhere -	Based on Occupancy or Floor Space Factor as below

Additional ancillary occupancies will be provided with occupant load factors as summarised in the table below.

Table 6: Occupant Load Factors – non-bedroom areas

Occupancy	Occupant Floor Space Factor (m²/person)
Bar (Lounge)	0.3 (within 2m of bar) 1 (rest of lounge)
Commercial Kitchen	7
Staff Room	1
Cleaners' room	30
Linen store	30
Waste Room	30

3.7.2 Occupancy Calculations

The total occupant load has been calculated and represented in the table below, for each floor based upon the number and type of bedrooms, with the occupant load per room based upon the figures in Table 5.

The table shows the current number of bedrooms and bedroom occupancy in the existing building along with the number of bedroom occupancy added (at L1 and L2) following the works.

Table 7: Bedroom occupancy numbers

Floor	Current Bedroom Occupancy	Occupancy to be added	Bedroom Occupancy following works
Level 1	0	56	56
Level 2	56	54	110
Level 3	69	0	69
Level 4	103	0	103
Level 5	127	0	127
Level 6	137	0	137
Level 7	105	0	105
Level 8	117	0	117
Level 9	98	0	98
Level 10	99	0	99
Level 11	44	0	44
Level 12	44	0	44
TOTAL	**999**	**110**	**1109**

At Level 3 the maximum occupancy of the bar, café, reception area is calculated based upon the number of seats in each area and denser numbers of people queuing for the bar and reception as follows:

Table 8: L3 Bar, Café, Receptions occupancy numbers

Floor	Area	Floor Area (m^2)	Occupancy
Level 3	Lower seating	51	51
	Middle Seating	91	91
	Upper seating	137	137
	Queueing - Bar	9	30
	Queueing - reception	10	33
TOTAL			**342**

3.8 Number of Escape Routes

The minimum number of exits permitted per room or storey is described in the table below in accordance with the requirements of ADB.

Table 9: Required number of escape routes and exits – ADB Table 2.2

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

For the new areas of the building at L1 and L2 where bedrooms are added there are at least two exits from each floor which is sufficient to meet these criteria.

The following figures show the exit routes from L1, L2 and L3.

At L1 there are two exits to outside, one at each end of the corridor which lead to the access road at the west as shown in Figure 4.

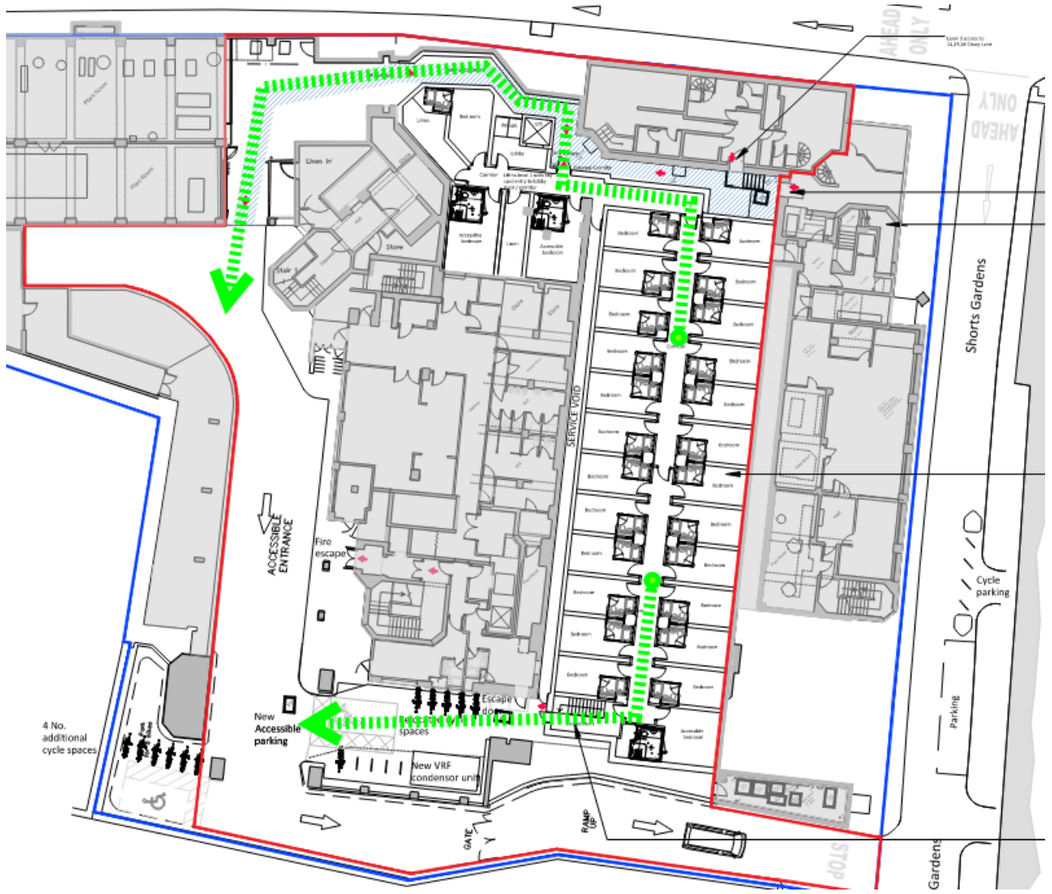


Figure 4: Level 1 Exit Routes

At L2 there are two exits to the outside with one at each end of the corridor. These two exits lead via stairs to the street, with the stair at the northeast end leading up to the main Drury Lane entrance, and the stair at the southwest end leading down to the access road at L1. These exit routes from L2 are shown in Figure 5.

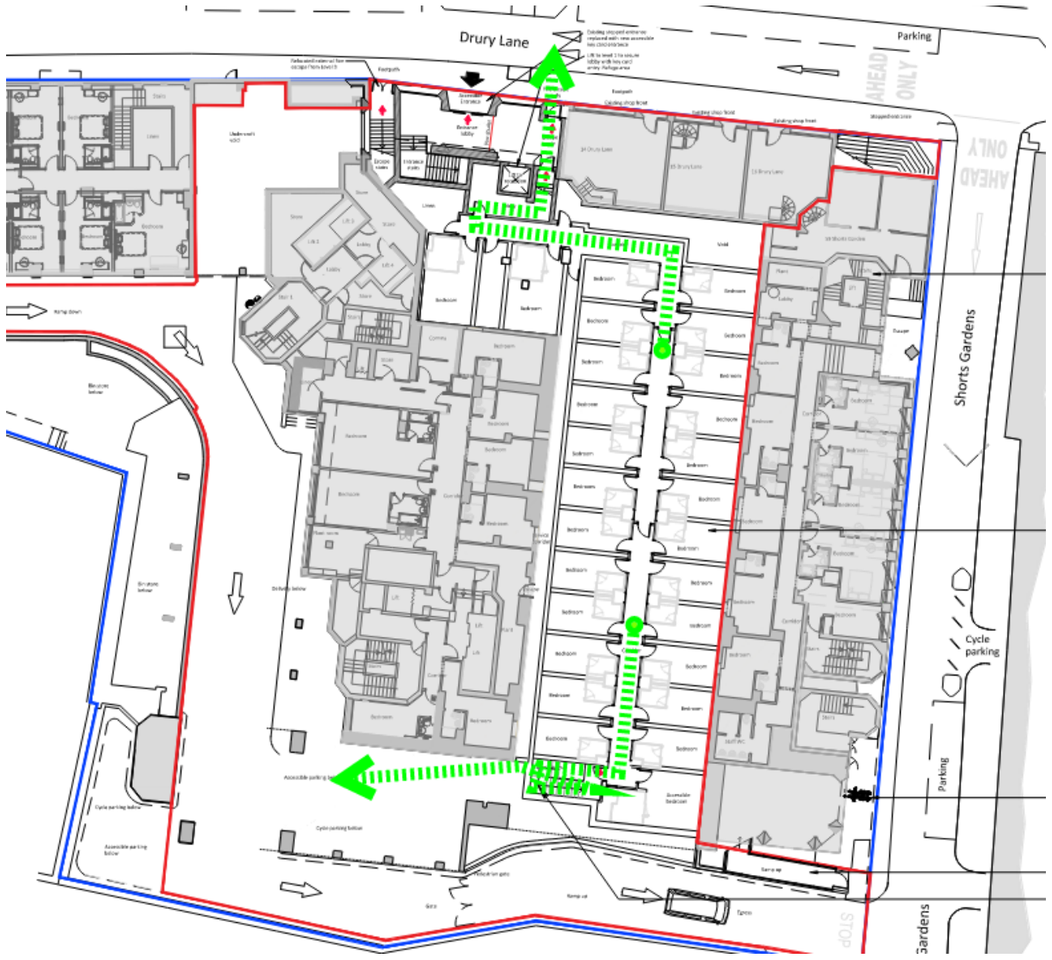


Figure 5: Level 2 Exit Routes

From the L3 bar, café, reception space there are six different exit routes as shown in the following figure with exits leading straight to outside via steps or ramps down to pavement level, or via internal stairs which discharge at L1.

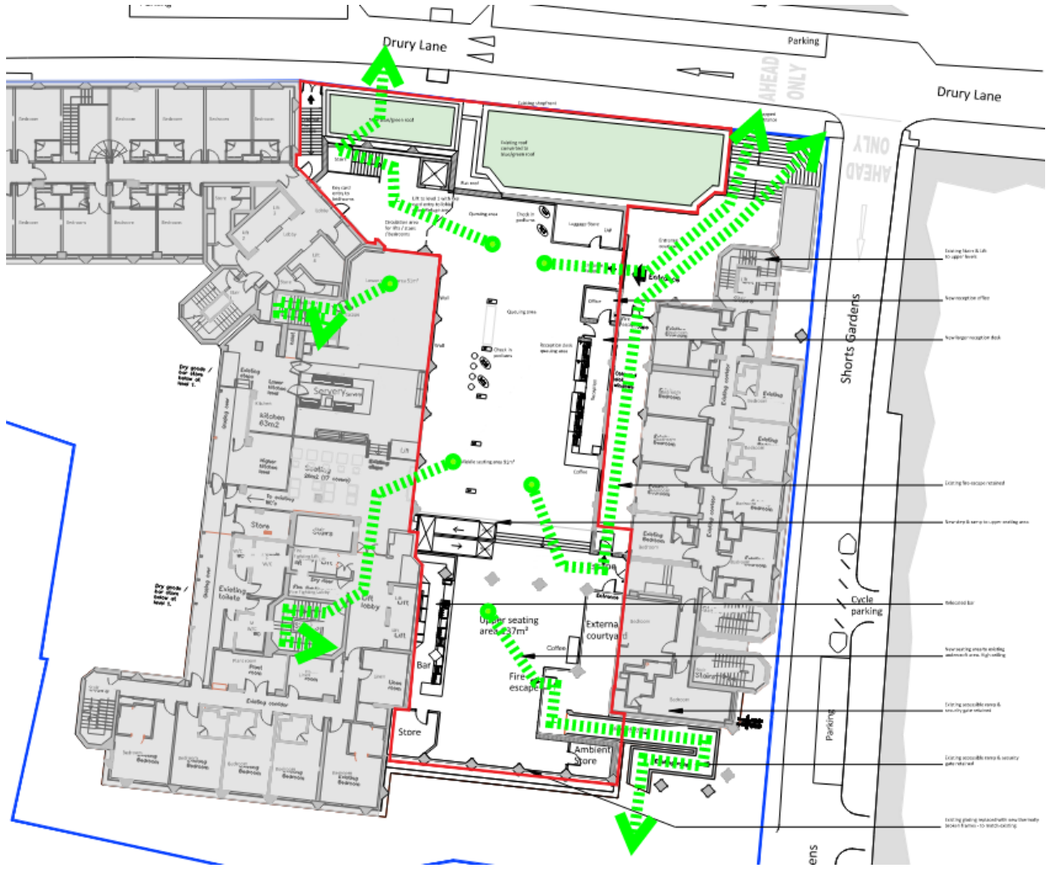


Figure 6: Level 3 Exit Routes

3.9 Minimum Width of Escape Routes / Storey Exits

The table below outlines how egress width is calculated and the minimum widths of components of egress. However, as the guidance in Approved Document M must also be followed, the doors along the escape routes should have a minimum width of 800mm in the new and modified areas where new doors are installed.

Table 10: Minimum Width of Escape Routes

Maximum number of people	Minimum width (mm)
60	800 (as per ADM)
110	850
220	1050
More than 220	5 per person

The following table shows a calculation of exit capacities from each of these three levels at L1, L2 and L3 where there will be new accommodation.

Table 11: Means of Escape Capacities from new areas

Level	Occupancy	Available Means of Escape		Comments
		No & Width	Capacity	
L1	28 double rooms = 56 people	2 exit doors from corridor, min width 850mm	110	One exit discounted, 850mm door sufficient for 110 persons. Sufficient exit capacity from L1.
L2	27 double rooms = 54 people	2 exit doors from corridor, min width 850mm	110	One exit discounted, 850mm door sufficient for 110 persons. Sufficient exit capacity from L2.
L3	342	6 exits, min width 850mm	550	Occupancy based upon maximum number of seats in bar, café, seating areas (51 + 91 + 137) plus 50 extra ppl queueing at bar/check-in = 329. There are six exits in total from the area, with one discounted and with a minimum width of 850mm per door the remaining five exits provide sufficient capacity for 550 people.

3.10 Travel Distance

For Purpose Group 2b - Hotel the limitations on travel distance are given in Table 2.1 of ADB which are copied in the tables below for reference:

Table 12: Main Occupancy Travel Distance requirements

Area	One direction only (m)	More than one direction (m)
Bedrooms -	9	18
Bedroom Corridors -	9	35
Elsewhere -	18	35

Travel distances to ancillary areas will be as follows:

Table 13: Travel Distances

Occupancy	One direction only (m)	More than one direction (m)
Bar (Lounge)	18	45
Commercial Kitchen	18	45
Staff Room	18	45
Plant Rooms - distance within the room	9	35
Plant Rooms - escape route not in open air (overall travel distance)	18	45
Plant Rooms - escape route in open air (overall travel distance)	60	100
Cleaners' room	12	25
Linen store	12	25
Waste Room	25	45

3.11 Final Exits

The width of the final exit should be at least as wide as the minimum required width of the escape route it serves.

3.11.1 Corridors

A corridor providing access to alternative escape routes should be divided by fire doorsets fitted with a self-closing device (and associated screens) where both of the following apply.

- it is more than 12m long
- it connects two or more storey exits

The fire doorsets (including any screens) should be approximately mid-way between the two storey exits. They should safeguard the route from smoke, while considering the layout of the corridor and any adjacent fire risks.

For the new bedroom corridors at L1 and L2 there is at least one fire door subdividing the corridors to meet this requirement.

If a cavity exists above the enclosures to a corridor as described above (because the enclosures are not carried to full storey height or the underside of the roof covering at the top storey), the potential for smoke to bypass the enclosure should be restricted by one of the following methods:

- Method 1 – Fitting cavity barriers on the line of the enclosure(s) to and across the corridor.
- Method 2 – Dividing the storey using fire resisting construction that passes through the line of the division of the corridor (Diagram 2.9 of Approved Document B). Any cavity above this division should be fitted with cavity barriers on the line of division of the storey and the corridor.
- Method 3 – Enclosing the cavity on the lower side by a fire resisting ceiling that extends throughout the building, compartment or separated part. Any door that could provide a path for smoke to bypass the division should be fitted with a self-closing device (but need not necessarily be fire resisting).

3.12 Automatic doors

An automatic sliding door is to be provided at the new entrance from Drury Lane. Where automatic doors are placed across escape routes, they should comply with one of the following:

- They are of the required width and comply with one of the following conditions:
  - Their failsafe system provides outward opening from any open position.
  - They have a monitored failsafe system to open the doors if the mains electricity supply fails.
  - They failsafe to the open position if the power fails.

OR

- Non-automatic swing doors of the required width are provided immediately adjacent to the automatic doors.

3.13 Inner Rooms

A room from which the only escape route is through another room is called an inner room. Where this occurs, the following arrangements should be provided:

- total occupancy of the inner rooms should not exceed 60 people.
- the inner room cannot be a bedroom.

- the inner room should be entered directly from the access corridor.
- means of escape should not pass through more than one access room.
- travel distances should not exceed the limits specified in This Report.
- the access room should not be a place of special fire hazard.

3.14 Vertical Means of Escape

Stairs should be protected stairs, enclosed in fire resisting construction. For the new stairs which will be installed between L1, L2 and L3 the stairs should be enclosed in EI120.

3.14.1 Facilities for Mobility Impaired Persons

Consideration should be given to the management procedure for the evacuation of disabled persons. This will need to align with the existing Travelodge policy and procedure for evacuating disabled persons, which will need to be updated to incorporate the new and modified areas with additional bedrooms and accessible rooms located at L1 and L2, and new disabled refuges at these levels.

The guidance in ADB for disabled refuges is:

- A refuge should be provided for each protected stairway affording egress from each storey. Each refuge should provide an area accessible to a wheelchair with minimum dimensions of 900mm x 1400mm. To enable wheelchair users to manoeuvre themselves into the refuge, the door width should have a clear opening of not less than 850 mm, and the corridor width should be not less than 900 mm. Refuges are permitted to be located in protected lobbies or protected corridors; however, it should be ensured that the wheelchair space does not reduce the width of the escape route. Where the wheelchair space is located within the protected stairway access to the wheelchair space should not obstruct the flow of persons escaping.
- Refuges should be clearly identified by appropriate fire safety signs and an emergency voice communication (EVC) system should be provided so that occupants of the refuge can alert the management of the building that they need assistance, and so that they can be reassured that assistance will be provided. The EVC system should comply with BS 5839-9, consisting of Type B outstations which communicate with a master panel located adjacent to the main fire alarm panel.

At L1 and L2 in the new areas disabled refuges shall be provided on all floors without a level route to outside along with Emergency Voice Communication system complying with BS 5839-9 to aid disabled occupants that are not able to use the stairs.

At L1 there is level access to outside into the fire escape. However, it is also proposed that a refuge will be located next to the evacuation lift at L1 so disabled persons can evacuate via the lift to the main exit onto Drury Lane. The location of the disabled refuge at L1 is shown below.

Further details on the evacuation lift are provided in Section 3.14.7

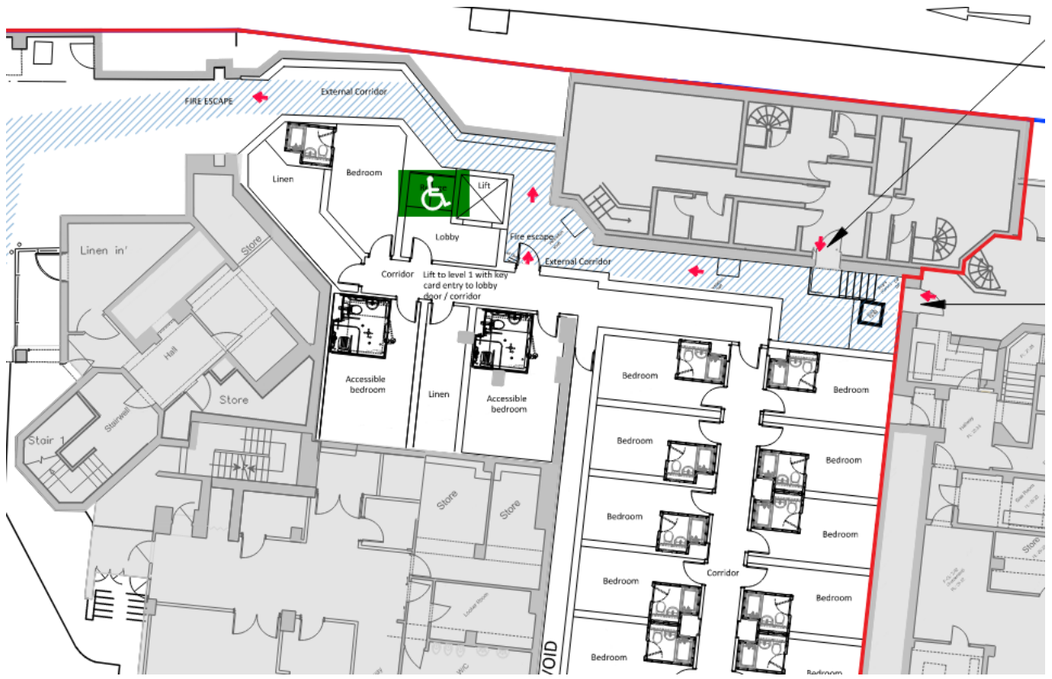


Figure 7: Refuge next to lift at L1

At L2 there will be a disabled refuge next to the evacuation lift and also in the stair core at the opposite end of the bedroom corridor should a disabled person or someone unable to use the stairs escape in the opposite direction. The two disabled refuge locations at L2 are shown in the following figure.

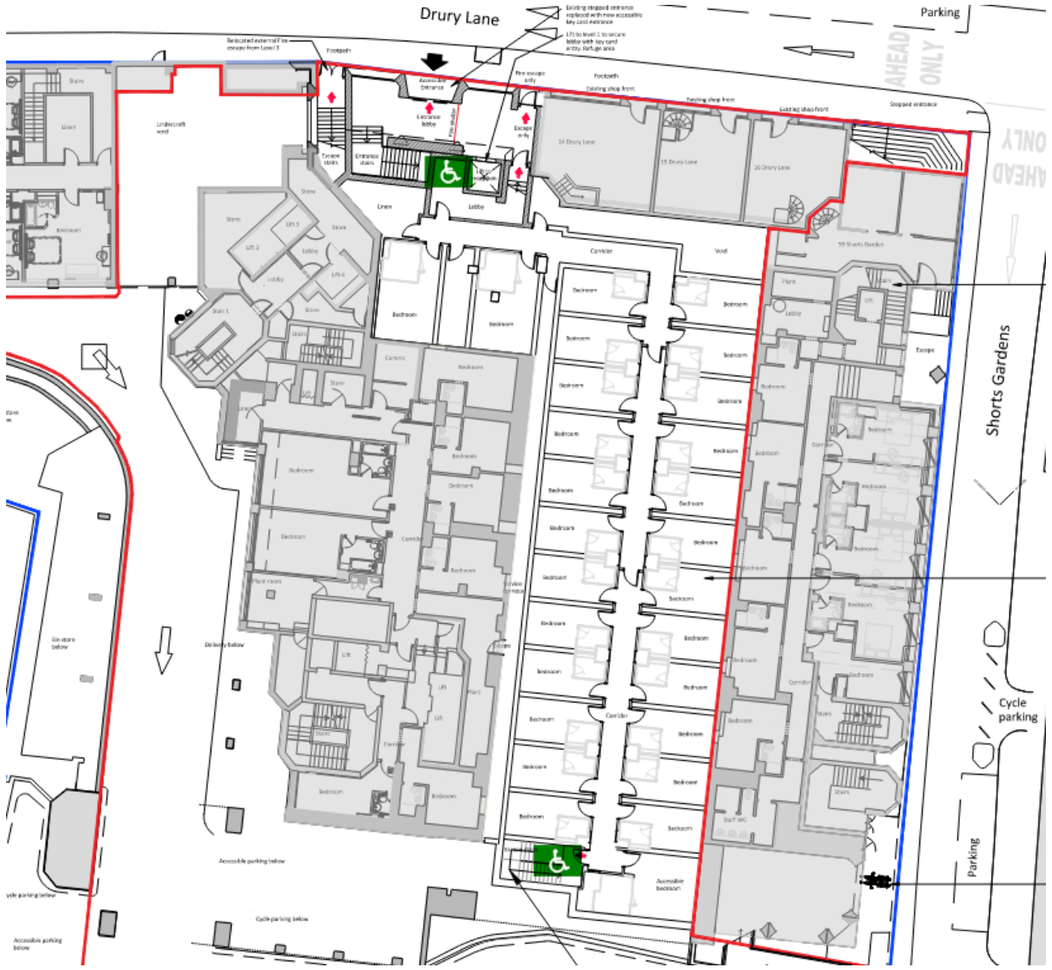


Figure 8: Refuges next to lift and in the escape stair core at L2

A staff management plan is required to ensure that all disabled refuges are checked via the emergency voice communication panels in an evacuation scenario and to assist with disabled evacuation where required. Additionally, a staff member will need to attend the external roadway at L1 in an evacuation to ensure that all persons who evacuate to the outside at L1 can safely follow the pathways back up the ramp to the emergency assembly point on Shorts Gardens.

PEEPS

Personal emergency evacuation plans (PEEPs) are recommended for all people requiring assistance to leave the building. Visitors who are likely to require assistance in the event of an evacuation should be encouraged to make themselves known to staff on arrival. Management should be encouraged to have available, especially at reception, staff who are trained in disability awareness. This will make this process more comfortable for disabled people and more effective for management. The generic PEEPs should provide a wide range of guidance for differing disabilities and be adapted for the individual premises. They need to include what the visitor should do in an evacuation, and what the management response will be. They should also reflect what specific fire safety provisions are provided for disabled persons on the premises, e.g. fire alarms adapted for people who are deaf and hard of hearing. It is important that the generic PEEP is discussed with each visitor and their particular needs taken into account where possible.

3.14.2 Width of Escape Stairs

The required width of the escape stairs depends upon how many stairs are available for means of escape, the number of people needing to use the stairs and the evacuation strategy. Egress stairs should meet the egress width limitations outlined in ADB table 3.1.

When a simultaneous evacuation policy is in place, Table 3.2 of ADB should also be met.

From L2 the two new exit routes provided to serve the bedrooms discharge via a stair at either end of the corridor, with one stair leading up to the Drury St entrance and the other stair leading down to the L1 access road in the courtyard. Both stairs require a minimum clear with of 1000mm which will provide sufficient capacity for the occupancy at L2.

For the existing building the existing stairs have been measured on site with clear width measured as per ADB guidance, measured between walls where handrails extend no more than 100mm, or between handrails where they do extend more than 100mm. The widths are shown in the following figure.

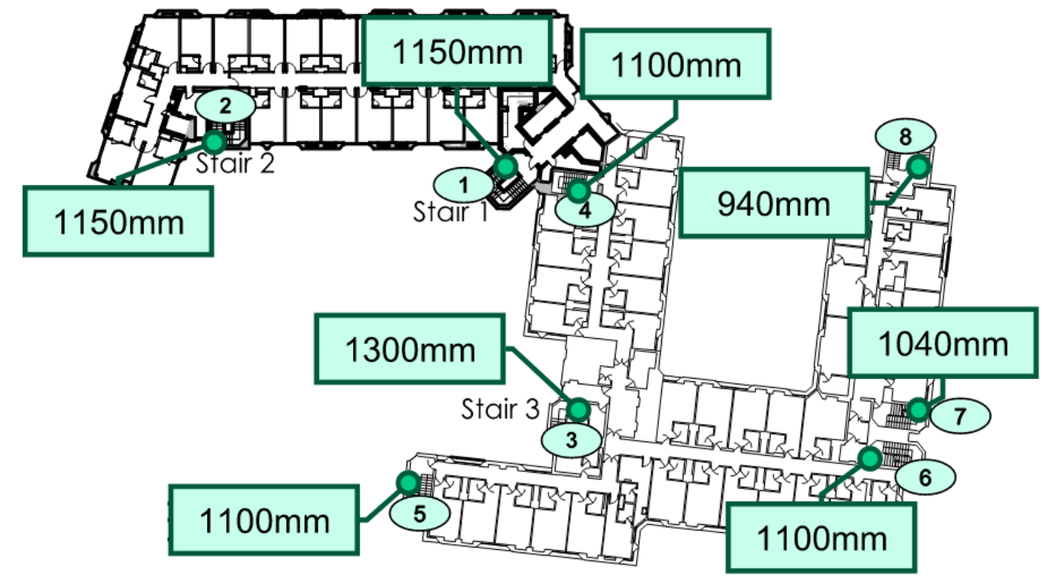


Figure 9: Clear width of existing stairs

The capacity of these stairs based upon clear width and the number of storeys they serve as per ADB v2 Table 3.2.

Table 14: Capacity of existing stairs

Stair (as per label in Figure 9)	Clear Width (mm)	Floors served	Stair capacity as per ADB Table 3.2
1	1150	10	612
2	1150	10	612
3	1300	9	660
4	1100	5	380
5	1100	8	500

Stair (as per label in Figure 9)	Clear Width (mm)	Floors served	Stair capacity as per ADB Table 3.2
6	1100	8	500
7	1040	5	338
8	940	5	291*

* This is an estimate for a 940mm width based upon Table 3.2 in ADB v2 which has a minimum stair width of 1000mm. When serving 5 floors a 1000mm stair has a capacity of 310. For the 940mm stair width of Stair 8 (measured between handrails as the rail protruded more than 100mm) the capacity is factored down to estimate the capacity for an existing building.

Overall, the total capacity of all eight stairs serving the bedrooms in the existing building added up to a total of 3839 persons. Discounting Stair 1 which is the largest stair, which is not lobbied on all floors, the remaining capacity is 3281. The maximum number of occupants in the bedrooms at L2-L12 who would be using these stairs is calculated as 999 persons with every bedroom fully occupied therefore there is sufficient overall capacity for the simultaneous evacuation of the building based upon the existing stairs.

3.14.3 Enclosure of Stairs

Stairs should be a protected stair as they pass through compartment floors. The new stairs to be installed as part of the new and remodelled areas at L1, L2 and L3 are to be enclosed in fire resisting construction (120 minutes fire resistance to each side separately as the stairs pass through compartment floors), leading to a final exit.

Existing stairs cores in the building should be maintained to the same level of fire resistance.

3.14.4 Construction of Escape Stairs

The flights and landings of the new escape stairs should be constructed of materials achieving Euroclass A2 or better (limited combustibility). Materials achieving Euroclass B or worse may be added to the top horizontal surface.

3.14.5 External Walls Adjacent to Protected Stairs

With some configurations of external walls, a fire in part of the building could subject the external wall of a protected stairway to heat.

Therefore, if a protected stairway projects beyond or is recessed from or is in an internal angle then the distance between any unprotected area in the external enclosures to the building and any unprotected enclosure to the protected stairway should be 1800mm. As such, the walls in these zones must be a fire resisting construction providing RE 30 from inside the building.

3.14.6 Protected Corridors

The corridors serving hotel bedrooms are required to be protected corridors enclosed with EI30 fire resistance and FD30S doors to each hotel bedroom.

3.14.7 Lift Installations

Generally, lifts should not be used within a building when there is a fire situation, unless their use forms part of a management plan for evacuating people and the lifts are appropriately sited and protected with safety features to ensure they remain usable during a fire, as described below for the new evacuation lift.

Evacuation Lift

The new lift located by the entrance from Drury Lane will be an evacuation lift. It is recommended that the design and installation of the lift follows the guidance in BS 9999 for evacuation lifts with dual power supplies provided.

A lobby is provided for the evacuation lift at L1 and L2 to provide a protected lobby for the lift. Where the lift discharges to outside onto Drury Lane a protected escape route is provided through the entrance hallway with the provision of a fire and smoke curtain/shutter to separate off the exit route from the lift to outside. This is shown in the following figure (note that the lift needs to be accessible from the disabled refuges at L1 and L2).

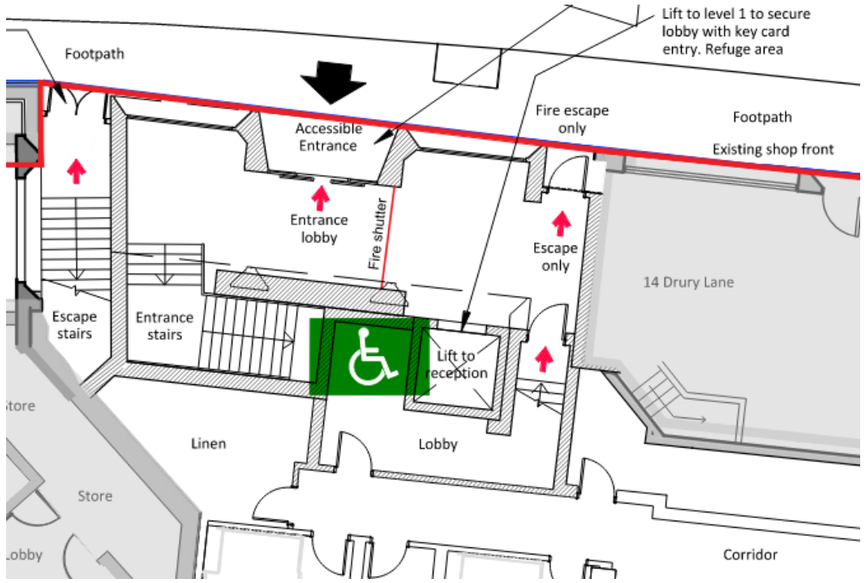


Figure 10: Drury Lane entrance with protected escape route from stair and lift

Guidance on the design and use of evacuation lifts is given in Annex G to BS 9999.

3.15 General Provisions

The following general provisions should be provided to all escape routes:

3.15.1 Headroom in Escape Routes

All escape routes should have clear headroom of not less than 2m.

3.15.2 Doors on Escape Routes

All doors on escape routes should not be fitted with lock, latch, or bolt fastening, and are to be provided with simple fastenings i.e. thumb turns or push pads to allow them to be open. Any security devices should be provided with an over-ride that allows them to release without a key/fob.

Electrically powered locks should return to the unlocked position if the fire detection and alarm system operates, there is loss of power/system error, or the security mechanism override is activated.

Security mechanism overrides for electrically powered locks should be a Type A call point as described in BS 7273-4. The call point should be positioned on the side approached by people escaping. If the door provides escape in either direction, a call point should be installed on both sides of the door.

The door of any doorway or exit should always be hung to open in the direction of escape if the number of persons that might be expected to use the door at the time of a fire is more than 60.

Where doors are hung to swing both ways, they should be fitted with vision panels. Vision panels are also required if the door is dividing a corridor on an escape route.

3.15.3 Emergency Lighting

Emergency escape lighting 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 are sufficiently illuminated to enable occupants to escape. Additionally, emergency escape lighting will be provided as follows:

Table 15: Provisions for Emergency Lighting

Use of the building or part of the building	Areas requiring escape lighting
Residential	All common escape routes*
Office / Storage areas and other non-residential	Underground or windowless accommodation
	Open-plan areas of more than 60m²
Assembly and recreation – bar/café area	All escape routes*
Any purpose groups	All toilet accommodation with a minimum floor area of 8m²
	Electricity and generator rooms
	Switch room/battery room for emergency lighting system
	Emergency control rooms

* Including external escape routes.

Typical mounting height of luminaires is at least 2m as specified in BS EN 1838. This may need adjusting based on effects of glare or specific smoke control strategies.

Emergency lighting should be in accordance with BS 5266-1. Emergency lighting must be automatic and provide a minimum of 3-hour illumination.

3.15.4 Exit Signage

Every doorway or other exit providing access to a means of escape, other than exits in ordinary use (e.g. main entrances), should be distinctively and conspicuously marked by an exit sign in accordance with BS ISO 3864-1 and BS 5499-4.

Exit signage should be located and operated in accordance with BS 5499-4. The signs designated as E001 and E002 in BS EN ISO 7010:2012+A5 should be used with the appropriate directional arrow in accordance with BS 5499-4.

Colorimetric and Photometric Requirements

Powered - internally illuminated escape route signs should be as follows:

- Colorimetric and photometric requirements specified in BS ISO 3864-4 Table 2 and the luminance contrast requirements specified in BS ISO 3864-4 Table 3 should be met.
- The minimum luminance of the safety colour green should be at least 2 cd/m² and the luminance of the contrast colour white 5 to 15 times that.
- The ratio of maximum to minimum luminance within either green or white should not exceed 10:1.
- Response times should conform to BS EN 1838.
- Durations should be the same as the Emergency Lighting.

Externally illuminated escape signs and unpowered internally illuminated escape route signs (i.e. normal lighting conditions) should meet the colorimetric and photometric requirements specified in BS ISO 3864-4 Table 1. The illuminance on any part of the face should not be less than 5 lx.

Sign Height and Viewing Distances

The maximum viewing distance normal to escape route signs should be determined from the sign height and distance factors using the recommendations given in BS 5499-4. The angle of viewing should also be considered when calculating these factors.

3.16 Primary and Secondary Power Supplies

To reduce the risk of the loss of electrical supply to fire protection systems that are required to operate continuously during a fire a secondary power supply should be provided. This supply should be of sufficient capacity to maintain supplies to all life safety and fire equipment installations. The secondary power system should be designed to operate safely in fire conditions. The means for the provision of a secondary supply should include the overall electrical distribution system within the building, and also the power needs for other equipment requiring a secondary power supply.

The management procedures for the building should prohibit the isolation of circuits supplying power to the above-mentioned equipment during a fire emergency.

For the new and remodelled parts of the building there will be an evacuation lift which will require secondary power supplies. Any mechanical smoke ventilation from the undercroft car parking will also require a secondary power supply.

In the existing building there are firefighting lifts in the two firefighting cores which should have secondary power supplies.

The guidance from ADB / BS 9999 recommends that power supplies should meet the following specific recommendations:

- A secondary power supply independent of the primary power supply to the building, e.g. an automatically started generator or a supply from another substation, should be provided which, independently of the primary supply, is of sufficient capacity to maintain in operation for at least 3 h the following:
  - any powered smoke control systems (including systems using pressure differentials)
  - any fire and rescue service communication systems and
  - any other fire protection or fire-fighting equipment, except automatic fire detection and fire alarm systems and evacuation lifts.
- The secondary power supply should be capable of providing the power supply for the items detailed in the 3 points above within 15s of the failure of the primary electrical supply.
- Where the secondary electrical supply is to be taken from a separate substation (whether utility or private) to that supplying the primary electrical supply, the following criteria should be met.
  - The electrical supplies to the two independent substations should be taken from two separate high-voltage supplies, and not originate from the same substation.
  - The failure of one substation should not lead to the failure of the other.
  - The two independent substations should be adequately separated. Where the substations are located within the building they serve, the following criteria should be met:
    - Each substation should be enclosed within a fire-resisting structure having a minimum of 2 h fire resistance.
    - The two substations should be located in two separate parts of the building.
  - Supply cables from the high-voltage substations should enter directly the high-voltage/low-voltage switch rooms and not pass through the building.
  - The two sets of supply cables should be adequately separated from each other to avoid a single fault affecting both supplies.

- Cables supplying current to the life safety installations should be installed in accordance with BS 7671 and the manufacturer's instructions. The cables should have an inherently high resistance to fire and be protected where necessary against mechanical damage. Cables, switchgear, and other equipment transmitting the secondary power supply should be separate from those of the primary supply, or be physically protected so that a breakdown, or any cause of breakdown, on one supply would not lead to a simultaneous failure of the other supply.
- The primary and secondary power supply cables should be terminated in a changeover device located within the plant room(s) housing the life safety and fire protection equipment.
- The changeover device should automatically affect the transition from the primary to the secondary power supply if the primary supply to the particular plant fails.
- Any electrical substation or enclosures containing any distribution board, generator, powered smoke control plant, pressurization plant, communication equipment, and any other equipment associated with life safety and fire protection systems, should be separated from the building by construction with a duration of fire resistance of not less than 2 h.
- Secondary power supplies should be provided for the following:
    - o firefighters' lifts
    - o evacuation lift
    - o smoke control systems where automatic systems are installed (it is noted that in the two existing fire-fighting stairs have natural openings via louvres which are not powered)

4. B2 – Internal Fire Spread (Linings)

4.1 Functional Requirement of the Building Regulations

The functional requirement contained within Schedule 1 Part B2 of The Building Regulations states that:

(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, a rate of heat release which is reasonable in the circumstances.

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

4.2 Surface Linings

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

The wall and/or ceiling linings must satisfy the classifications given in ADB when tested under the European classifications in accordance with BS EN 13501: Part 1.

Table 16: Classification of wall and ceiling linings

Area	European Class	National Class
Small rooms in residential accommodation not exceeding 4m²	D-s3, d2	3
Small rooms in non-residential accommodation not exceeding 30m²	D-s3, d2	3
Other rooms	C-s3, d2	1
Other circulation spaces	B-s3, d2*	0

*Wall coverings which conform to BS EN 15102, achieving at least class C-s3, d2 and bonded to a class A2-s3, d2 substrate, will also be acceptable.

Note 1: when a classification includes 's3, d2' this means that there is no limit on the production of smoke or flaming droplets/particles.

Note 2: a product achieving a classification 'A' achieves a higher standard than the minimum classifications set out in the table above.

Parts of walls in rooms may be of lower performance than stated in the table above, but no worse than class D-s3, d2. In any one room, the total area of lower performance wall lining should be less than an area equivalent to half of the room's floor area, up to a maximum of 60m².

For the purposes of this requirement, a wall includes the internal surface of internal and external glazing (except glazing in doors) and any part of a ceiling which slopes at an angle greater than 70° to the horizontal.

A 'wall' does not include:

- Doors and door frames.
- Window frames and frames in which glazing is fitted.
- Architraves, cover moulds, picture rails, skirtings, and similar narrow members.
- Fireplace surrounds, mantle shelves and fitted furniture.

For the purposes of this requirement, a ceiling includes glazed surfaces, any part of a wall at 70° or less to the horizontal, the underside of a gallery or the underside of a roof exposed to the room below.

A 'ceiling' does not include:

- Trap doors and their frames.
- The frames of windows or rooflights and frames in which glazing is fitted.
- Architraves, cover moulds, picture rails, exposed beams, and similar narrow members.

5. B3 – Internal Fire Spread (Structure)

5.1 Functional Requirement of the Building Regulations

The functional requirement contained within Schedule 1 Part B3 of The Building Regulations states that:

(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.*

(3) *To inhibit the spread of fire within the building, it shall be sub-divided with fire-resisting construction to an extent appropriate to the size and intended use of the building 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.*

5.2 Loadbearing Elements of Structure

The period of fire resistance required is linked to the purpose group for the building taking into account the height of the top floor, depth of any basement and whether the building is sprinklered or not.

Where any element supports another the supporting element should possess at least the resistance of the other which it is supporting.

As the building is classified as 'Residential (other) - Hotel' with a height more than 30m, in accordance with Table B4 of ADB it will require **120 minutes fire resistance applied to the structure**.

Structure that only supports the roof may be excluded from the definition of element of structure (and therefore not fire rated) unless:

- The structure is essential to maintain the stability of the building.
- The roof serves as a floor (i.e. supporting plant) or
- Its failure leads to unreasonable or disproportionate damage that could render the building inoperative for a prolonged period.

5.3 Compartmentation

Compartment walls and floors should form a complete barrier to fire between the compartments they separate. Where a compartment wall or floor meets another compartment wall or external wall the junction should maintain the fire resistance of the compartmentation. Key requirements are as follows:

- The maximum floor area of any one storey in the building or any one storey in a compartment for a multi storey building is unlimited, so long as the requirements of 'Typical Compartmentation Provisions' (below) are also met.
- As the building is a hotel and greater than 30m, every floor will be a compartment floor.

5.3.1 New and Remodelled Areas at L1, L2, L3

The fire compartmentation required in the new and remodelled areas at L1, L2 and L3 will be as follows. More specific details are included in Table 17 which follows.

- Compartment floors are required to provide 120 minutes fire resistance.
- Stair cores which pass between floors are required to provide 120 minutes fire resistance.
- The new hotel bedrooms at L1 and L2 will be accessed from a central corridor at each floor which will provide 30 minutes fire resistance to protect the corridor, with FD30S doors to the bedrooms. Cross corridor doors should be FD30S.
- Places of special fire hazard are to be enclosed in 30 minutes fire resistance with FD30S doors, as good practice this will include linen rooms, luggage store and bar stores.
- The kitchen will be extended at L3, this will be enclosed in 60 minutes fire resistance with FD60S doors.

5.3.2 Typical Compartmentation Provisions

The table below sets down typical compartmentation requirements for the building, including new and existing areas. Where walls are shared between fire separating elements, the higher standard of fire rating should be applied to the shared wall.

Table 17: Fire resistance requirements

Area	Above Ground Storeys	
	Fire resistance of construction	Fire resistance of any doors (Integrity only)*
Structural frame, beam, or column	R 120 to exposed faces	N/A
Loadbearing wall	R 120 to each side separately	Based on location
Floors – including compartment floors	REI 120 from the underside	FD 120
Any part of an external wall a maximum of 1000mm from any point on the relevant boundary	REI 120 to each side separately	FD 120
Any part of an external wall a minimum of 1000mm from the relevant boundary	RE 120 and REI 15 from inside the building	FD 120
Any part of an external wall beside an external escape route	RE 30 from inside the building	FD 30
Compartment walls	REI 120 to each side separately	FD 120 S
Protected shaft	REI 120 to each side separately	FD 120
Enclosure to a protected stairway	120 to each side separately	FD 60 S
Firefighting shafts	REI 120 from the side remote from the shaft	FD 60 S
Construction that separates firefighting shaft from rest of building	REI 60 from the shaft side	FD 60 S

Area	Above Ground Storeys	
Construction that separates firefighting stair, firefighting lift shaft and firefighting lobby	REI 60 to each side separately	FD 60 S
Enclosure to a protected corridor	REI 30 to each side separately	FD 20 S
Sub-division of a corridor	REI 30 to each side separately	FD 20 S
Construction that encloses places of special fire hazard	REI 30 to each side separately	FD 30
Cavity barriers	E 30 and EI 15 to each side separately	FD 30
Ducts passing through cavity barriers	E 30 from the outside	FD 30
Casing around a drainage system	EI 30 from the outside	FD 30

* S = Smoke resisting door

R = Loadbearing

E = Integrity

I = Insulation

Rooms of special fire hazard as defined in ADB are required to be protected as follows:

Table 18: Fire resistance requirements for rooms of special fire hazard

ADB Rooms of Special Hazard	Requirement	Fire Door Resistance
Boiler room	REI 30 to each side separately	FD 30
Additionally included as hazard rooms for good practice: - Linen rooms - Bin stores - Luggage rooms - Plant rooms	REI 30 to each side separately	FD 30

If an existing wall or floor is to be relied upon to provide the protection detailed in the above tables, it is recommended that the compartmentation is checked to confirm it meets the required standard and, if applicable, remedial work is conducted.

5.3.3 Fire Doors

Fire doors should normally be self-closing unless they give access to cupboards or service risers, in which case they should be kept locked. Fire doors should meet the specified level of integrity but do not usually need to be insulated as there is no fire load immediately adjacent to a door.

Doors installed on site should conform, in dimensions and workmanship, to the manufacturer's specification for the appropriate fire resistance test report/assessment. Doors should be hung to ensure a good fit to the frame when closed, and the junction between door assembly and surrounding structure should be adequately sealed.

Security requirements should not override the need to provide adequate means of escape.

Integrated elements such as locks, letter plates and security viewers should not reduce the fire resistance of the door.

5.3.4 Refuse Storage Chambers (Bin Stores)

Refuse storage chambers, refuse chutes and refuse hoppers will be sited and constructed in accordance with BS 5906. They should not be situated within a protected stairway or protected lobby and should be approached as per one of the following conditions:

- be directly from the open air.
- be through a protected lobby with a minimum 0.2m² of permanent ventilation.
- not sited next to escape routes or final exits.

5.3.5 Junction of Compartment Wall with Roof

In accordance with ADB, the detail at the head of a compartment wall must not permit fire spread via materials from a compartment on fire to an adjacent compartment. Fire stopping at the head of the wall must also be appropriate. Diagram 8.2 in ADB shows the requirements for typical construction at the head of a compartment wall where it junctions with the roof. This diagram is reproduced in the Figure below.

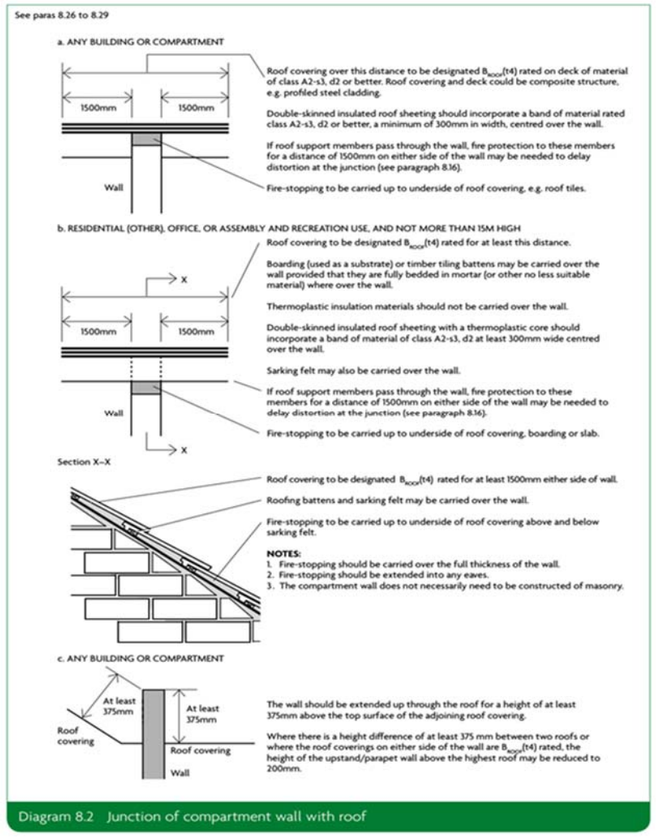


Figure 11: Junction of compartment wall with roof (ABD diagram 8.2)

5.3.6 Risers / Service Ducts / Shafts

Where any service risers pass through compartment floors, they should either be treated as protected shafts and enclosed in fire resisting construction equal to the compartment floor through which they are passing, or they should be fire stopped in line with the compartment floors.

5.3.7 Cavity Barriers

There are limits to the extent to which any cavities can exist, for example between walls and cladding and between ceilings and roofs. Cavity barriers should close gaps around windows and separate cavities on compartment lines.

Cavity barriers shall be provided in floor and ceiling voids (where these are present) to sub-divide the concealed space and reduce the potential for fire or smoke to spread over large areas of the building unchecked. They shall be located not more than 20m apart in the large open plan spaces and they shall be aligned with partition walls wherever practicable. In areas where there are smaller rooms cavity barriers shall be provided such that no undivided void is greater than 20m in any one direction. The maximum distance between cavity barriers must be reduced to 10m if the surfaces of the cavity do not have a Class 0 or Class 1 surface spread of flame rating.

Cavity barriers shall also be provided at the junction of compartment walls and other construction where there is a void and in other construction where there are large, concealed voids and around openings.

Cavity barriers shall be constructed to achieve at least 30 minutes fire resistance for integrity and 15 minutes fire resistance for insulation.

Where combustible insulations or other materials are in close proximity to the cavity barrier, the fire resistance of the cavity barriers will be increased to 30 minutes integrity and 30 minutes insulation.

Cavity barriers should generally be provided in accordance with Figure 9.1 of ADB (reproduced in the following figure).

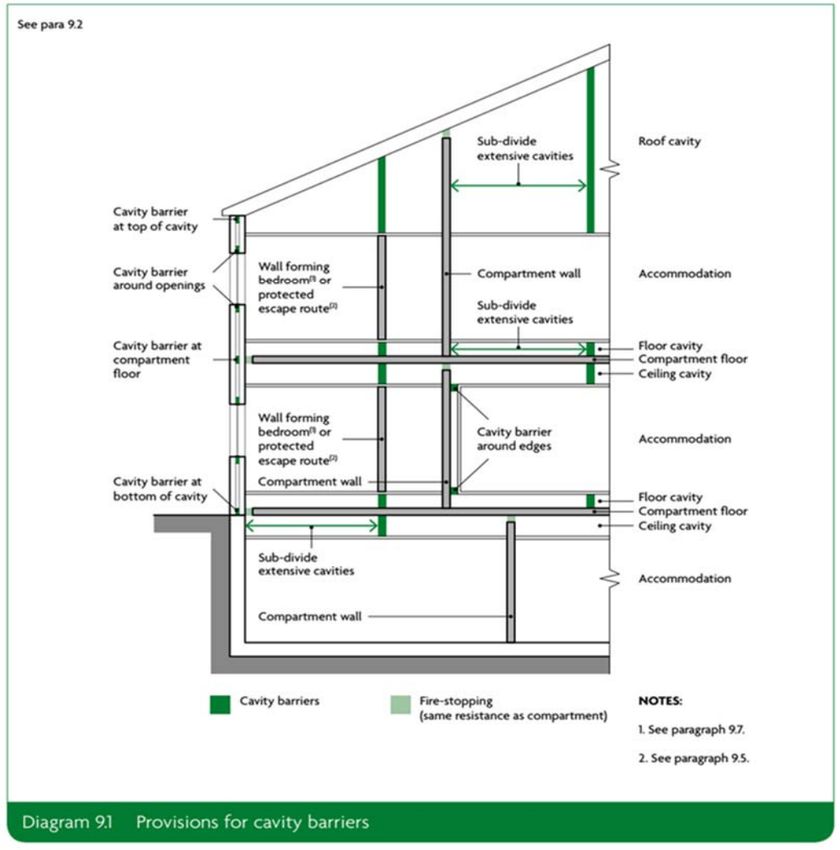


Figure 12: Cavity barrier and fire-stopping provision (Figure 9.1 of ADB)

Cavity barriers should be provided to close the edges of any cavities, including around openings* (but see also note below: Figure 9.2 of ADB). As set out in ADB, cavity barriers are also required:

- at the junction between an external cavity wall* and every compartment floor and compartment wall and
- at the junction between an internal cavity wall* and every compartment floor, compartment wall or other wall or door assembly which forms a fire resisting barrier.

*This provision is not required where the cavity wall conforms with Figure 9.2 of ADB. This figure is reproduced below. Note that in this type of configuration ADB guidance states it is permissible for combustible material (lowest classification Euroclass B) to be placed within the cavity, however as external walls need to meet Regulation 7 any insulation material should be at least Euroclass A2-s1,d0.

Every cavity barrier should be constructed to provide at least 30 min fire resistance. It may be formed by any construction provided for another purpose if it meets the provisions for cavity barriers. Cavity barriers in a stud wall or partition, or provided around openings, may be formed of:

- steel at least 0.5 mm thick or
- timber at least 38 mm thick or
- polythene-sleeved mineral wool, or mineral wool slab, in either case under compression when installed in the cavity or
- calcium silicate, cement-based or gypsum-based boards at least 12 mm thick.

Further information regarding the requirements for construction and fixing of cavity barriers is set out in Section 9 of ADB, including requirements to specific configurations and reaction to fire requirements for surfaces within or adjacent to cavities.

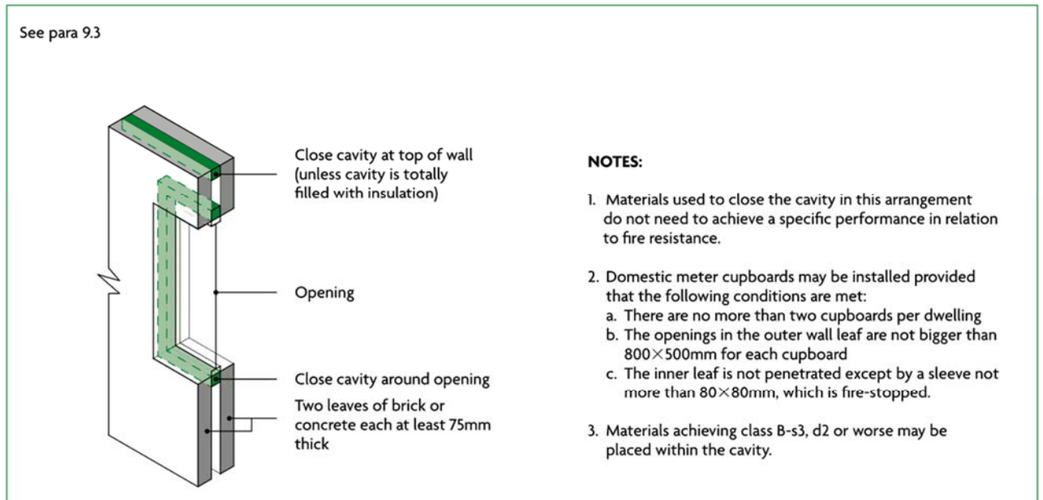


Figure 13: Cavity wall exclusions - Figure 9.2 of ADB

5.3.8 Installation of Ductwork Systems

Ductwork that passes through escape routes or breaches compartmentation will be fire rated in line with the methods outlined in Section 10.12 of ADB as follows:

- Method 1 – thermally actuated fire dampers (not suitable for protected escape routes as per note below)
- Method 2 – fire-resisting enclosures.
- Method 3 – protection using fire-resisting ductwork.
- Method 4 – automatically actuated fire and some dampers triggered by smoke detectors.

NOTE - Method 1 should not be used for extract ductwork passing through the enclosures of protected escape routes as large volumes of smoke can pass thermal devices without triggering them.

Both fire dampers and fire and smoke dampers shall be tested to BS EN 1366-2:1999 and be classified to BS EN 13501-3: 2005. They require an E (fire dampers) or ES (smoke and fire dampers) classification to be the same fire resistance standard as the wall/floor through which the duct passes.

5.3.9 Protection of Openings

Where services penetrate compartment walls, floors and between the junction with the walls or façade suitable fire stopping should be provided.

Pipes which pass through a fire separating element (unless within a protected shaft) will meet the following provisions:

Option 1 - proprietary seals (any pipe diameter)

Provide a proprietary sealing system which has been shown through test evidence to maintain the fire resistance of the compartmentation.

Option 2 – pipes with a restricted diameter

When a proprietary sealing system is not used, fire stopping may be used around the pipe, where every effort is made to keep the opening as small as possible. Any mastic used for the protection of pipe penetrations should be compatible with the pipework material and size to maintain the prescribed standard of fire resistance, tested and installed in accordance with the manufacturer's instructions.

The nominal internal diameter of the pipe should not be greater than that detailed in Table 10.1 of ADB and graphically represented in the figure below:

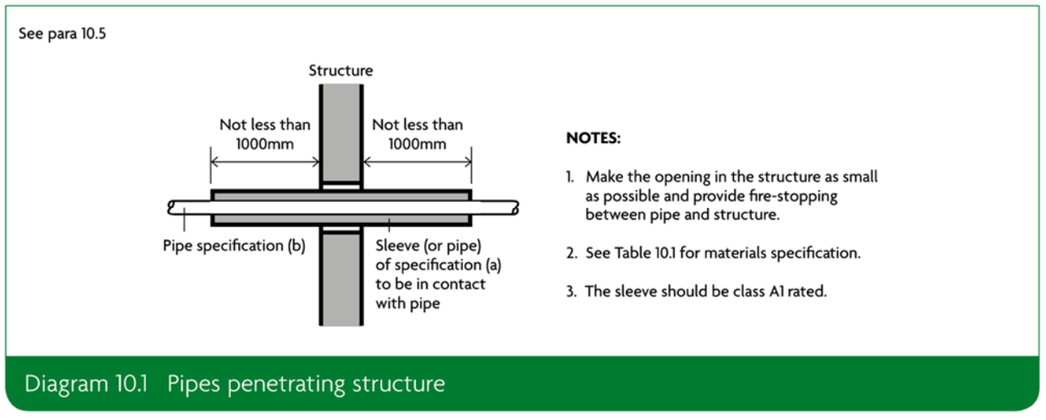


Figure 14: Maximum Internal Diameter of Pipes Passing Through Compartment Wall / Floor (Figure 10.1 of ADB)

Option 3 – 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 non-combustible pipe as per Figure 10.1 of ADB.

5.3.10 Fire Stopping

Penetrations through lines of fire-resisting separation will be fire-stopped to achieve the same fire resistance as the separation.

All pipes, ductwork and services passing through fire-resisting separations will be either enclosed in fire-resisting construction (i.e. shafts) of matching fire resistance or provided with fire dampers of matching fire resistance. Certain small-diameter pipes require only fire-stopping around the pipe, dependent on pipe material and the type of fire-resisting barrier penetrated. The ASFP Red Book provides information on fire stopping and penetration seals, the following figure is recreated from the Red Book and gives examples of where fire stopping is typically required.

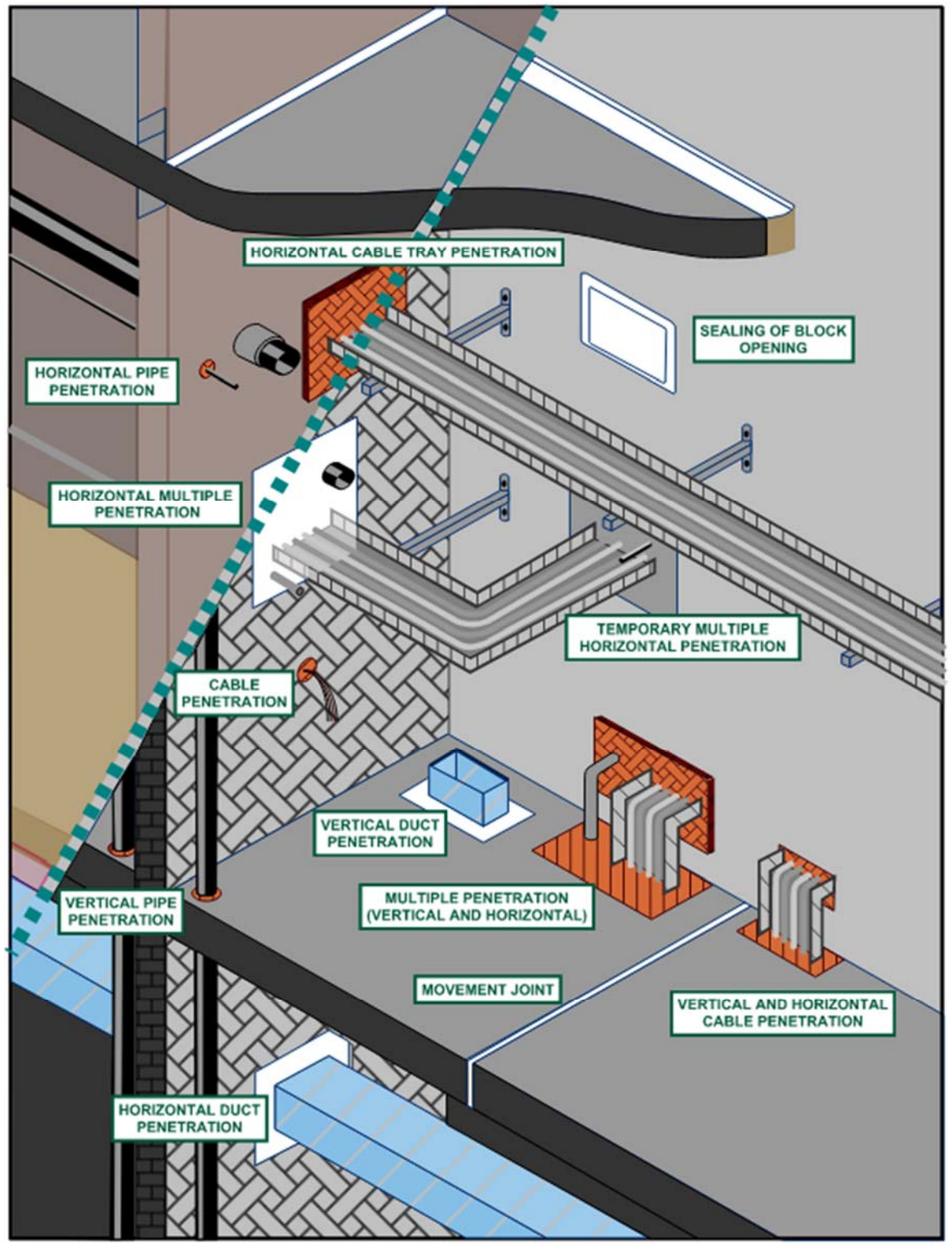


Figure 15: Examples of locations where fire stopping should be provided (Recreated from ASFP Red Book)

6. B4 – External Fire Spread

The functional requirements of Part B4 to the Building Regulations 2010 (as amended) are set down for clarity below.

References to applicable guidance within this section are made with regard to the amended Approved Document B Volume 1 - 2019 (ADB V1 2019).

6.1 Functional Requirement of the Building Regulations

The functional requirement contained within Schedule 1 Part B4 of The Building Regulations states that:

(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.*

6.2 External Wall Construction

6.2.1 General

The guidance in this section is designed to reduce the risk of vertical fire spread as well as the risk of ignition from flames coming from adjacent buildings. To review fire resistance requirements for external walls, see Section 5.3.2.

6.2.2 Combustibility of External Walls

External walls should be constructed using a material that does not support fire spread and therefore endanger people in or around the building. Flame spread over or within an external wall construction should be controlled to avoid creating a route for rapid fire spread bypassing compartment floors or walls.

External wall surfaces near to other buildings should not be readily ignitable, to avoid fire spread between buildings.

As hotel buildings are now included as relevant buildings under Regulation 7 any new external wall materials added as part of the new and remodelled areas at L1, L2 and L3 are required to be as follows:

> *materials which become part of an external wall, or specified attachment, of a relevant building are of European Classification A2-s1, d0 or Class A1, classified in accordance with BS EN 13501-1:2007+A1:2009.*

6.2.3 External Surfaces

The external surfaces of walls should meet the provisions in Table 12.1 of ADB. As the hotel is a relevant building under Regulation 7 the requirements are summarised below:

Table 19: Reaction to fire performance of external surface of walls

Less than 1000mm from the relevant boundary	1000mm or more from the relevant boundary
Class A2-s1, d0 or better	Class A2-s1, d0 or better

6.2.4 Cavities and Barriers

Cavity barriers should have sufficient fire test evidence that they will operate in the proposed façade system.

They should be provided in accordance with Section 5.3.7 of This Report.

Surfaces which face into cavities should also meet the provisions of Table 12.1 of ADB, and provisions in Section 5.3.7.

6.3 Summary of external wall build up

The existing external walls are of concrete construction over the majority of the building. There are spandrel panels and lightweight brown panels in some limited locations on Drury Lane which are unknown materials. This is considered to be low risk based upon the concrete construction and limited area of brown panels, but the type of panel material remains unknown.

The external walls of the existing building are to remain unchanged.

New external walls of the bedrooms to be added at L1 and L2 and the external walls of the extension of the reception, bar, café area at L3 will be of non-combustible materials to at least A2-s1,d0 as per BS EN 13501-1, in accordance with Regulation 7.

6.4 Space Separation

The requirements of B4 of the Building Regulations are considered to be met if the external walls of the building 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.

The key area requiring further review for the new and remodelled areas is the new reception at L2-L3 on Drury Lane. The proposed new front elevation is shown below.

Figure 16: New front entrance

External fire spread calculations were therefore carried out on this new area to ensure that the proposed scheme would not create an unacceptable risk to adjacent sites. The calculation follows BR 187 methodology as follows:

- Compartment size – 12.0m wide x 6.8m high.
- Distance across the road – 9.7m at the closest point.
- Use type – assembly and recreational (bar/café) Type A.
- Permitted unprotected are – 70% (57m^2).

Therefore, provided the glazing covers less than 57m^2 of this façade the glazing and sliding door will not need to be fire resisting. The remaining 30% area should provide a level of fire resistance achieving RE 120 and REI 15 from inside the building.

6.5 Roof Construction

The recommendations in this section are principally concerned with the performance of roofs when exposed to fire from the outside. The separation distance is the minimum distance from the roof (or part of the roof) to the relevant boundary. Separation distances should be as recommended in the following table by the type of roof covering and the size and use of the building.

Table 14.1 Limitations on roof coverings

Designation[1] of covering of roof or part of roof	Distance from any point on relevant boundary			
	Less than 6m	At least 6m	At least 12m	At least 20m
B_{ROOF}(t4)	●	●	●	●
C_{ROOF}(t4)	○	●	●	●
D_{ROOF}(t4)	○	●[2][3]	●[2]	●
E_{ROOF}(t4)	○	●[2][3]	●[2]	●[2]
F_{ROOF}(t4)	○	○	○	●[2][3]

● Acceptable. ○ Not acceptable.

NOTES:

Separation distances do not apply to enclosed/covered walkways. However, see Diagram 8.2 if the roof passes over the top of a compartment wall.

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

1. The designation of external roof surfaces is explained in Appendix B
2. Not acceptable on any of the following buildings.
   a. Industrial, storage or other non-residential purpose group (purpose groups 6 and 7) buildings of any size.
   b. Any other buildings with a cubic capacity of more than 1500m³.
3. Acceptable on buildings not listed in (1) if both of the following apply.
   a. Part of the roof has a maximum area of 3m² and is a minimum of 1500mm from any similar part.
   b. The roof between the parts is covered with a material rated class A2-s3, d2 or better.

Figure 17: Limitations on roof coverings (ABD Table 14.1)

In addition, roof covering products (and/or materials) defined in Commission Decision 2000/553/EC of 6 September 2000, implementing Council Directive 89/106/EEC, can be considered to fulfil all of the requirements for the performance characteristic ‘external fire performance’ without the need for testing, provided that any national provisions on the design and execution of works are fulfilled, and can be used without restriction.

7. B5 – Access and Facilities for the Fire Service

7.1 Functional Requirement of the Building Regulations

The functional requirement contained within Schedule 1 Part B5 of The Building Regulations states that:

(1) *The building shall be designed and constructed so as to provide reasonable facilities to assist firefighters 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.*

7.2 Provision of Fire Fighting Shafts

7.2.1 General Provisions

For the upper floors of the building from L2 up to L12 the fire service access remains as per the existing provision whereby there are two firefighting shafts serving the upper floors. These two firefighting shafts are as highlighted on the following drawing.

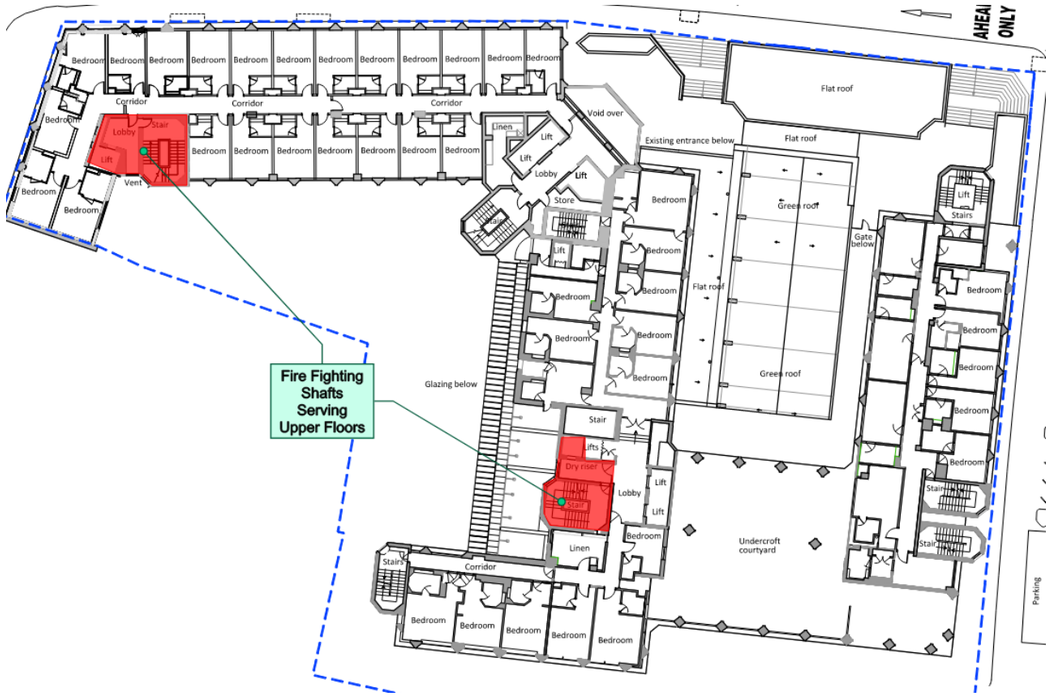


Figure 18: Existing Fire Fighting Shafts Serving Upper Floors

The core at the north (left side of Figure 18) is a firefighting shaft which serves all floors from L1 to L12 and leads up to L13 plant, the core includes:

- Stair 1150mm clear width, lobby and FF lift
- Dry riser in lobbies
- Ventilation to the lobbies (open louvres to outside)
- Vent at head of stair (open louvre)
- Fire alarm repeater panel at ground floor level.
- (There is also a disabled refuge with comms located in the lobby at each level with an evac chair).

The more central core is of older construction but also appears to be a firefighting shaft which includes:

- Stair 1300mm clear width, lobby and FF lift serving L1 up to L10 (which is the highest floor in this section of the building).
- Dry riser in lobbies.
- Ventilation to the lobbies with open louvres are provided at some levels with openable windows provided at other levels. The windows have restricted opening so there is limited open area.

These two existing firefighting shafts will remain unchanged and are not to be altered as part of the works at L1, L2 and L3. A layout of a typical firefighting shaft is shown below for reference to the key components and fire resistance of walls and doors for ongoing maintenance in the existing building.

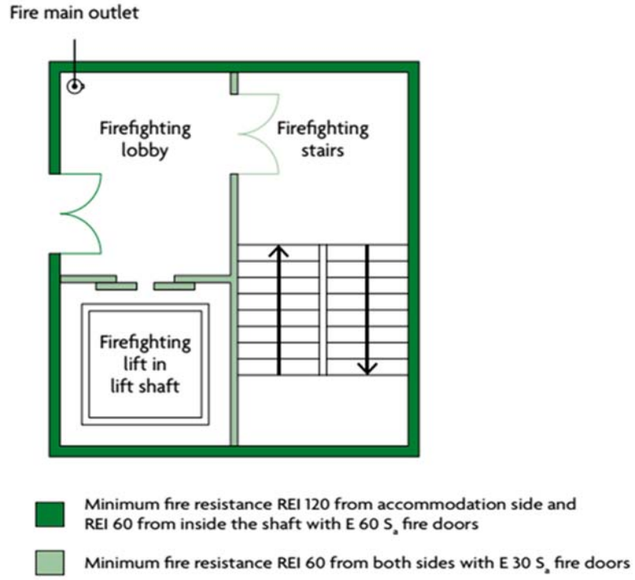


Figure 19: Typical Components of Fire Fighting Shafts

7.2.2 Fire Fighting Stairs

A fire-fighting stair should have an unobstructed width (measured between the walls and/or balustrades) of 1.1m. The width should be kept clear for a vertical distance of 2m. This is achieved in the existing FF stairs which have:

- The north FF stair has a 1150mm clear width.
- The central FF stair has a 1300mm clear width.

The handrails and strings that do not intrude more than 100 mm into these widths may be discounted when calculating.

Clear signage should be provided on the landing in the stair to identify the storey level.

7.3 Access for Vehicles

Perimeter road access is available for the fire service to access the building with road access from Drury Lane and Shorts Gardens, and a delivery access road which leads down to L1 on the north side of the building.

This route has a one-way system with ramped entry from High Holborn at the north, and exit via a second ramp towards Shorts Gardens. The ramps each have a vehicle gate with an adjacent pedestrian gate.

Existing street hydrants are provided on the adjacent streets as shown in the following figure (yellow H) which also shows the fire service parking locations around the building, dry riser inlet points (shown with DR in red box) and access into Level 2.

Fire service access is provided to within 18m of each dry fire main inlet.

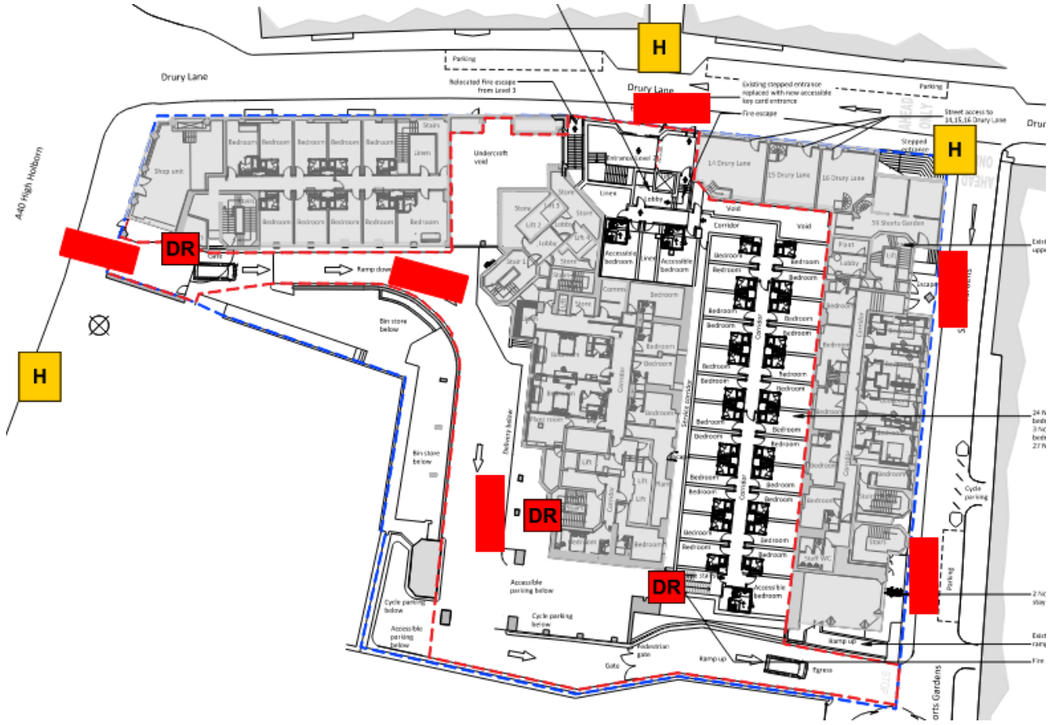


Figure 20: Fire service vehicle access around the perimeter and within 18m of dry riser inlets

For access to dry riser inlets and for hose coverage the fire service should be suitable for a pumping appliance. As per ADB v2 Table 15.2 the requirements are detailed in the below table:

Table 20: Measurements for high reach appliance vehicle access route (Table 15.2 of ADB)

Minimum width of road between kerbs (m)	Minimum width of gateways (m)	Minimum turning circle between kerbs (m)	Minimum turning circle between walls (m)	Minimum clearance height (m)	Minimum carrying capacity (tonnes)
3.7	3.1	16.8	19.2	3.7	12.5

Gates are located at the top of both of the access ramps, it will be necessary to ensure these do not prevent the fire service gaining access to this route.

7.4 Fire Mains

The building is provided with two firefighting shafts which each have a fire main (dry riser).

- Access should be provided for a pumping appliance to within 18m of each fire main inlet connection point. Inlets should be on the face of the building.
- The fire main inlet connection point should be visible from the parking position of the appliance.

The guidance in ADB is that the maximum hose laying length from the fire main outlet to the furthest point inside must be no more than 45m.

For the new bedrooms and areas created at L1 and L2 it is necessary to consider hose coverage across these news areas as the existing firefighting shafts do not provide access to these new areas.

It is proposed that a dry riser will be installed in the new stair which links L1 and L2 at the west side of the development to provide sufficient hose coverage to the new bedrooms at L1 and L2.

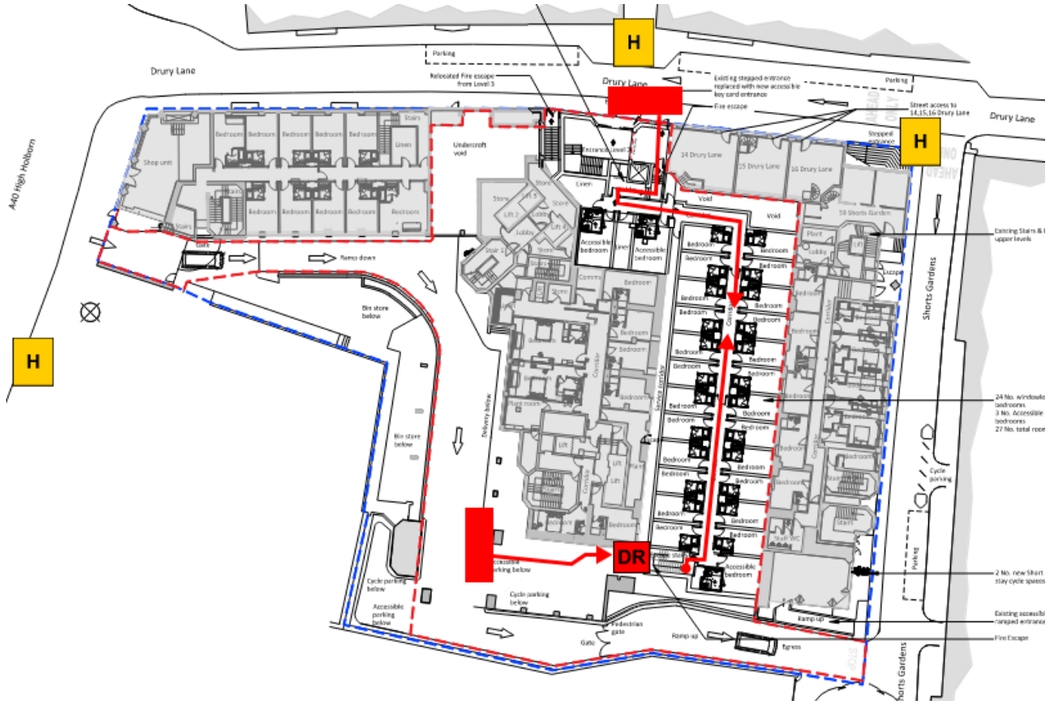


Figure 21: Level 2 Fire Service Access and Existing Street Hydrants (approximate locations)

Fire service access into Level 1 is shown in the following figure with parking available on the access road at the base of the ramp.

It is recommended that a dry riser is provided in the new escape stair which provides access between L1 and L2 so that hose coverage can be achieved within 45m across the new bedrooms at L1 and L2 when measured from either the dry riser outlet, or from a vehicle parking position.

The dry riser outlets should be placed within the stair core, accessible at each floor. Further guidance on the design and construction of fire mains is given in BS 9990.

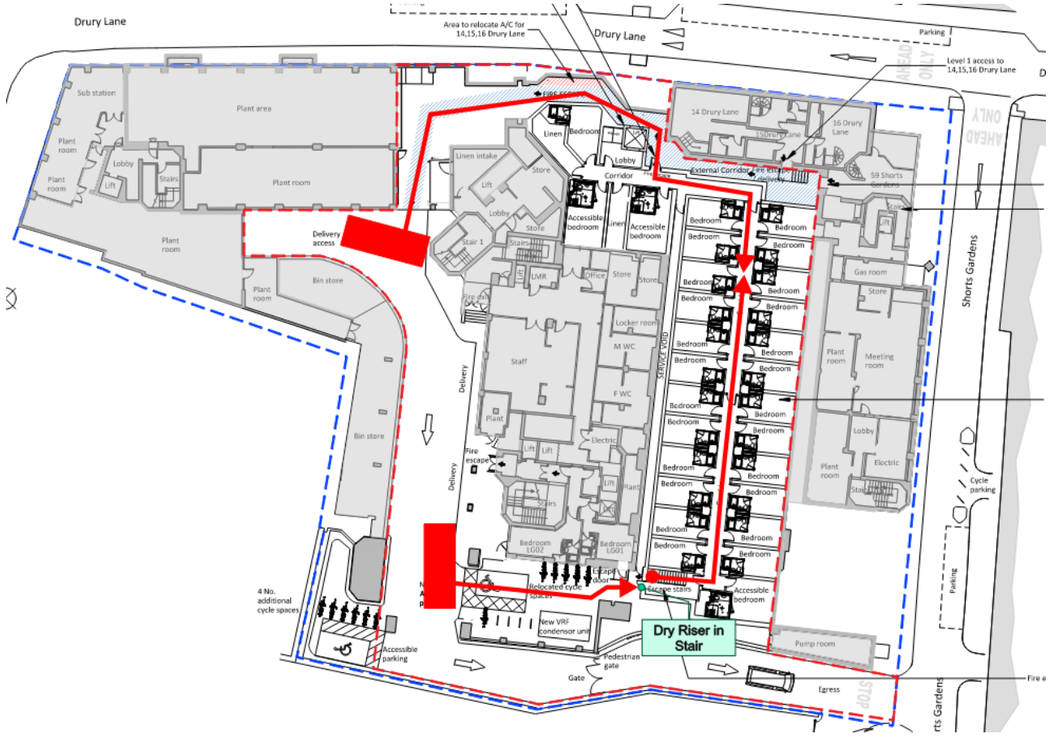


Figure 22: Level 1 Fire Service Access from Vehicle Access route

At Level 3 where the reception, café, bar and kitchen are located this level has access direct from the street on Drury Lane and Shorts Gardens directly into L3 via three main access routes. From street parking locations the fire service can run hoses directly into L3 and cover the reception, café, bar within 45m of a parking location.

7.5 Hydrants

Approximate locations of the existing street hydrants are marked on Figure 20 and Figure 21 which are within 90m of dry fire main inlets.

Each fire hydrant should be clearly indicated by a plate, fixed nearby in a conspicuous position, in accordance with BS 3251.

7.6 Hose Reels

Hose reels are installed in the older part of the building which was likely a requirement under Section 20 of the London Building Act. Section 20 was repealed in 2013 but hose reels can remain if they are maintained. The stickers listing maintenance checks show they were last tested and inspected in December 2022.

Hose reels are not required in the new and remodelled parts of the building.

7.7 Smoke Control

In the existing building there are existing smoke control systems. These will be maintained following the works as follows:

- The two existing firefighting shafts have smoke vents provided to the lobbies and stairs as described in section 7.2.1 which are natural louvered vents and manually opening windows.
- In the main plant room at L1 there are luxcrete panels which open out at street level above which are provided for smoke clearance. This area will not be impacted by the works and will be maintained.
- There is an existing louvered vent from the undercroft car park at L1-L2 which leads up to Drury Lane pavement. This will be replaced with a mechanical extract to serve the remaining undercroft areas at L1-L2 following the works.