



50 – 51 Russel Square

RIBA Stage 3 Fire Strategy



## Written Record

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## Table of Content

1. Introduction.....	4
2. Fire Safety Design Approach.....	5
3. Building Design.....	6
4. Package of Fire Safety Measures.....	8
5. Means of Escape.....	9
6. Internal Fire Spread (Linings).....	11
7. Internal Fire Spread (Structure).....	11
8. External Fire Spread.....	14
9. Access and Facilities for the Fire Service.....	14
10. Fire Safety Management Requirements.....	16
References.....	18

## 1. Introduction

### 1.1. Project Outline

- 1.1.1. Semper has been appointed by The Bedford Estates Bloomsbury Limited to provide fire safety engineering advice for the refurbishment of 50 – 51 Russell Street, located in London.
- 1.1.2. The scheme involves the refurbishment of an existing ground plus six-storey office building containing a basement.
- 1.1.3. The report outlines the fire safety provisions recommended in this development for compliance with the functional requirements of the Building Regulations 2010 (as amended)<sup>[1]</sup>. The measures recommended in this report are not exhaustive and are subject to change as the scheme develops.
- 1.1.4. Compliance with the relevant fire safety requirements in the Building Regulations<sup>[1]</sup> can be achieved by compliance with relevant guidance. However, most guidance is directly applicable to typical building types, and there are alternative engineering and design methods which can be used to demonstrate compliance with the intent of relevant fire safety requirements in the Building Regulations<sup>[1]</sup>.
- 1.1.5. This fire strategy therefore considers the total fire safety package within the scheme to provide a functional and practical fire safety solutions. The strategy draws on prescriptive standards as a basis for design; however, it is only through utilising a combination of established guidance, fire engineering, and technical experience that an adequate degree of fire safety can be achieved – while also complying with the intent of relevant fire safety requirements in the Building Regulations<sup>[1]</sup>.

### 1.2. Project Stakeholders

- 1.2.1. Design coordination has been progressed with the following design team.

Discipline	Company
Client	The Bedford Estates Bloomsbury Limited
Architect	Garnett Architecture

Table 1: Project Design Team

## 2. Fire Safety Design Approach

### 2.1. Applicable Legislation

2.1.1. The proposed works are defined as “building work” in the Building Regulations 2010 (as amended). Therefore, in terms of Fire Safety, the works are required to comply with the functional requirements written in Parts B1 to B5 of Schedule 1 of the Building Regulations 2010 (as amended) <sup>[1]</sup> as follows:

- B1 – Provision of adequate means of warning and escape.
- B2 – Control of internal fire spread; (internal).
- B3 – Control of internal fire spread; (structure).
- B4 – Control of external fire spread.
- B5 – Provision of access and facilities for the fire service.

### 2.2. Regulation 38

2.2.1. Regulation 38 of the Building Regulations <sup>[1]</sup> necessitates that the fire safety information for the building shall be given to the Responsible Person at the completion of the project or when the buildings are first occupied.

### 2.3. CDM

2.3.1. The Construction (Design and Management) Regulations 2015 (CDM) <sup>[2]</sup> 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 those 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 do the best in terms of health and safety; and
- Discourage unnecessary bureaucracy.

### 2.4. Design Guidance

2.4.1. The fire strategy has been developed primarily using the guidance given within BS 9999<sup>[3]</sup>. This British Standard provides a flexible approach for fire safety design through the adoption of a structured risk-based approach. The risk-based approach reflects with greater accuracy the varying physical and human factors associated with individual building designs in a way that other more traditional design documents, such as Approved Document B Volumes 1 and 2, do not. In doing so, this British Standard permits greater design freedoms.

#### 2.4.2. Performance Based Design

2.4.2.1 Where a particular feature, arrangement or area of the project lies outside the recommendations of BS 9999, an advanced fire-engineered solution will be produced. Such solutions will be based upon current guidance, engineering practice and information available at the time of writing. It should be noted that any fire-engineered solution may not be valid if the design criteria etc. on which it is based are altered. Such solutions will follow the formal framework outlined within BS 7974, Application of fire safety engineering principles to the design of buildings – Code of practice.

## 2.5. Fire Safety Management

2.5.1. This report is primarily concerned with Building Regulations compliance and as such, fire safety management is not explicitly addressed. However, the measures detailed rely on a suitable level of maintenance and fire safety management being maintained during the life of the building, in accordance with the Regulatory Reform (Fire Safety) Order 2005 (RRO). Further details on what constitutes a reasonable level of fire safety management and how it can be achieved are provided in BS 9997<sup>[4]</sup>, Section 4 of BS 9999<sup>[3]</sup> and the detailed government guidance provided on the Ministry for Levelling up Housing and Communities' website.

### 2.6. Property Protection

2.6.1. Additional measures may be required by the client or building's insurer for property protection and/or business continuity purposes. This is outside the scope of this report which is primarily concerned with planning & Building Regulations compliance.

2.6.2. It is therefore recommended that the final client and their insurer are consulted, together with any other relevant parties to determine whether the measures detailed in this strategy are considered sufficient for property protection purposes.

### 2.7. Materials and Workmanship

2.7.1. It has been assumed that all building work is carried out in accordance with Regulation 7 of the Building Regulations. Therefore, to ensure that the proposed fire safety systems detailed within this report achieve the appropriate fire performance, it is crucial that all products, components, materials or structures relating to the fire strategy are installed using competent companies/people and, where applicable, third-party accreditation/certification is provided.

### 2.8. Consultation

2.8.1. Consultation has been carried out with the Building Control Authority and the key fire safety principles have been agreed. Consultation with the relevant authorities, including the Building Control Authority and the Fire Authority will continue as the design develops.

### 2.9. Document Limitations

2.9.1. This report does not represent a design or specification; it is a series of principle recommendations that others may consider and relate to the design of the scheme as appropriate. The information contained herein is strategic and does not address detailed aspects of design, such as construction details.

2.9.2. This document should be updated through each RIBA work stage to reflect developing and agreed strategies and relate to the design as the scheme progresses.

2.9.3. Note that any diagrams incorporated into this document are illustrative, intended to convey aspects of fire safety design and do not necessarily reflect the latest architectural drawings. The diagrams are not a substitute for the architectural general arrangement drawings or the detailed M&E drawings or specifications, which should be referred to in conjunction with this report.

### 3. Building Design

#### 3.1. Project Description

- 3.1.1. The project involves the refurbishment of a six-storey office building known as 50 – 51 Russell Street, located in London.
- 3.1.2. The current building requires wholesale modernisation to improve usability and meet current sustainability aspirations. Figure 1 illustrates the existing third floor plan.
- 3.1.3. The interior of the building will be partially demolished and reconstructed to provide new office space. The office floor will be extended to the rear and a new stair will be incorporated.
- 3.1.4. Additional terraces will be added but the facades will be retained.

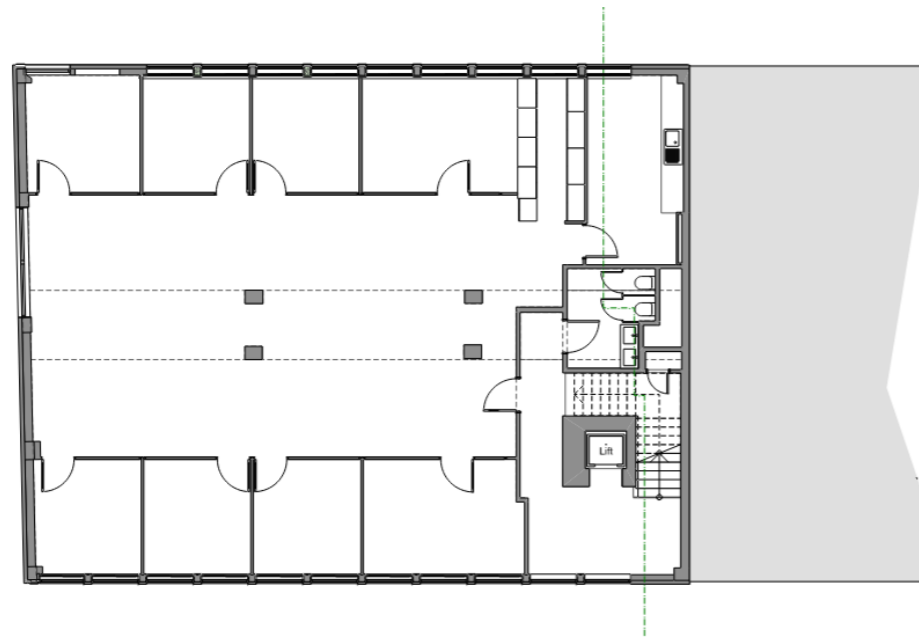
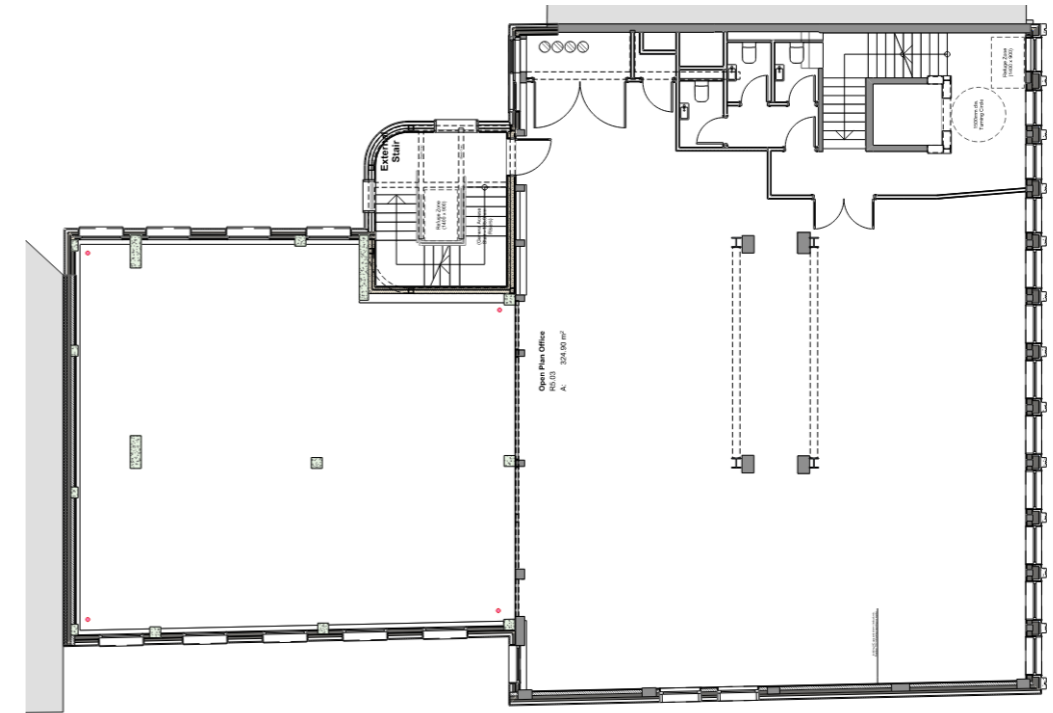


Figure 1: Existing Third Floor Layout.

- 3.1.5. Table 2 sets down the accommodation provided at each level.

Floor	Accommodation
Roof	Roof plant
Level 5	Office, Terrace
Level 4	Office
Level 3	Office
Level 2	Office
Level 1	Office, Terrace
Ground	Reception, Office
Basement	Plant, Refuse Store, Office, Bike Storage

Table 2: Summary of Scheme Accommodation



- 3.1.6. Figure 2 illustrates a typical floor following refurbishment.

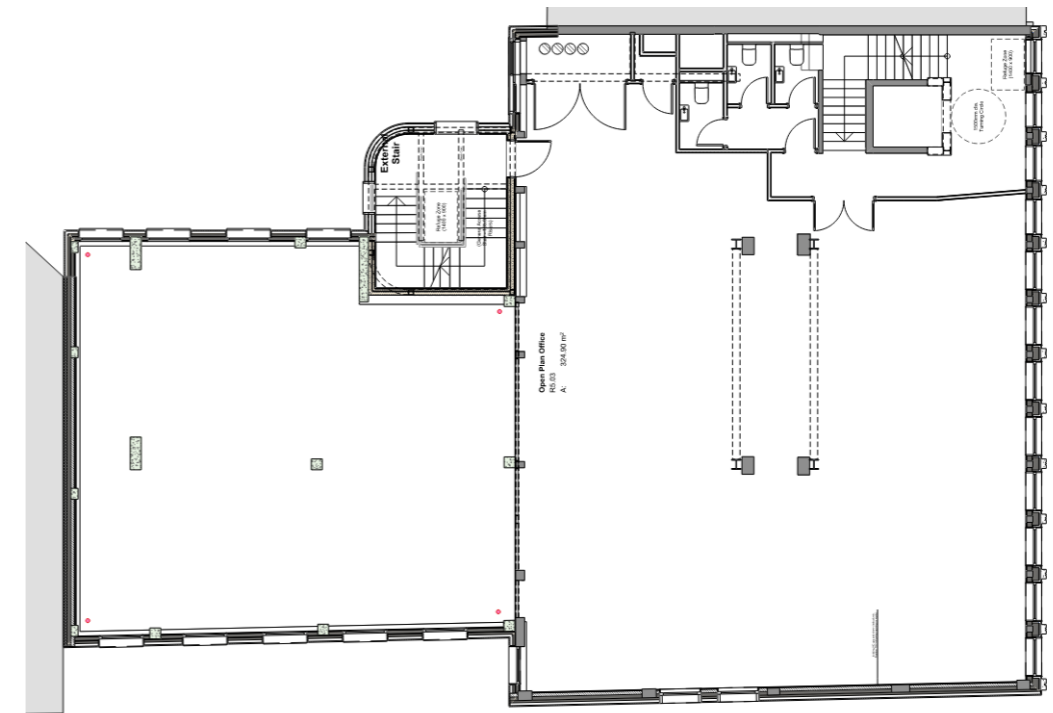


Figure 2: Typical Floor Layout

#### 3.2. Building Height

- 3.2.1. The scheme will be c. 16 m when measured from the lowest adjacent ground floor level to the finished floor level of the uppermost occupied storey (level 5).

Table 4: Population Breakdown



Figure 3: Scheme Height

### 3.3. Risk Profile and Design Occupancy

3.3.1. Table 3 sets down the risk profiles for the scheme. The risk profiles have been established using BS 9999<sup>(3)</sup> based on an assessment of the occupancy characteristics and the potential fire growth rate.

Area	Occupant characteristic	Fire Growth Rate	Risk profile
Office	Awake and Familiar	Medium	A2
Plant	Awake and Familiar	High	A3

Table 3: Design Occupancy and Risk Profile

### 3.4. Population Breakdown

3.4.1. Table 4 sets down the design density and occupancy numbers for the scheme.

Level	Accommodation	Design Density	Area (NIA, m <sup>2</sup> )	Population
L5 – Terrace	Ancillary	2.0 m <sup>2</sup> /person	35	17
	Office	8.0 m <sup>2</sup> /person	162	20
4	Office	8.0 m <sup>2</sup> /person	203	25
3	Office	8.0 m <sup>2</sup> /person	287	25
2	Office	8.0 m <sup>2</sup> /person	322	40
L1 – Terrace	Ancillary	2.0 m <sup>2</sup> /person	23	11
	Office	8.0 m <sup>2</sup> /person	314	39
Ground	Reception	4.0 m <sup>2</sup> /person	17	4
	Office	6.0 m <sup>2</sup> /person	356	39
Basement	Bike Storage	6.0 m <sup>2</sup> /person	27	5
	Office	6.0 m <sup>2</sup> /person	198	25

## 4. Package of Fire Safety Measures

### 4.1. Automatic Fire Detection & Alarm System

- 4.1.1. A Category L2 fire alarm and detection system will be installed throughout the building in accordance with BS 5839-1.

### 4.2. Smoke Control Systems

- 4.2.1. A 1.0 m<sup>2</sup> AOV (Automatic Opening Vent) will be provided at the head of the stairs in accordance with EN 12101-2<sup>[5]</sup>.
- 4.2.2. As the basement has an area more than 200 m<sup>2</sup>, natural smoke ventilation will be provided by the means of breakout panels. The breakout panels should not be less than 2.5% of the overall basement area; however, it is acceptable that the current smoke provisions for the basement remain the same.
- 4.2.3. Part of the ventilation requirement could be met by openings in the façade adjacent to the external lightwell, subject to maintaining a minimum of 2.0 m from the external stair.

### 4.3. Dry Rising Mains

- 4.3.1. A dry rising main will be provided within the main stair in accordance with BS 9990. Inlets should be positioned on the respective elevation within 18 m of appliance parking.

### 4.4. Emergency Signage

- 4.4.1. Fire safety signs will be installed where necessary to provide clear identification of fire precautions, fire equipment and means of escape in accordance with BS 5499-4<sup>[6]</sup>.

### 4.5. Emergency Lighting

- 4.5.1. Emergency lighting will be installed in accordance with the relevant parts to BS 5266-1.

### 4.6. Provisions for Disabled Occupants

- 4.6.1. Disabled refuges shall be 1400 mm x 900 mm and located within the main lift lobby and main stair of each level.
- 4.6.2. A system of two-way communication between each refuge area is to be linked with the reception to be designed, installed and commissioned in accordance with BS 5839-9.
- 4.6.3. The passenger lift will be upgraded to accommodate evacuation in accordance with BS EN 81-76 (draft). The lift is accessed from the protected stair and will be provided with emergency power supplies capable of sustaining operation for a minimum of 30 minutes.
- 4.6.4. Escape from the ground floor is direct onto Russell Square and Bedford Place respectively. The access is stepped, so external refuge positions shall be considered subject to the management strategy (TBC).



## 5. Means of Escape

### 5.1. Escape Strategy

5.1.1. All levels will evacuate simultaneously on activation of the automatic fire alarm and detection system.

### 5.2. Travel Distances

5.2.1. The scheme will be designed to meet the following maximum travel distance recommendations as outlined in Table 5. The travel distances have been based on the relevant risk profile in accordance with BS 9999<sup>(4)</sup>.

Area	Risk profile	Maximum recommended travel distance (m)	
		In one direction	In more than one direction
Office	A2	22 (15)	55 (37)
Plant	A3	18 (12)	45 (30)

Table 5: Travel Distances

Notes:

1. In accordance with BS 9999<sup>(4)</sup>, where the internal layout is unknown the maximum permitted travel distance is reduced as shown by figures in brackets.

### 5.3. Horizontal Means of Escape

5.3.1. Table 6 sets down the horizontal means of escape assessment for worse case floors above ground.

Level <sup>1</sup>	Risk Profile	Minimum Exit Width Per Person <sup>2</sup>	Storey Exit Width	Theoretical Storey Exit Capacity <sup>3</sup>	Population
2	A2	3.6 mm	880 mm	138	40

Table 6: Horizontal means of escape capacity

Notes:

1. Most densely occupied floor considered

2. The largest storey exit is discounted because of fire in the worst-case scenario, providing access to 1 x 880 mm storey exit

5.3.2. The absolute minimum width of the storey exits must be no less than 800 mm, where the absolute minimum width for unassisted wheelchair access must be no less than 850 mm.

5.3.3. Given the anticipated occupancy is fewer than 60 per floor, the exit doors may open against the direction of escape to ease coordination.

### 5.4. Vertical Means of Escape

5.4.1. Table 7 sets down the maximum stair capacity in the event of an evacuation for the floors above ground.

Floors Evacuated <sup>1</sup>	Risk Profile	Minimum Stair Width Per Person <sup>2</sup>	Total Stair Width	Stair Capacity	Population
1 - 5	A2	2.45	1200 mm	490	218

Table 7: Vertical means of escape capacity

Notes:

1. Total evacuation considered across all floors

2. 1no stair discounted because of fire.

3. 1200 / 2.45 = 490 people per stair across three floors.

5.4.2. Two escape stairs will be available. The main internal stair will discharge at ground via reception. The secondary external stair will transfer at Level 1, before existing at ground level.

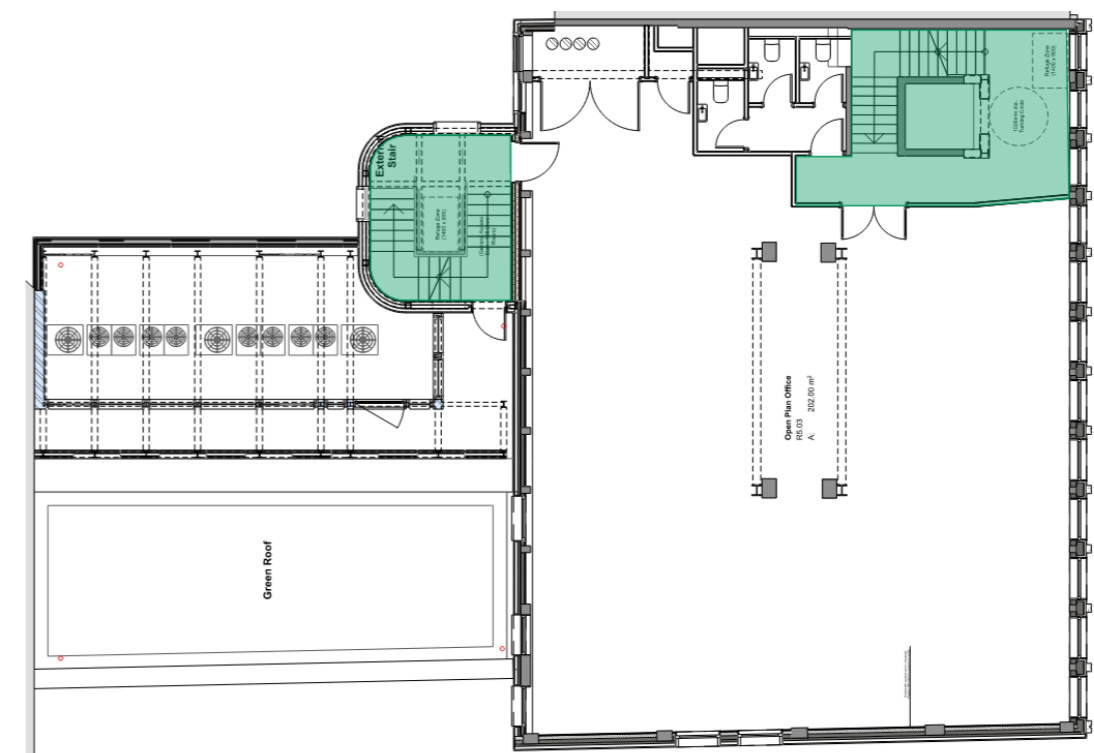


Figure 4: Stair Provision

5.4.3. The basement will contain one internal escape stair that will discharge at the ground floor entrance.

### 5.5. External Assembly Point

5.5.1. All occupants will be instructed to proceed to a pre-defined evacuation zone, which should be located a minimum of 10 m from the premises to avoid interference with the Fire Service or danger from falling debris, fire and smoke.

5.5.2. The assembly zones should be designed to accommodate a maximum occupant density of 0.3 m<sup>2</sup>/person.

## 5.6. Terraces

5.6.1. Access to the terrace is via the open plan office. The occupancy is limited to 11 persons on the first floor and 17 persons on the fifth floor. Occupants are expected to be awake and familiar with their surroundings.

5.6.2. The terraces will be provided with visual and audible warning devices to provide early warning to occupants in the event of a fire. The installations of the devices shall comply with BS 5839-1.

5.6.3. The external stair serving levels three and four transfers across the terrace at level 1. The route should be clear of planting and furniture and any roof lights within 3.0 m should be 30-minute fire resisting.

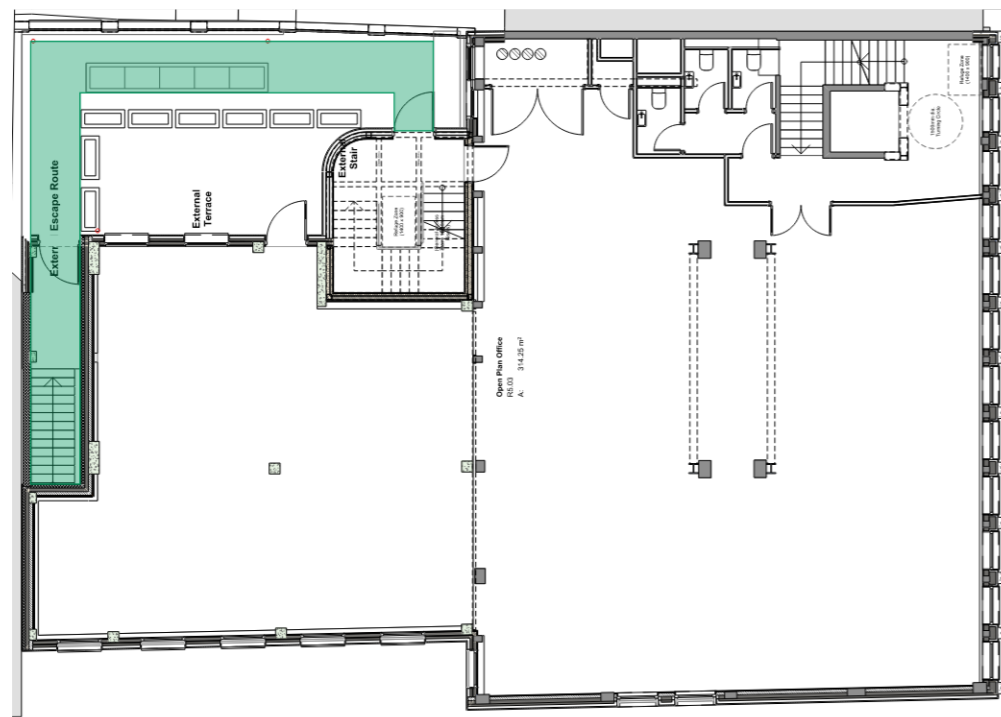


Figure 5: Level 1 External Stair Transfer

## 5.7. Doors and Escape Corridors

5.7.1. Any doors on escape routes, including the external gates (whether it is a fire door or not) should not be fitted with a latch, lock or bolt fastening, or be fitted with simple fastenings that can be readily opened from the side that is approached by occupants escaping. Where more than 60 people are expected to use a door the inclusion of panic hardware is recommended

5.7.2. The final exit door should be fitted with panic hardware in accordance with BS EN 1125<sup>[7]</sup>.

5.7.3. Electronically powered locks should return to the unlocked position on operation of the AFD system, loss of power and/or activation of a manual door release unit (Type A – BS EN 54-11). Locked security doors must failsafe unlocked upon fire alarm activation and must be provided

with the relevant override switch (i.e., emergency green break-glass), designed in accordance with BS 7273-4. Firefighting stair doors should not be secured.

## 5.8. Merging Flows

5.8.1. The design must consider the occupants escaping simultaneously from above and below ground in the event of a fire. The total occupants evacuating the basement level simultaneously would be 30. Due to only one stair serving the basement, all 30 occupants will use the available stair.

5.8.2. Based on the minimum width of stair is 3.25 (based on the risk profile being A2), the required width to accommodate merging flow taken from BS 9999 is <1000 mm, meaning maintaining minimum 1200 mm at the final exits will be satisfactory.

## 5.9. Final Exits

5.9.1. The final exits from the stairs should be at least as wide as the stair leading to it and should discharge via a protected route direct to a place of ultimate safety.

5.9.2. In accordance with Section 17.2.7 of BS 9999, every protected stairway should discharge by way of a protected exit passageway to a final exit. Any such protected exit passageway should have the same standard of fire resistance and lobby protection as the stairway it serves.

5.9.3. The external escape stair leads down to the first-floor roof, whereby an escape route will be available to occupants escaping that leads directly outside to a place of safety. This is illustrated in Figure 6.

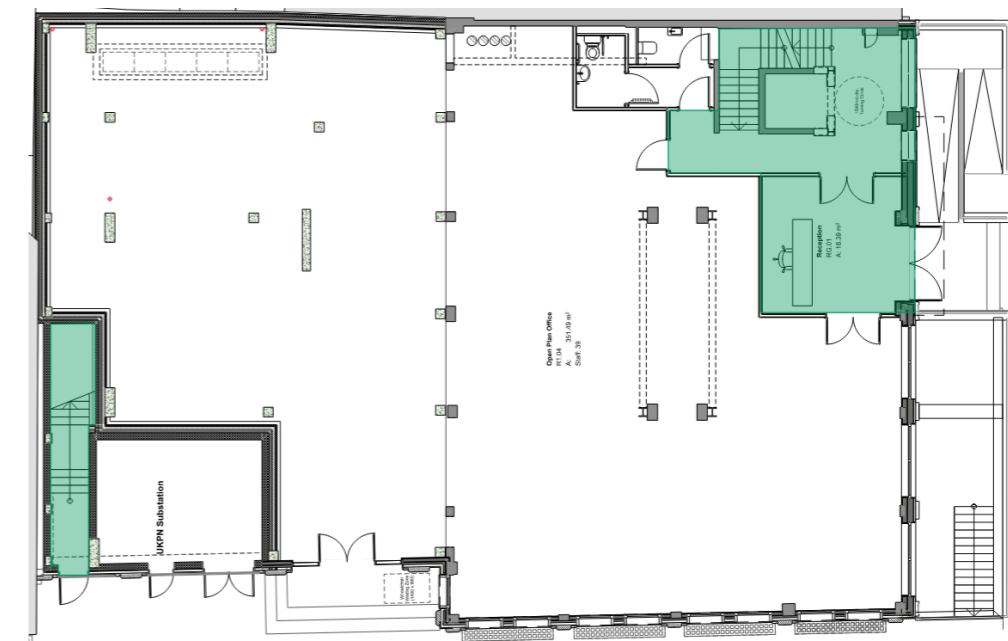


Figure 6: Final Exit Routes

## 6. Internal Fire Spread (Linings)

### 6.1.1. Wall and Ceiling Linings

6.1.1.1 All wall and ceiling linings should meet the relevant classifications given in Table 33 of BS 9999(extracted in Table 8).

Location	European Class <sup>2</sup>
Small rooms <sup>1</sup> of area not more than 30m <sup>2</sup>	D-s3, d2
Other rooms <sup>2</sup>	C-s3, d2
Other circulation spaces	B-s3, d2

Table 8: Minimum Surface Spread of Flame Classifications

#### Notes

1. BS 9999 defines a "room" as "an enclosed space within a building that is not used solely as a circulation space. The term includes not only conventional rooms, but also cupboards that are not fittings and large spaces such as warehouses. The term does not include voids such as ducts, ceiling voids and roof spaces."

2. When a classification includes 's3, d2', this means that there is no limit set for smoke production and/or flaming droplets/particles.

## 7. Internal Fire Spread (Structure)

### 7.1. Structural Fire Resistance

7.1.1. The term 'elements of structure' is applied to the main load bearing elements of structure. Structure includes, but is not limited to:

- Structural frame, beams, and columns
- Load bearing walls (internal and external)
- Floor structures (e.g., galleries)

7.1.2. Given that the building is less than 18 m in height, any new structural elements supporting more than the roof will achieve REI 60 minutes fire resistance in accordance with EN 13501-2.

### 7.2. Compartmentation

7.2.1. Table 9 below sets down typical compartmentation provisions for the scheme, which is conveyed in Figure 7.

Area	Minutes (REI)
Electrical Room	120
Protected Escape Routes	60
Floors	60
Plant/Services	60
External Stair	30
Storage	30

Table 9: Compartmentation

7.2.2. The external stair shall be 30-minute fire resisting up to 1.8 m from the external wall of the building.

### 7.3. Fire Doors

7.3.1. Hold-open devices that automatically release should also align with BS 7273-4<sup>[8]</sup>. This will ensure fire exit doors are readily available.

7.3.2. Table 10 sets down the standard of fire rated doors to be provided throughout the scheme.

Door Location	Door Rating (mins) <sup>1</sup>
Refuse Storage	E60S
Protected lobby	E30S
Stair Doors	E30S
Riser Doors	E30

Table 10: Fire Door Rating

Notes:

1. Classified in accordance with BS EN 13501-2.

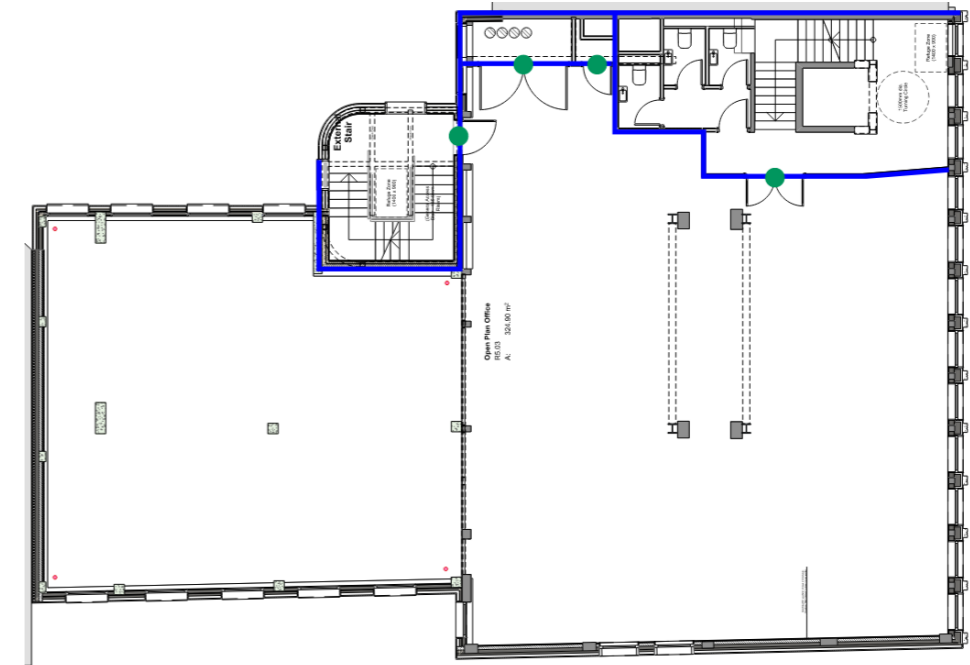


Figure 7: Typical Office Core Compartmentation (Blue = 60 minutes, Green = 30 minutes)

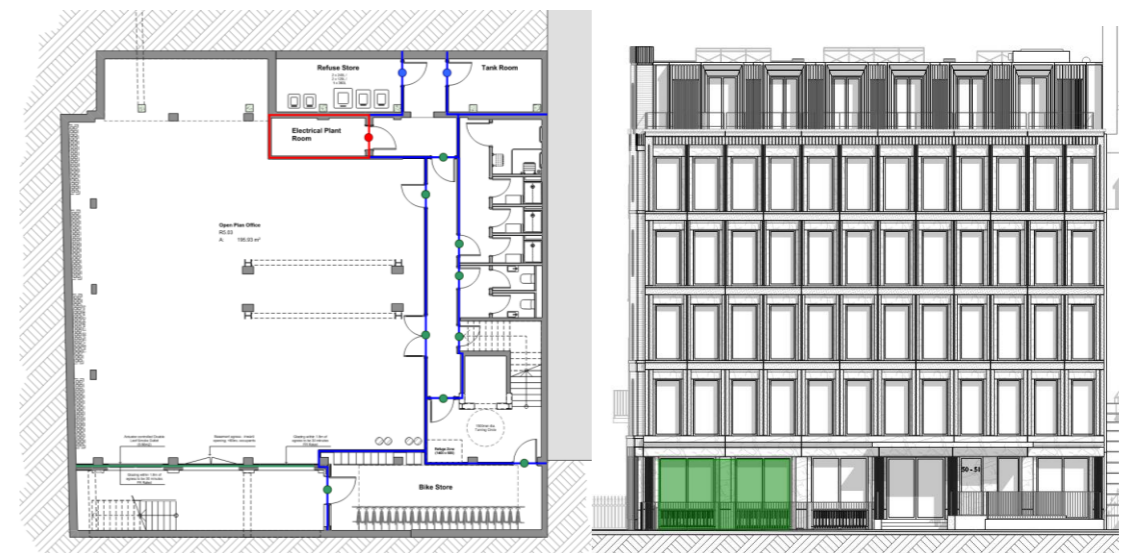


Figure 8: Lower Ground Illustrating Compartmentation, including External Protection (left). Protection to the North Elevation illustrated on the right.

### 7.4. Ductwork

7.4.1. Ductwork that passes through escape routes or breaches compartmentation will be fire rated in line with the methods outlined in BS 9999 (to the appropriate EN standards) as follows:

- Method 1 – protection using dampers (not appropriate for escape routes unless ES)
- Method 2 – protection using fire-resisting enclosures (integrity and insulation)
- Method 3 – protection using fire-resisting ductwork (integrity and insulation)
- Method 4 – automatically actuated fire and smoke dampers

## 7.5. Fire Dampers

- 7.5.1. Fire dampers should be situated within the fire-separating element. To ensure that the damper will not be displaced by movement or collapse of the duct, dampers should be securely fixed and provided with breakaway joints in accordance with manufacturer's instructions.
- 7.5.2. Adequate means of access should be provided to allow inspection, testing and maintenance of both the fire damper and its actuating mechanism. Fire dampers should be tested under EN 1366-2 and conform to BS EN 15650:2010<sup>9)</sup>.

## 7.6. Openings for Pipes

- 7.6.1. Pipes which pass through a fire separating element (unless within a protected shaft) should 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.
  - 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 diagram 31 of BS 9999.

## 7.7. Concealed Cavities

- 7.7.1. Where concealed cavities are incorporated, the following provisions will be made:
- Fire stops to be provided at the junction of compartment walls or floors and the external wall construction, maintaining the relevant standard of compartmentation.
  - Cavity barriers (30 min integrity, 15 min insulation) to be provided within the external wall construction cavities at the junction of compartment walls or floors, around any openings and edges within the voids of external cavities.
  - Any extensive cavity should be provided with cavity barriers (30 min integrity, 15 min insulation) such that the maximum dimension does not exceed 20m in any direction. If the cavity surfaces are lined with any product other than Class 0 or Class 1, cavity barriers should be provided such that the maximum dimension does not exceed 10m in any direction.

## 8. External Fire Spread

- 8.1.1. Under the proposed works, the western boundary abuts the neighbouring development and is unchanged. Equally, the northern boundary onto Russell Square is unchanged.
- 8.1.2. The eastern boundary onto Bedford Place requires consideration as the accommodation is being extended. Given compartment floors are being provided, the maximum area exposed to the boundary is 27 x 3 m. From BRE 187 Table A, this equates to a boundary distance of 4.5 m. The distance to the relevant boundary along the centreline of Bedford Place is ~9.0m. As a result, the arrangement is acceptable.
- 8.1.3. The southern boundary adjoins a neighbouring property. Where the accommodation is being extended on levels 2 and 3, the boundary wall will be 60-minute fire resisting (when tested from both sides).

### 8.2. External Walls Surface

- 8.2.1. No changes are expected to the external walls as part of the proposed works. Any new cladding or external walls should be class B-s3, d2 or better (European).

### 8.3. External Wall Insulation

- 8.3.1. Any new insulation product used to create the external wall should be constructed with limited combustibility (e.g., Class A2 or better in accordance with EN 13501-1<sup>[10]</sup>).

### 8.4. Roof and Terrace

- 8.4.1. Any roof lights or penetrations within 3.0 m of the level 1 escape route should be 30-minute fire resisting.
- 8.4.2. Any new roof coverings should be designed to achieve B<sub>ROOF</sub>(t4) in accordance with EN 13501-5.
- 8.4.3. Green roofs should be designed in accordance with GRO Green Roof Code and incorporate the following:
- The growing medium layer (substrate) should be a minimum of 80 mm deep, with an organic content of not more than 50%.
  - A 300 mm fire break should be provided around all penetrations. This should be increased to 500 mm where there are opening into the building.
  - A one-metre wide fire break should be provided at 40 m intervals, which should consist of 20 – 50 mm pebbles, to a minimum depth of 50 mm.

## 9. Access and Facilities for the Fire Service

### 9.1. Fire Hydrants

- 9.1.1. Water supplies for firefighting operations will be via existing hydrants.
- 9.1.2. Fire hydrants will be located within 90 m of the building entrances and provide sufficient water supply for the fire service in the event of a fire.

### 9.2. Fire Service Vehicle Access

- 9.2.1. Vehicle access is provided to the north-along Russell Square and east along Bedford Place. The access routes conform with the following conditions:
- Minimum width of road between kerbs: 3.7 m
  - Minimum width of gateways: 3.1 m
  - Minimum turning circle between kerbs: 16.8 m
  - Minimum clearance height: 3.7 m
  - Minimum carrying capacity: 12.5 tonnes

### 9.3. Fire Mains

- 9.3.1. A dry riser system will be provided within the main stair in accordance with BS 9990<sup>[1]</sup>. Coverage will be provided to within 45 m to any point on the floor when measured along a route suitable for laying hose.
- 9.3.2. Inlets will be provided at ground level, within 18 m of the fire appliance parking location.

## 10. Fire Safety Management Requirements

- 10.1.1. Management procedures have a pivotal role to play in fire prevention, control and evacuation of occupants should a fire incident occur.
- 10.1.2. Inherent in both BS 9999 and the approach adopted for this scheme is the assumption that there will be appropriate fire safety management of the premises when in use.
- 10.1.3. This section is intended to introduce the RRO its obligations and provide initial guidance in fulfilling these duties. It is the responsibility of the landlords/building management to ensure that all fire safety systems are tested and maintained to ensure their continuous effectiveness. The landlords/ building management need to be aware of all fire safety features provided and their purpose.
- 10.1.4. It is important that management are aware of their responsibilities detailed in this document and agree that they are sufficiently capable of adequately performing them. Effective arrangements should be put in place to manage all aspects of fire safety in the premises and the details of those arrangements need to be recorded, e.g., within a fire safety management plan.
- 10.1.5. Any deviation from the principles or ethos of the fire safety strategy could have major impacts on the effectiveness of its implementation post construction and should be factored into an updated document accordingly. The final fire strategy may contain bespoke solutions independent from prescriptive guidance and should therefore be shared with building management and fire risk assessors, or any other relevant person.
- 10.1.6. This section outlines some high-level recommendations to be incorporated into the management plan for the building. It is the recommendation of this report that the guidance of BS 9999 is followed with regards to developing an appropriate management strategy for the building. It is envisaged that management of the building will be akin to level M1 throughout, as defined in BS 9999. During the life of a building, any changes to the standard or quality of management, use of the building, or alterations proposed will need to be assessed to identify their effect upon the overall fire safety strategy and fire safety management strategy. Likewise, changes to the building layout might require similar changes to fire safety documentation.
- 10.1.7. Providing an accessible means of escape solution shall be an integral part of any fire safety management process. Fire safety management should consider the full range of people who might use the premises, paying particular attention to the needs of disabled people. It is important to note that it is the responsibility of the premises management to ensure that all people can make a safe evacuation. The evacuation plan shall not rely on the assistance of the fire and rescue service. This is an important factor that needs to be considered in management design.

## 10.2. Personal Evacuation Plans

- 10.2.1. Personal emergency evacuation plans (PEEPs) are recommended for all people requiring assistance to leave the building. Through the recording of PEEP, the management team shall be made aware of the amount of staff support required for each evacuation. There are three types of PEEPS that might need to be developed:
- Individual PEEP for disabled people who are regularly in the premises, for example staff and regular visitors:
  - PEEPs for visitors to the premises who will make themselves known to staff.
  - PEEPs for visitors not previously identified to staff. The standard evacuation plan shall include measures to make evacuations suitable for all persons on the premises.
- 10.2.2. Following discussions with an individual, a plan can be developed for their specific needs, which should contain details of how they will evacuate the premises. By considering the individual needs of a person when preparing a PEEP, management will be able to make any reasonable adjustments to the premises or procedures that are necessary.
- 10.2.3. Visitors who are likely to require assistance in the event of an evacuation shall be encouraged to make themselves known to staff on arrival. Management shall be encouraged to have staff available (especially at reception locations), who are trained in disability awareness. This will make this process more comfortable for disabled people and more effective for management:
- 10.2.4. PEEPs for visitors who make themselves known to staff should provide a wide range of guidance for differing disabilities. 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. It is important that the generic PEEP is discussed with each visitor and their particular needs considered where possible.
- 10.2.5. Information for disabled people shall be noted in fire action notices and in the fire management plan. It is vitally important that staff are trained so that they are aware of the facilities and their responsibility to evacuate disabled people.

## 10.3. Maintenance & Inspection of Fire Safety Installations

- 10.3.1. It is essential that in the event of fire, all fire safety provisions function as intended. The fire safety manager must ensure that all the built-in passive and active systems operate as required on demand.
- 10.3.2. It is essential for the safety of the occupants of a building that fire safety equipment (including passive fire protection provisions) is inspected frequently. Although much of the inspection may be undertaken by suitably trained personnel, a formal agreement shall be made with the installer or the installer's representative to provide the regular inspection and testing described in the relevant British Standards for individual fire safety installations. Any agreement should be recorded in the fire safety manual.



#### 10.4. Fire Safety Manual

- 10.4.1. The fire safety manual shall contain design information and operational records. The design information taken from the fire safety strategy forms the basis of an ongoing history document to which additional material is added when the building is occupied. It shall be recorded in the fire safety manual where the design of the occupied building does not reflect the design outlined in the fire safety strategy.
- 10.4.2. The fire safety manager is responsible for those parts of the fire safety manual that contain operational records, the fire safety policy statement and the fire safety documentation.

#### 10.5. Fire Safety Training

- 10.5.1. Fire safety training shall form part of the planning, training and monitoring activity defined in the fire safety manual. A person who is competent both in the subject and in training shall give all training. Fire safety training shall be continuous, commencing with induction training on the first day of appointment of new staff and continuing in the form of regular refresher training. Thereafter, staff will receive sufficient training at regular intervals (at least once a year) to make sure that they remain familiar with the fire precautions for the workplace and are reminded of the action to be taken in an emergency.

## References

- 1) Building Regulations 2010 - Statutory Instrument 2000. HMSO. 2010.
- 2) UK Statutory Instrument "The Construction (Design and Management) Regulations 2015. 2015 No.51. Health and Safety".
- 3) BS 9999 2017: Fire Safety in the design, management and use of buildings – Code of practice
- 4) BS 9997 2019: Fire Risk Management System (FRMS)
- 5) BS 12101-2: 2017 – Smoke and heat control systems. Natural smoke and heat exhaust ventilators.
- 6) BS 5499-4:2013 - Safety Signs. Part 4: Code of practice for escape route signing
- 7) BS EN 1125:2008 – Building hardware. Panic exit devices operated by a horizontal bar, for use on escape routes. Requirements and test methods.
- 8) BS 7273: 2015+A1: 2021 – Code of practice for the operation of fire protection measures. Actuation of release mechanisms for doors.
- 9) BS EN 15650: 2010 – Ventilation for buildings. Fire dampers.
- 10) BS EN 13501-5: 2016-TC – Fire classification of construction products and building elements. Classification using data from external fire exposure to roof tests.
- 11) BS 9990: 2015 – Non automatic fire-fighting systems in buildings. Code of practice.



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