

SOCOTEC

PLANNING FIRE SAFETY STATEMENT

29-41 Castle Mews

Project no. TX 165445

Issue	Date	Drafted / Checked / Authorised	Notes
Draft	08/08/24	LM/RT/WS	Draft issue for design team review and comment
1	09/08/24	RT/WS/WS	Updated following design team review
2	05/09/24	BA/RT/-	Updated following design team review
3	27/09/24	BA/RT/-	Following the removal of the highlighted items.
4	31/09/24	RT/BA/	Updated following adjustment to boundary line

**BA:** Beatriz Avino BSc MSc AIFireE **(Fire Engineer)**  
**LM** Leah McMillan BSc (Hons) MSc AIEpE **(Graduate Fire Engineer)**  
**RT:** Ryan Taylor BSc AIFireE MIEI **-(Fire Engineer)**  
**WS:** Wayne Somanna BTech AIFireE MIEI – **(Principal Fire Engineer)**

*This document is provided for the purpose of demonstrating compliance with the appropriate performance levels required by a designated third party. It should not be divulged to any other parties without the approval of the client for whom it was produced. It should not be manipulated, abridged or otherwise presented without the written consent of SOCOTEC UK Ltd.*

<b>1</b>	<b>Summary</b>	<b>2</b>
1.1	Background	2
1.2	Legislative requirements	2
1.3	Guidance	2
1.4	The London Plan – Policy D5 & D12	2
1.5	Authors	2
1.6	Information received	2
<b>2</b>	<b>Project Overview</b>	<b>3</b>
2.1	Project Brief	3
2.2	Risk profiles and occupant numbers	3
<b>3</b>	<b>Fire Safety Systems</b>	<b>4</b>
3.1	Means of detection and alarm	4
3.2	Sprinklers	4
3.3	Smoke ventilation system	4
3.4	Emergency Lighting	4
3.5	Fire safety signage	4
3.6	Back-up power supplies	4
<b>4</b>	<b>Means Of Warning And Escape</b>	<b>5</b>
4.1	Evacuation regime	5
4.2	Horizontal means of escape	5
4.3	Escape beyond the final exits	5
4.4	Means of escape for disabled occupants	5
<b>5</b>	<b>Internal Fire Spread</b>	<b>6</b>
5.1	Internal linings	6
5.2	Structural fire resistance, compartmentation and fire-resisting separation	6
5.3	Fire-stopping and penetrations through fire-resisting construction	6
5.4	Cavity barriers	6
<b>6</b>	<b>External fire SPread</b>	<b>7</b>
6.1	External surfaces and wall materials	7
6.2	Roof coverings	7
6.3	Space separation and unprotected areas of the external walls	7
<b>7</b>	<b>ACCESS AND FIREFIGHTING</b>	<b>8</b>
7.1	Means of notifying the fire and rescue service	8
7.2	Vehicle access to and around the site	8
7.3	Access into and through the building	8
7.4	Firefighting facilities within the building	8
7.5	Water supplies	8
<b>8</b>	<b>Golden thread</b>	<b>10</b>
8.1	Future development of the asset and the ‘Golden thread’ of information	10
<b>9</b>	<b>Bibliography</b>	<b>11</b>
Appendix A.	Compartmentation drawings	12

# 1 SUMMARY

## 1.1 Background

- 1.1.1 SOCOTEC UK has been appointed by The Arch Company Properties Limited to develop a planning fire safety statement for the 29-41 Castle Mews warehouse building located in Castle Mews, Castle Road, London, NW1 8SY.
- 1.1.2 This document is not intended to portray detailed design information. As a strategic document supporting and informing the wider design, it should be read in conjunction with the wider project design documentation.

## 1.2 Legislative requirements

### The Building Regulations

- 1.2.1 The strategy has been developed to satisfy the functional requirements of Parts B1 – B5 of Schedule 1 to the Building Regulations 2010 (as amended).
- 1.2.2 The fire statement will be developed to satisfy the requirements for fire safety as set out by the Building Regulations. The document has not been developed to address property protection. However, the features that are included for life safety will contribute to some extent to property protection. This document has also been developed with reference to local design expectations as set out within the London Plan.
- 1.2.3 In accordance with Regulation 4 of the Building Regulations, works must meet the functional requirements of the Building Regulations. The existing areas may not comply with the functional requirements of the Building Regulations, but they must not be made less satisfactory in relation to the requirements than before the work was carried out.
- 1.2.4 The proposed works do not constitute a material change of use as defined in Regulation 5 of Building Regulations, therefore any alterations to existing fabric should be made no worse than existing.

## 1.3 Guidance

- 1.3.1 The requirements of Section 1.2 should be met through compliance with the prescriptive standard BS 9999 [1], and the codes of practice referenced therein.
- 1.3.2 In accordance with the fire safety engineering principles detailed in the BS 7974 [2] codes of practice, all fire precautions are determined on the basis of there being one seat of fire.

## 1.4 The London Plan – Policy D5 & D12

- 1.4.1 As part of the planning submission, the London Plan (2021) also requests that a ‘Fire Statement’ be provided for the building. It is intended that this fire strategy report will also serve as the Fire Strategy for the scheme.
- 1.4.2 Within the London Plan is the intent that buildings should achieve a high standard of fire safety, thereby reducing risk to life, minimizing the risk of fire spread, and providing suitable and convenient means of escape which all building users can have confidence. In addition to the expectations of the Building Regulations, the design of this development is developed to meet the fire safety expectations within Policies D5 and D12 of the London Plan as follows:

### 1.4.3 Policy D5 Inclusive design states:

- Development proposal should achieve the highest standards of accessible and inclusive design. They should be designed to incorporate safe and dignified emergency evacuation for all building users;
- In all developments where lifts are installed, as a minimum at least one lift per core (or more subject to capacity assessments) should be a suitably sized fire evacuation lift suitable to be used to evacuate people who require level access from the building.

### 1.4.4 Policy D12 Fire Safety states:

(A) In the interest of fire safety and to ensure the safety of all building users, all development proposals must achieve the highest standards of fire safety and ensure that they:

- Identify suitably positioned unobstructed outside space:
  - For fire appliances to be positioned on;
  - appropriate for use as an evacuation assembly point.
- Are designed to incorporate appropriate features which reduce the risk to life and the risk of serious injury in the event of a fire, including appropriate fire alarm systems and passive and active fire safety measures;
- Are constructed in an appropriate way to minimise the risk of fire spread;

- Provide suitable and convenient means of escape, and associated evacuation strategy for all building users;
- Develop a robust strategy for evacuation that can be periodically updated and published, and which all building users can have confidence in;
- Provide suitable access and equipment for firefighting which is appropriate for the size and use of the development.

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

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

1.4.6 This fire safety report has been developed in accordance with the above items. This document is intended to serve as strategic guidance. Therefore, detailed design information such as the methods of construction or the selection of specific products will not be included within this document. However, the minimum performance requirements to be achieved by certain products or materials in the building are stated within this report, which will be used to inform the selection of products during RIBA Stages 3 – 6.

1.4.7 In accordance with Clause 3.12.9 of Policy D12(A) of the London Fire Plan, Fire Statements are to be produced by qualified engineers with relevant experience in fire safety such as a chartered engineer or suitably qualified and competent professionals with demonstrable experience to address the complexity of the design being proposed. The relevant experience of the authors and authorisers of this document is in Section 1.5.

1.4.8 “SOCOTEC confirms that reasonable skill and care has been provided in the development of this Fire Statement and that to the best of our knowledge sets out a proposal that, with appropriate development in the following design and construction stages, would offer a level of fire safety that meets the expectations of Policy D5 and Policy D12 of the London Plan.”

## 1.5 Authors

Author	Position	Experience
Beatriz Avino BSc MSc AIFireE	Fire Engineer	1 year
Leah McMillan BEng(Hons) MSc AiExpE	Graduate Fire Engineer	1 year
Ryan Taylor BSc AIFireE	Fire Engineer	3 years
Wayne Somanna BTech AIFireE MIEI	Principal Fire Engineer	6 years

## 1.6 Information received

1.6.1 This strategy is based on information provided to SOCOTEC UK Limited as listed in Table 1. Additional information or variations to that supplied may render the conclusions and recommendations within this report invalid.

Table 1 – Referenced documents

Description	Reference	Revision	Date
Site Location Plan and Existing Site Survey Plan	23-4758-PD-001	A	04/07/24
Proposed Means of Escape Plan	23-4758-PD-012	B	29/07/24

## 2 PROJECT OVERVIEW

### 2.1 Project Brief

- 2.1.1 The project consists of the refurbishment of 13 existing warehouse units. The existing warehouse units were single-storey (G) and two-storey (G+1) arches underneath an existing railway viaduct. It is proposed to remove the existing first floor from the warehouse such that the building is a single storey warehouse with a maximum height of 5.5 m and a cumulative ground area of approximately 2,100 m<sup>2</sup>.

Units 29-38 form part of the same warehouse such that they form part of one compartment.

Units 39-41 shall be treated as independent units.

- 2.1.2 There is a cumulative ground area of approximately 1,200 m<sup>2</sup> within the warehouse area, where the units have access from an external yard.

- 2.1.3 The site plan is shown in Figure 1.



Figure 1 – Site Plan

### 2.2 Risk profiles and occupant numbers

- 2.2.1 BS 9999 recommends various fire safety provisions, such as warning systems, means of escape and compartment size based on analysed risk. This is achieved by:

- i. Allocating a risk profile based on the nature of occupancy eg:

A– Awake and familiar,  
B– Awake but unfamiliar,  
C- Occupants who are likely to be asleep, or  
D- Occupants receiving medical care)

- ii. The likely fire growth rate e.g:

1 – Slow  
2 – Medium growth rate  
3 – Fast growth rate  
4 – Ultra fast

- 2.2.2 BS 9999 does not describe in detail what constitutes the characteristics of risk profiles “A” or “B”. However, it is proposed that:

- i. any group utilising the building with regularity (i.e., staff) are occupant characteristic “A”. Some examples are, office and industrial premises;  
ii. persons (i.e., public) that utilise the building infrequently (unfamiliar), are occupant characteristic “B”  
Some examples are, shops, exhibition, museums, leisure centres.

- 2.2.3 Table 2 of BS 9999 provides more details on each occupancy characteristic. Based on the information in Table 2 of BS 9999, this warehouse would class as an occupancy characteristic “A”.

- 2.2.4 In accordance with Table 3 of BS 9999, on the basis of on or off racking and shelving but excluding high rack storage and storage of flammable liquids and gases or where rapid-fire growth could occur, therefore the appropriate fire growth rate for this building is taken to be 3 – Fast.

- 2.2.5 Additionally, following design team correspondence, an ordinary hazard Group 3 hazard class (OH3) has been anticipated for the warehouse, in accordance with BS 12845. The storage configuration considered, as the worst-case scenario, is free standing or blocks stacking with a maximum height of 1.2m (OH3, Cat IV goods).

Note: The above classification is based information provided and approved by the client at the time of writing this report. If the above scenario changes (i.e., the maximum height exceeds 1.2m for Cat IV goods), the fire strategy should be reviewed accordingly.

- 2.2.6 As per the guidance contained within BS 9999, a risk profile is established to determine appropriate means of escape and other relevant fire safety provisions for life safety. The assigned risk profile is A3.

- 2.2.7 As per client information, units 37 and 38 might be used by the tenant as office spaces, which will be ancillary to the warehouse. The risk profile these units will be A2.

- 2.2.8 The maximum design occupancies have been calculated based on floor space factors provided in Table 9 of BS 9999. However, BS 9999 does not deal with floor space factors for storage buildings adequately and therefore it is more appropriate to use ABD Vol 2 Table D.1. The floor space factors applied in the design is provided below.

- iii. 30 m<sup>2</sup>/person for Storage areas.  
iv. 6 m<sup>2</sup>/person for Office areas

- 2.2.9 During the horizontal phase of the means of escape, the individual escape routes and exit widths, will be based on the conservative assumption that all rooms are considered to be at maximum occupancy simultaneously.

Table 3 – Design occupancy estimation for non-residential areas

Unit	Usage	Floor area (m <sup>2</sup> )	Floor space factor (m <sup>2</sup> / person) <sup>Note 1</sup>	Maximum design occupancy (persons)
Units 37	Storage/Office	85	6 <sup>Note 3</sup>	15
Units 38	Storage/Office	85	6 <sup>Note 3</sup>	15
Units 39	Storage	85	30	3
Units 40	Storage	85	30	3
Warehouse (Bays 29-36)	Storage	1,200	30	40
Total design occupancy of the building:				76

**Note 1** – 30 m<sup>2</sup>/person floor space factor is based on Table D.1 of ADB Vol 2 for Storage building

**Note 2** – All occupancies estimated are subject to changes in the proposed floor area.

**Note 3** – Worst case scenario



## 3 FIRE SAFETY SYSTEMS

### 3.1 Means of detection and alarm

- 3.1.1 The building should be fitted out with an automatic fire detection and alarm system (FDAS) designed, installed and maintained to a minimum Category L2 standard, in accordance with BS 5839-1 [3].
- 3.1.2 As per client information, the shell and core will be fitted with the minimum category FDAS as outlined above. If the tenant risk assessment calls for a higher category, this installation will be the responsibility of the tenant.
- 3.1.3 Type A (“single action”) manual call points should be provided at every final exit from the building, whether or not they are designated as final exits, in accordance with BS 5839-1. Manual call points should be fitted with a transparent, hinged cover in accordance with BS 5839-1, and meeting BS EN 54-11 [4] for Type A.
- 3.1.4 Visual alarm devices, such as flashing beacons, will be provided in rooms or areas where the background noise level could be louder than the fire alarm, e.g., plant rooms. Consideration may also be given to providing a visual alarm to areas of the building designated for disabled occupants (such as WCs) in light of potentially isolated hearing-impaired occupants in the building. Flashing beacons are also recommended in the basement changing room.
- 3.1.5 The provision of a fire alarm control panel, also known as control and indicating equipment (CIE), conforming to BS EN 54-2 [5] and power supply equipment conforming to BS EN 54-4 [6] will be required for the detection and alarm system. The main fire alarm panel for the building should be located in a conspicuous location that is both visible and accessible to the fire service and the building management personnel. In accordance with the recommendations of BS 5839-1, the fire alarm and detection engineer must submit the design certificate for the scheme to Building Control/ Approved Inspector prior to the commencement of the installation on site.

### 3.2 Sprinklers

- 3.2.1 Sprinklers are not required for life safety to meet the functional requirements of Part B of Schedule 1 to The Building Regulations 2010 (as amended). This should be reassessed in the event of future alterations or change of use or arrangement of stored goods.

### 3.3 Smoke ventilation system

- 3.3.1 Smoke control and/or ventilation is not required for life safety to meet the functional requirements of Part B of Schedule 1 to The Building Regulations 2010 (as amended).

### 3.4 Emergency Lighting

- 3.4.1 Emergency lighting should be installed to provide temporary illumination in the event of failure of the primary power supplies to the normal lighting system. Emergency lighting should be installed in accordance with the recommendations of BS 5266 [7], BS EN 1838 [8], and BS EN 60598-2-22 [9].

### 3.5 Fire safety signage

- 3.5.1 Fire safety signs will be installed where necessary to provide clear identification of fire precautions, fire equipment and means of escape in the event of fire. All parts of the development will be fitted with appropriate fire safety signage to comply with The Health and Safety (Signs and Signals) Regulations 1996 (i.e., signage to be specified in accordance with BS ISO 3864-1 [10] and following the principles of the Safety signs and Signals: Guidance on Regulations Publication). [11]

### 3.6 Back-up power supplies

- 3.6.1 The following fire safety systems shall be provided with backup power supplies in accordance with BS 8519 [12]:
- Emergency lighting and/or signage in common areas;
  - Automatic fire detection and alarm system; and

## 4 MEANS OF WARNING AND ESCAPE

### 4.1 Evacuation regime

- 4.1.1 A simultaneous evacuation regime will be utilised for all of the building, with a single stage alarm protocol, whereby all occupants within the occupancy will be signalled to evacuate in the event of a fire.

### 4.2 Horizontal means of escape

- 4.2.1 The general philosophy for means of escape is that the occupants of a building should be able to turn their back on a fire and escape via the nearest exit without additional assistance from other occupants or firefighters. This is achieved by providing alternative escape routes where necessary, limiting travel distances, providing sufficient exit width and escape routes that, depending upon the use of the building, will have specified periods of fire resistance.

- 4.2.2 The proposed internal arrangement of the building is currently unknown and a 'direct distance' shall be used when assessing the travel distance requirements. Based on the current information provided it appears that these requirements are achieved. Table 2 provides the recommended travel distances for an A3 risk profile for both single and multi-direction.

Note: If a tenant fitout is proposed, the tenant or responsible person for the building should ensure that the travel distances with the proposed internal fitout strategy is in accordance with the 'actual' travel distance requirements of BS 9999.

- 4.2.3 The number and width of exits are dependent upon the number of people that are to be served, travel distance, and risk profile describing the area. Where spaces within the building are provided with a single means of escape, the occupancy should be limited to 60 persons. All such rooms will also be provided with exit doors that swing in the direction of escape. Otherwise, rooms with escape doors that swing opposite the direction of escape will be limited to 60 occupants (including final exits from the building).

- 4.2.4 Units 37, 38, 39 and 40 are provided with escape in a single direction with an inward facing door and therefore have an exit capacity of 60 occupants, the occupant demand is 3 as per Table 3 and therefore there is sufficient capacity to accommodate the occupancy demand.

- 4.2.5 The warehouse (units 29 – 36) are provided with two escape routes, with the largest exit capacity being discounted i.e the 1700 mm door the remaining door has an exit capacity of 195 occupants. The occupancy demand is 40 occupants as per Table 3 and therefore there is sufficient exit capacity to accommodate the demand.

- 4.2.6 The maximum escape travel distance and its corresponding minimum exit width factors are shown in Table 2. These values are based on Tables 11 and 12 of BS 9999. For units 37 and 38, the worst-case scenario will be considered them as storage areas.

Table 2 – Recommended travel distance when minimum fire resistance protection is provided and escape width limitations

Use (risk profile)	Travel distances <sup>1</sup>			
	Single-direction (m)		Multi-direction (m)	
	Direct	Actual	Direct	Actual
Warehouse (A3)	12	18	30	45
Offices (A2)	15	22	37	55
Minimum exit width (mm/person)				
Use (risk profile)	Minimum fire safety measures			
Warehouse/Plant/Ancillary areas (e.g., stores) (A3)	4.6			
Offices (A2)	3.6			

#### General escape width recommendations / limitations:

##### Notes

1. Direct travel applies where the furniture layout is unknown, actual travel distance applies where it is known.
2. Exits that serve more than 60 people should open in the direction of escape.
3. Exits serving 60 people or less should achieve a minimum clear width of 800 mm.
4. Exits serving 60 people or less should achieve a clear effective width of 850 mm where unassisted wheelchair access is necessary, see Clause 16.6.1.b of BS 9999. Approved Document M [13] may require additional width.
5. The capacity of exits less than 1,050 mm in width will be calculated on an effective door width of 500 mm, as per Clause 16.6.1 of BS 9999.
6. Where double doors are provided, the width of one of the leaves will be not less than 800 mm.
7. For rooftop egress, the maximum travel distance in a single direction is 60 m which will not be exceeded.

- 4.2.7 The horizontal escape capacity provided has been summarised in Table 3. Where there are two or more exits, the largest exit has been discounted. Additionally, absolute minimum widths for escape are described in Table 4.

Table 3 – Horizontal capacity assessment

Unit	Minimum required door width (mm)	Door capacity (persons)	Total exit capacity (persons)	Expected occupancy (persons)
Unit 37	800	60	60	15
Unit 38	800	60	60	15
Unit 39	800	60	60	3
Unit 40	800	60	60	3
Warehouse (unit 29-36)	800	173	173	40
	800	173		

**Note 1** – The largest exit has been discounted.

**Note 2** – The door swing is in the direction of escape.

**Note 3** – There is only one storey exit, thus the maximum occupancy is 60 persons i.e Units 37-40.

**Note 4** – The storey exit via the automatic fire curtain shall be no less than 850 mm.

Table 4 – Absolute minimum widths for escape

Element	Minimum width for means of escape (mm)
Doors	800
Doors where unassisted wheelchair users are expected	850
Corridors	1,200

**Note 1** - Where corridors are not expected to be used by wheelchair users the width of the corridor may be reduced to 1,000 mm.

**Note 2** - Approved Document M and Approved Document K [14] may require additional width.

### 4.3 Escape beyond the final exits

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

- 4.3.2 All other exits from the building lead to sufficient open space exits, and therefore, do not require any additional fire resisting construction.

- 4.3.3 Designated assembly areas should be provided by the tenant as part of the fire risk assessment of the building. Occupants are to be encouraged to retreat to a safe distance from the building, away from the access routes that would be used by the fire and rescue service. This would be feasible at this site using the surrounding public pavements or parking areas.

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

### 4.4 Means of escape for disabled occupants

- 4.4.1 According to BS EN 81-70 [15], the car size should be at least Type 2 in order to be used for evacuation of persons with disabilities.

- 4.4.2 Suitable means of escape for disabled occupants should be provided by the tenant as part of their own fire risk assessment.

- 4.4.3 The procedures described in staff PEEPs should be practised during fire drills. A Generic Emergency Evacuation Plan (GEEP) will need to be written for members of the public who would need assistance to escape. Further information can be found in BS 8300 [16] and the DCLG Publication "Fire Safety Risk Assessment Supplementary Guide – Means of Escape for Disabled People" [17].

## 5 INTERNAL FIRE SPREAD

### 5.1 Internal linings

- 5.1.1 Wall and ceiling linings should achieve the surface spread of flame and fire classifications outlined in Table 5 (excerpt from Table 33 of BS 9999) at a minimum.
- 5.1.2 Thermoplastic materials, which do not comply with Table 5 (e.g., windows, roof-lights, lighting diffusers, etc.) should comply with the recommendations of Section 34 of BS 9999.

Table 5 – Internal lining requirements

Location	European Class (BS EN 13501-1:2007+A1)
Small rooms ≤30 m²	D-s3, d2
Other rooms	C-s3, d2
Circulation spaces	B-s3, d2

**Note:** Parts of the wall area in rooms may be of poorer performance than specified above, but not poorer than D-s3, d2. This variation is limited to a total area not exceeding one half of the room floor area, subject to a maximum of 60m² in non-residential rooms.

### 5.2 Structural fire resistance, compartmentation and fire-resisting separation

- 5.2.1 Minimum required structural fire resistance is noted in Table 6. The structure of the extension should be protected with a fire resistance period of 60 minutes, considering the height of the topmost occupied floor of the building is less than 5 m (single-storey building). The proposed work in the existing building does not constitute a material alteration/change of use and does not make the existing situation worse, there is no requirement to fire rate the existing structure.
- 5.2.2 However, in the interest of improving the overall fire safety of the building, it is recommended that the existing structural elements are fire rated using passive fire protection measures.
- 5.2.3 Compartment walls should be taken up to meet the underside of the floor slab, roof covering or deck, with fire-stopping where necessary at the wall and floor/roof junction to maintain the continuity of fire resistance. For more details, see Figure 30 of BS 9999.
- 5.2.4 The continuity of compartmentation should be maintained at the junctions of the fire-resisting elements and at the junctions of external walls with compartment walls and floors.
- 5.2.5 When tested in accordance with the relevant part of BS 476, BS EN 1363, BS EN 1364, BS EN 1365 or BS EN 1366, the relevant elements of the structure should have a fire resistance not less than the minimum values provided in Table 22 and 23 of BS 9999 and summarised in Table 6.
- 5.2.6 Units 37 and 38 are part of the warehouse compartment. In case they are used as office spaces, they will be ancillary to the main use. As these offices are not considered to be high fire risk areas, they do not need to be separated from the warehouse by fire resistance construction.

Table 6 – Fire resistance

Element	Minimum fire resistance <sup>Notes 1 &amp; 2</sup>	Method of exposure
Structural frame, beam, wall or column (incl. roof supporting structure)	R60	Exposed faces
External/Party wall (where required in Section 0) – less than 1 m from the relevant boundary	REI 60	Each side separately
External wall (where required in Section 0) – more than 1 m from the relevant boundary	RE60 I15	From inside the building
External wall – any part adjacent to an external escape route	RE30	From inside the building
Compartment wall	REI60	Each side separately
Cavity barriers/closers	E30 I15	Each side separately

**Note 1** - R = Load-bearing capacity, E = Integrity, I = Insulation.  
**Note 2** - Where an element of construction could be regarded as more than one of the line items, the most onerous applies.

- 5.2.7 Fire door assemblies will comply with:

- BS 476-22 [18] or BS EN 1634-2 [19] for fire resistance; and where applicable
- BS 476-31 [20] or BS EN 1634-3 [21] for smoke leakage.

- 5.2.8 Where hold open devices are to be provided for fire doors in the common corridor areas, these should be installed in accordance with BS EN 1155 [22] and Clause 32.1.6.2 in BS 9999. Any fire doors to be fitted with hold-open devices should release on any one of:

- Actuation of a locally positioned smoke detector head; or
- Manual operation or operation of a hand-operated switch fitted in a suitable position; or
- Failure of the electricity supplies.

### 5.3 Fire-stopping and penetrations through fire-resisting construction

- 5.3.1 Fire-stopping, must be provided to maintain the fire resistance period of fire-separating walls or floors at junctions with other construction, thereby preventing a fire from travelling around the junction and back into the neighbouring unit or space. See Table 6 for typical fire-stopping and penetration expectations.
- 5.3.2 All pipes, ductwork and services passing through fire-resisting barriers should be penetration-sealed with an appropriate system and / or fire damper which has been shown by test or assessment to maintain the period of the fire-resistance of the barrier.
- 5.3.3 Certain small-diameter pipes require only fire-stopping around the pipe, depending on the pipe material and the type of fire-resisting barrier penetrated. Further information is available in Table 31 of BS 9999. Table 7 is provided to assist in the interpretation of Table 31 of BS 9999.
- 5.3.4 Where ducts cross protected escape routes (e.g., common stairs, common corridors), dampers on fusible links are not sufficient. Either combined fire-and-smoke dampers activated upon smoke detection (ES type dampers) are provided, or the duct should be fire-resisting / enclosed within a fire-resisting enclosure.

Table 7 – Maximum diameter pipes

Situation	Pipe material and maximum internal diameter		
	Non-Combustible Material	Lead, Aluminium Alloy, uPVC, Fibre Cement	Any other material
Structure enclosing a protected shaft which is not a stairway or lift shaft	160 mm	110 mm	40 mm
Any other situation	160 mm	40 mm	40 mm

Any non-combustible material which, if exposed to a temperature of 800°C, will not soften or fracture to the extent that flame or hot gas will pass through the wall of the pipe.

### 5.4 Cavity barriers

- 5.4.1 Cavity barriers are provided in order to prevent the rapid spread of unseen fire or smoke in voids, and to prevent the spread of fire around compartmentation via voids.
- 5.4.2 All cavity barriers should have a fire resistance rating of at least 30 minutes for integrity I and 15 minutes for insulation (I). In general, cavity barriers should be at 20 m centres in cavities with exclusively European Class A or B linings. For other linings, the spacing between cavity barriers should be reduced to 10m.
- 5.4.3 Cavity barriers are to be installed in accordance with Section 33.1 of BS 9999, apart from within any twin-leaf masonry cavity walls which are constructed in accordance with Figure 36 of BS 9999.
- 5.4.4 As this building is existing it is expected that any external wall works should make the arrangement no worse than existing.



6.1 External surfaces and wall materials

- 6.1.1 In order to prevent the spread of flame across the surface of a building at a speed that may pose a threat to life, BS 9999 recommends that materials forming the external cladding to buildings be in accordance with Figure 35.5 and Figure 47, or meet the performance criteria given in BR 135 [23] for cladding systems using test data from BS 8414-1 [24] or BS 8414-2 [25].
- 6.1.2 Should the external wall not meet the performance criteria given in BR 135, the following will be applied in line with the guidance in BS 9999:
- i. Cavity barriers will be provided to limit the extent of cavities in accordance with Section 5.4.
  - ii. External walls should achieve Class B-s3, d2 or better surface spread of flame classification where they are:
    - protected to meet space separation requirements (see Section 0); or
    - within 1 m of the relevant boundary.
  - iii. external wall located more than 1 m of the relevant boundary do not require to achieve any performance requirements
- 6.1.3 External walls should be constructed such that they will not support fire spread at a speed that is likely to threaten people in or around the building.
- 6.1.4 External wall surfaces near other buildings should not be readily ignitable to avoid fire spread between buildings.

6.2 Roof coverings

- 6.2.1 The relevant test and classification standards for the external fire performance of roof systems are BS 476-3 [26] and BS EN 13501-5 [27].
- 6.2.2 Where green, brown or sedum roofs are provided, these should be specified based on recommendations provided in the GRO's green roof design code [28] and the DCLG guidance [29].
- 6.2.3 Roof coverings refer to a construction that can consist of one or more layers of material but does not refer to the roof structure as a whole. The properties of a roof covering are only of relevance:
- i. if the roof is close enough to a boundary to be at risk of ignition from a fire in other buildings; or
  - ii. in the vicinity of a compartment wall to avoid fire spread between compartments via a roof covering.
- 6.2.4 In order to reduce the risk of fire penetrating the roof near a compartment wall, a zone of roof 1.5 m wide should have a covering of European class Broof(t4) on a substrate or deck of Class A2 materials to both sides above compartment walls, as detailed in Figure 30 of BS 9999.
- 6.2.5 Table 8 summarises the separation distances from the boundary according to the type of roof covering as shown in Table 36 and Section 35.4 of BS 9999.

Table 8 – Limitations on roof coverings

Distance from relevant boundary	European Class <sup>1</sup>		
	B <sub>ROOF</sub> (t4)	C <sub>ROOF</sub> (t4)	D <sub>ROOF</sub> (t4)
Less than 6 m	✓	✗	✗
At least 6 m	✓	✓	✓ 2 & 3
At least 12 m	✓	✓	✓ 2
At least 20 m	✓	✓	✓

**Note 1** – This class is in accordance with Commission Decision 2055/823/EC amending Decision 2001/671/EC in accordance with BS EN 13501-5 [27]. Test 4 within BS EN 13501-5 is to be used in determining the classification.

**Note 2** – Not acceptable on any of the following buildings:

- occupancy characteristic A; and
- buildings with a volume of more than 1 500 m<sup>3</sup>.

**Note 3** – Acceptable on buildings not listed in footnote B, if part of the roof is no more than 3 m<sup>2</sup> in area and is at least 1.5 m from any similar part, with the roof between the parts covered with a Class A2 material.

6.3 Space separation and unprotected areas of the external walls

- 6.3.1 Should a fire occur in a building, heat will radiate through non-fire resisting openings in the external walls. This heat can be enough to set fire to nearby buildings. In order to reduce the likelihood of this occurring, the Building Regulations place limits on the area of the external elevation with no fire resistance. This area is known as the unprotected area. The distance of the building from other buildings, the use of the building and the compartment size are all factors in determining the acceptable degree of unprotected area for each elevation.
- 6.3.2 External fire spread calculation has been performed on the external walls of the building. Using the calculation process outlined in BR 187 [30] an analysis of the distance between the building and the adjacent roads or notional boundaries has been undertaken. It should be noted the radiation intensity value of 168 kW/m<sup>2</sup> recommended by BR 187 is utilised.
- 6.3.3 Based on the outline calculations carried out, East and South façades should be 100% protected (except for units 39-41), along with West elevation of the main warehouse compartment. These facades are effectively compartment walls (located less than 1m away from the relevant boundaries). These walls should achieve a rating of 60 minutes (from either side) for load bearing (where required), integrity and insulation.
- 6.3.4 No works are proposed in the rear part of Units 39-40 and the conditions are not made worse. Therefore, it is considered reasonable that these facades remain as existing.
- 6.3.5 In unit 41, it is proposed to remove the timber frame window and infill the opening with brickwork to match existing construction of wall. Therefore, it is also considered to be reasonable that the unaltered façade remains as existing.
- 6.3.6 The maximum allowable unprotected areas for the West façade of units 37- 41 will depend on compartment size and location, as detailed in Table 9 and Figure 2. For units 37 – 38 (increase in compartment size) and 39-41 (removal of the external wall), the proposed works make the condition of the external works worse. Therefore, the percentage of allowable unprotected area should be met. The Northern façade of the warehouse (Elevation F) has an allowable unprotected area of 100%.
- 6.3.7 It appears that the E elevation is of masonry construction with no openings. Since this is existing with no works being undertaken it is considered reasonable to remain unchanged.

Table 9 – Space separation and unprotected areas of the external walls

Elevation	Distance to relevant boundary	Width	Height	Allowable unprotected area (%)
A	0.0	100.00	5.50	0%
B	6.60	100.00	5.50	37%
C	6.50	9.00	5.50	89%
D	6.50	8.90	5.50	90%

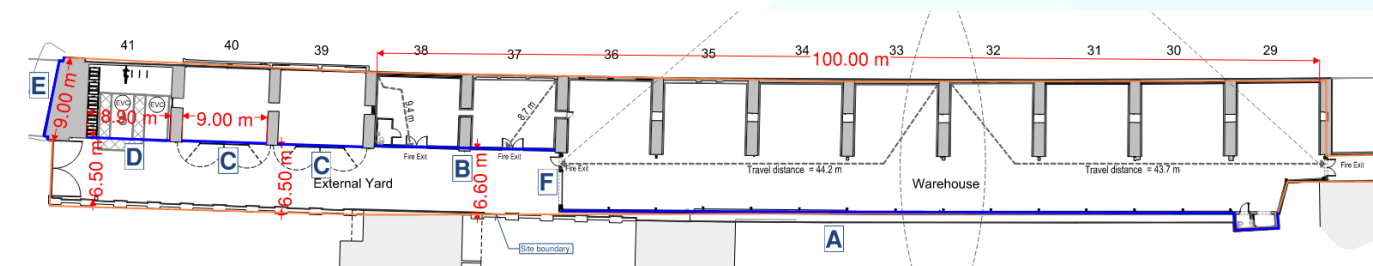


Figure 2 – Elevations and distance to relevant boundaries



## 7 ACCESS AND FIREFIGHTING

### 7.1 Means of notifying the fire and rescue service

- 7.1.1 In the event of a fire, initial firefighting operations may be attempted by a suitable trained member of staff. The fire and rescue service (FRS) will be notified by an authorised member of staff and the FRS should be met by a member of staff when they arrive.
- 7.1.2 The local fire alarm panel should be located within a suitable location near an entry point into the building.

### 7.2 Vehicle access to and around the site

- 7.2.1 Fire and rescue service access to and around the site is understood to be via Castle Road. The route to the building should be appropriate for the appliance access requirements, including sufficient turning facilities, typical values noted in Table 10. It must be ensured that a fire service vehicle may enter this location and it is anticipated that this will be by the establishment unlocking secure doors, as necessary, to allow entry.
- 7.2.2 Fire and rescue service access should be sized in accordance with the recommendations given in London Fire Brigade document GN29 [31] as summarised in Table 10.

Table 10 – Typical FRS vehicle access route specification

Element	Minimum recommended
Width between kerbs	3.7 m
Width between gateways	3.1 m
Turning circle between kerbs	16.8 m
Turning circle between walls	19.2 m
Clearance height	3.7 m
Carrying capacity	14 tonnes

### 7.3 Access into and through the building

- 7.3.1 Fire-fighting access into the buildings will be provided through the main entrance doors into the building located on 29-41 Castle Mews, Castle Road, London, NW1 8SY. This provides direct access to the front gate leading to units 41, and 40. This front gate should remain held open when the site is under occupational hours. The gates will be locked shut outside of operational hours and an override should be provided from the inside in the event of a fire within those hours. The access from Clarence Way leads to units 29 and 30. This can be seen in Figure 3.
- 7.3.2 The existing fire services access route is non-compliant with the requirements of BS9999 as vehicle access for a pumping appliance should achieve 15% of the building perimeter and should not have a dead-end condition greater than 20 m, both of the above items are non-compliant.
- 7.3.3 It should be noted that to comply with the Building Regulations, no works are required to be undertaken for fire service access and use in accordance with Building Regulation 4(3). However, as the floor area of the warehouse has been increased, it is recommended that that supplementary hydrants at the site entrance gate (inlet) and at the entrance of the warehouse (outlet) be provided. These hydrants will not be connected to a public main, but rather will be 'dry' and used only when required by the FRS Team. It must be taken into account that a level of improvement in terms of fire safety is being provided to the building eg, improving the internal compartmentation and removing the first-floor area, greatly reducing the existing fire load. This is a fire service access and use matter and therefore will be subject to review from Building Control and the Fire and rescue services.

### 7.4 Firefighting facilities within the building

- 7.4.1 As per client information, there will be no discharge lighting installations in the building. All lighting will be LED type.

### 7.5 Water supplies

- 7.5.1 Water will be supplied for fire-fighting use via the public hydrant system. Hydrants will be provided in the vicinity of the building to support fire-fighting operations. It appears that existing hydrants are available within 90 m of the proposed site entrance. The location of the hydrant(s) can be seen in Figure 4. This location should be confirmed by the client.
- 7.5.2 A water supply capable of providing a minimum of 1,500 litres per minute at all times is recommended in accordance with BS 9990.

- 7.5.3 The existing public hydrants shown in Figure 4 is to be utilised. It is recommended that supplementary hydrants are installed as outlined in section 7.3.3. Water supplies will be designed and installed in accordance with BS 9990 [33].



Figure 3 – Fire-fighting access around and to the building



Figure 4- Location of Site Plans and Hydrant

### 8.1 Future development of the asset and the 'Golden thread' of information

- 8.1.1 The 'Golden Thread' refers to a concept where the fire safety information of a building is to be updated and maintained throughout the whole life cycle of the building. The fire safety information should be maintained and updated as the development evolves in line with the principles of the golden thread.
- 8.1.2 Under Regulation 38 of the Building Regulations, a fire safety strategy report should form part of the information handed over to the management company to enable them to be effective.
- 8.1.3 Those fire safety elements identified within the fire safety strategy report may only be modified following suitable review and approval under the Building Regulations by a building control body.
- 8.1.4 The Regulatory Reform (Fire Safety) Order 2005 (FSO) places a legal obligation on management. Under the Order, the responsible person must carry out a fire safety risk assessment and implement and maintain a fire management plan. In workplaces, the responsible person is the employer. Or anyone who has an extent of control over the premises. Some examples include a branch manager, building supervisor, facilities management company, etc.
- 8.1.5 Building management should develop fire safety plans, fire safety manuals, a management and evacuation plan, an emergency information pack for the fire and rescue service. The information should be kept up to date. Management of fire safety must be integrated with all other management systems.
- 8.1.6 Management systems should also include procedures for anticipating and taking into account, either on a permanent or a temporary basis, changes to the occupancy (e.g. number of occupants, the familiarity of occupants, etc) and /or fire growth characteristics(e.g., types of combustibles including fire growth rates, the quantity of combustibles, storage/use of combustibles including high risk items, etc.) of the building and its contents over the life cycle of the building.
- 8.1.7 Maintenance and testing are essential to ensure that the fire safety systems will operate correctly in the event of a fire. Good housekeeping will be encouraged to ensure that the effectiveness of the fire safety provisions is not adversely affected.



## 9 BIBLIOGRAPHY

- [1] BSI, "BS 9999:2017 Code of practice for fire safety in the design, management and use of buildings," British Standards Institution, London, 2017.
- [2] BSI, "BS 7974:2019 Application of fire safety engineering principles to the design of buildings. Code of practice," British Standards Institution, London, 2019.
- [3] BSI, "BS 5839-1:2017 Fire detection and fire alarm systems for buildings - Part 1: Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises," British Standards Institute, London, 2017.
- [4] BSI, "BS EN 54-11:2001+A1:2006 Fire detection and fire alarm systems - Part 11: Manual call points," British Standards Institute, 2006.
- [5] BSI, "BS EN 54-2:1997 + A1:2006. Fire detection and fire alarm systems. Control and indicating equipment.," British Standards Institution, London, 1997.
- [6] BSI, "BS EN 54-4:1998. Fire detection and fire alarm systems. Power supply equipment," British Standards Institution, London, 1998.
- [7] BSI, "BS 5266-1:2016 Emergency lighting. Code of practice for the emergency lighting of premises," British Standards Institution, London, 2016.
- [8] BSI, "BS EN 1838:1999 Lighting applications. Emergency lighting," British Standards Institution, London, 1999.
- [9] BSI, "BS EN 60598-2-22:1999 Luminaires - Part 2-22: Particular requirements - Luminaires for emergency lighting," British Standards Institution, London, 1999.
- [10] BSI, "BS ISO 3864-1:2011 Graphical Symbols - Safety colours and safety signs - Part 1: Design principles for safety signs and safety markings," British Standards Institution, London, 2011.
- [11] HSE, "Safety signs and signals. The Health and Safety (Safety Signs and Signals) Regulations 1996. Guidance on Regulations," The Stationary Office, Norwich, 2015.
- [12] BSI, "BS 8519:2020 Selection and installation of fire-resistant power and control cable systems for life safety and fire-fighting applications - Code of practice," British Standards Institution, London, 2020.
- [13] DCLG, "Approved Document M: Volume 2 - Buildings other than dwellings," NBS for the Department for Communities and Local Government, London, 2015.
- [14] DCLG, "Approved Document K: 2013 Protection from falling, collision and impact," NBS for the Department of Communities and Local Government, London, 2013.
- [15] BSI, "BS EN 81-70:2018 Safety rules for the construction and installation of lifts - Particular applications for passenger and goods passenger lift," BSI, London, 2018.
- [16] BSI, "BS 8300-2:2018 - Design of an accessible and inclusive built environment. Buildings - code of practice," BSI, London, 2018.
- [17] HM Government, Fire Safety Risk Assessment Supplementary Guide - Means of Escape for Disabled People, Norwich: TSO (The Stationery Office), 2007.
- [18] BSI, "BS 476-22:1987 Fire tests on building materials and structures. - Part 22: Methods for determination of the fire resistance of non-loadbearing elements of construction," British Standards Institution, London, 1987.
- [19] BSI, "BS EN 1634-2:2008 Fire resistance and smoke control tests for door, shutter and openable window assemblies and elements of building hardware. Fire resistance characterisation tests for elements of building hardware," British Standards Institution, London, 2008.
- [20] BSI, "BS 476-31-1:1983 Fire tests on building materials and structures. - Part 31: Methods for measuring smoke penetration through doorsets and shutter assemblies. Section 31.1 Method of measurement under ambient temperature conditions.," British Standards Institution, London, 1983.
- [21] BSI, "BS EN 1634-3:2004 Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware. - Part 3: Smoke control test for door and shutter assemblies," British Standards Institution, London, 2004.
- [22] BSI, "BS EN 1155:1997 Building hardware. Electrically powered hold-open devices for swing doors. Requirements and test methods," British Standards Institution, London, 1997.
- [23] BRE, "BR 135, Fire performance of external thermal insulation for walls of multistorey buildings," BRE Press, Bracknell, 2013.
- [24] BSI, "BS 8414-1:2015. Fire performance of external cladding systems. Test method for non-loadbearing external cladding systems applied to the masonry face of a building.," British Standards Institution, London, 2015.
- [25] BSI, "BS 8414-2:2005 Fire performance of external cladding systems. Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame.," British Standards Institution, London, 2005.
- [26] BSI, "BS 476-3:2004 Fire tests on building materials and structures. Classification and method of test for external fire exposure to roofs," British Standards Institution, London, 2004.
- [27] BSI, "BS EN 13501-5:2005 Fire Classification of construction products and building elements - Classification using test data from external fire exposure to roof tests," British Standards Institute, London, 2005.
- [28] GRO, "The GRO Green Roof Code: Green Roof Code of Best Practise for the UK 2021," Green Roof Organisation, London, 2021.
- [29] DCLG, "Fire Performance of Green Roofs and Walls," Department for Communities and Local Government, London, 2013.
- [30] BRE, "BR 187: 2014, External fire spread - Building separation and boundary distances," IHS BRE Press, Bracknell, 2014.
- [31] London Fire Brigade, "GN29: Fire Safety Guidance Note - Access for Fire Appliances," London Fire Brigade, London, 2007.
- [32] BSI, "BS 7671:2008+A3:2015. Requirements for electrical installations. IET Wiring Regulations. Seventeenth edition (+A3:2015)," British Standards Institution, London, 2008.
- [33] BSI, "BS 9990:2015 Non-automatic fire-fighting systems in buildings - Code of practice," British Standards Institution, London, 2015.
- [34] BSI, "BS EN 12101-1:2006 Smoke and heat control systems. - Part 1: Specification for smoke barriers," British Standards Institution, London, 2006.
- [35] BSI, "BS 7273-4:2015 + A1:2021 Code of practice for the operation of fire protection measures – part 4: Actuation of release mechanisms for doors," British Standards Institute, London, 2021.
- [36] BSI, "BE EN 13501-2:2016 Fire classification of construction products and building elements. Classification using data from fire resistances tests, excluding ventilation services," British Standards Institution, London, 2016.
- [37] BSI, "BS 8524-1:2013 Active fire curtain barrier assemblies - Part 1: Specification," British Standards Institution, London, 2013.
- [38] BSI, "BS 8524-2:2013 Active fire curtain barrier assemblies - Part 2: Code of practice for application , installation and maintenance," British Standards Institution, London, 2013.

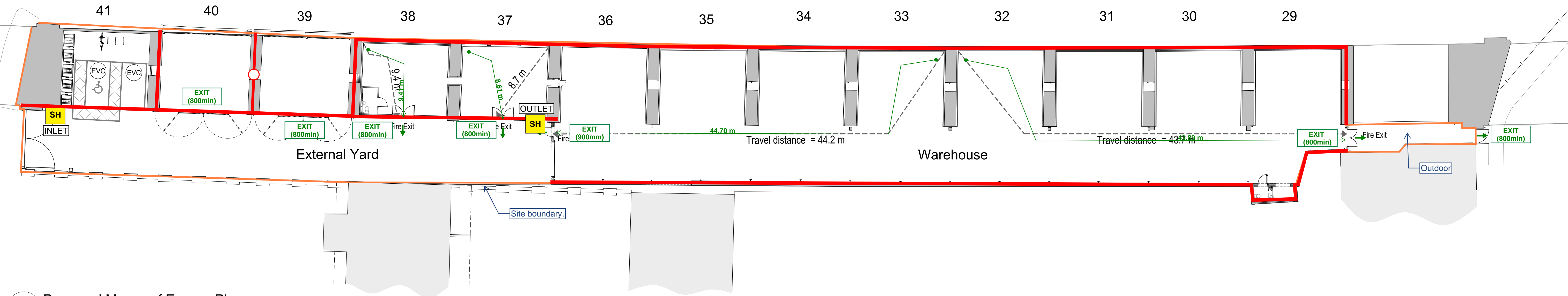


**NOTES:**  
The project consists of the refurbishment of 13 existing warehouse units. The existing warehouse units were single-storey (G) and two-storey (G+1) arches underneath an existing railway viaduct. It is proposed to remove the existing first floor from the warehouse such that the building is a single storey warehouse with a maximum height of 5.5 m and a cumulative ground area of approximately 2,100 m2.

The basis for compliance will be BS 9999.

Risk Profile is A3 as occupants are expected to be awake and familiar with their surroundings.

- Notes:
1. Copyright: The contents of this drawing may not be reproduced in whole or in part without the written consent of Robinson Kenning & Gallagher.
  2. All dimensions to be checked on site by Contractor.
  3. Where discrepancy occurs between specification and drawings then Robinson Kenning & Gallagher must be notified immediately.



01 Proposed Means of Escape Plan  
Scale 1 : 200



**Project:** 29-41 Castle Mews  
**Title:** Fire resistance and fire safety sketch  
**Revision:** 5  
**Scale:** as shown

**Drawn by:** RT  
**Checked by:** BA  
**Authorised by:** -  
**Date:** 31/01/2025

**Fire resistance of separating elements and doors:**

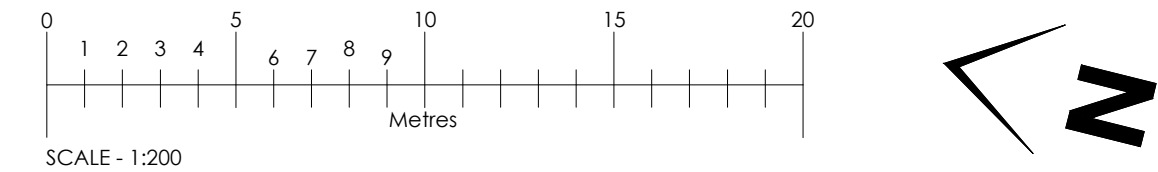
- 60FR
- Boundary Line
- FD60
- SH Supplementary hydrant

**Notes:**  
This drawing should be read in conjunction with associated report(s) and supporting detailed information.

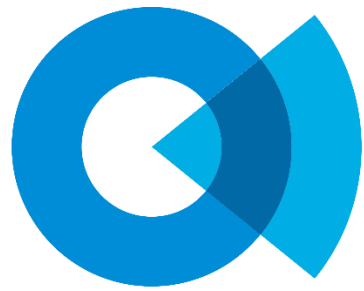
The fire resistance illustrated on this drawing are for separating or enclosing areas of the building. The performance of the load-bearing structure, external walls and floors should be in accordance with the building fire safety report.

Unless otherwise shown, fire resistance provisions and method of exposure should be in accordance with the fire strategy and associated references.

Unless otherwise shown, fire doors should be in accordance with the fire strategy and associated references







# SOCOTEC

## LONDON

SOCOTEC UK Limited  
2<sup>nd</sup> Floor  
Queens House  
Lincoln's Inn Fields  
London  
WC2A 3LJ

## BICESTER

SOCOTEC UK Limited  
St Edburghs Hall, Priory Road  
Bicester  
Oxfordshire  
OX26 6BL

## MANCHESTER

SOCOTEC UK Limited  
7th Floor, Suite C,  
Beckwith House,  
1-13 Wellington Road,  
North Stockport,  
Greater Manchester,  
SK4 1AF

## IRELAND

SOCOTEC Fire Engineering  
Unit 156 CoLab,ATU,  
Port Road,  
Letterkenny,  
County Donegal,  
F92 RH61

[firesafety@socotec.co.uk](mailto:firesafety@socotec.co.uk)