



FIRE SAFETY STRATEGY DOCUMENT

Building Conversion Project

Unit 1

New Street

Manchester

M40 8AW



Association of Fire Consultants



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Building Project, Unit 1, New Street, Manchester, M40 8AW

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Building Conversion Project Unit 1, New Street, Manchester, M40 8AW.

Fire Engineering Solution - Report and Recommendations

1. Introduction.

This Fire Safety Strategy Document is based on drawings submitted by architects P4BA. The main assumptions of this strategy document are:

1. The Fire Strategy and the consequent means of escape that is designed into the proposed building are based on the current guidance contained in the Building Regulations 2010, Approved Document B, 2019 edition, Volume 1, Dwellings (ADB). Where any deviation from ADB is made, reference to the relevant code/standard will be made in the text.
2. The building as proposed will be classified under Purpose Group 5, assembly and recreation.
3. The primary Evacuation Strategy for the building is 'simultaneous evacuation'.

2. Description and use of the Building.

This is a small industrial unit which is to be re-purposed as a Cultural Events Space. The building has two floors (ground and first) with access to the front of the building via open external staircase to first floor whilst ground floor has its own access / entrance door at the front of the building.

The proposed building will be re-purposed to contain the following:

1. Ground floor – Cold Room, Lounge Area, Green Room and Toilet Facilities with main access to the front of the building via a separate entrance and protected corridor. Access from first floor will be via protected staircase and corridor to the rear of the building.
2. First floor – Bar, Dance Floor area and DJ Booth. Main access will be by weather protected external staircase to the front of the building and also internally via staircase located at the rear of the building.

3. Statutory Requirements.

3.1 Building Regulations 2010.

The fire safety strategy and the consequent means of escape that is designed into the building are based on the current Building Regulations 2010, Approved Document B (ADB) 2019 edition, Volume 2, 'Buildings other than dwellings'. The building will

be used as a cultural events space for assembly and recreation and therefore classified under Purpose Group 5 as per ADB. It will therefore be necessary for it to meet the functional requirements of Schedule 1 of the Regulations relating to:

- i. B1 (means of warning and escape).
- ii. B2 (internal fire spread (linings)).
- iii. B3 (internal fire spread (structure)).
- iv. B4 (external fire spread).
- v. B5 (access and facilities for the fire and rescue service).

ADB is general in its approach and the recommendations presented in it provide guidance on how to satisfy the functional requirements of the Building Regulations. However, there is no obligation to adopt any particular solution contained in ADB and it recognises that the functional requirements can also be demonstrated to have been satisfied by an alternative 'fire engineered' approach not contained within ADB.

This 'fire-engineered' approach can be applied to the whole building design, encompassing all relevant requirements, or may be applied to a specific aspect of the building design whilst the rest follows the provisions of ADB.

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

This information, together with this Fire Strategy Document will facilitate the production of a Fire Risk Assessment, which is a requirement of the Regulatory Reform (Fire Safety) Order 2005. The fire safety information in this strategy may be used to supplement the information required to be given to the 'Responsible Person'.

As a minimum, it will be necessary for the occupier of the building to be given this Fire Strategy Document and all the 'as built' fire safety plans. Further information can be found in ADB.

3.2 The Regulatory Reform (Fire Safety) Order 2005 (RRFSO).

The RRFSO applies in England and Wales. It covers 'general fire precautions' and other fire safety duties which are needed to protect 'relevant persons' in case of fire in and around most 'premises'. The Order requires fire precautions to be put in place 'where necessary' and to the extent that it is reasonable and practicable in the circumstances of the case.

Responsibility for complying with the RRFSo rests with the 'Responsible Person'. In a workplace, this is the employer and in other circumstances any other person who may have control over any part of the premises, e.g., the manager or owner. In all other premises, the person or people in control of the premises will be responsible. If there is more than one 'Responsible Person' in any type of premises, all must take reasonable steps to work with each other.

The 'Responsible Person' has to carry out a Fire Risk Assessment which must focus on the safety from fire of all 'relevant persons'. It should pay particular attention to those at special risk, such as the disabled and those with special needs. It must include the consideration of any 'dangerous substance' likely to be on the premises. The Fire Risk Assessment is designed to help identify risks that can be removed or reduced and to decide the nature and extent of the general fire precautions that need to be taken to protect people against the fire risks that remain.

If five or more people are employed, or the premises are licensed or the subject of an Alterations Notice, the significant findings of the assessment must be recorded.

4. Fire Warning System and Means of Escape.

4.1 Fire Warning System.

The fire warning system that is proposed for this building will be to BS 5839 Part 1, Category L1 with specific variations for the activities including management systems in place to ensure efficient evacuation.

4.2 Evacuation Strategy.

The primary Evacuation Strategy for the building is 'simultaneous evacuation'.

4.3 Occupant Capacity.

The occupant capacity is based on floor space for different uses as set out in ADB. For the first floor, total area available is approximately 102m² so the maximum capacity at 0.5m² per person is 204 people at first floor level.

At ground floor level, the total available area in the events space is approximately 41m² giving a maximum capacity of 41 people at 1m² per person and for the Green Room at approximately 15m² gives a maximum of 15 people. These areas have a floor space area of 1m² per person, so the maximum capacity on the ground floor will be approximately 56 people.

The total amount of people in the building should not exceed 260 including staff.

4.4 Means of Escape.

The means of escape is designed to meet the standards set out in ADB and the Evacuation Strategy. All travel distances are within the acceptable limits i.e., 18m with escape in one direction and 45m with escape in more than one direction.

The means of escape from the first floor provides for 2 storey exits. The first is via the main entrance and external staircase to the front of the building. The staircase has a lobbied approach with a final exit door onto the staircase and approached via an internal FD30s door which give access into the main first floor space. Both doors should be a minimum of 1050mm exit width.

The second exit is to the rear of the floor adjacent to the DJ Booth and is accessed via an FD30s self-closing door, minimum exit width 1050mm. This exit leads into a protected staircase enclosure giving 30 minutes fire resistance which leads down to the ground floor and through a protected corridor to a final exit at the front of the building. The width of the protected corridor is (1400mm) and final exit is calculated on merging flow from the first floor plus occupants from the rooms on the ground floor.

The width of the staircase will be 1100mm with handrails which will not protrude more than 100mm each side.

The ground floor corridor doorset adjacent the Green Room will be FD30s, 1050mm width and fitted with self-closing devices. Both doors into the Green Room/Lounge area ground floor will be FD30s, 1050mm minimum width, fitted with self-closing devices and allowed to open inwards.

All door furniture will meet the correct fire safety standards. All fire doors will open in the direction of escape except for the doors to the Green Room and Lounge Area which can open inwards as the rooms accommodate less than 60 people. Any fire doors required to be held open should be fitted with hard wired electro-magnetic retaining devices which are linked to the fire warning and detection system and close automatically on the actuation of that system.

4.5 Provision of Refuges

Two refuge areas will be provided at first floor level, one within the rear staircase enclosure and the second in a protected lobby adjacent the front staircase and access lift. These areas will have minimum dimensions of 1400mm x 900mm. Emergency Voice Communication (EVC) systems may not be appropriate for the venue and a formal Emergency Plan supported by a robust management policy with enhanced staff training might be more acceptable given the purpose of the building.

The access platform lift is not an evacuation lift and will be signed 'Do not use in case of fire' or similar.

4.6 Final Exits.

There are two final exits. The first is at first floor level with the final exit door leading onto the external staircase which discharges at ground floor level into the courtyard and beyond to the Assembly Point in New Street.

The second final exit discharges direct from the ground floor into the courtyard and beyond to the Assembly Point. Final exit doors will open in the direction of escape and should be available at all times that people are in the building.

5. Internal Fire Spread (Linings).

To inhibit the spread of fire via the material linings within the building, it is proposed to follow the guidance taken from ADB for classification of linings. This being:

Location	Classification
Small rooms in residential accommodation not exceeding 4m ² Garages (as part of a dwellinghouse) of maximum internal floor area of 40m ²	D-s3, d2
Other rooms (including garages)	C-s3, d2
Circulation spaces within dwellings	C-s3, d2
Other circulation spaces, including the common areas of flats/apartments	B-s3, d2
<i>Note: wallcoverings conforming to BS EN 15102 that achieve class C-s3,d2 which are bonded to A2-s3,d2 substrate are also acceptable.</i>	

6. Internal Fire Spread (Structure).

6.1 Loadbearing Elements of Structure.

The building has the topmost storey is 3.3m above ground level, the elements of structure will have a minimum period of fire resistance of 60 minutes, when tested in accordance with the relevant parts of BS 476 (ADB Table B3 and B4).

6.2 Compartmentation.

All floors within the building are compartment floors designed to achieve equivalent fire resistance to the elements of structure within the building, i.e., 60 minutes.

The protected internal staircase will provide 30 minutes fire resistance and will be accessed by FD30S self-closing doors.

The external staircase will be protected with all openings adjacent and which are within 1.8 metres horizontally and 9 metres vertically being 30 minutes fire resisting and self-closing and, in the case of windows, fire resisting and in fixed shut frames.

At junctions between compartment walls, compartment floors and external walls, the fire resistance will be maintained with fire stopping and cavity barriers as necessary, and in accordance with ADB (Section 8 Paras.8.2 to 8.5).

6.3 Concealed Spaces, Cavities, Fire Stopping and Protection of Openings.

Concealed spaces and cavities in the building will be provided with adequate interruption of any cavities which could form a pathway for fire around a barrier. Any extensive cavities will be sub divided, and edges of openings will be closed off.

For the compartmentation to be effective, there will be continuity at the junctions of the fire-resisting elements enclosing a compartment, and any openings from one compartment to another will be adequately fire stopped.

Where appropriate, suitable provisions will be made to prevent the unseen spread of fire through cavities or concealed spaces.

Unless located in protected shafts, pipes passing through fire separating elements should be either:

- i. Provided with a proprietary seal or sealing system.
- ii. Pipes with restricted diameter, use of fire stopping around the pipe (see ADB Table 9.1 for maximum nominal internal diameters.
- iii. Use of a high melting point metal sleeve.

6.4 Ducts.

Where ventilation ducts / flues etc. pass through fire separating elements, the elements fire resistance will be maintained by any one or a combination of the following:

- i. Method 1 - Thermally activated fire dampers.
- ii. Method 2 - Provision of fire resisting enclosures.
- iii. Method 3 - Fire resisting ductwork.
- iv. Method 4 - Automatically operated fire and smoke dampers activated by smoke detectors.

Only methods 2 and 3 should be used for kitchen extract systems.

6.5 Flues.

Any flue and similar heating ducting will be enclosed with 60-minute fire resistant materials or half the fire resistance of the compartment floor or wall it passes through or is built into.

6.6 Fire Stopping.

All fire stopping mentioned within this Fire Strategy document will be carried out using proprietary materials and by a certified/accredited installer.

7. External Fire Spread.

The external wall system will satisfy ADB with a reaction to fire performance of the external wall surface of A2-s1,d0 or better. Any other materials used in the external wall construction should be class A2-s3,d2 or better. (See table below for full European classifications).

Table of European Fire Performance Classifications

Definition	European Classification (BS EN 13501 – 1)		
Non- combustible materials	A1		
	A2-s1,d0	A2-s1,d1	A2-s1,d2
	A2-s2,d0	A2-s2,d1	A2-s2,d2
	A2-s3,d0	A2-s3,d1	A2-s3,d2
Combustible materials – very limited contribution to fire	B-s1,d0	B-,s1,d1	B-s1,d2
	B-s2,d0	B-,s2,d1	B-s2,d2
	B-s3,d0	B-,s3,d1	B-s3,d2
Combustible materials – limited contribution to fire	C-s1,d0	C-s1,d1	C-s1,d2
	C-s2,d0	C-s2,d1	C-s2,d2
	C-s3,d0	C-s3,d1	C-s3,d2
Combustible materials – medium contribution to fire	D-s1,d0	D-s1,d1	D-s1,d2
	D-s2,d0	D-s2,d1	D-s2,d2
	D-s3,d0	D-s3,d1	D-s3,d2
Combustible materials – high contribution to fire	E	E,d2	
	F		
Combustible materials – easily flammable			

8. Fire Service Access.

This is an existing building and fire service access and provision of hydrants is already established.

9. Other Provisions.

9.1 Emergency Escape Lighting.

Escape lighting shall be provided to all common escape routes, in accordance with BS5266: Part 1. Escape lighting shall also be provided in the following accommodation:

- i. Windowless toilet accommodation, with a floor area not more than 8m².
- ii. All toilet accommodation with a floor area over 8m².
- iii. Electricity and generator rooms.
- iv. Switch room/battery rooms for emergency lighting system.
- v. Emergency control room.

9.2 Emergency Signage.

Each escape route, doorway or other exit points which are part of the means of escape, should be marked distinctively with emergency exit signs. Final exits will be distinctively and conspicuously marked with emergency exit signage conforming to BS 5499: Part 4.

9.3 Firefighting Equipment.

First aid fire-fighting equipment appropriate to the risk will be provided in risk rooms/risk areas only. All such equipment will be provided and installed in accordance with BS 5306: Part 3 and Part 8.

10. Further Considerations in Line with the Building Regulations 2010 and the Regulatory Reform (Fire Safety) Order 2005.

1. Regulation 38 of the Building Regulations requires that, where building work involves the erection or extension of a relevant building, or a relevant change of use of a building, fire safety information shall be given to the "Responsible Person" at the completion of the project or when the building or extension is finally occupied. ADB Section R38 Para. 17.1 to 17.4 refers.
2. A management Fire Safety Policy and Procedures document will be written for the building.

3. Once occupied, a full suitable and sufficient Fire Risk Assessment will be carried out at the earliest opportunity in conformity with the Regulatory Reform (Fire Safety) Order 2005. The Fire Risk Assessment should take into account the Fire Strategy for the building and associated information from the recommendations made in this report on a risk-based approach and also from 1 and 2 above.
4. An Emergency Plan and Evacuation Strategy will be written for the building. This will include training and instructions to staff on what to do in case of fire.

A handwritten signature in blue ink, appearing to read "Dr Robert Docherty".

Dr Robert Docherty QFSM, PhD, CEng, FIFSM (Life), FIFireE, MEI.
Fire Engineering and Fire Safety Consultant
Flamerisk Safety Solutions Ltd.
1st July 2021

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