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Fire Strategy
Dantzic Street
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Quality Assurance

Revision	Description	Date	Produced by	Reviewed by
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This report has been produced from the plans specified in the reference drawing table. Should the design change from the drawings specified within this report, then a follow-up analysis must be undertaken prior to any changes taking place. The report should then be updated to reflect the changes in the design.



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➤ Executive Summary

SPL Fire Engineering has been commissioned to develop a fire engineering strategy for a commercial unit that will be re-purposed as a place of assembly.

Essential fire protection features

The following section summarises the key elements of fire safety provisions that are to be provided within the project build. The table is broken down into features affecting active and passive measures, and construction.

The table is a summary of the key elements and therefore, should not be read in isolation. The full report should be read before implementation of the strategy.

	Fire Safety Requirements	Clarification
Construction	Occupancy	Place of Assembly
	Fire-fighting shaft serving the building	No requirement for firefighting shaft
	Fire Service access route	Main entrance is located off Dantzig Street. There is a large courtyard to the front.
	Corridors	All corridors are sterile areas and the corridor between the two premises that will be used for means of escape will be external to the main building.
	Compartmentation	Not required
Active and Passive Measures	Fire detection and fire alarm for the building	BS5839 Part 1 (M)
	Emergency Lighting	In accordance with BS5266: Part 1 2016 – Code of practice for the emergency lighting of premises.
	Escape Signage	In accordance with BS 5499: Part 4 2013 – Code of practice for escape route signage.
	Ventilation of stair	NA
	Ventilation of lobby	NA
	Compartmentation - Stairs	NA
	Compartmentation - Walls	NA
	Compartmentation - Floors	NA
	Openings in compartment walls / floors	Should be in suitably fire stopped in accordance with compartmentation section, protection of openings and fire stopping.
	Cavity barriers	NA

Occupant response in the event of an incident

On activation of the BS5839 part 1 fire alarm system, the music will cease and all persons will evacuate.

Fire and Rescue Service response

Fire Service arrival in the event of an incident shall be on Dantzig Street where the main entrance to the property is situated. The fire service gain access from this point and parking of the appliance is within a short distance of the front door. Adequate water supplies for firefighting are provided by hydrants situated on Dantzig and the surrounding streets.

Conclusion

With the application of the passive and active fire safety measures in line with Approved Document B to be implemented within this project, it is concluded the design of the commercial unit satisfies the functional requirements of Part B of the Building Regulations 2010.

➤ Introduction

General

SPL Fire Engineering have been appointed to provide a Fire Engineering Strategy for the client. Initial observations have been made to the client, architect and the project team for comment / discussion prior to the completed Fire Engineering Strategy being produced.

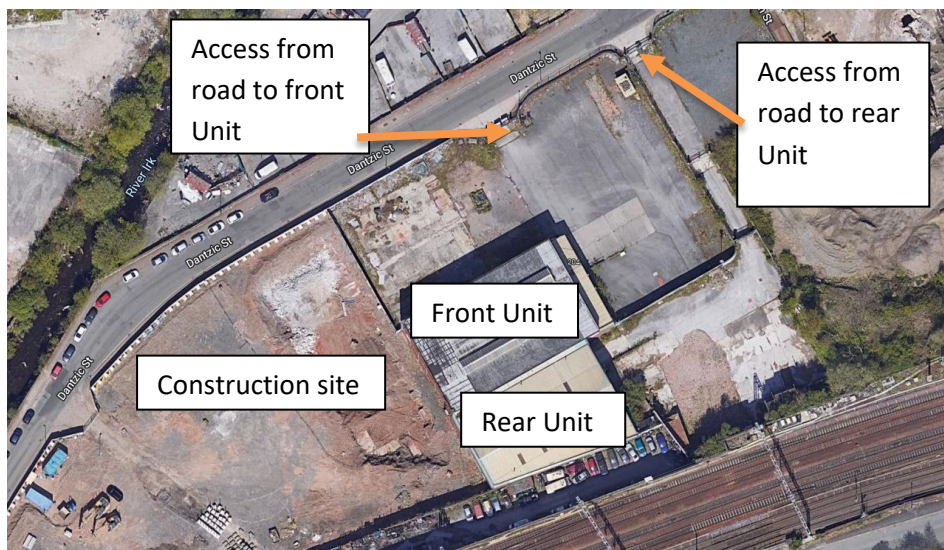
Whilst the design of this building will be compliant with current guidance, a fire engineering approach is permitted under Approved Document B, as stated under paragraph 0.30

'Fire safety engineering can provide an alternative approach to fire safety. It may be the only practical way to achieve a satisfactory standard of fire safety in some large and complex building and in buildings containing different uses e.g., airport terminals. Fire safety engineering may also be suitable for solving a problem with an aspect of the building design which otherwise follows the provisions in this document'.

The Fire Strategy demonstrates a means of compliance with the requirements of Approved Document B (ADB)

External Site Description

The site is accessed via Dantzic Street to the front. Land on the left-hand side of the picture is a construction site and to the rear is Tebbutt Street which is a private road. Fire-fighting hydrants are positioned within 90m of the building. Main and only access to the building is via Dantzic Street



Note – The rear unit does not form part of this strategy.



➤ Legislation & General Principles

“The Approved Documents are intended to provide **guidance** for some of the more common building designs. However, there may well be alternative ways of achieving compliance with the requirements. Thus, there is no obligation to adopt any particular solution contained in an Approved Document if you prefer to meet the relevant requirement in some other way”. The fire strategy will utilise both Approved Document B (ADB) to ensure equivalence.

Building Regulations

The building will be subjected to the requirements of the Building Regulations 2010. It will be necessary, therefore, for it to meet the requirements of Schedule 1 (or an equivalent standard) of the regulations relating to:

The functional requirements required for B1 – B5 are provided below

Building Regulations	Functional Requirements
B1 Means of warning and escape	The building shall be designed and constructed so that there are appropriate provisions for the early warning of fire, and appropriate means of escape in case of fire from the building to a place of safety outside the building capable of being safely and effectively used at all material times
B2 Internal fire spread (linings)	To inhibit the spread of fire within the building the internal linings shall adequately resist the spread of flame over their surfaces; and have, if ignited, either a rate of heat release or a rate of fire growth, which is reasonable in the circumstances. In this section, “internal linings” means the material or products used in any partition, wall ceiling or other internal structure.
B3 Internal fire spread (structure)	The building shall be designed and constructed so that, in the event of fire, its stability will be maintained for a reasonable period. Where reasonably necessary to inhibit the spread of fire within the building, measures shall be taken, to an extent appropriate to the size and intended use of the building, comprising either or both of the following: (a) sub-division of the building with fire resisting construction, (b) installation of suitable automatic fire detection systems. The building shall be designed and constructed so that unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited.
B4 External fire spread	The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building. The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regards to the use and position of the building.
B5 Access and facilities for the fire service	The building shall be designed and constructed so as to provide reasonable facilities to assist fire fighters in the protection of life. Reasonable provision shall be made within the site of the building to enable fire appliances to gain access to the building.

Table 1 - The functional requirements required for B1 – B5

Construction, Design and Management Regulations (CDM Regs)

Projects undertaken within Great Britain and Northern Ireland are subject to the requirements of the Construction (Design and Management) Regulations 2015 (CDM Regs). The object of the CDM Regs is to reduce risk as low as reasonably practicable concerning Health and Safety during construction and maintenance of construction sites and occupied buildings.

This report defines the strategy for meeting the functional and performance requirements for fire safety in the finished building. It is primarily intended to form part of the submission for Building Regulation Part B approval. Where any conclusions or recommendations have been arrived at which specify particular materials, products or forms of construction these will have been assessed, in accordance with CDM Regulations 9 (duties for designers).

In addition, this fire safety strategy plays an important role in providing appropriate fire safety measures for people in and around the building in the event of fire. Where aspects of the strategy involve significant residual risks or health and safety critical assumptions when the building is in use, appropriate information will be made available to the CDM Coordinator (for example, this might include a tailored management regime, or controls on certain aspects of the building).

Report limitations

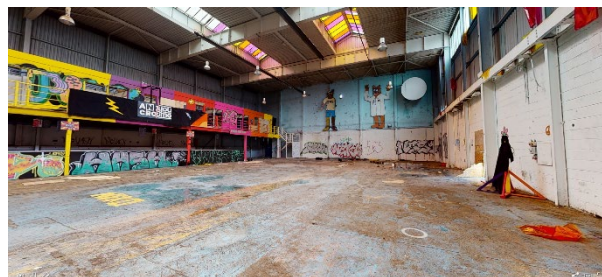
Within this report are illustrations and drawings that are suggestive only and are envisioned only to describe the notions and principles of the building fire strategy. Property protection and business continuity are not covered within this report; the fire strategy addresses the life safety elements of Building Regulations.

➤ Building Summary

Building Description

The property covered in this strategy is a disused commercial unit. The client has leased the unit with a view to turning it into a place of assembly.

The unit is of steel frame structure, concrete floors and the walls are a mix of block, brick and metal / composite panels. The roof is pitched, with glazed units set amongst composite panels.



The unit has ancillary rooms and a mezzanine that runs the full length of the premises.

➤ Purpose Groups

Title	Group	Purpose for which the building or compartment of a building is intended to be used
Place of Assembly	5	Venue for music, celebrations, and a fan zone for the world cup.

Table 2 - Purpose groups

➤ Means of Escape

Evacuation Principle

The general building evacuation philosophy for the property is based on the concept of simultaneous evacuation policy whereby the occupiers of the premises evacuate on activation of the BS 5839-part 1 fire detection system.

If a fire was to occur or the fire alarm is activated,

- 1) The music will cease and persons will be directed to their nearest available exit.
- 2) The travel distance from any part of the premises to a final exit is within agreed guidance levels.



- 3) Persons on the mezzanine can reach a final exit door without having to enter the ground floor.

Fire Detection and Alarm

A BS 5839-1 (M) specification will cover the premises: **Fire detection and fire alarm systems for buildings** – Code of practice for the design, installation, commissioning and maintenance of fire alarm and fire detection systems in non-domestic premises.

The fire alarm and detection system will comprise of:

- manual break glass call points located in non-public areas (behind the bars).
- Sounders located throughout the premises.
- Visual Alert Displays (strobes) located throughout the premises and within the area where music is being played (stage / DJ area).

Should the fire alarm activate, visual and audio notification will be seen and heard throughout the premises. Any persons who are playing music are informed to cease immediately so that the evacuation can commence.

False alarms cause disruption to the normal operation of business and create a drain on fire and rescue service resources. False alarms can even seriously prejudice the safety of occupants, who might not react correctly when the system responds to a real fire if they have recently experienced a number of false alarms. The manual break glass call points are being installed in non-public areas to prevent unwanted fire alarm activations.

Responsibility for limitation of false alarms rests with every party involved in the specification, design, installation, commissioning, management at operational level and maintenance of the fire detection and fire alarm system. The major part of this responsibility rests with the designer, but it is important that enforcing authorities and insurers have a good knowledge of the guidance contained in this section, so that requirements for forms of automatic fire detection, which, realistically, are unsuitable for the conditions in the building, are not imposed (BS5839-P1:2017).

Emergency Lighting

Emergency lighting will be provided throughout the building in accordance with BS 5266-1:2016. Emergency lighting – Part 1: Code of practice for the emergency lighting of premises.

Emergency lighting will be provided in escape routes, open areas, high-risk areas and strategic points of importance including:

- Near each exit door intended to be used in an emergency
- Near to stairs so that each flight of stairs receives direct light
- Near change in levels
- Mandatory emergency exit and safety signs
- At each change of direction
- At each intersection of corridors
- Near to each final exit and outside the building to a place of safety
- near each piece of fire-fighting equipment and call points
- Disabled toilets



- All facilities exceeding 8m²

“Near” is normally considered to be within 2m measured horizontally

Emergency Escape Signage



All exits and exit routes will be clearly marked with appropriate escape signs so that the occupants can easily determine their most direct route to a place of safety in the event of an emergency.

Fire escape signs are to be provided to guide occupants from any point in a building, via a place of relative safety (the escape route) to the place of ultimate safety (outside the building). Exit and directional signage should be provided in accordance with the requirements of BS 5499: Part 4 and conform to BB EN ISO 7010.

Signage is provided to identify the available escape route / routes from each location within the building. To achieve this, the following principles have been adopted.

- Escape routes or doorways leading to a means of escape should be visible from any place within a room.
- If it is not possible to see the direct means of escape, then intermediate / additional signage to be considered.
- All changes of direction in corridors, stairways and open spaces forming part of the means of escape will be marked with intermediate signs.
- Signs are not to be fixed or sited where they could be obscured by open doors.

Escape route signs are to be sited conspicuously within the normal field of vision. The following principles, which will assist the evacuating occupants to predict the location of successive signs, should be applied:

- Signs above doors or open spaces should be mounted between 2m and 2.5m from floor level, measured to the base of the sign and be sited as close to the centre line of the escape route as practicable.
- Signs sited on walls should be mounted between 1.7m and 2m from floor level to the base of the sign.

Signs should be sited at the same height throughout the escape route, so far as is reasonably practicable.



Occupancy level

Area	Maximum occupancy
Front premises	1370 people, made up of 1310 on the ground floor and 60 on the mezzanine.

Table 3 – Occupancy levels

Note – The occupancy is restricted by the available exit widths (after the largest is discounted and not by the floor space factor of the premises. The mezzanine is restricted to 60 persons due to there being a single means of escape as the alternative staircase is not within 3m of a final exit door.

Horizontal Escape

ADB Limitations on travel distances			
Purpose Group	Use of premises or part of premises	Travel in one direction	Travel in more than one direction
Place of assembly	Events and celebrations	18m	45m

Table 4 - ADB Limitations on travel distances

The travel distances for this project are in line with the prescriptive recommendations listed above.

Note – A section of mezzanine will be isolated from the public as this is beyond the 18m threshold. The isolated section can be utilised for storage etc. and staff can use the alternative staircase at the end of the mezzanine to gain access without entering the public area.

Exit widths

The widths of escape routes and exits have been calculated using the guidance from Table 2.3 of ADB.

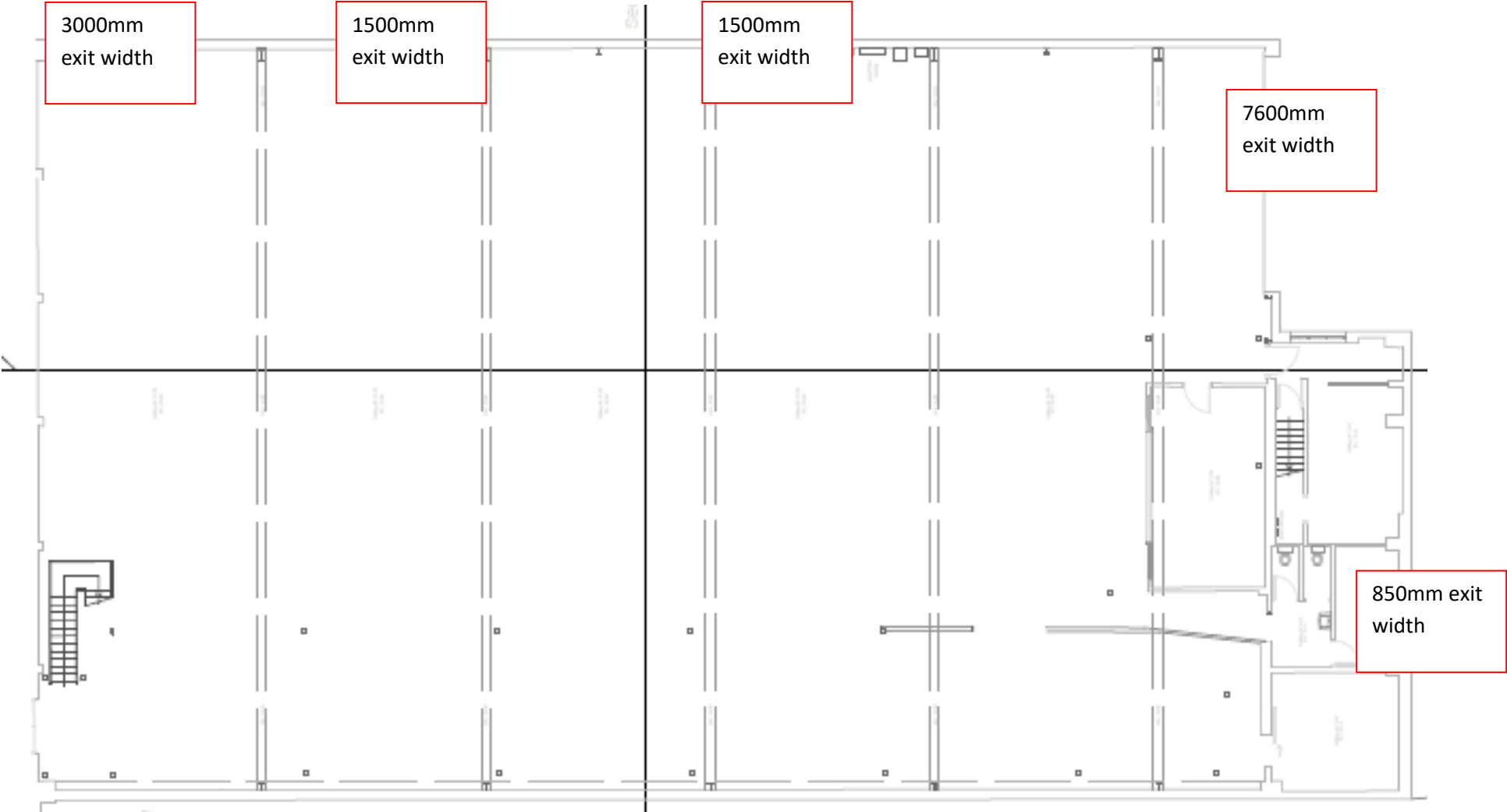
Table 2.3 Widths of escape routes and exits	
Maximum number of persons	Minimum width in mm
60	750
110	850
220	1050
More than 220	5mm per person

Table 5 - Widths of escape routes and exits

Area	Occupancy	Number of exits provided	Exit capacity
Ground	1310	1 x 3000m exit	600
		2 x 1500 exits	600
		1 x 850mm exit	110
		Note – The 7.6m exit where the roller shutters are located has been discounted as this is the largest exit.	Total 1310
First	60	1 x 750 (min)	60

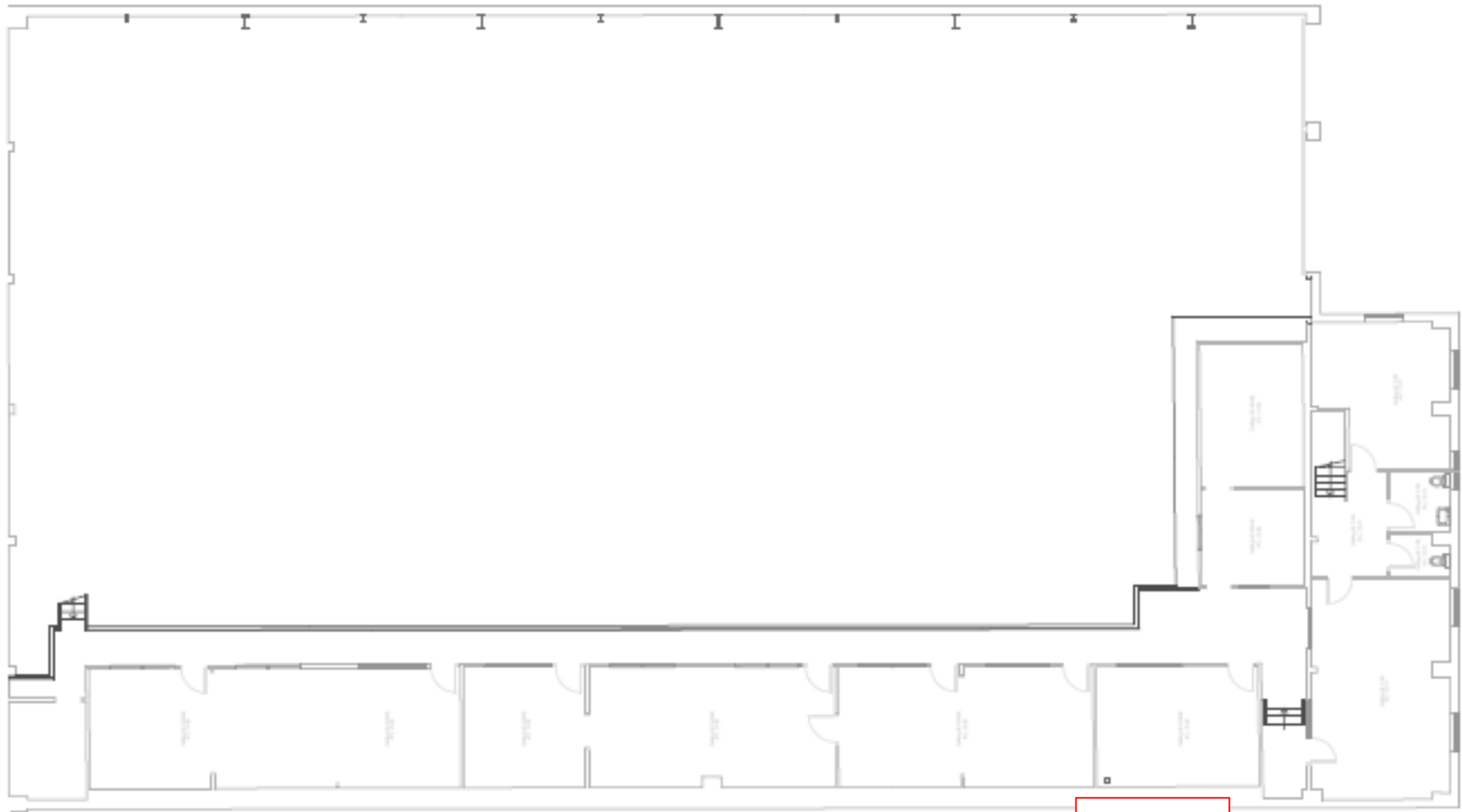
Table 6 - Exit Capacities

Ground floor





First floor



750mm exit
width

Means of escape for mobility impaired occupants.

Approved document M details the requirements for disabled access and the access strategy developed for the office should consider both part M of the building regulations (schedule 1) and the Equalities Act 2010. The premises are predominantly on a single floor and staff will be able to provide support for persons with reduced mobility.

Doors on escape routes

- Any cross-corridor door can be hung in either direction.
- All doors on escape routes should be hung to open not less than 90 degrees (see figure 1).
- Any door that opens towards a corridor or a stairway should be sufficiently recessed to prevent its swing from encroaching on the effective width of the stairway or corridor.
- The 850mm door at the bottom of the picture must open so that persons can utilise the external corridor which leads to the front of the premises.

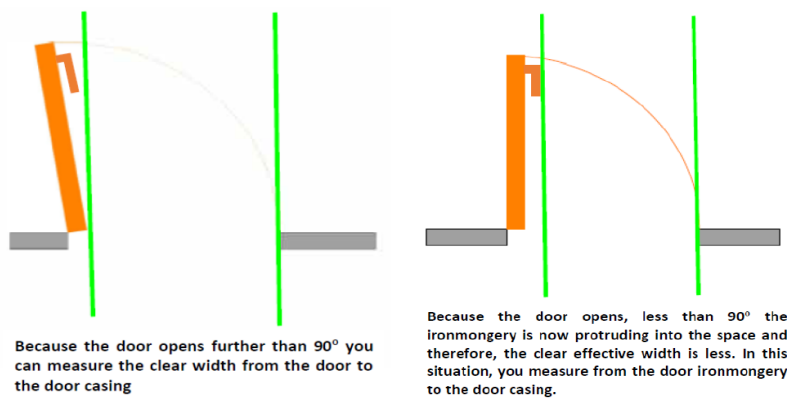


Figure 1 - effective door width

Vision Panels

Vision panels are to be installed in cross-corridor doors and lobby doors to alert people approaching a door to the presence of another person on the other side.

If a door has a single viewing panel, the minimum zone of visibility should be between 500 mm and 1 500 mm from the floor. If a door has multiple viewing panels, the minimum zone of visibility should not be interrupted by opaque areas that obstruct more than 350 mm of the vertical height of the zone. Where the minimum zone of visibility is interrupted, there should be a vision panel at both the top and bottom of the zone. Vision panels should be positioned centrally on the door or offset towards its leading edge (see Figure 13). Each individual viewing panel should be not less than 100 mm in width.

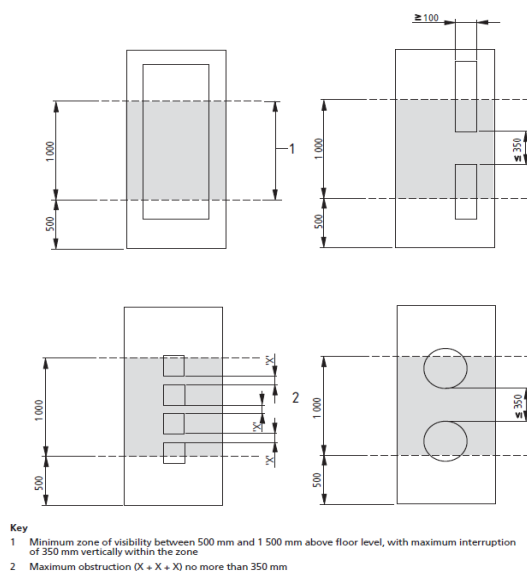


Figure 2 - Vision panels BS 9999



Vertical Escape

The general building evacuation policy will be simultaneous evacuation for both floors and each have independent means of escape.

Whilst the mezzanine is on an upper level to the ground floor, it will have an external means of escape leading directly to safe air which will not require staircase provisions. This is due to the rear of the building being constructed on sloping ground.

The mezzanine floor has been restricted to 60 persons. This is due to the second staircase not discharging within 3m from an external exit.

➤ Internal Fire Spread (linings)

The choice of materials for walls and ceilings can significantly affect the spread of a fire and its rate of growth, even though they are not likely to be the materials first ignited it is particularly important in circulation spaces where the rapid spread of fire is most likely to prevent occupants escaping.

All surface finishes and internal linings are to be designed in accordance with ADB. A summary of the main features and classification requirements are provided in Table 9, Internal linings are required to meet the standard recommendations of Section 6 of Approved Document B (ADB 2019). The classification shall meet the following standards from Table 6.1 of ADB:

Location	European Class
Circulation Spaces	B-s3, d2
Other rooms	C-s3, d2
Small rooms Max 4m ² in residential accommodation max 30m ² non-residential accommodation	D-s3, d2
NOTE – Wallcoverings which conform to BS EN 15102 , achieving at least class C-s3, d2 and bonded to a class A2-s3, d2 substrate, will also be acceptable.	

Table 7 - Table 6.1 - Classification of Linings ADB:2019

➤ Internal Fire Spread (structure)

All internal structures will be designed, constructed, repaired or replaced with materials that conform to British Standards and or European Standards. The structural performances will be in accordance with ADB's Appendix A: Performance of materials, products and structures Table B3 & B4 ADB 2019.



➤ Compartmentation

The spread of fire within a building can be limited with the introduction of passive fire protection, which is sub-dividing the building into compartments separated by walls and or floors with a degree of fire resisting construction. Consequently, these can restrict the spread of fire that could trap occupants; therefore, reducing the risk of fires becoming large.

Passive compartmentation will be provided in accordance with Appendix B|: Performance of materials, products and structures Table B3 & B4 ADB 2019.

A summary of the compartmentation can be found below:

- The protected area at the head of the mezzanine will be constructed to 30mins fire resistance
- The door leading into the area at the end of the mezzanine will be FD30s

Fire Door Summary

All fire doors indicated with suffix (s) should be fitted with intumescent strips and cold smoke seals. The following sizes of strips and seals should be fitted to the frame or fire door.

Fire door rating	Intumescent strip and Cold Smoke seal sizes
FD30s	15mm x 4mm
FD60s	20mm x 4mm or two 10mm x 4mm strips
FD90s	One 20mm x 4mm, plus a 15mm x 4mm
FD120s	Two 20mm x 4mm

Table 8 - Intumescent strip and Cold Smoke seal sizes

The areas identified in the table below should be fitted with the following hardware.

Note - s indicates intumescent strips and cold smoke seals

Doors	Fire Rating of the doors	Self-closing devices required
Door leading to mezzanine escape	FD30s	Yes

Table 9 - Fire door summary

Self-closing devices – all self-closing devices installed must conform to BS EN 1154

➤ Structural Requirements

Premature failure of the structure can be prevented by provisions for load bearing elements of structure to have a minimum standard of fire resistance, in terms of resistance to collapse or failure of load bearing capacity.

The purpose of providing the structure with fire resistance is:

- To minimize the risk to occupants.
- To reduce the risk to fire fighters who may be engaged on search and rescue operations.



- To reduce the danger to people in the vicinity of the building.

As this project is a refurbishment of an existing building, the load bearing elements of structure will not be affected. However, should any beams or columns require fire resistance due to the refurbishment work then they must be protected by a minimum of 60 minutes fire resistance.

Note – The above does not apply to any structure which solely supports the roof.

All exposed steel columns and beams are to be protected by intumescent covering or boarding affording 60 minutes fire protection. Certification / details of the intumescent covering to be provided by the contractor.

➤ External Fire Spread – Space separation

External wall surfaces will achieve a Class 0 surface spread of flame classification. As this is an internal refurbishment, the external façade will not be adversely affected therefore, the external fire spread from the building will be deemed acceptable if all areas are suitably protected against fire.

Note - Buildings over 11m or less than 1m from a relevant boundary (not including Assembly or Recreation Buildings of more than one storey) - The external envelope of the building needs to be comprised of materials that achieve A2 to BSEN13501 - limited combustibility with a surface spread of flame of Class 0 (BS476:7 & 6) or B-s3, d2 (BSEN13501) or better.

Or - tested as a system to BS8414 parts 1 or 2 (depending on the system) with a BR135 classification.

Should the external envelope fall outside the scope of the two above specifications then a technical assessment will be undertaken by SPL Fire Engineering to ensure the suitability of the system.

➤ Access and Facilities – Fire Service

The main entrance and fire service entrance is off Dantzic Street, fire-fighting hydrants are positioned within 90m of the building. Access for fire service appliances, including high reach is set at 50% of the building perimeter. This meets current guidance for fire service access.





➤ Fire Safety Management

Fire Safety Management Assumptions

The strategy contained herein has been written on the assumption that the building concerned will be properly managed. This section of the report defines the minimum standard of management that has been assumed as well as any specific management requirements or procedures that are required to validate the strategy defined in subsequent sections. Failure to comply with these requirements will invalidate this fire strategy.

Management Standards

The building should be properly managed and a Fire Safety Management Plan and Manual should be developed. Once the building is in use, the management regime should be maintained and any variation in that regime should be the subject of a suitable Fire Risk Assessment.

Regulatory Reform (Fire Safety) Order 2005

The Regulatory Reform (Fire Safety) Order came into force on the 1st October 2006. The order consolidates nearly all previous fire safety legislation revoking the Fire Precautions Act and the Workplace Regulations. The Order places a general duty of fire safety care on employees, occupiers and /or owners of businesses to provide and maintain adequate fire precautions throughout their premises.

The responsible person has a duty to carry out a fire risk assessment which must focus on the safety in case of fire of all 'relevant persons'. The risk assessment should pay particular attention to following areas:

- Identifying Fire hazards – sources of ignition, fuel, oxygen
- Identifying people at risk
- Reducing the risk
- Recording the findings
- Reviewing the outcomes

Regulation 38

Regulation 38 requires that, where building work involves the erection or extension of a relevant building, or relevant changes 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 first occupied. The information will facilitate the production of the fire risk assessment. This strategy should be maintained throughout the building works and all stakeholders are required to inform the Fire Engineers of any changes to the building design to ensure that the finished strategy accurately reflects the complete design.