



Fire Safety Strategy



58-60 Whitworth St Manchester M1 6LT

SPL Fire Engineering Ltd

281 Palatine Road

Northenden

Manchester

M22 4ET

Quality Assurance

Revision	Description	Date	Completed by	Reviewed By
FSF1	Fire Safety Strategy	24/10/2020	David Lenagan MBE BEng (Hons) MIFireE	Lee Smart BEng (Hons) MCIOB MIFSM

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➤ Terms and conditions

SPL Fire Engineering Ltd have produced this fire strategy document to assess whether the building was designed and constructed to comply with the Building Regulations. This document specifically addresses legislative compliance and safety of relevant persons. The ownership and implementation of the significant findings lies with the “*responsible person*”.

This strategy, reverse engineers a previously constructed building and the author has no access to the original design documentation; as such, the submission of this strategy constitutes neither a warranty of future results by SPL Fire Engineering Ltd nor an assurance against risk. The report represents only the best judgement of the Fire Engineer involved in its preparation, and is based, in part, on information provided by others and a site inspection. No liability whatsoever is accepted for the accuracy of such information

In addition, the fire strategy does not include specialist testing or invasive inspection of the passive and active fire safety measures within the building as this does not form part of our brief.

CLIENT ACCEPTANCE

I hereby accept this Fire Strategy in accordance with the terms and conditions above

NAME (PLEASE PRINT)

SIGNATURES

DATE

POSITION IN ORGANISATION

NAME OF ASSESSOR (PLEASE PRINT)

SIGNATURE

DATE

David Lenagan MBE

24 th October 2020

➤ General Information

Property Details

Address	Bridgewater House 58 - 60 Whitworth St
Town / City	Manchester
County	Greater Manchester
Postcode	M1 6LT

Property Owners Details

Owner	Britannia Investments A/S
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Responsible Person Details

Responsible Person	APAM
Corporate Address	10 th Floor Bridgewater House Manchester M1 6LT
Telephone Number	0161 871 9821

Managing Agent	APAM
Address	10 th Floor Bridgewater House Manchester M1 6LT
Telephone Number	0161 871 9821

➤ Executive Summary

Bridgewater House is a Grade II listed multi-occupied commercial property utilised predominantly as office accommodation. A few of the larger tenants occupy full floors; however, smaller companies occupy managed suites of differing sizes throughout the premises. In addition to the offices on the upper floors, JD Gyms occupy the basement area as a Gym.

The building was constructed in the early 1912 – 1913 by Lloyds Packing Warehouses Limited and at the time, it was the largest warehouse in the world. The premises were built in traditional construction methods of the time, steel frame with cladding of sandstone ashlar and white glazed terracotta and concrete floors. The original building height would have been circa 28m; however, overtime, further floors have been added and now the height of the topmost floor is circa 38m.

The property is accessed off Whitworth Street and is bounded by the Palace Theatre, Atwood Street and the Rochdale Canal to the rear.

The building is owned by Britannia Investments A/S and APAM are the management company who have identified that a fire strategy was never created for the premises; this is due to its age; as such, they are unaware of how the passive and active systems within the building were designed. Furthermore, the property has been converted from a warehouse to offices over numerous decades, most recently, the refurbishment of the 9th floor in 2015 and the main reception area which was completed in 2017. Thus, several versions of British Standards will have been used.

Due to the lack of information available, the client has commissioned SPL Fire Engineering to inspect the building and reverse engineer a fire strategy on their behalf.

The fire strategy was commissioned to answer two important questions,

- 1) Were the premises built / converted to the correct standard at the time and
- 2) Does the building design meet the current statutory life safety requirements of Part B of the Building Regulations?

Following the review, it was found that the property has **not** been refurbished to building guidance available at the time of development or to current guidance. This is due to

- The sprinkler system being decommissioned
- The firefighting shafts not being compliant
- No lobby protection on staircase doors
- Fire door specifications.
- Breaches in compartmentation
- No disabled refuge

Where the building does not meet current standards, key recommendations have been highlighted within this report. These are summarised on Page 29 of this report.

This document is a strategy document and is not to be read as a Fire Risk Assessment. The Fire Engineer is aware that a current fire risk assessment is available for this building. The fire risk assessment should be reviewed to take account of this documents finding.

➤ The Building Structure

Bridgewater House is a Grade II listed multi-occupied commercial property consisting of office suites on ground and over the 10 upper floors with a Gym in the basement.

Purpose Groups

Title	Group	Purpose for which the building or compartment of a building is intended to be used
Office	3	Offices
Assembly & Recreation	5	Gymnasium

The premises were built in traditional construction methods of the time, steel frame with cladding of sandstone ashlar and white glazed terracotta and concrete floors. 4 protected means of escape staircases serve the upper floors, there are also 2 firefighting shafts and 2 firefighting lifts as shown in (figure 1).

The building is split into two sections, as you look from Whitworth Street, the left-hand section is named the Palace section as it neighbours the Palace Theatre, to the righthand side is Atwood as it adjoins Atwood Street (see Figure 1). This is replicated through all upper floors.

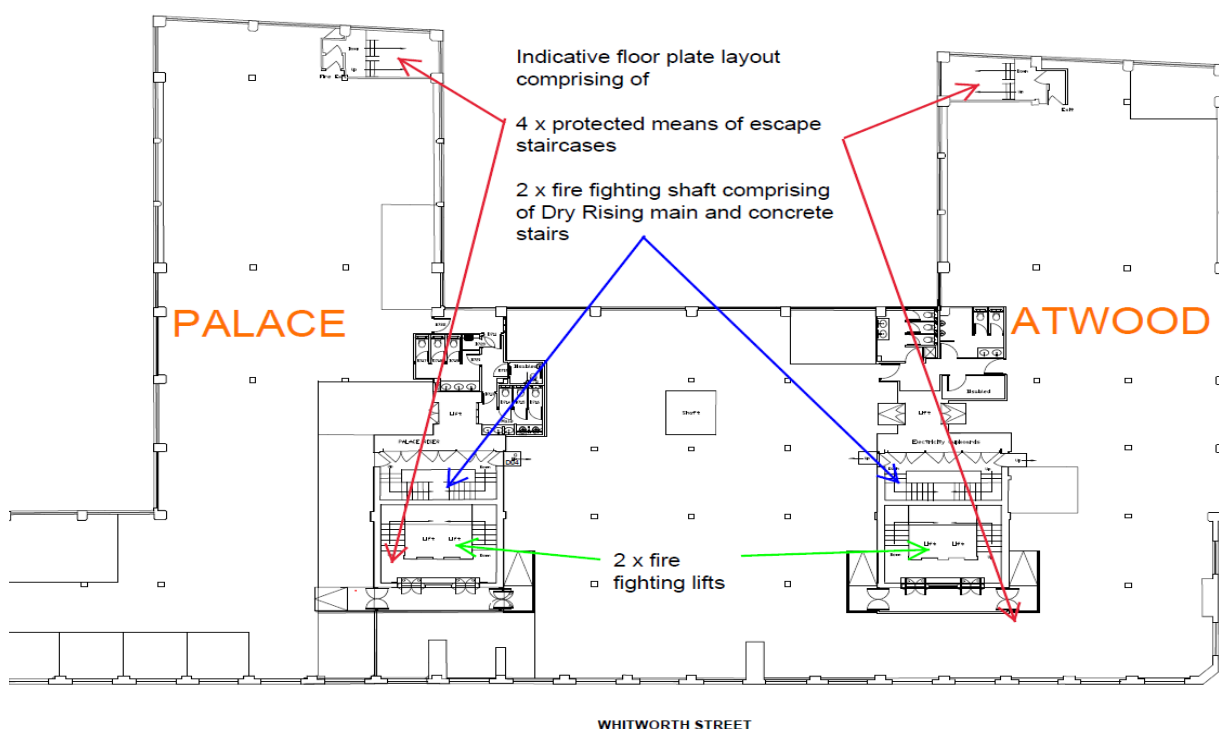


Figure 1 - Indicative floor plate layout

In addition to the upper floors, there is a basement and a sub-basement. The basement is utilised as a gym and the sub-basement is storage and plant.

The internal fire spread of linings on the escape routes and around the stair cores appears to be Class 0. However, there are some discrepancies on the firefighting staircases.

Arson prevention - APAM employ persons to manage the reception area from 7am to 7pm, after these times security are employed, and these would prevent unauthorised access. Furthermore, there are 29 CCTV cameras throughout the building and car park areas.

Use of Premises	Office accommodation and Gym	
Maximum number of floors	13	Sub-basement, Basement, ground - 10
Number of staircases	6	4 x protected stairs and 2 x firefighting stairs
Number of passenger lifts	4	Accessed from the Whitworth Street main foyer

➤ The Occupants

Employees

Maximum number of persons in building	Approximately 2000 persons
Number of employees at one time	A maximum of 10 employees at any one time
Occupants at special risk	
Sleeping occupants	None
Occupants with disabilities	None identified at the time of inspection but there is the potential for persons to be in the building who have disabilities. Each office will create their own PEEPs should there be a need.
Occupants in remote areas	Potentially staff could be working on the roof
History of Fires?	
Has there been any history of fires on the premises?	None brought to the attention of the Fire Engineer.

➤ 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”.

As the building was constructed in the 1912, the building was created before Approved Document B (ADB) was published; however, as the building has been developed / refurbished over its life cycle, the alterations would have been undertaken utilising the Approved suite of documents as reference guides. This is an assumption following an inspection of the premises and the technical knowledge of the engineer.

Building Regulations

It is assumed that the building was subjected to the requirements of the Building Regulations when refurbishments were carried out. 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 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 • Resist the spread of flame over their surface; and • Have, if ignited, a rate of heat release which is reasonable in the circumstances In this paragraph ‘internal linings’ mean the materials lining 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. A wall common to two or more buildings shall be designed and constructed so that it resists the spread of fire between those buildings. For the purpose of this sub paragraph a house is a terrace and a semi-detached house are each to be treated as separate building
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 facilities to assist firefighters in the protection of life. Provision shall be made within the site of the building to enable fire appliances to gain access to 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.

➤ Compliance with Guidance.

In order to comply with the Building Regulations in force at the time of construction 1912, the regulations required there to be adequate levels of life safety provisions to be installed in the building. However, the building has undergone numerous conversions over the life span of the building.

This strategy will review whether the building was constructed with adequate levels of life safety provisions, to achieve this an evaluation of the passive and active measures was carried out. Furthermore, the strategy will review guidance over its life span.

This was achieved by reviewing

- Means of warning the occupants
- Suitable means of escape (MOE) – Horizontal / Vertical escape
- Review of escape strategy
- Limiting internal fire spread
- Protecting the adjacent property from external fire spread and
- Facilitating fire service emergency operations

➤ Means of Warning – Fire Detection and Alarm System L3

The premises would originally have been designed with a manual break glass call point fire alarm system. The manual break glass call points would have been located adjacent to the exit doors on each floor and would have been linked to a fire alarm panel.

As the use of the building has changed over time, so has the fire detection and alarm system. The system has been renewed and enhanced throughout its life cycle, the current system is designated to a BS5839 Part1 L2 specifications, however, there are over provisions to what would be required for an L2 system and therefore, the system is moving towards an L1 system.

Coverage - The author of this report identified

- Manual Break glass call points on all exit routes
- Smoke detection in all available communal corridors, lobbies and staircases, except on the 9th floor within staircase 1.
- Smoke detection in office accommodation
- Smoke detection in service risers
- Heat detection in kitchens.
- Smoke and heat detection in the plant rooms.
- Sounders covering all areas.

The system appeared to be over and above the requirements to comply with BS5839 Part1 L2, however, it is understandable how a system in a building of this age can be adapted over time.

Conclusion – Means of warning

One would normally expect a BS5839 part 1 manual system within an office block. However, as the building is above 30m then the standard needs to be increased to a BS5839 part1 L3 system to accommodate a phased evacuation strategy. The fire alarm system installed within the property appears to exceed current guidance for this type of property; however, the additions do not conflict with the evacuation strategy; as such, no recommendations are required except to extend the smoke detection to cover the 9th floor staircase landing and any miscellaneous detectors identified by the fire alarm engineer.

➤ Means of Escape Section – Horizontal / Vertical Escape Routes

Horizontal means of escape

This section will cover the horizontal means of escape for the common areas only. Plans were available to review and were used to critically review the building design.

Whilst full access to every area was unavailable due to COVID 19 restrictions and data protection issues, access was gained to all common areas and limited office areas. Access was required to clarify the door specifications on the firefighting shafts, rear means off escape stair cores, central stairs and the occupancies of each floor.

Each upper floor is designed differently, with differing numbers of tenants on each floor, from complete floor occupancy by one tenant to multi-occupancy on other floors. The building is a mirrored U shape design from the 1st floor to the 10th floor. There are 6 staircases per floor (only 4 available for means of escape); however, some of the floors are subdivided. Of those that are sub-divided, there are a minimum of 2 means of escape for the occupants. The ground, basement and sub-basement floors appear to be satisfactory. Horizontal travel distances are compliant with current Building Regulations guidance for office accommodation and gymnasium and are therefore, deemed suitable and sufficient for the occupancy.

Occupancy	Travel distance in one direction	Travel distance in 2 directions
Offices	18m	45m
Gymnasium	18m	45m

Conclusion – Horizontal means of escape

The horizontal means of escape within the property appears to meet current guidance for this type of property; as such, no recommendations are required.

Vertical means of escape

The building has 4 protected staircases available to the tenants from ground to 10th floor, these have been numbered 1, 2, 3 & 4 staircases as shown in figure 2. There are 2 further staircases to the rear of stairs 1 & 2, but these are for firefighting purposes and maintenance only.

Staircases 1 & 2 are common staircases in that they are used by persons to traverse floors and also means of escape staircases, both these stairs are 1375 mm wide and lead to final exit doors that are 1500 mm wide. Staircases 3 & 4 are means of escape staircases only which are within the domain of offices on each floor, both staircases are 1000 mm wide, however, stair 3 narrows at the 1st floor to ground from 1000 mm to 850 mm. The final exit doors from stair 3 is a double door 1650 mm wide and the final exit door from stair 4 is a single leaf door 890 mm.

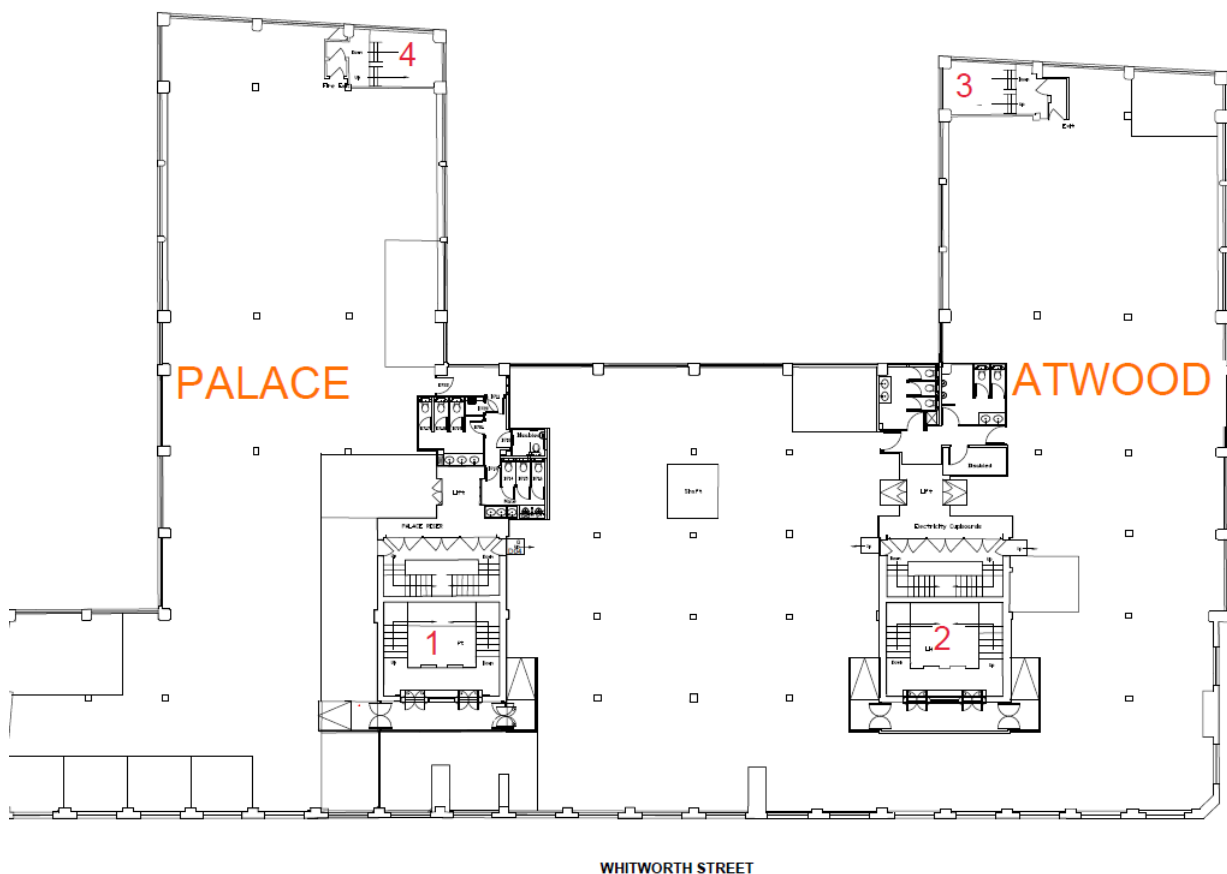


Figure 2 - Staircase numbers

Means of escape staircases 1 & 2 are both 1375mm wide, which is in line with guidance. However, due to the height of the premises, the staircases should be accessed through a protected lobby or a protected corridor. This applies to all floors except for the uppermost floor. It was found that on the 9th floor the lobby protection to staircases 1 & 2 have been removed. Therefore, this is deemed to be non-compliant. Furthermore, lobby protection doors are missing on the 3rd & 2nd floors of staircase 1.

Means of escape staircases 3 & 4 appear to be accessed from all floors through a protected lobby. The lobby protection should be 120-minute fire resistant, with 2 x FD30s doors protecting the staircases.

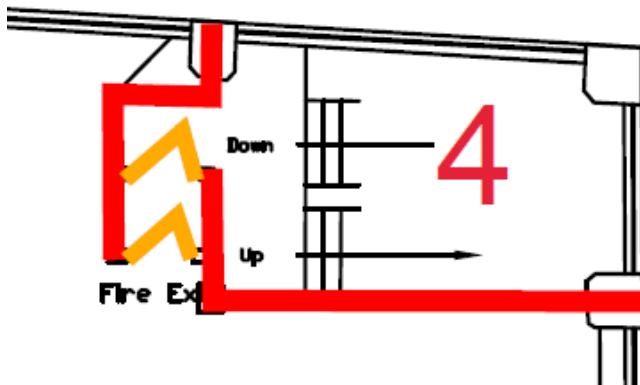


Figure 3 - Protection of Means of escape stairs 3 & 4

Conclusion – Means of Escape Vertical Section

Staircases 1 & 2 are non-compliant as they should be protected staircases accessed on all floors via a protected lobby or a protected corridor. At the original build stage these staircases would have been aligned with building regulations because the height of the building was less than 30m (circa 28m). However, since the building height has increased above 30m, the staircases have become non-compliant.

The above statement also applies to the staircases to the rear of 1 & 2. These should have been lobby protected on all floors; however, see recommendation 2 regarding a potential solution.

Note - There is potentially an exception to the lobby protection, and that is on the 9th floor – the upper most floor does not require lobby or corridor protection on to both these staircases, therefore, if the 10th floor was unoccupied and classed as a plant area, then theoretically the 9th floor could be classed as the top storey. However, this could only be achieved through a risk assessment process.

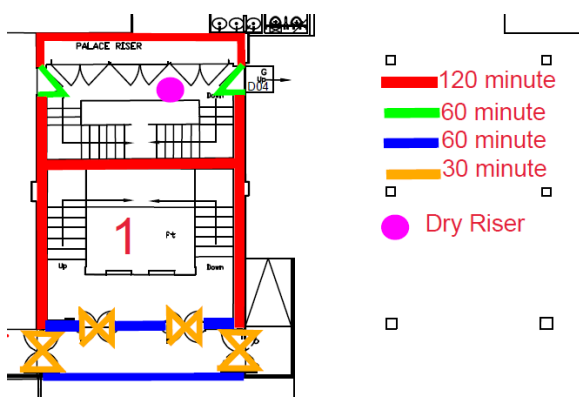


Figure 4 - Protection of staircases

Recommendation 1 – Vertical means of escape

Ensure that there is a protected lobby approach to all fire escape staircases (1, 2, 3 & 4). The screen to create the lobby should be a minimum of 60minutes fire resisting construction and the doors should be FD30s. The staircase enclosure should be 120minutes fire resistant and the doors within them should be FD30s doors as per figures 3 & 4.

Recommendation 2 – Firefighting staircases

The two staircases to the rear of 1 & 2 have dry rising mains in them for firefighting purposes. These shafts should mirror Recommendations 1; however, it is clear that this cannot be achieved, and a lobby approach would hamper firefighting operations. Due to the staircases not being available for means of escape, the upgrading of the doors to FD60s would be a suitable compromise. This would maintain the 120min fire integrity whilst assisting in firefighting operations. In addition, a thumb turn, or other approved locking device should be used on the door so that firefighters can access each floor in the event of an emergency.

Recommendation 3 – Staircases 3 & 4

The assessor was unable to access and check all walls and doors leading onto staircases 3 & 4 for reason mentioned previously; as such, a full survey of staircases 3 & 4 should be carried out to ascertain if the means of escape on these staircases are compliant. If found to be non-compliant, then the doors and walls on all floors should be upgraded to replicate figure 3.

➤ Means of Escape Section – Evacuation Strategy

The procedures adopted within the premises, in the unlikely event of an incident, is that of a phased evacuation strategy. The principle of a phased evacuation strategy is that if a fire occurs anywhere within the property, only the fire floor, one floor above and one floor below the fire floor evacuate, all other floors are put on standby for evacuation if necessary. The decision to move to full evacuation will be given by the officer in charge of the incident from Greater Manchester Fire and Rescue Service.

To facilitate a phased evacuation all of the following should be in place.

- Each staircase should be approached through a protected lobby or corridor except the top storey.
- Lifts should be approached through a protected lobby
- Every floor should be a compartment floor
- Because the building is over 30m, all floors should be protected throughout by an automatic sprinkler system.

- The fire detection and alarm system should be a minimum of BS5839 part L3

A more in-depth analysis of these measures can be found throughout the document.

To review whether the internal staircases are sufficient for the occupancy, measurements were taken of staircases 1, 2, 3 & 4.

- Staircases 1 & 2 are both 1375mm
- Staircase 3 is 1000mm but narrows to 850 at 1st floor so we will use the most onerous width 850mm
- Staircase 4 is 1000mm

The assessor was informed that 2000 persons normally occupy the premises, however, there could be 300 persons on one floor. Therefore, we will take the worst-case scenario and utilise 300 per floor x 8 floors plus 100 for the 10th floor (the reason 100 has been used for the 10 floor is because most of the 10th floor is a dedicated plant area). This equates to 2500 persons throughout the 9 floors (ground, basement and sub-basement are not taken into consideration as these floors would not use staircases 1, 2, 3 & 4 for means of escape purposes).

To calculate the minimum width of stairs table 3.3 of ADB 2019 has been used.

Table 3.3 Minimum width of stairs designed for phased evacuation

Maximum number of people in any storey	Stair width (mm)
100	1000
120	1100
130	1200
140	1300
150	1400
160	1500
170	1600
180	1700
190	1800
NOTES:	
1. This table assumes a phased evacuation of the fire floor first followed by evacuation of not more than two floors at a time.	
2. Unless a central handrail is provided, stairs with a rise of more than 30m should be a maximum width of 1400mm (see paragraph 3.10).	
3. As an alternative to using this table, the minimum width (in mm) may be calculated from: $(P \times 10) - 100$ where P = the number of people on the most heavily occupied storey. However, the minimum width of a stair should be 1000mm.	

Number of persons per storey = $2500/9 = 278$. If you are to discount a stair then the remaining stair width must add up to 3000mm. therefore, discounting the widest stair, staircase number 1 = 1375mm. We would have 3 available staircases to utilise in a phased evacuation.

Stair 2	1375mm
Stair 3	850mm
Stair 4	1000mm
Total width of stairs	3225mm

It is confirmed that each of the staircases would facilitate a phased evacuation strategy from the building.

Note - One of the largest staircases was discounted due to staircases 1 & 2 not being fully compliant and the fact that all active and passive provisions documented on page 16, which are required for phased evacuation are not compliant.

Conclusion – Evacuation strategy.

The means of escape for the building has been evaluated and it appears that whilst the active and passive measures required within this building are not compliant, the remaining 3 stairs can still support a phased evacuation, even when discounting the largest staircase.

The conclusion is that the available staircases are sufficient for the number of persons within the building; however, additional active and passive measures must be adopted to fully support a phased evacuation. Recommendations 1, 3 & 4 cover these areas.

➤ Means of Escape Section - Emergency Lighting

Emergency lighting and escape signage is required in most areas including all escape routes and common circulation areas in accordance with BS 5266: Part 1.

Typical areas which require coverage include:

Emergency lighting 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

Conclusion – Emergency lighting

The system installed within the property appears to meet current guidance for this type of property; as such, no recommendations are required.

➤ Means of Escape Section - Emergency Signage

The assessor was unable to gain entry to all areas due to offices being occupied, locked and due to COVID-19. Therefore, it is impossible to identify if the correct emergency evacuation signage is compliant.



All exits and exit routes should 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 should 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 BS 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 should be 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 should 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.

In the common areas escape routes have distinctive and conspicuous signage using emergency exit signs of adequate size complying with the Health and Safety (Safety signs and signals) Regulations 1996.

Conclusion – Signage

A full review of the property should be undertaken to ensure that the appropriate signage is in place. However, the signage within the common areas appears to conform to BS5499 Part 1.

➤ 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. 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

Figure 5 - Table 10 - Classification of Linings ADB:2019

Conclusion – Internal Fire Spread

The linings appear to meet current guidance for this type of property; as such, no recommendations are required.

➤ Internal Fire Spread (Structure)

The minimum period of fire resistance in accordance with ADB Table B4:2019 for a building over 30m in height is 120 minutes fire resistance.

Elements of structure are defined as:

- A member forming part of the structural frame of a building or any beam or column.
- A load bearing wall or load bearing part of a wall.
- A floor.
- An external wall structure supporting fire protected elements for the prevention of external fire spread.
- A compartment wall.

The original building height was circa 28m as such, it was under the 30m threshold, consequently, SPL Fire Engineering Ltd are unable to confirm if the premises have been built to this standard without intrusive investigations which have not been part of this fire strategy.

Elements which only support the roof are sometimes exempted from this provision.

Conclusion – Internal Fire Spread (structure)

The premises are a concrete slab design which at the time of build was acceptable. Whilst an intrusive survey was not requested, the amount of materials used to meet the structural requirements of the time, along with the construction technique employed on this building would suggest that the structure is adequately protected with fire resisting materials; as such, no recommendations are required. However, the compartment walls protecting the staircases are not compliant (this is discussed in the compartmentation section).

➤ Compartmentation

Sprinklers

When the building was constructed, a sprinkler system was installed throughout which was acceptable at the time. However, as the building has been altered and changed use, the sprinklers have been decommissioned (it is not clear when the sprinklers were decommissioned, however, the assessor was informed by Brian Lenord (who escorting him round the premises) that as far as he knows they have not been operational for over 22 years).

The compartmentation of the floors will reduce the risk of fire spread and the impact of a fire within the building; Building Regulations guidance document (ADB) states that compartment floors in office blocks above 30m are required to be 120minutes fire resistant, however, this is only acceptable with sprinkler protection, without sprinklers this is not permissible.

Conclusion

Without the sprinklers being re-commissioned on all floors including the basement, the building and compartment floors are not aligned to modern day standards. The sprinkler system would need to follow the guidance given in BS12845 and be to a minimum of an Ordinary Hazard system.

Recommendation 4 – Sprinklers

The client should investigate the installation of a commercial sprinkler system in the building. This is required to enhance the compartmentation and support the phased evacuation policy.

➤ External Fire Spread

The external façade is constructed of steel frame with cladding of sandstone ashlar, white glazed terracotta and glass. The windows are located directly above each other and should a fire breach out of a window the floor above would become affected until the fire is under control. The external façade will not support the propagation of flames over the surface apart from fire spread from window opening to window opening.

Conclusion – External Fire Spread

The external facades are compliant with current guidance, there are no recommendations for this section.

➤ Fire Doors

Fire doors play an integral role in passive fire safety measures for a building, a well-designed / fitted door set can reduce fire travel and damage significantly.

To understand what the requirements are, information is required relating to

- Height of the building
- Protected areas / Firefighting shaft
- Risk rooms

Building Height - The premises are above 30m to the floor slab of the highest occupied floor and the premises is used for office purposes; as such, compartmentation is required on all floor slabs.

Structure protection is set at 120 minutes; however, this relies on the sprinklers being operational throughout the building. Furthermore, the protected staircases should be 120minutes fire resistant with a protected lobby or corridor approach.

An intrusive survey of the compartment walls protecting the staircases is not part of the fire strategy remit, furthermore staircases 1 & 2 are Grade 11 listed stairs.

Risk rooms - Risk rooms found within the premises are as follows:

- Kitchen
- Boiler rooms
- Electric intake rooms
- Risers
- Plant rooms

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 1 – 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
Plant room	FD30s	To be kept locked shut
Electrical riser cupboard	FD60s	To be kept locked shut
Dry riser shaft – doors leading to offices	FD60s	Yes
Staircase doors - stair 1, 2, 3 & 4 both sets of doors that form the lobby	FD30s	Yes
Door leading to protected staircases to basement and in the basement	FD30s	Yes
Cross-corridor doors	FD30s	Yes
Kitchen doors	FD30S	Yes
Doors separating the plant are in the basement and the Gym	FD60s	To be kept locked shut – unless it is a means of escape door then it needs to have a self-closer installed

Table 2 - Fire door summary

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

Conclusion – Fire doors

The doors in Bridgewater House are not wholly compliant with current guidance and table 11. The upgrades for this section are covered in Recommendations 1,2 & 3

Doors on escape routes

- Cross-corridor doors can be hung in either direction.
- All doors on escape routes should be hung to open not less than 90 degrees (see figure 6).
- 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.

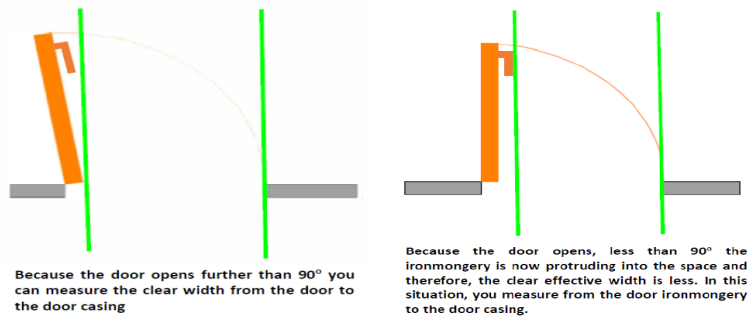


Figure 6 - width of door openings

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 7). Each individual viewing panel should be not less than 100 mm in width.

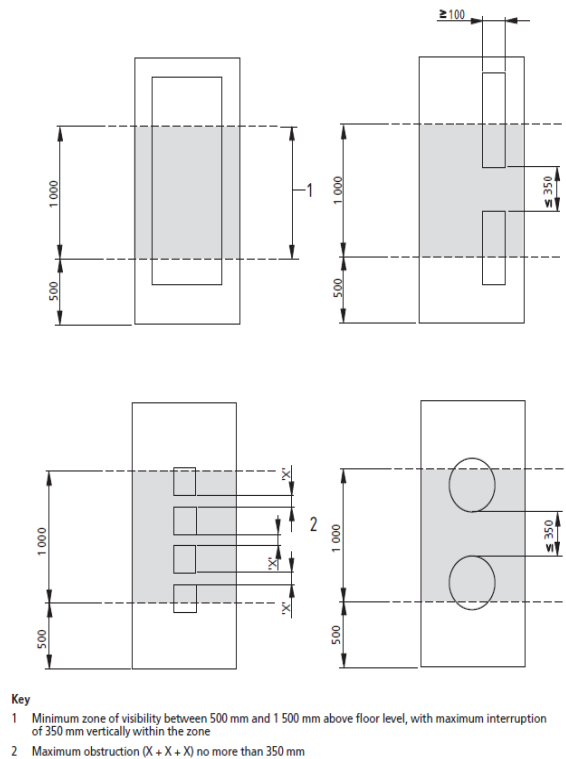


Figure 7 - Vision panels BS 9999

➤ Access and Facilities for the Fire Service

Perimeter access



Figure 8- Aerial view of Bridgewater house and fire service access points

Bridgewater House is accessed from Whitworth Street; however, the dry rising mains are accessed off Atwood street. Figure 8 indicates the position of the dry rising main inlets. Dry rising main inlet for Atwood section of the building is on Atwood Street and the Dry Rising main inlet for Palace section is in the rear courtyard.

Firefighting appliances can access and park within 18m of either Dry Rising main, this is in line with today's standards.

Firefighting provisions

To assist fire fighters in their duties, buildings over 18m are required to have active measures installed within them, these being firefighting shafts incorporating the following:

- Firefighting staircase
- Firefighting lift
- Dry rising main

Firefighting shaft

When the building was first constructed, there was no firefighting shaft installed within the premises as this was not a requirement at the time. As legislation and firefighting techniques changed, at some juncture, a decision must have been taken to install dry rising mains within the building to create some

form of firefighting shaft to aid fire fighters. However, no one knows quite when the dry risers were installed.

The dry rising main was installed from ground floor to the roof, however, it was not extended to the basement floors. One would normally expect the dry rising mains to be within the protected staircases (stair 1 & 2) as shown in figure 9. However, because this is an addition to the original build, the most convenient place to install the main was in the riser at the rear of staircases 1 & 2 as shown in figure 4; as such, whilst the dry rising main is available, the fire-fighting shaft is none compliant as firefighters cannot access the staircase from the firefighting lift which is located in stairwells 1 & 2. A compliant firefighting shaft is pictured below.

The dark grey hatchings forming the outer walls of the firefighting shaft are constructed to achieve 120minutes fire resistance and the door leading into the occupied areas from the shaft are FD60s door set

The lighter solid grey structure separating the staircase are constructed to achieve 60minutes fire resistance and the doors separating the staircase from the firefighting lobby are FD30s door sets.

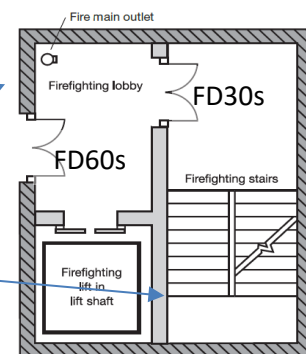


Figure 9 - firefighting shaft

The shafts / stair cores with the dry riders installed are non-compliant with today's standards. However, as the building is a Grade II listed building, It would be impossible to create a compliant firefighting shaft within Bridgewater House, therefore, an assessment would of been made on the most suitable arrangements possible to assist and aid firefighting within the building, whilst also protecting the fire-fighters.

To provide safety and to aid fire fighters in this building, all doors within the two shafts that lead into the offices on each floor should be FD60s doors (as shown in figure 4 and in Recommendation 2). Doors leading into the shaft at ground floor level should be FD60s doors or FD30s if accessed through a protected lobby. Approved type locking devices are also required.

Recommendation 5 – Firefighting shaft

To assist fire-fighters, identify the correct floor, the following information must be affixed adjacent to each door leading into the office floor areas.

The floor identification signs should meet all of the following conditions.

- The signs should be located on every landing of the stairway.

- The text should be in sans serif typeface with a letter height of at least 50mm. The height of the numeral that designates the floor number should be at least 75mm.
- The signs should be visible from the top step.
- The signs should be mounted between 1.7m and 2m above floor level and, as far as practicable, all the signs should be mounted at the same height.
- The text should be on a contrasting background, easily legible and readable in low level lighting conditions or when illuminated with a torch.

The wording used on each floor identification sign should take the form Floor X.

- The ground level should be designated as either Floor 0 or Ground Floor.
- Each floor above the ground floor should be numbered sequentially beginning with Floor 1.
- Each floor below the ground floor should be numbered sequentially beginning with Floor –1 or Basement 1.

Water Supplies

A short survey was conducted and confirmed the presence of suitable hydrants are within 100m of the building, in addition, the Rochdale Canal is located to the rear of the building.

Ventilation

A firefighting shaft is required to have a smoke control system in accordance with BS5588-5:2004; however, as previously mentioned, the firefighting shaft has been retrofitted and smoke control has not been considered.

The omission of smoke control would normally be a significant problem as persons also use the firefighting shafts as their means of escape; however, in this instance, this is not the case. In this instance, fire fighters would remain in isolation within the 2 cores and only exit on the fire floor. There is the potential for smoke filling of the stair-well, but the operational crews will be in breathing apparatus.

It is the recommendation of the author to address this through the fire risk assessment process.

➤ Management Plan – Provision of Refuges

As a warehouse there would have been no reason to have refuge points on all floors of the building, nor would they have been required when first converted to offices. The assessor was informed that a management plan is in place whereby all offices have a radio and should a person need to be placed in a refuge on the floor whilst all other person evacuate someone would inform the reception / security by radio that there is a person in the refuge on the relevant floor.

Conclusion

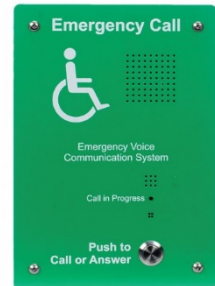
Not having dedicated refuges and an emergency voice communication system means the premises is not compliant with today's standards, however, there is a management plan in place as discussed above.

To bring premises up to today's standard would require the following provision to be implemented.

Recommendation 6 – Provision of refuges.

Figure 10 - EVC Type B outstation

A refuge should be provided as part of the means of escape management plan on every storey that is served by a protected stair, where level access to ultimate safety (outside in fresh air) is not obtainable. Refuges are provided for persons to wait for short periods of time only.



The following are minimum standards would have to be adopted:

- Provision of refuges in protected lobby, protected corridor or within a protected stair should be a minimum of 900mm x 1400mm in size. This area will be accessible to wheelchair users unaided.
- The refuges should not impede the evacuation of people escaping.
- All refuges should be denoted with a blue mandatory sign worded 'Refuge – keep clear'
- To facilitate the effective evacuation of people from refuges an emergency voice communication (EVC) system should be installed. It is essential that the occupants of each refuge are able to alert other people that they are in need of assistance and for them to be reassured that this assistance will be forthcoming
- The EVC system should comply with BS 5839-9:2011 and consist of Type B outstations which is able to communicate with a master station located at reception.

➤ Conclusion – Bridgewater House

SPL Fire Engineering were commissioned to reverse engineer a fire strategy for Bridgewater House. This was due to the management company not having a fire strategy owing to the age of the building.

The purpose of the review was to establish if the building had been constructed to Building Regulations guidance and to establish whether it meets current guidance.

A review of the passive and active fire safety provisions has been undertaken, it was found that the property was not constructed / refurbished to guidance at the time and does not meet current guidance in a number of areas, these being

- Vertical means of escape
- Provision of fire doors
- Provision of sprinklers to support the evacuation plan and the integrity of the building
- Provision of firefighting shaft.

6 Recommendations have been raised, these should be reviewed by the client and written into the premises fire risk assessment for action.

SPL Fire Engineering are able to offer technical support in addressing all items within this report.

➤ Key Recommendations

Recommendation 1 – Vertical means of escape

Ensure that there is a protected lobby approach to all fire escape staircases (1, 2, 3 & 4). The screen to create the lobby should be a minimum of 60minutes fire resisting construction and the doors should be FD30s. The staircase enclosure should be 120minutes fire resistant and the doors within them should be FD30s doors as per figures 3 & 4.

Recommendation 2 – Firefighting staircases

The two staircases to the rear of 1 & 2 have dry rising mains in them for firefighting purposes. These shafts should mirror Recommendations 1; however, it is clear that this cannot be achieved, and a lobby approach would hamper firefighting operations. Due to the staircases not being available for means of escape, the upgrading of the doors to FD60s would be a suitable compromise. This would maintain the 120-minute fire integrity whilst assisting in firefighting operations. In addition, a thumb turn, or other approved locking device should be used on the door so that firefighters can access each floor in the event of an emergency.

Recommendation 3 – Staircases 3 & 4

The assessor was unable to access and check all walls and doors leading onto staircases 3 & 4 for reason mentioned previously; as such, a full survey of staircases 3 & 4 should be carried out to ascertain if the means of escape on these staircases are compliant. If found to be non-compliant, then the doors and walls on all floors should be upgraded to replicate figure 3.

Recommendation 4 – Sprinklers

The client should investigate the installation of a commercial sprinkler system in the building. This is required to enhance the compartmentation and support the phased evacuation policy.

Recommendation 5 – Firefighting shaft

To assist fire-fighters, identify the correct floor, the following information must be affixed adjacent to each door leading into the office floor areas.

The floor identification signs should meet all of the following conditions.

- The signs should be located on every landing of the stairway.
- The text should be in sans serif typeface with a letter height of at least 50mm. The height of the numeral that designates the floor number should be at least 75mm.
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The wording used on each floor identification sign should take the form Floor X.

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Recommendation 6 – Provision of refuges.

Figure 11 - EVC Type B outstation

A refuge should be provided as part of the means of escape management plan on every storey that is served by a protected stair, where level access to ultimate safety (outside in fresh air) is not obtainable. Refuges are provided for persons to wait for short periods of time only.

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- The EVC system should comply with BS 5839-9:2011 and consist of Type B outstations which is able to communicate with a master station located at reception.



➤ Appendix A – Relevant information

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.

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. This strategy should be retained by the client as the information contained will facilitate and assist the production of the fire risk assessment.