

FIRE ENGINEERING

DETAILED FIRE STRATEGY REPORT

BREHERTONS, CASTLE QUAY SHOPPING CENTRE, CASTLE STREET, BANBURY, OX16 5UN

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This report is formulated and based on the information and experience available at the time of preparation. It is applicable to the above-mentioned project only in accordance with the client's instructions. It is only valid provided no other modifications are made other than those for which a formal opinion has been sought and given by Clarke Banks (Fire Engineering) Limited.

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1 INTRODUCTION

1.1 SCOPE

Clarke Banks (Fire Engineering) has been appointed to produce a Detailed Fire Strategy report for the project known as Brethertons.

The development consists of a newly partitioned 2-storey (G+1) office building within an existing shopping centre.

This Detailed Fire Strategy is intended for coordination with the design team for review and design development. At this stage, the fire strategy may also be used for review and approval in principle from the Building Control Body, including their statutory consultation with the local Fire Brigade.

This report is based on best practice guidance contained in BS 9999: Fire safety in the design, management and use of buildings (2017) with the intention of satisfying the functional fire safety requirements of Part B under The Building Regulations 2010 (as amended to date).

The base-build fire strategy as developed by others is assumed to have been approved by the Building Control Body including their consultation with the local Fire Brigade as part of the Building Regulations approvals process for the building. Therefore, the core principle to be employed as part of the fit-out and refurbishment design is to ensure that the proposed works will not make the existing design any worse from a fire-safety perspective. Every provision of the fit out should be in line with the base build strategy and this document does not supersede that strategy.

The fire strategy primarily follows the guidance in BS 9999, however where strict adherence to the recommendation of BS 9999 would conflict with the project aspirations, fire engineering solutions employing qualitative assessment have been employed, used to justify deviations from guidance. Such deviations are detailed in each section as appropriate. These deviations represent project risks until formally accepted by the Building Control Body.

The design team should ensure the contents of this report are incorporated in the building design and this report should form part of the information handed over to the end user under Regulation 38 of The Building Regulations 2010.

1.2 PRIMARY LEGISLATION

The primary fire legislation applicable to this development are:

- The Building Regulations 2010 (pre-occupation);
- Regulatory Reform (Fire Safety) Order 2005 (post-occupation); and
- Construction (Design and Management) Regulations 2015.

1.2.1 The Building Regulations 2010

Responsibility for deciding if the requirements of The Regulations have been met rests with the Building Control body (the Local Authority Building Control or an Approved Inspector).

1.2.2 Regulatory Reform (Fire Safety) Order 2005

The Regulatory Reform (Fire Safety) Order 2005 (FSO) is a primary piece of legislation relating to fire safety in existing, non-domestic premises and the common areas of residential buildings and is enforced by the Local Fire Authority.

The duty of ensuring that the requirements of The Order are met rests with the 'Responsible Person', who must undertake (or cause to undertake) a risk assessment for the purpose of identifying the fire precautions they need to take.

1.2.3 Construction, Design and Management Regulations 2015

UK projects are subject to the requirements of the Construction (Design and Management) Regulations 2015 (CDM).

Where any conclusions or recommendations contained within this report specify materials, products or forms of construction these will have been assessed, in accordance with CDM Regulations 11 and 18 (duties for designers).

If these involve significant residual risks or health and safety critical assumptions, this information will be made available to the Principal Designer. Where the architect or other consultants use all or part of this report to specify works, they are understood to be competent in alerting the Client, Principal Designer, Designers, Contractors and Building Occupier of issues arising under the CDM Regulations.

1.2.4 Statutory Consultation

During the Building Regulations application process, the Building Control body is required by law to consult with the Fire Authority. The purpose of this consultation is to give the Fire Authority an opportunity to make observations with respect to The Building Regulations 2010 and to provide an opportunity to make the applicant aware of action that may have to be taken to meet the requirements of the FSO.

If the Fire Authority require physical changes to be made to the building to meet the requirements of the FSO, the Building Control body has a legal responsibility to pass on all comments and recommendations to the applicant / responsible person. The applicant should take note of all comments and where necessary implement these into the building's design.

1.3 FIRE SAFETY OBJECTIVES

This report aims to satisfy the following statutory fire safety objectives:

- Occupant life safety: The occupants must be able to escape the building without being exposed to hazardous or untenable conditions. This shall be satisfied by meeting the Requirements B1 to B3 of The Building Regulations 2010;
- Protection of adjoining buildings: Structures must not collapse onto adjacent property and fire spread by radiation shall not occur. This shall be satisfied by meeting Requirements B3 and B4 of The Building Regulations 2010; and

- Access and facilities for firefighting: Firefighters must be given a reasonable time to rescue any remaining occupants before hazardous conditions develop or structure collapse occurs. This shall be satisfied by meeting Requirements B3 and B5 of The Building Regulations 2010.

1.4 SOURCES OF INFORMATION

This report is based on the drawings referenced in Appendix A.

1.5 LIMITATIONS AND ASSUMPTIONS

This report is based on the following assumptions and limitations:

- The basis of the report is upon the information provided by the architect and the drawings listed in Appendix A;
- The description of the works which have been covered by the report are listed in Section 1.1 (the scope);
- It has been assumed that all other parts of the building or associated elements of design are in accordance with The Building Regulations 2010, including provisions that impact or support the fire strategy;
- It is required as part of this strategy that the completed building will be used as defined under the specific risk profiles presented. Any change to the use or associated level of fire risk within the building and its surroundings will require a further assessment and potentially a new fire strategy to achieve compliance; and
- The building is to be managed, operated and maintained in accordance with the guidance provided in each relevant section of this report.

1.6 SPRINKLER SYSTEMS

Wherever Clarke Banks (Fire Engineering) confirms or recommends a sprinkler system that is part of the Fire Strategy design within this report, it is recommended that the design, installation, commissioning, and maintenance of the sprinkler system is carried out by a specialist company registered with a third-party accreditation scheme accredited by the United Kingdom Accreditation Service (UKAS).

1.7 OTHER ACTIVE FIRE SAFETY SYSTEMS

It is recommended that the design, installation, commissioning, and maintenance of other active and passive fire protection systems is carried out by a specialist company registered with a third-party accreditation scheme accredited by the United Kingdom Accreditation Service (UKAS).

2 PRINCIPAL BUILDING CHARACTERISTICS

2.1 SITE LOCATION

The office is located within Castle Quay shopping centre, location shown below.

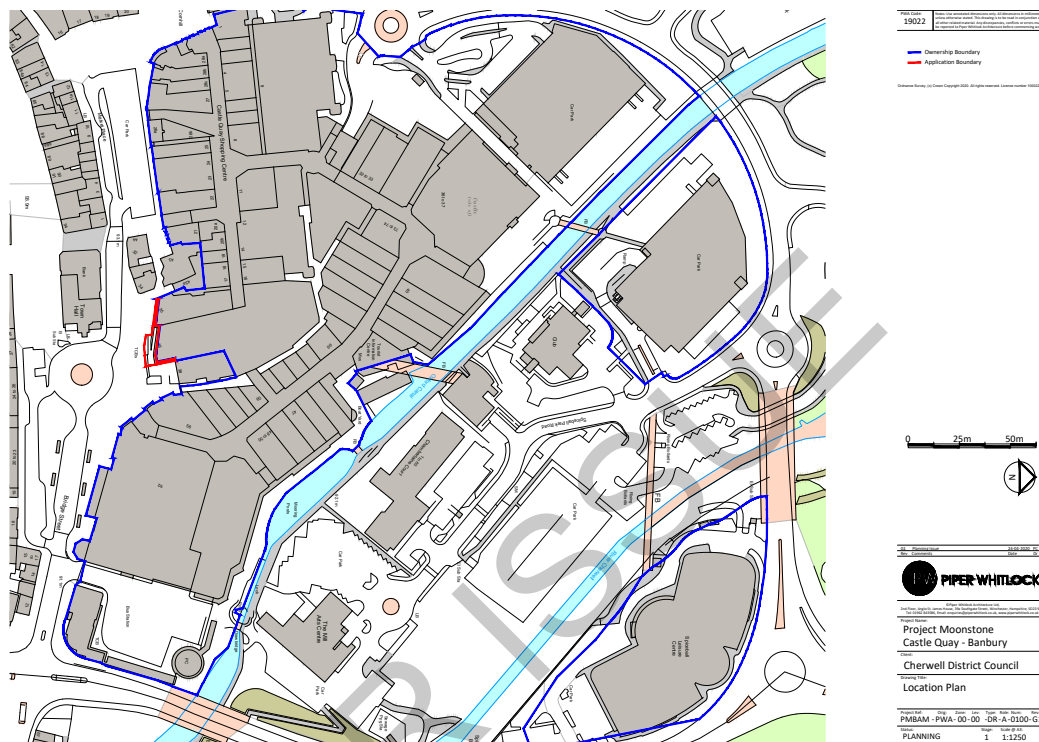


Figure 1: Site location plan

2.2 BUILDING DESCRIPTION

The development consists of a newly partitioned 2-storey (G+1) office building within an existing shopping centre.

The ground floor will include a reception, a waiting area, and meeting rooms along with back-of-house ancillary areas (WVC and cleaner's cupboard).

The first floor will include an open plan office area, meeting rooms, tea point, main toilet block and a post room.

The key principle to be employed in the design will be to ensure that the finished building condition will not be any less satisfactory from a fire safety point of view when compared with the landlord strategy.

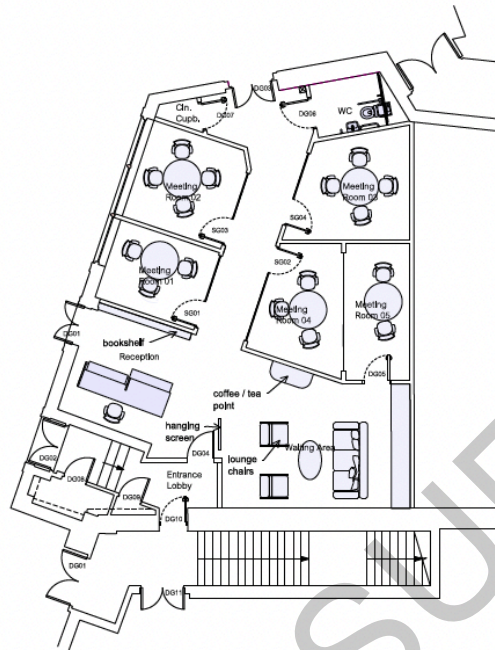


Figure 2: Indicative ground floor level

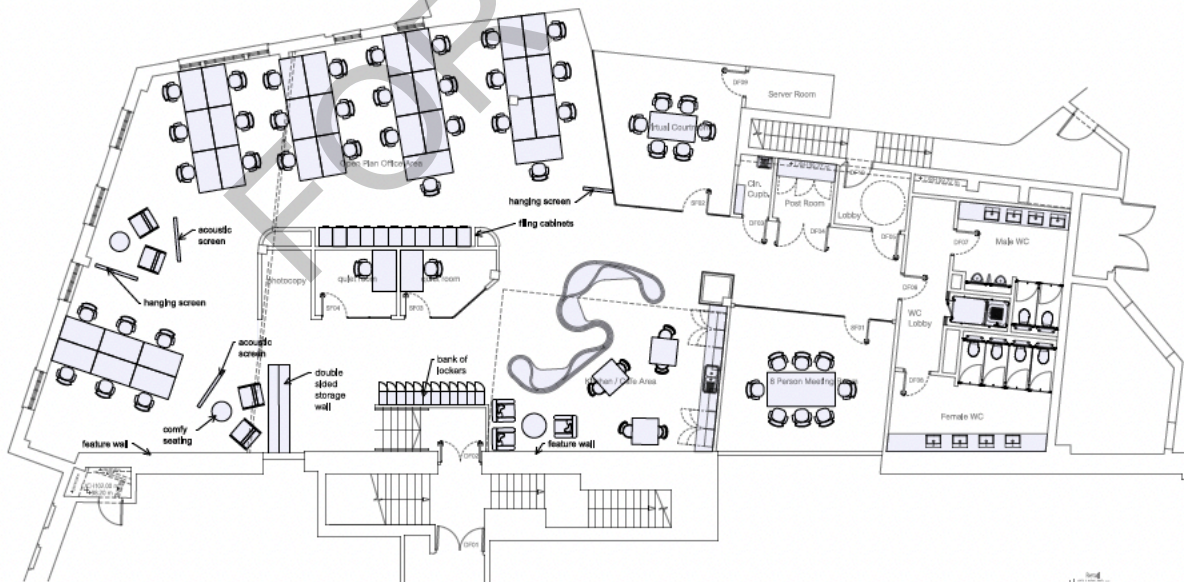


Figure 3: Indicative first floor level

3 OCCUPANT CHARACTERISTICS

3.1 DEMOGRAPHICS

Based on office use, all areas are assumed to accommodate occupants who will be awake and familiar with the building layouts, their surroundings and the associated escape routes.

All areas may contain persons who need assistance or who may be a wheelchair user and need assistance in the event of a fire.

3.2 RISK PROFILES

The risk profiles for the buildings have been established using Table 4 of BS 9999 and are presented in Table 1 of this report:

Area	Occupancy characteristic	Fire growth rate	Risk profile
Office areas	A	2	A2
Back-of-house areas (stores)	A	3	A3

Table 1: Risk profiles

All areas in the office building employing A3 risk profile (fast fire growth rate) will be separated using fire resisting construction from any other areas, locally mitigating the higher risk. Therefore, the governing risk profiles for the proposed works will be A2.

3.3 OCCUPANCY NUMBERS

The occupancy numbers for the office areas have been assessed based on the seating arrangements shown on architectural drawings (as referenced in Appendix A of this report), as well as based on the head count figures shown as part of the same drawings. Apart from open plan office areas, both floors will include a number of additional meeting rooms and breakout spaces, which are assumed to have a transient occupancy and therefore are not considered to contribute to the total occupancy of the building.

Level	Area	Floor Area (m ²)	Occupancy Factor (m ² /person)	Occupancy
G	Reception	N/A	N/A	6 ⁽¹⁾
	Meeting Rooms	N/A	N/A	16 ⁽²⁾
	Total occupancy for second floor			22
1	Office Seating	N/A	N/A	35 ⁽¹⁾
	Meeting Rooms	N/A	N/A	16 ⁽²⁾
	Tea Point	N/A	N/A	9
	Total occupancy for first floor			60 ⁽³⁾

Note:

- 1) Based on head count figures provided as part of architectural drawings (as referenced in Appendix A of this report.
- 2) Based on meeting room figures provided as part of architectural drawings (as referenced in Appendix A of this report.
- 3) The maximum allowable first floor occupancy will be limited by the horizontal egress capacity

Table 2: Maximum occupancies

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4 DEPARTURES FROM GUIDANCE

4.1 OVERVIEW

Table 3 of this report lists the deviations from the guidance of BS 9999, including the associated references to the fire engineering justification presented in the report. It should be noted that the following actions are a risk until agreed with the Approving Authorities.

Departure	Deviation / Justification
Reliance on landlord fire strategy	The proposed works will rely on the requirements of the landlord fire strategy. Provisions contained herein may need to be updated should the landlord fire strategy be updated. It is strongly recommended that the provisions discussed herein are reviewed in order to ensure that the interpretation and requirements of the landlord fire strategy are met by the fit-out works.

Table 3: Table of variations to standard guidance

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5 MEANS OF WARNING AND ESCAPE

5.1 EVACUATION PHILOSOPHY

The office will be evacuated simultaneously in the event of the fire alarm activating. A repeater panel should be housed within the command centre of the shopping centre to alert personnel who manage the centre to a possible fire within the office unit. It should be checked that any alarm signals sent by the office meet the strategy for the centre and be designed in accordance with it.

A Category L1 fire alarm system (designed, installed and commissioned in accordance with BS 5839-1) will be installed within the office. The fire alarm is noted as L1 as this is a landlords requirement shown in the "Project Moonstone Fire Engineering Review" document.

5.2 AUTOMATIC FIRE DETECTION AND ALARM

A summary of the fire alarm and detection systems are presented in Table 4 of this report:

Risk Profile	Detection and Alarm Category designed in accordance with BS 5839-1	
	Minimum Category	Proposed Category
A2	M	L1
A3	L2	L1

Table 4: Fire alarm and detection systems

The fire alarm system will include detection, manual call points and sounders as necessary to comply with a Category L1 BS 5839-1 system.

5.3 CAUSE AND EFFECT

The fire alarm cause and effect principles for the building are summarised in Table 5 below:

Accommodation	Cause	Effect
All areas under scope of this report	Smoke / heat detector activated or manual call point activated	- Alarm signal sounds throughout the demise; - Immediate evacuation commences; - HVAC shutdown; - Smoke ventilation systems activate; - Security doors unlock / fire doors close (except powered sliding doors which would remain open).

Table 5: Cause and effect

5.4 HORIZONTAL ESCAPE

5.4.1 Travel distances

It is generally the case that travel distances will be within guidance limitations as measured up to a storey exit. Travel distances will be in accordance with the guidance recommended in BS 9999 (see Table 6 of this report):

Risk profile	Travel within	Maximum travel distance (meters)			
		Single direction		Alternative Means of Escape	
		Direct	Actual	Direct	Actual
A2	All such areas ⁽¹⁾	15	22	37	55
A3	All such areas ⁽²⁾	12	18	30	45
1) Areas having an A2 risk profile are identified in Table 1 of this report.					
2) Areas having an A3 risk profile are identified in Table 1 of this report.					

Table 6: Travel distance requirements

5.4.2 Inner rooms

As the design will include furnished open-plan areas in both of the office areas falling under the scope of these works, all rooms accessed off the open-plan areas, including the lounge (e.g. meeting rooms, offices etc) will be classed as inner rooms. This is considered acceptable, given the provision of an L1 detection and alarm system and the fact that inner room occupancies will not exceed 60 occupants per room.

5.4.3 Number of exits

In accordance with Section 16.3.1 of BS 9999, the minimum number of escape routes from individual rooms / storeys is presented in Table 7 of this report, and is dependent on the overall occupancy of the room / storey:

Number of occupants in room / storey	Minimum number of required escape routes
60	1
600	2
More than 600	3

Table 7: Minimum number of escape routes

The ground and first floor areas will be provided with exits as follows:

- GROUND - 2no. exits leading into fresh air and 1 no. exit leading to the Entrance lobby
- FIRST - 1 no. storey exit leading into the common office stair and 1 no exit leading to a fire escape to fresh air.

Based on the occupancy numbers discussed in Table 2 of this report, the number of exits from each area should be sufficient to satisfy minimum BS 9999 requirements.

5.4.4 Exit widths

The minimum clear width of the storey exits within the buildings are shown in Table 8 of this report. In any case, all doors should achieve a minimum clear width of 850mm in order to support unassisted evacuation of disabled occupants.

Risk profile	Effective clear width
A2	3.6 mm / person
A3	4.6 mm / person

Table 8: Horizontal exit width requirements

Table 9 of this report presents the minimum required horizontal exit widths for each of the areas falling under the scope of this report. It should be noted that the maximum occupancies for each space are mainly driven by the overall building escape capacities, rather than storey exit widths.

It should be noted that all doors with a stated capacity of more than 60 persons, should swing in the direction of escape:

Level	Area	Minimum width of storey exit (mm)	Leading into / to	Exit capacity ⁽¹⁾	Horizontal exit capacity	Maximum occupancy
4	Ground	1100	Fresh air (DG01)	305	365	22 ⁽³⁾
		1100	Fresh air (DG03)	305		
		850	Entrance lobby (DG04)	60 ⁽²⁾		
4	First	1100	Entrance lobby Stair	305	60	60 ⁽⁴⁾
		850	Fire escape Stair	60 ⁽²⁾		

Notes:

1)

The storey exit with the largest capacity has been discounted.

2)

Inward-swing doors are limited to a capacity of 60 occupants

3)

Limited by seats available.

4)

Limited by single escape due to lobby arrangements.

Table 9: Horizontal exit capacity

The requirements presented in Table 9 notwithstanding, all doors on escape routes should achieve a clear width of at least 850mm to support unassisted wheelchair egress.

All doors used as a Means of Escape / final exit should be readily openable without the use of a key at all material times. Any securing devices should enable escape from within during a fire scenario.

5.5 VERTICAL ESCAPE

The proposed work should not result in a change of width or number of storeys served by each of the stairs serving the wider building. Therefore, it is expected that, as long as overall occupancies follow the requirements

of the landlord strategy, no further calculations should be undertaken to review the escape capacities of the protected stairs serving the building.

The current stair capacities should be monitored should any other units take advantage of these, as all stairs will have a maximum capacity based on the amount of floors they serve. For example if the main stair served ground, first and a second floor (indicated on the plans as they go up) we can eliminate the ground floor use as they have two external doors which serve as two separate escapes. This leaves the stairs having a capacity of 300 people if they are at least 1100mm wide and only serve ground, first and second.

5.6 EMERGENCY LIGHTING

Emergency lighting will be provided throughout the building in accordance with the recommendations of BS 5266-1 and 5266-7 and will be included in the following areas:

Risk profile	Areas requiring escape lighting
Any	All sanitary accommodation with a floor area over 8m ²
	Windowless sanitary accommodation with a floor area less than 8m ²
	Electricity and generator rooms
	Switch room / battery room
A	Underground or windowless accommodation
	Stairways in a central core
	Internal corridors more than 30m long
	Open-plan areas of more than 60m ²

Table 10: Emergency lighting

Emergency lighting will be provided on all escape routes. The installation will also comply with the Codes of Practice for Emergency Lighting BS 5266-1.

5.7 ESCAPE ROUTE SIGNAGE

Escape signage will be provided above storey exits and final exit doors from the common areas within the accommodation. Emergency escape signage will be required to meet the requirements of the Regulatory Reform (Fire Safety) Order 2005. Such signage will meet the recommendations of BS 5499-4 and will be located as follows, except for escape routes which are in ordinary use:

- All designated escape routes or escape routes across open areas will be provided with signage, especially stairs and other changes in level and direction.
- The position of all doors and other exits sited on escape routes, including storey exits and final exits will be identified by signs.
- Where an escape route from a room is not conspicuous or confusion could occur, the route will be indicated by a sign, including intermediate signs where necessary.
- All changes of direction in corridors, stairways and open spaces forming part of an escape route will be marked with intermediate signs. Each intermediate door or junction will be similarly signed.

It is suggested that the final signage provision is agreed with the Regulatory Authorities prior to occupation of the building.

5.7.1 Other Signage

Fire resisting doors, fire exit doors and escape routes in and around the building will be provided with signage meeting the recommendations of BS 5499-5.

5.8 OCCUPANTS WITH DISABILITIES OR IMPAIRMENTS

Accessible refuges are required for the first floor, should lift access be available.

Each refuge should be at least 1400mm x 900mm in area and located outside the general escape route. The refuge will be signed and contain a means for occupants to communicate with the building management that they need assistance (Emergency Voice Communication (EVC) system, as per BS 5839-9). EVC systems and refuge areas will be indicated on the plans and will need to be verified by the design team.

A management strategy will need to be developed for the accommodation by the owner / building management and will incorporate details of how the building complies with the requirements of The Equality Act 2010. The management strategy will include information on staff training, how occupants with a disability will be evacuated in the event of a fire and identify key roles in ensuring that they are assisted in a fire situation.

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6 INTERNAL FIRE SPREAD

6.1 INTERNAL LININGS

The internal linings for all walls and ceilings should meet the recommendations shown in Table 11 of this report:

Location	Class of lining	
	National Class*	European Class#
Small rooms of area up to 30m ²	3	D-s3, d2
Other rooms	1	C-s3, d2
Circulation spaces	0	B-s3, d2

Table 11: Wall and ceiling linings

The Class of linings recommended in Table 11 of this report can be downgraded (but not less than Class 3 or D-s3, d2) in walls of rooms, provided that the total area of those parts in any one room does not exceed one half of the floor area of the room and subject to a maximum of 60m². It should be noted that the reduction in classification does not apply to circulation routes / escape routes but small rooms outside of these areas.

6.2 AUTOMATIC FIRE SUPPRESSION

Is it not proposed that the works falling under this report would include automatic suppression. However as per the JGA note, the landlords fire strategy calls for automatic suppression in the form of sprinklers, therefore these will need to be provided.

6.3 ELEMENTS OF STRUCTURE

It is expected that the structural fire resistance of the building will be retained as per the landlord fire strategy. Any new structural elements should achieve a structural fire resistance of at least 90-minutes.

Where any fire-resisting structural elements are removed, chipped or otherwise damaged by the proposed fit-out works, these should be fully reinstated in line with the landlord fire strategy requirements.

6.4 FIRE COMPARTMENTATION

Unless otherwise stated in this section, the compartmentation strategy is expected to be fully retained in line with the requirements for the landlord fire strategy.

If affected by the proposed works, the enclosures of the protected stairs should be retained as 90-minutes (integrity and insulation). This is an important item, which should be confirmed with the landlord fire engineer.

All high hazard rooms (stores, plant rooms i.e. all areas with an A3 risk profile) will be individually enclosed in fire-resisting construction.

Any risers, protected shafts, lifts or similar should be protected in line with the requirements of the landlord fire safety strategy.

The compartmentation provisions including fire doors will follow the recommendations of Table 12 of this report:

Enclosure	Fire resistance rating (minutes)	Fire door
Building structure	Retained in line with landlord fire strategy requirements	
Protected lobbies		
Party wall / floor to adjacent units		
Protected stairs (where impacted by the works)	90	FD60S
Low risk ancillary areas e.g. cleaner stores, storage cupboards, server room	30	FD30S
High risk ancillary areas (e.g. plant rooms)	60	FD60S

Table 12: Fire resisting enclosures

6.5 GENERAL

Openings in compartment walls will be limited to the passage of service ducts and access doors fitted with smoke seals. Where service ducts pass through compartment walls or floors, these will be provided with a fire and smoke damper. All openings within protected shafts will be provided with a period of fire resistance which is half to the wall they are provided within and the fire doors are to be locked shut.

6.6 FIRE STOPPING

Any openings for services will be fire stopped, unless protected throughout their entire length with fire resisting material.

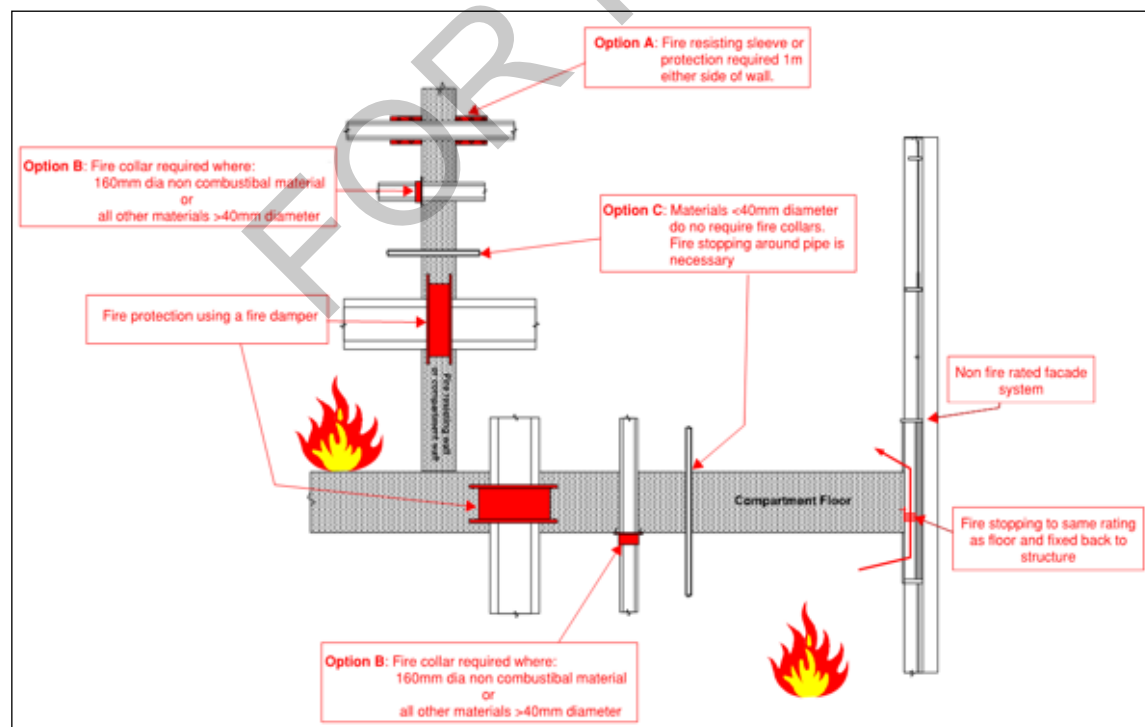


Figure 4: Fire stopping details

This is to prevent the passage of fire and assist in retarding the movement of smoke. Joints between elements of structure that serve as barriers to fire will be fire-stopped to prevent the passage of fire and smoke.

Situation	Pipe material and maximum nominal internal diameter (mm)		
	(a) Non-combustible material	(b) Lead, Aluminium, Aluminium alloy, uPVC, Fibre cement	(c) Any other material
Structure (but not a wall separating buildings) enclosing a protected shaft which is not a staircase or a lift shaft	160	110	40
Compartment Wall or Compartment floor	160	160 (stack pipe) 110 (branch pipe)	40
Any other situation	160	40	40

Table 13: Permitted pipe penetration details

6.7 CAVITY BARRIERS

Cavity barriers will be included in any large cavity with the potential for extensive unseen fire spread. The key areas that require cavity barriers are as follows:

- At the junction between an external cavity wall and a compartment wall that separates buildings; and at the top of such an external cavity wall;
- At the junction between an external cavity wall and every compartment floor and compartment wall;
- At the junction between a cavity wall and every compartment floor, compartment wall, or other wall or door assembly that forms a fire-resisting barrier;
- In a protected escape route, above and below any fire-resisting construction that is not carried full storey height;
- Within the void behind the external face of rain screen cladding at every floor level and on the line of compartment walls abutting the external wall;
- At the edges of cavities (including around openings, i.e. windows).

In addition to the above locations, cavity barriers are also normally required in cavities (including ceiling voids and under floor service voids) where the cavity exceeds 1.0m or 20m (depending on the surface of the products exposed within the cavity, the classification of the materials exposed within the cavity being worse or better than Class C-s3,d2).

If a single room with a ceiling cavity or underfloor cavity exceeds the dimensions mentioned above, cavity barriers need only be provided on the line of the enclosing partitions for of that room, provided that the following conditions are met:

- The cavity barriers are a maximum of 40m apart;
- The surface of the material / product exposed within the cavity is Class C-s3,d2 or better.

However, if even larger cavities (>40m) are required, a summary of the necessary provisions for avoiding cavity barriers are listed in Table 14 of this report:

Barrier criteria for large cavities
A) The room and the cavity together are compartmented from the rest of the building
B) An automatic fire detection and alarm system meeting the relevant recommendations of BS 5839-1 is fitted in the building (however detectors are not required in the cavity) if it meets certain criteria
C) If the cavity is used as a plenum, the recommendations about re-circulating air distribution systems in BS 9999 are to be followed
D) The surface exposed in the cavity is Class B-s3,d2 or better and the supports and fixings in the cavity are Class A1
E) The flame spread rating of any pipe insulation system is Class C-s3,d2 or better
F) Any electrical wiring in the void is laid in metal trays, or in metal conduit
G) Any other materials in the cavity are of Class A2-s3,d2 or better.

Table 14: Cavity details

The cavity barriers will provide a 30-minute fire rating (i.e. 30 minutes integrity and 15 minutes insulation) and should be mechanically fixed to the structure in all locations. Any penetrations through the cavity barriers will be either;

- Fitted with a proprietary sealing system, or
- Pipes of limited diameters that are sealed with fire-stopping or sealed with sleeving of non-combustible pipe material.

6.8 BUILDING SERVICES COORDINATION

6.8.1 Emergency Power Supplies

In the event of a failure of the mains power supply a secondary backup power supply will be provided to feed all life safety systems that require electricity to function as intended. The secondary supply will be appropriate for the life safety system concerned. The following life safety systems will include a backup power supply:

- Automatic fire alarm and detection system;
- Sprinkler system and alarm
- Illuminated emergency signage;
- Emergency voice communication systems;
- Smoke ventilation systems; and
- Emergency lighting.

6.8.2 Gas Services

All gas services should be designed and installed in accordance with all current version of Gas Safety guidance and Regulations (1998) & Pipelines Safety Regulations (1996) where applicable.

6.8.3 Electrical Services

Electrical services should be designed and installed in accordance with the latest version of electrical guidance and Regulations, mainly BS 7671 18th Edition.

6.8.4 Fire and Smoke Dampers

Fire and smoke dampers will be required to all lines of internal compartmentation and fire resistance when the integrity has been breached. Fire dampers should always be located within the thickness of the fire separating element they are protecting and suitable access for inspection, maintenance and testing should always be provided.

All fire dampers should conform to BS EN 15650: 2010. They should have an E classification equal to or greater than the wall / floor through which they pass.

Fire dampers activated only by fusible links are not suitable for protected escape routes or for compartment lines (floors or walls). In such instances an ES 60 classified fire and smoke damper which is activated by a fire and smoke detector shall be used.

The following spaces constitute a protected escape route:

- Fire escape stairs
- Main protected stairs, and;
- Protected corridors.

The fire and smoke damper strategy should be generally in accordance with the requirements specified in BS 9999 Clause 32.5.

6.9 DOORS

All fire doors within the building should be provided in accordance with BS 9999.

Each door provided should be tested and achieve the appropriate performance as stated in BS 476-22.

All fire doors should generally be operable without the use of a key at all material times and open in the direction of escape, where the occupancy of a room / space exceeds 60 persons, escape / fire doors should always open in the direction of escape.

The minimum rating required has been detailed in Table 12 of this report.

7 EXTERNAL FIRE SPREAD

The proposed works are understood not to involve any changes to the external envelope of the building (i.e. walls, roof etc). Also, the works will not change the level of fire risk / fire loading when compared to the assumptions of the landlord fire strategy i.e. all areas within the solicitors office retained as office use rather than shop / commercial.

There are no changes to the frontages of any concourse here as the office does not interact with that part of the shopping centre, therefore any external boundary conditions have not been altered or made worse as a part of these works.

Therefore, it is expected that the proposed fitout changes will not make the existing design any less satisfactory with respect to external fire spread provisions. It is expected that all landlord strategy design requirements in support of Part B4, Schedule 1 of The Building Regulations 2010 will be retained as existing.

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8 ACCESS AND FACILITIES FOR THE FIRE SERVICE

The proposed works are understood not to involve any changes to the external access routes for the building (i.e. adjoining roads, site access points). Additionally, the works are not considered to have any adverse effects on the internal floor area, building height etc. Also, the works change the use from shop to office, which is expected to pose an equivalent level of risk. The principal access has not changed and is still external from Market Place.

Therefore, it is expected that the proposed fit-out changes will not make the existing design any less satisfactory with respect to fire service and facilities provisions. It is expected that all existing design requirements in support of Part B5, Schedule 1 of The Building Regulations 2010 will be retained as existing.

It is noted that the shopping centre has a smoke clearance system in place for the main concourse, but as this unit does not intersect with that concourse it has been expected that there will be no changes to that system as part of these works. However, should this change or adaptations are made to the smoke clearance system of the shopping centre, the shopping centre's base build fire strategy should be referred to and further investigative work undertaken.

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9 FIRE SAFETY MANAGEMENT

9.1 GENERAL

Given the use and likely occupancy of the building, management procedures will assist in the prevention and control of fires and the evacuation of occupants.

Good housekeeping standards will be enforced to ensure that the effectiveness of the fire safety provisions is not affected.

Maintenance procedures should be developed to ensure that all equipment and services within the building are able to operate effectively.

A full Fire Risk Assessment should be carried out by the occupier / developer of the building (coordinated by the landlord where multiple tenants are present) nearer to the development completion and be in place on occupation to meet the Regulatory Reform (Fire Safety) Order (FSO) 2005. The assessment should be maintained and act as a record of the provision and measures, passive and active, used to minimise fire risk within and around the building.

9.2 KEY MANAGEMENT ISSUES

This section describes each of the key management areas that will need to be implemented and maintained during the lifetime of the building:

- All necessary fire safety systems must be regularly maintained and tested.
- The building management will regularly monitor and control the specification and use of combustibles within the escape routes and circulation areas. These areas will generally be maintained free of all combustibles and the escape routes will be unobstructed at all times.
- A full Fire Risk Assessment should be developed and kept up to date at all times and especially when any physical changes are made or the use of the building changes.
- All building staff and tenants will receive regular training including roles and responsibilities for key members of staff.

9.2.1 Fire Safety Management

A level 2 management process should be put in place as a minimum, key management areas that will need to be developed implemented and maintained during the lifetime of the building.

- Planning for changes in risk profile.
- Resources and authority.
- Staffing levels & ratio to occupants.
- Fire training.
- Work control and repairs.
- Communications.
- Maintenance and testing.
- Liaison with fire service.

- Contingency planning.

Further information is available via BS 9999.

9.2.2 Control of Evacuation and Fire Safety Planning / Implementation

A Detailed Fire Safety plan will be drawn up by the building management, which will provide clear simple advice for the occupants in the event of an emergency.

The fire safety plan will be prepared, maintained and implemented by the fire personnel responsible for the building in question and will include:

- The procedures to be adopted in the event of a fire signal being given.
- Procedures for evacuation of occupants.
- Procedures for equipment maintenance.
- Procedures for recording and monitoring equipment maintenance and any fire incidents.
- Special procedures which are in place for occupants who may have a disability and procedures which are in place to ensure that all occupants are made aware to staff when they are in the building.

Expanding on the information given above, the fire strategy includes a number of risk critical areas resulting in the need to formalise the fire safety management in the building. To develop and maintain the safety of the building, the building management should formulate a policy statement appropriate to the building configuration, location, occupation, and if relevant, to the building users. The policy statement should include:

- General safety issues related to the use of the building.
- Possible fire scenarios.
- Aims and objectives of the proposed management system and its methodology.

This policy should be endorsed by the highest level of management.

9.3 REGULATION 38

To satisfy Regulation 38 of The Building Regulations 2010 it is proposed that a full package of building design information is passed to the end user. It is proposed that the following relevant information is provided to the end users:

- This fire strategy report;
- Any management information proposed in addition to that contained in this strategy;
- Details of all passive fire safety measures (including compartmentation, cavity barriers, fire doors, self-closers, and duct dampers);
- Details of the fire alarm and detection systems, emergency lighting, emergency signage, access controls, door hold open devices;
- Details of all active fire safety measures including the smoke control system design, mode of operation and control systems; (where applicable)
- Details of the lifts;
- Details of fire hydrants;

- Details of life safety equipment, including life safety power supplies;
- Any high-risk rooms and equipment present;
- As built plans for the building;
- Fire strategy drawings of every floor level within the building.
- O&M Manuals for the building systems, including commissioning information and certification.

This information will be transferred as a package of information by the main contractor at handover of the building.

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APPENDIX A – ARCHITECT’S DRAWINGS REFERENCED

This report is based on the following plans and revision shown:

Author	Description	Reference	Revision
Gray Baynes + Shew	305 Proposed Furniture Layout - Ground Floor	7002.305	N/A
	306 Proposed Furniture Layout - First Floor	7002.306	N/A
Piper Whitlock	Location Plan PMBAM-PWA-00-00-DR-A-0100-G1_	PMBAM	G1
JGA	2020-05-31 Project Moonstone Fire Engineering Review <i>(For info only, this refers to the whole area of the shopping centre undergoing renovation not purely the office referred to in this report.)</i>	OX18055 (28/02/2019)	D00

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