



Fire Safety Strategy

Project: Bognor Regis Campus – Student Accommodation

Revision: 1

Date: March 2022

Project Reference: FE1355

DOCUMENT TRACKER

Project Address	University of Chichester, Upper Bognor Road, Bognor Regis PO21 1HR
Client	AECOM
Building Control Body	Not Appointed
Fire Authority	West Sussex Fire and Rescue Service (FRS)
Architect	Architecture PLB
RIBA Stage	3
Project Reference	FE1355
Revision Number	1
Date	14.03.2022

Revision	Type	Drafted by	Reviewed/Approved by	Date
1	Fire Safety Strategy Report	A Dragan	J Dowd	14.03.2022

Drafted by	A Dragan MEng (Hons) AIFireE
Reviewed/Approved by	J Dowd MSc BEng (Hons) CEng MIFireE MCABE

Solas Realta Ltd Reserve All Rights

This report is a copyright of Solas Realta Ltd. It applies only to the named development and must not be used in support of any other project. It may be distributed to third parties only with the permission of Solas Realta Ltd and must be distributed in full and without amendment to content or presentation.

This report relates only to statutory requirements for Building Regulations compliance. Additional fire safety measures may be necessary for insurance and other purposes. Where no reference is made within this report to a certain element, all detailed aspects of the design and construction will, unless explicitly stated otherwise in this report, be in accordance with the recommendations of the selected design guidance identified in the legislation section of this report and the appropriate British Standards.

The validity of this report is dependent upon the recommendations being implemented in full and as described.

This report is based on the Client's description of their requirements and is subject to assumptions that Solas Realta Ltd can reasonably be expected to make in accordance with sound professional principles and experience. Solas Realta Ltd accept no liability for the accuracy of the information provided by the Client or other third parties. Solas Realta Ltd shall not be held responsible or liable for the designs produced by any other consultants, sub-consultants or sub-contractors, including any original designs produced by others which you may adapt, modify or develop in the carrying out of the Services. The report is based on the drawings referenced. Any subsequent changes to the design which are not agreed with Solas Realta Ltd invalidate the report.

This report relates to a project that is subject to review from Approval Authorities. It should be ensured that the contents of the report are agreed with all the relevant approval bodies prior to implementation.

TABLE OF CONTENT

1	APPOINTMENT	4
2	STATUTORY REQUIRMENTS & DESIGN BASIS	5
3	GENERAL.....	6
4	BUILDING DESCRIPTION.....	8
5	MEANS OF WARNING & ESCAPE	9
6	INTERNAL FIRE SPREAD (LININGS).....	16
7	INTERNAL FIRE SPREAD (STRUCTURES).....	17
8	EXTERNAL FIRE SPREAD	22
9	ACCESS & FACILITIES FOR THE FIRE SERVICE	24
10	EMERGENCY POWER	26
11	MANAGEMENT	27
12	CONCLUSION	28
13	APPENDIX A: DRAWING PLANS.....	29
14	APPENDIX B: INDICATIVE FADS / CAUSE & Effect	33
15	APPENDIX C: SMOKE VENTILATION SYSTEM	35

1 APPOINTMENT

1.1 Scope

Solas Realta Ltd has been appointed by University of Chichester to produce a Fire Safety Strategy for RIBA Stage 3 for the new student residential building comprising of a six-storey (GF+5) block of flats as part of their campus at Upper Bognor Road, Bognor Regis PO21 1HR.

The report is intended for discussion between the design team and to assist the design team in gaining approval from the Regulating Authorities. The report will analyse and make recommendations to meet the functional requirements of Schedule 1 of the Building Regulations (Part B) and The Regulatory Reform (Fire Safety) Order 2005 only. Property protection will not form part of this report.

The following statutory fire safety objectives shall be satisfied:

- Life safety of occupants - the occupants must be able to leave the building without being subject to hazardous or untenable conditions. This shall be satisfied by meeting the Requirements of B1 to B3 of the Building Regulations 2010.
- Protection of adjoining buildings - structures must not collapse onto adjacent property and fire spread by radiation should not occur. This objective shall be satisfied by meeting the Requirement B4 of the Building Regulations 2010.
- Life safety of fire fighters - Fire fighters must be given reasonable time and facilities to rescue any remaining occupants before overly hazardous conditions occur within the common parts of the building.

The report follows the main sections of the Building Regulations, however, in some specific areas, fire engineering methods have been used to demonstrate deviations from the guidance.

This Fire Strategy does not address site fire safety during the building works. The Health and Safety Executive (HSE) issues guidance (HSG 168) on identifying and managing fire precautions during the construction phase.

The findings and opinions expressed are based on the conditions encountered and the information reasonably available at the date of issue of this document and shall be applicable only to the circumstances envisaged herein.

1.2 Limitations

Our advice is strictly limited to the scope in Section 1.1 and is provided for the new student residential building comprising of a six-storey (GF+5) block of flats as part of the University of Chichester campus at Upper Bognor Road, Bognor Regis PO21 1HR.

This report may have an impact on other Parts of the Building Regulations; therefore, it is recommended that this report is shared with all members of the Design Team.

Solas Realta Ltd has not reviewed any other issues within the project other than those identified in our report. We offer no comment on any other aspects of the development and any absence of comment on such issues should not be regarded as any form of approval. The advice should not be used for buildings other than the new student residential building at Upper Bognor Road, Bognor Regis PO21 1HR.

The details within this strategy are only valid where the systems are designed correctly and maintained in an operational condition. If there is a failure in the management approach and a fire occurs, the systems as designed, may not help to reduce the extent of damage to the building and its contents. Until this report is agreed with the approving authorities, the content should only be used for preliminary information.

2 STATUTORY REQUIREMENTS & DESIGN BASIS

2.1 Statutory Requirements

The main fire legislation applicable to this building includes:

- The Building Act 1984
- The Building Regulations 2010
- The Regulatory Reform (Fire Safety) Order 2005
- Construction, Design and Management Regulations (CDM) 2015

This document forms a detailed strategy for fire safety matters concerning the Building Regulations and The Regulatory Reform (Fire Safety) Order 2005. The design team must ensure the contents of this report are incorporated into the building. This strategy is mainly concerned with getting occupants out of the building safely and providing measures, where necessary, to assist the fire fighters in their operations.

Regulation 38 of the Building Regulations requires that fire safety information be given to the person responsible for the occupied building. Therefore, copies of the finalised fire strategy report and the other relevant fire safety information should be issued to the responsible person on completion of the project.

2.2 Design Basis and Guidance

2.2.1 General

BS 9991 will be the primary guidance used to show that the functional requirements of Part B of the Building Regulations have been satisfied. Where departures from the guidance are proposed, compensatory provisions and/or quantitative arguments will be offered to demonstrate that the overall level of safety achieved by full conformance to the guidance documents is not compromised.

Note: The guidance in Approved Document B (AD B) was updated in 2020 for residential buildings with a floor height greater than 11m above ground level. Albeit BS 9991 is not updated yet, the intention is for this guidance to be incorporated into BS 9991 when next published. The proposed building has a top floor height of more than 11m; therefore, this guidance will apply to the proposed building design.

For this reason, the specific updates in AD B will be incorporated into this Fire Safety Strategy. This includes the building being afforded with:

- Automatic Water Fire Suppression System (AWFSS) (See Section 5.3)
- Wayfinding Signage (See Section 9.4)

2.2.2 Relevant Building (Regulation 7)

Regulation 7 of the Building Regulations was updated in 2018 to include amendments to materials and workmanship. Regulation 7(4) identifies a building with a storey at least 18m above the ground level and which contains one or more dwelling to be classed as a "Relevant Building".

The proposed building is not a "Relevant Building" as defined by the Building Regulations and therefore is not required to conform to this update.

Notwithstanding this, it is strongly recommended that the external walls are designed in accordance with the requirements for a 'Relevant Building'. An external wall that does not meet this standard is likely to cause an elevated risk to people and property, possible approval issues, and potentially limitations in relation to selling the properties, or obtaining insurance due to the likelihood of the building needing an EWS1 Form.

3 GENERAL

3.1 Assumptions

The following assumptions have been made:

- For the purposes of this strategy, it has been assumed that a fire is an accidental event and that there is a single seat of fire.
- A Fire Safety Management Plan (FSMP) will be developed before the building is occupied. See Section 11 for information on a FSMP.
- The ancillary areas will be controlled by staff members.
- The external doors from all final exits, ancillary rooms and flats at the ground floor lead to the nominated Fire Muster Point (FMP) and will be Part M compliant.
- The building will comply with all other Parts of the Building Regulations.
- This Fire Safety Strategy Report will be developed further at RIBA Stage 4.

3.2 Building Height

Obtaining the building height is a prerequisite to identify several fire safety provisions within the building, namely; the structural fire resistance, the provisions for external wall construction, firefighting facilities, etc.

Using Diagram D6 from Approved Document B, the building height falls into the height category of above 11m and less than 18m.

Please see Figure 1 for a depiction of the principle of measuring the height of the top storey in the building.

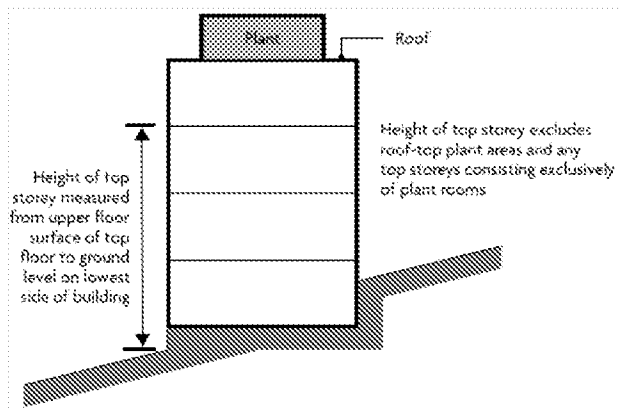


Figure 1: Building Height (AD B Diagram D6)

3.3 Purpose Group & Occupancy Characteristics

The building is designed to be used as student residential accommodation.

Therefore, the purpose group is Residential Dwellings [Flats 1(a)].

3.4 Design, Installation and Commissioning of Fire Safety Systems

The design, installation, and commissioning of the following fire safety systems should be carried out by a specialist company, registered with an independent third-party accreditation scheme accredited by the United Kingdom Accreditation Service (UKAS):

1. Fire Alarm and Detection System (FADS)
2. Automatic Water Fire Suppression System (AWFSS)
3. Smoke ventilation system
4. Emergency lighting
5. Dampers
6. Compartmentation (Wall, floors, doors, roof, etc)
7. Dry rising mains and hydrant

3.5 Referenced British Standard

This Fire Safety Strategy is not intended to provide a detailed system specification, as this information is included within British Standards and manufacturer's recommendations. Therefore, all 'system designers' should refer to the latest version of the British Standards referenced within this report, and any associated manufacturer's recommendations.

3.6 Reference Information

This report has been developed based upon the information contained in the latest design drawings provided by Architecture PLB. This report should be read in conjunction with these drawings and other supporting documentation prepared and submitted by other consultants who are acting on behalf of the design team.

Please see Appendix A for a depiction of the drawing plans listed in Table 1.

Drawing No	Description	Date
3122-APLB-BR-00-DR-A-2000_P4	Proposed Ground Floor	14.03.2022
3122-APLB-BR-XX-DR-A-2001_P4	Proposed Typical Upper Floor (1-4)	14.03.2022
3122-APLB-BR-XX-DR-A-2005_P4	Proposed Fifth Floor	14.03.2022
3122-APLB-BR-ZZ-ZZ-SK-A-8009_P2	Site Plan	07.02.2022
3122-APLB-BR-XX-DR-A-3000_P3	South-West and West Elevations	14.03.2022
3122-APLB-BR-XX-DR-A-3001_P3	North-West and North-East Elevations	14.03.2022

Table 1: Drawing Plan and Information

4 BUILDING DESCRIPTION

4.1 Building Description

The building is a new-build, six-storey (GF+5), student residential block comprising cluster flats with associated communal facilities. The building is proposed on a wider site where two additional student residential buildings will be constructed at a later stage, which fall beyond the scope of this report.

The Ground Floor (GF) consists of three cluster flats, kitchen, common room and plantrooms (water storage, switch room, combines hot water supply / heating plant room).

The First to Fourth Floors (L01-L04) are of a similar design, each consisting of four cluster flats.

The Fifth Floor (L05) extends only above the South wing and consists of two cluster flats.

The building is afforded with three staircases, one at either end of the building and one in the middle. All stairs discharge directly to outside at ground floor level. The North-West stair serves up to L04, whilst the other two stairs serve all floors.

The building is also afforded with two passenger lifts which are positioned centrally.

Please see Figure 2 for an overview of the floor plans and site plan.

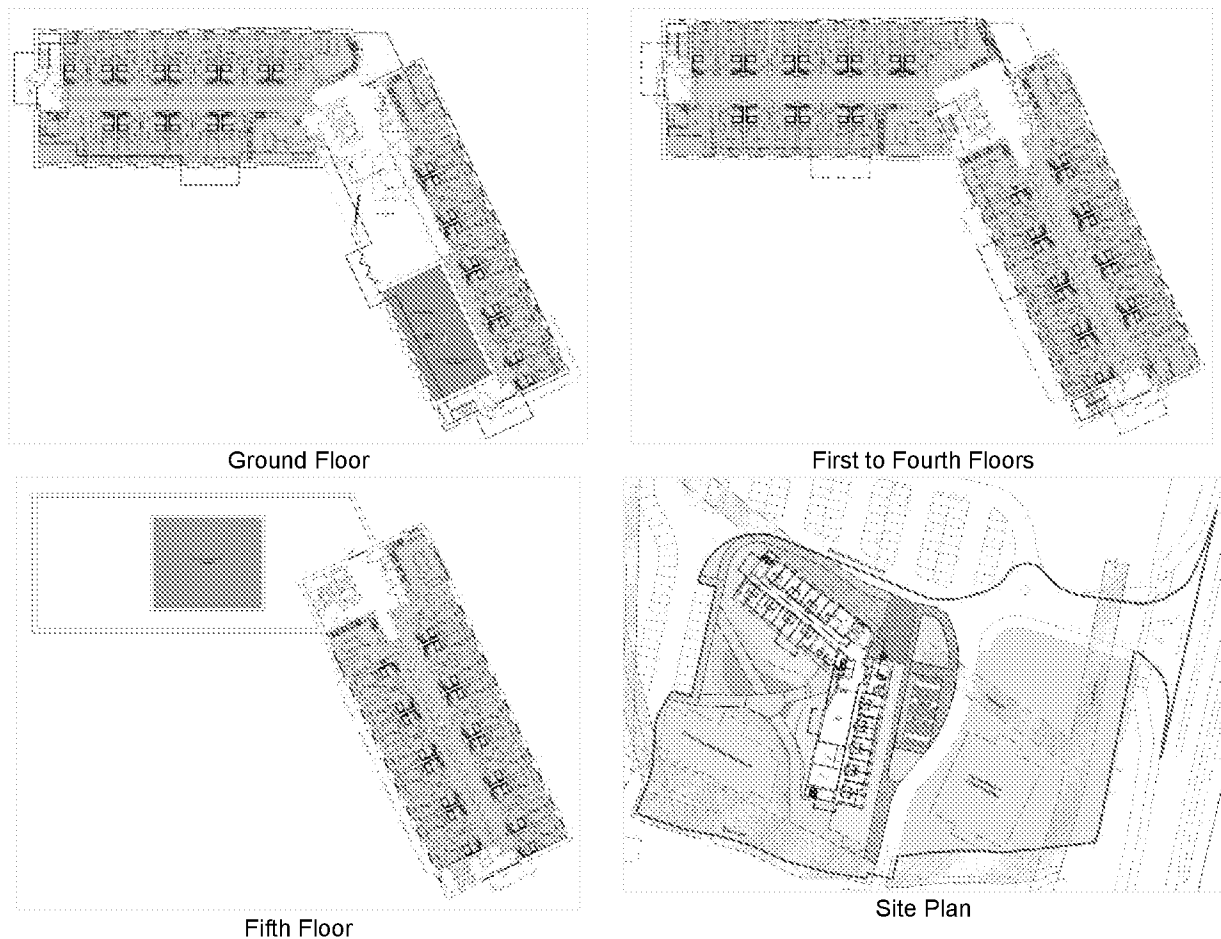


Figure 2: Indicative Floor and Site Plans

5 MEANS OF WARNING & ESCAPE

5.1 Evacuation Philosophy

5.1.1 Residential Flats

The evacuation strategy in the residential units will be based on a 'defend in place' strategy, whereby only residents within the cluster flat of fire origin will immediately evacuate. Residents in unaffected flats may remain protected within their flats until such time as the Fire Service initiate a phased or full evacuation of the building, or residents decide to make their own escape.

This strategy does not imply residents should remain within their flats should they become aware of a fire or smoke affecting their flat, or that could compromise their means of escape from the building. It is essential that the principles of a 'defend in place strategy' are effectively communicated with the residents at the time of their taking up residency within the building.

5.1.2 Ancillary Areas

The evacuation strategy in the ancillary areas (common room and plantrooms) will be simultaneous, whereby if a fire detector or manual call point is activated, sounders will alarm in these areas only, and residents should evacuate to the Fire Muster Point (FMP) outside the building.

5.1.3 Alternative Evacuation Strategy

In support of flexibility in use for the building, a simultaneous evacuation strategy for the entire building could be employed, if beneficial, in accordance with university, insurance or brand standards. This has been presented in Section 5.12.

Attention is drawn to the fact that a simultaneous evacuation strategy for the entire building could reduce the effectiveness of a fire alarm if false alarms are registered. Residents can be more likely to tamper with the detectors and not respond effectively due to the disproportionate number of false alarms. Therefore, if a simultaneous evacuation strategy is considered, it is recommended that building management employ a double-knock strategy as well as other management provisions in order to reduce the number of false alarms and ensure the effectiveness of the evacuation strategy.

5.2 Fire Alarm and Detection System (FADS)

5.2.1 General

The most suitable FADS for student accommodation is a BS 5839-1 Category L1 system.

The Fire Alarm Panel (FAP) should be an addressable type and be located in the main entrance area of the central stair on the ground floor. A fire alarm zone chart should be located adjacent to the FAP to aid in identifying where a fire detector has activated.

Call points can be omitted from the design due to the high level of automatic fire detection coverage. The aim of removing the call points is to remove the opportunity and likelihood of false activations due to deliberate misuse.

Approval Note 1: This is an approval risk until agreed with Building Control and the Fire Service.

5.2.2 Cause & Effect

It is important that the cause and effect is discussed with the end user as part of the overall Fire Safety Management Plan (FSMP) (See Section 11). The cause and effect should be discussed with the M&E Engineer as early as is reasonably possible.

Addressable Input/Output (I/O) units should be used to integrate with any third-party device and should conform to manufacturer's specifications and BS 7273.

Table 2 provides information on the systems/infrastructure that should be integrated with the FADS.

Please see Appendix B for further details on the cause-and-effect schedule.

No	System	Section
1	Automatically openable vents (AOV) in the common corridors	5.6
2	Automatically openable vents (AOV) at the head of each staircase	5.6
3	Evacuation of the roof	5.11
4	Evacuation of ancillary rooms	5.9
5	Passenger lifts	5.13
6	Release of electronic security on doors	5.14
7	Fire dampers	7.14

Table 2: Overview of Fire Safety Systems Integrating with the Common FADS

5.3 Automatic Water Fire Suppression System (AWFSS)

The height of the topmost floor in the building is greater than 11m, therefore an AWFSS is required.

A residential sprinkler system should be designed, installed, and commissioned in accordance with BS 9251. Please see Table 3 for a design specification details.

Design Parameter	Specification
Specification	BS 9251 (2021)
Category	3 (Subclause E & F)
Minimum Design Discharge Density	Minimum design discharge density should be 4 mm/min for single head operation, or 2.8 mm/min through each sprinkler operating simultaneously up to a maximum of four sprinklers in a single area of operation. For the non-residential areas (common room, plant room, etc), please see Note 1 below as these areas have more onerous provisions.
Number of Design Sprinklers	4
Minimum Duration of Supply	30 minutes
Coverage	All areas including corridors.
Emergency Power Supply	Yes
Notes 1. The BS 9251 system can only be used in the ancillary areas, provided no fire compartment is greater than 100m ² . Currently this is the case provided all walls in the ancillary areas are constructed to achieve a minimum of 60-minute fire resistance. If the aforementioned limitations are not fulfilled, then a full BS EN 12845 AWFSS would be required, which would represent a major project risk, considering the onerous water storage requirement. The Designer should refer to Section 5.5 and 5.6 of BS 9251 for details on sprinkler heads, discharge density, number of sprinkler heads and water duration.	

Table 3: AWFSS Design Parameters Overview

5.4 Emergency Lighting

Emergency Lighting should be designed and installed in accordance with BS 5266-1&7.

Emergency lighting coverage should include the following locations:

- Ancillary accommodation on the ground floor;
- Staircases and common corridors / lobbies;
- Windowless accommodation;
- Plant rooms
- External escape routes to the nominated Fire Muster Point (FMP).

5.5 Emergency Escape Signage

All escape routes are to be distinctively and conspicuously marked by emergency exit signs following the recommendations of ISO 3864-1 and BS 5499 Part 1,4 and 5.

Escape route signage should be provided to include directions outside the building to the nominated Fire Muster Point (FMP).

5.6 Smoke Ventilation

The primary aim of smoke ventilation in residential buildings is to protect the staircase enclosure. It can also provide some protection to the protected stair lobbies.

Please see Appendix C for further details on the smoke ventilation design.

Please see Table 4 for an overview of the smoke ventilation arrangements in the staircases and staircase lobbies and comprises of Automatically Opening Vents (AOV).

Please see Figure 3 for a simplistic depiction of the smoke ventilation principles.

No.	Type	Size (m ²)	Floor Level	Location
1	AOV	1.5	GF to L04	North Stair lobby
2	AOV	1.5	GF to L05	Central Stair lobby
3	AOV	1.5	GF to L05	South Stair lobby
4	AOV	1	N/A	Head of North Stair
5	AOV	1	N/A	Head of Central Stair
6	AOV	1	N/A	Head of South Stair

Notes

If smoke is detected in the common corridor or lobby, both of the following should occur:

- Simultaneous opening of the AOV into the staircase lobby on the storey where the fire is located and at the head of the adjacent staircase.
- AOVs from the staircase lobbies on all other storeys should remain closed, even if smoke is subsequently detected on storeys other than where the fire is located.

The Designer should refer to BS EN 12101-2 for details on the specification of natural smoke ventilation systems.

Please see Appendix C for further details on the smoke ventilation design.

Table 4: Overview of Smoke Ventilation Arrangements in the Common Corridor & Stairs

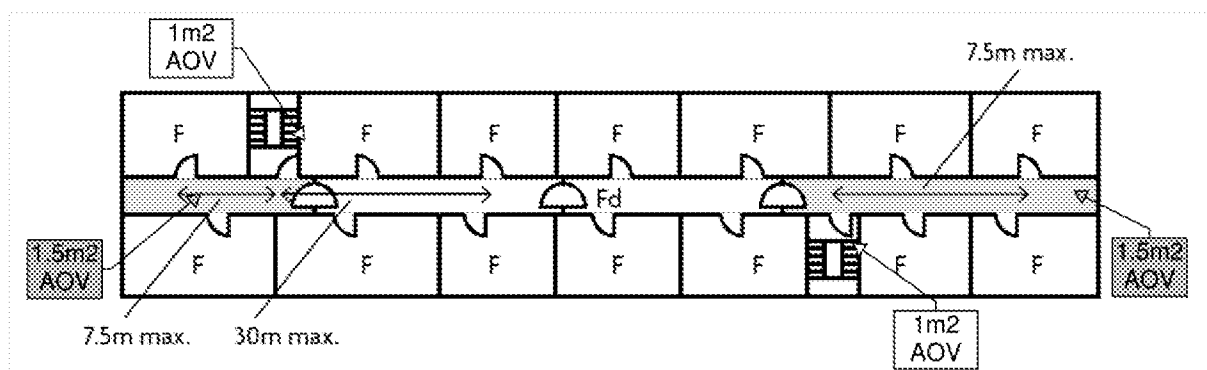


Figure 3: Smoke Ventilation Principles

5.7 Travel Distance

The travel distances should not exceed the recommendations in Table 5.

Area	Travel Distance (m) (single direction)	Travel Distance (m) (more than one direction)
Cluster Flat Corridors	9	35
Bedrooms	9	N/A
Staircase Lobbies	7.5	N/A
Common Room	18	45
Plantrooms	12	N/A
Roof (Open to Air)	60	100
Notes		
The travel distances are considered acceptable.		

Table 5: Travel Distance Overview

5.8 Internal Arrangements of Cluster Flat Units

All flats should be designed as cluster flats in accordance with Section 9.8 of BS 9991. The relevant design criteria are presented in Figure 4.

Cluster flats should be separated from the remainder of the building by construction having a minimum of 60 minutes fire resistance. The cluster flat entrance door should be an FD30S fire door with a self-closing device.

The internal corridor serving the bedrooms of the cluster should be constructed to achieve a minimum of 30 minutes fire resistance. All doors that open onto the internal corridor (bedroom and kitchen doors) should be FD30S fire doors with a self-closing device. Cupboard and service duct access from the corridor should be separated by FD30S fire doors.

The walls/partitions between the bedrooms are not required to achieve fire separation.

The kitchen should be positioned at the remote end of the cluster flat away from flat entrance door. However, it is noted that all cluster flats will include escape in two directions (i.e., escape is always possible away from the kitchen), therefore the proposed kitchen locations are acceptable.

The kitchen should be enclosed in 30 minutes fire-resisting construction with a FD30S fire door, held open by an electromagnetic door holder or free-swing device linked to the FADS.

Any cooking appliances in the kitchens, should be remote (1.8m) from the kitchen access doors.

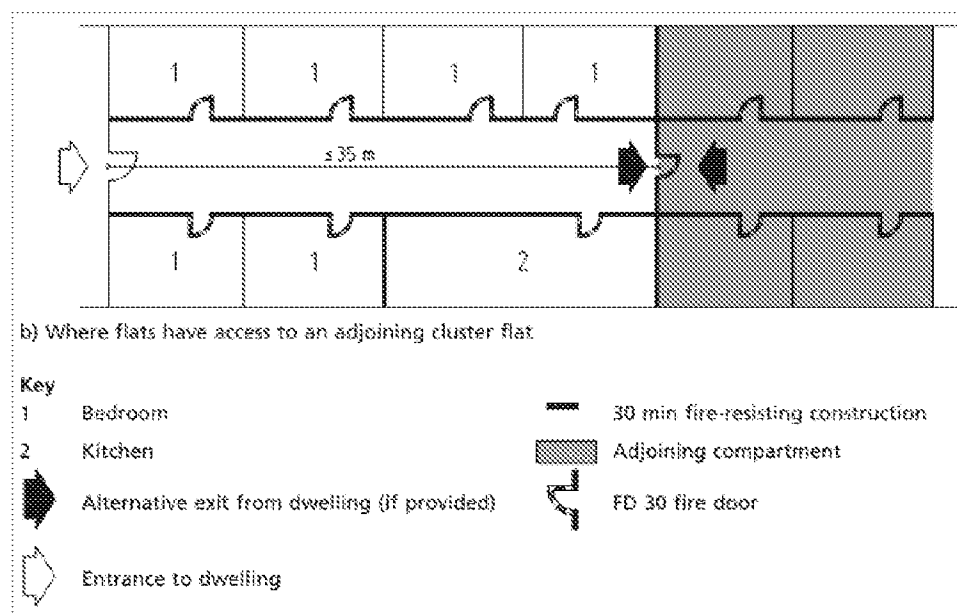


Figure 4: Cluster Flat Overview

5.9 Ancillary Accommodation

Ancillary accommodation covers all those parts of buildings containing flats, that are ancillary to the dwellings. It includes the common room and plant rooms (Water Storage, Switch Room and Combined HWS/Heating Plant Room) on the ground floor.

The common room is approximately 79m² and will generally be used for socialising. The common room should be enclosed in 60-minute fire resisting construction, and be afforded with 30-minute fire resisting lobby, so that the room does not directly open into the lift lobby. It is imperative that the fuel loading within the common room is managed and reviewed within the Fire Risk Assessment. The AWFSS is designed to operate to a maximum of four sprinkler heads simultaneously, therefore, it is imperative that the fuel loading is kept to a minimum, managed and reviewed within the Fire Risk Assessment.

The plant rooms should be independently enclosed in 60-minute fire resisting construction and not exceed 100m². As these rooms are accessed directly from outside, no lobbies or ventilation is required.

5.10 Stairs

The building is afforded with three staircases. The Central and South staircases serve all floors. The North staircase serves L00 to L04. Please see Figure 5 for staircase identification.

Each staircase should adhere to the following points:

1. Be enclosed in 60-minute fire resisting construction with FD30S self-closing fire doors.
2. Be afforded with a ventilated lobby.
3. Discharge directly to a final exit at ground floor level.
4. Conform to Approved Document K.
5. Have a minimum clear width of 1,000mm. Handrails and strings that do not intrude more than 100mm into these widths may be discounted when calculating the common stair width. Please note that Approved Document K may be more onerous.
6. Be constructed of materials achieving class A2-s3, d2, or better.
7. Access hatches for service risers should not be situated within the staircases.

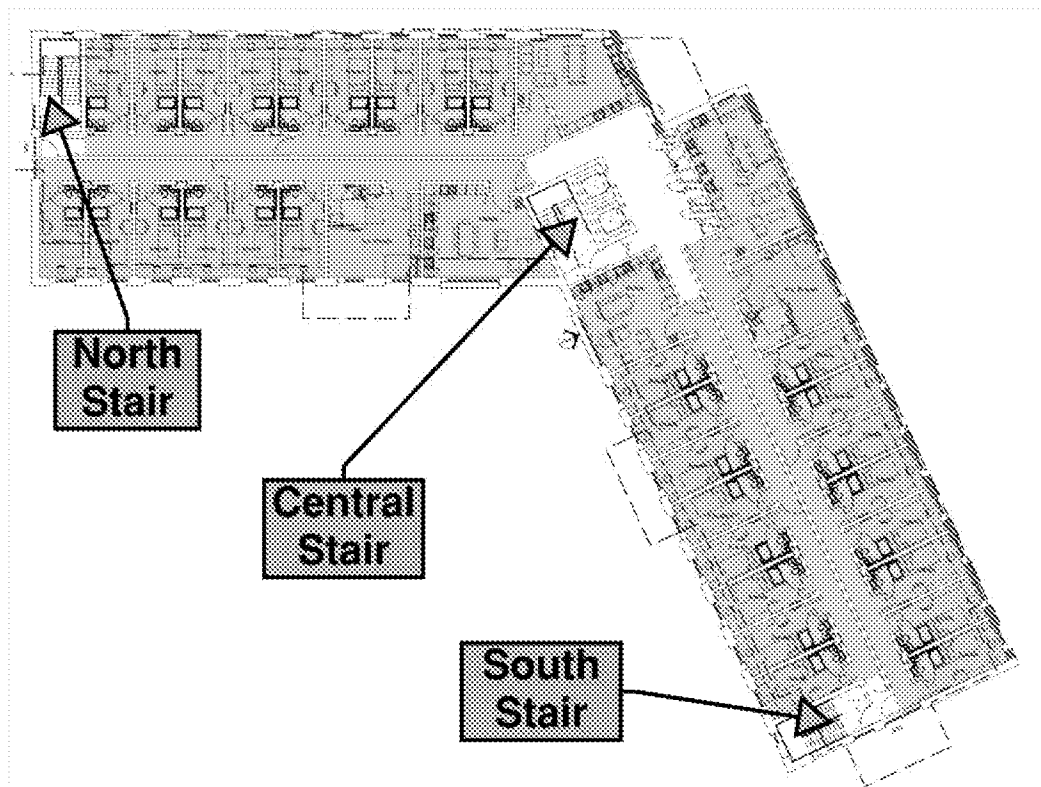


Figure 5: Staircase Identification

5.11 Roof Access

Access to the roof can be gained from a protected staircase. In addition to this, the following arrangements being adhered to:

1. The roof should only be accessed for maintenance.
2. The travel distances should not exceed 60m from the most remote accessible area to the staircase.
3. A 'permit to work' scheme will be employed for any contractors accessing the roof.
4. A sounder/beacon should be located at the roof level to warn occupants at that level in the event of a fire in the building, or smoke entering the lobbies or staircases.

5.12 Occupancy

5.12.1 General

Typically, an occupancy calculation would not be carried out for a block of flats due to the 'defend in place' evacuation strategy. However, in support of a flexible evacuation strategy for future use, a simultaneous evacuation strategy will be examined in relation to occupancy.

5.12.2 Vertical Exit Capacity

Although the staircases are not designed in support of simultaneous evacuation of the entire building, the following vertical egress capacity calculation has been undertaken in accordance with BS 9999, in order to afford flexibility in use for the building should simultaneous evacuation be adopted in the future.

A governing risk profile of C2 has been employed (assuming all occupants can be asleep) and that the fire growth rate is medium. The vertical exit width per stairs is 2.9mm/person for the North staircase (serving four storeys) and 2.6mm/person for the South staircases (serving five storeys each). The central staircase has been discounted for this calculation. The overall vertical exit capacity based on a 1000mm staircase will therefore be 728 people (344 for North staircase and 384 for South staircase), for the entire building. This is in excess of the maximum expected occupancy of approximately 180 people.

5.12.3 Horizontal Exit Capacity

The horizontal exit capacity has also been investigated in order to afford flexibility in use for the building in the future.

Noting the governing risk profile as C2, the horizontal exit width per person is 4.1mm/person. As the storey exits are all 850mm, giving an exit capacity of 121 persons per storey exit. The central staircase exits will be discounted, therefore, the horizontal exit capacity for any storey will be in excess of 242 people (121 for North staircase exit and 121 persons for the South staircase exit). This is in excess of the expected maximum occupancy of any given storey of 36 people.

5.13 Passenger Lifts

The building is afforded with two passenger lifts. The passenger lifts should conform to BS EN 81-73. BS EN 81-73 specifies the safety rules for the construction and installation of lifts, particular applications for passenger and goods passenger lifts in the event of fire.

Upon activation of the FADS, the passenger lifts should be programmed to safely become out of use and return to ground, so that these cannot be used in the event of a fire.

5.14 Doors

The doors on the means of escape should not be fitted with a lock, latch or bolt fastening.

Other than final exits from the stairs, door widths are to be a minimum of 750mm based upon the proposed occupancies, unless specified otherwise within the report. These widths may need to be increased based on the guidance in Approved Document M.

If a door has an electronic security device, it should automatically release / de-energise on the activation of the FADS, to free the door for occupants to escape. In addition to the door automatically releasing/de-energising on the FADS, a green, manual emergency escape call point should be positioned adjacent to any door fitted with an electronic security device.

5.15 Dimensions of Escape Routes

All escape routes should have a clear headroom of not less than 2m. (except for door frames). The width of escape routes should be no less than 750mm. These widths may need to be increased based on the guidance in Approved Document M.

5.16 External Escape Routes

The external doors from all final exits and ancillary rooms should lead to the nominated Fire Muster Point (FMP) and will be Part M compliant.

All security gates along the external escape route should freely open with one single action and not be obstructed.

Occupants should not have to pass within 1.8m of the building elevation except where one of the following options form part of the design:

1. Option 1: The elevation is constructed to achieve 60-minute fire resisting protection. If windows form part of this elevation, then the windows should also achieve 60-minute fire resisting protection and be fixed shut.
2. Option 2: There are two external escape routes around the elevation of the building, so that occupants can turn their back, and escape in the other direction in the event of an external route becoming compromised.

5.17 Provision of Refuges

There is generally no requirement for a refuge space in a block of flats with a 'defend in place' policy. This is due to the building being afforded with a high level of compartmentation which allows an occupant to remain in a non-fire affected flat. If a fire was to initiate within a flat on the upper floors, any disabled occupants can evacuate to a protected stair (place of relevant safety) which leads to the outside (place of ultimate safety).

Notwithstanding this, it is understood that due to the likelihood of some residents having reduced mobility, a refuge space will be included in each staircase at all levels above L00 to assist with vertical evacuation, should it become necessary.

Each refuge should provide an area accessible to a wheelchair of at least 900mm by 1400mm and should be provided with Emergency Voice Communication (EVC) devices in accordance with BS 5839-9. Where the wheelchair space is in within a protected stairway or escape route, the wheelchair space should not obstruct the flow of persons escaping. Please see Figure 6.

A management strategy will need to be developed for the accommodation, by the owner / building management and this should incorporate details of how the building complies with the requirements of the Equality Act 2010.

It is recommended that an Access Consultant is appointed to address the requirements of the Equality Act 2010.

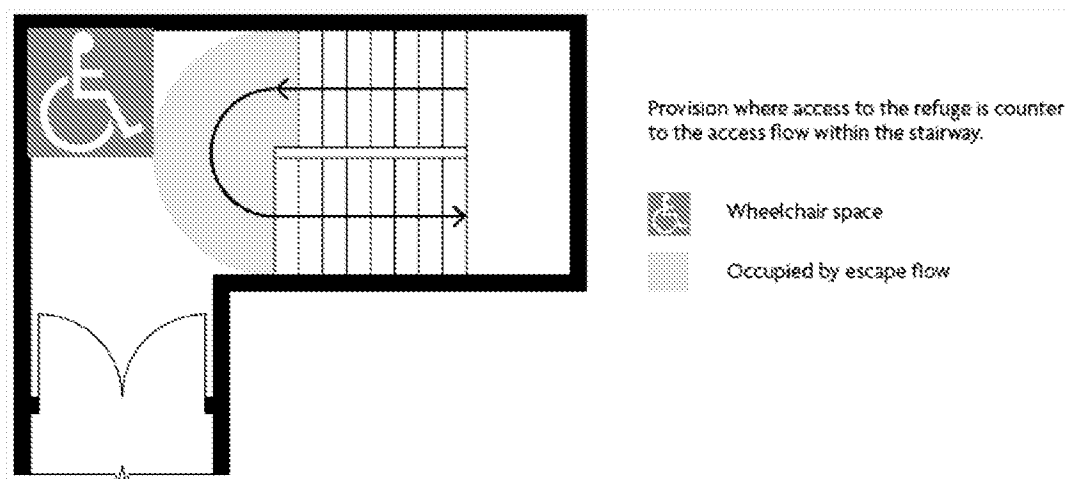


Figure 6: Refuge Formed in a Protected Stairway

6 INTERNAL FIRE SPREAD (LININGS)

6.1 Classification of linings

Restrictions are placed on the wall and ceiling lining materials within certain areas of buildings. This is to limit the spread of fire and production of smoke in those specific areas. The surface lining of the ceilings and walls should meet the classifications shown in Table 6.

Classification of Linings	
Location	European class
Small rooms of area not more than:	
1. 4m ² in residential accommodation; and	D-s3, d2
2. 30m ² in non-residential accommodation.	
Other rooms	C-s3, d2
Circulation spaces within dwellings	
Other circulations spaces, including the common areas of blocks of flats	B-s3, d2
Notes	
For the purposes of this requirement, a wall does not include any of the following:	
1. Doors and door frames.	
2. Window frames and frames in which glazing is fitted.	
3. Architraves, cover moulds, picture rails, skirtings and similar narrow members.	
4. Fireplace surrounds, mantle shelves and fitted furniture.	
Note: Parts of walls in rooms may be of lower performance than stated in Table 6, but no worse than class D-s3, d2. In any one room, the total area of lower performance wall lining, should be less than an area equivalent to half of the room's floor area, up to a maximum of 20m ² and 60m ² of wall lining in residential and non-residential accommodation, respectively.	
For the purposes of this requirement, a ceiling does not include any of the following:	
1. Trap doors and their frames.	
2. The frames of windows or rooflights and frames in which glazing is fitted.	
3. Architraves, cover moulds, picture rails, exposed beams and similar narrow members.	

Table 6: Classification of Linings

7 INTERNAL FIRE SPREAD (STRUCTURES)

7.1 Introduction

Unless stated otherwise, the fire resistance levels within this report are specified as R/E/I, where; R: Loadbearing capacity, E: Integrity and I: Insulation.

7.2 Loadbearing Elements of Structure

The building height is greater than 11m but less than 18m. Therefore, all elements of structure require 60-minutes, fire protection. An element of structure is any member forming part of the structural frame of a building or any other beam or column. The structure of a roof, and structure that supports only a roof, should have fire resistance if the roof:

- Forms part of a means of escape; or
- Functions as a floor, e.g., as a car park; or
- Is part of a portal frame structure where the roof and the supporting stanchions form a single element of structure; or;
- Is integral to the stability of a fire-resisting external wall

7.3 Compartmentation

The fire resistance rating should be tested to the relevant part of BS 476 or the relevant European Standard. A summary of the compartmentation strategy is presented in Table 7.

Building Element	Minimum Fire Resistance Rating (mins)	Method of Exposure
Floor ⁽¹⁾	60	From underside
Staircase	60	Each side separately
Cluster Flats	60	Each side separately
Internal Hallways of Cluster Flat	30	Each side separately
Staircase Lobby	60	Each side separately
Ancillary Room ⁽²⁾	60	Each side separately
Ancillary Room Lobby ⁽²⁾	60	Each side separately
Corner Junction ⁽³⁾	60	Each side separately
Passenger Lift	60	Each side separately
Service Riser	60	Each side separately
Cavity Barrier	30	Each side separately
External Walls (Protected areas)	60	From inside the building (more than 1m from the boundary)

Notes

1. All floors should be designed as compartment floors.
2. Please see Section 5.9.
3. Please see Section 7.12 & 7.13.

Table 7: Compartmentation

7.4 Fire Doors

Fire doors must be provided in all fire rated enclosures in accordance with:

- BS 476-22 or BS EN 1634-2 (fire resistance)
- BS 476-31 or BS EN 1634-3 (smoke leakage) ("S" denotes smoke seals)
- BS 8214 (Fire door sets)
- BS EN 1634 (Self-closing devices)

A summary of the fire door requirements is presented in Table 8.

Door Locations	Minimum Fire Resistance of Door (min)	Smoke Seal (S)	Self-closing
Cluster Flat (Front Door)	FD30S	Yes	Yes
Cluster Flat (Bedroom Door)	FD30S	Yes	Yes
Cluster Flat (riser, store room, etc)	FD30S	Yes	KLS ⁽¹⁾
Staircase Door	FD30S	Yes	Yes
Staircase Lobby Door	FD30S	Yes	Yes
Service Riser Door	FD30S	Yes	KLS ⁽¹⁾
Passenger Lift Door	FD30	No	Yes
Ancillary Room Door	FD30S	Yes	Yes ⁽¹⁾

Notes

1. Ancillary room doors that are not frequently used should be locked, and have a door sign stating, 'keep locked shut'. An example of a room that should be kept locked shut, is a plant / service room.

Table 8: Fire Door Rating

7.5 Compartment Floors

Due to the purpose group of the building, all floors should be constructed as compartment floors achieving 60 minutes fire resistance. This includes the floors in service risers.

7.6 Protected Shafts

Any shafts penetrating compartment floors (i.e., staircases, risers, lifts, etc.) should be constructed as a protected shaft / fire compartment achieving 60 minutes fire resistance.

7.7 Compartment Walls

Due to the purpose group of the building, all cluster flats, staircase lobbies / corridors, and ancillary areas should be constructed as fire compartments achieving 60 minutes fire resistance.

7.8 Fire-resisting Walls

All fire-resisting walls and associated partitions should be continued up to the structural soffit of the above compartment floor level, or the roof level to form complete compartmentation.

The Designer should refer to Section 4 of BS 9991 for further information.

7.9 Junction of Compartment / Party Wall and Roof

If a fire penetrates a roof near a compartment wall, there is a risk that it will spread over the roof to the adjoining compartment. To reduce this risk, a zone of the roof 1500mm wide on each side of the wall, should have a covering of designation B_{Roof}(t4) on a substrate or deck of a material of limited combustibility (Class A2-s3, d2 or better). Thermoplastic insulation materials should not be carried over the wall.

The Designer should refer to Section 4 of BS 9991 for further information.

7.10 Service Risers

Service risers and other vertical ducts should:

1. Be in accordance with BS 8313
2. Be fire stopped at each floor level
3. Not open into a protected staircase

7.11 Fire Stopping

If the fire separating element is to be successful, every joint or imperfect fit, or opening to allow services to pass through the element, should be adequately protected by sealing or fire stopping

so that the fire resistance of the element is not impaired. The method of fire stopping should have equal fire resistance to the element or construction it passes through.

The Designer should refer to Section 4 of BS 9991 and the ASFP Red Book: Fire Stopping And Penetration Seals For The Construction Industry published by the Association of Specialist Fire Protection for further information.

7.12 Re-entry of Fire between Compartment Walls on Corner Junctions

For façade design, fire-resisting glazed elements may be used at appropriate locations to minimize the risk of fire spread in the same building from floor to floor, or on the same floor across re-entrant corners, by preventing flame break-out and break-in. The distance for the application of fire-resisting glazing either side of such a re-entrant corner should be 1.8m. Therefore, where the internal angle of a corner in the façade is 130 degrees or less, at least one wall should be fire-resisting (integrity & insulation) for a distance of 1.8m. The fire resistance should be at least 60 minutes. Please see Figure 7 for a depiction of this provision.

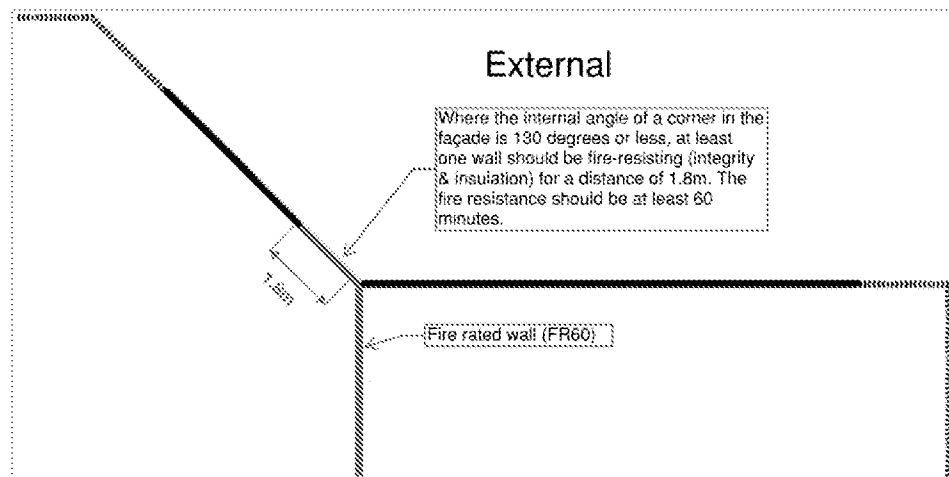


Figure 7: Re-entry of Fire between Compartment Walls on Corner Junctions

7.13 Protection of Protected Stairs from External Fire

With some configurations of external walls, a fire in one part of a building could subject the external wall of a protected stairway or escape corridor to heat. If the external wall of the protected stairway or escape corridor has little fire resistance, there is a risk that this could prevent the safe use of the escape route.

Therefore, if a protected stairway or escape corridor projects beyond, or is recessed from, or is in an internal angle of, the adjoining wall of the building, then; the distance between any unprotected area in the external enclosure of the building and any unprotected area in the enclosure to the stairway or corridor should be at least 1800mm. Please see Figure 8.

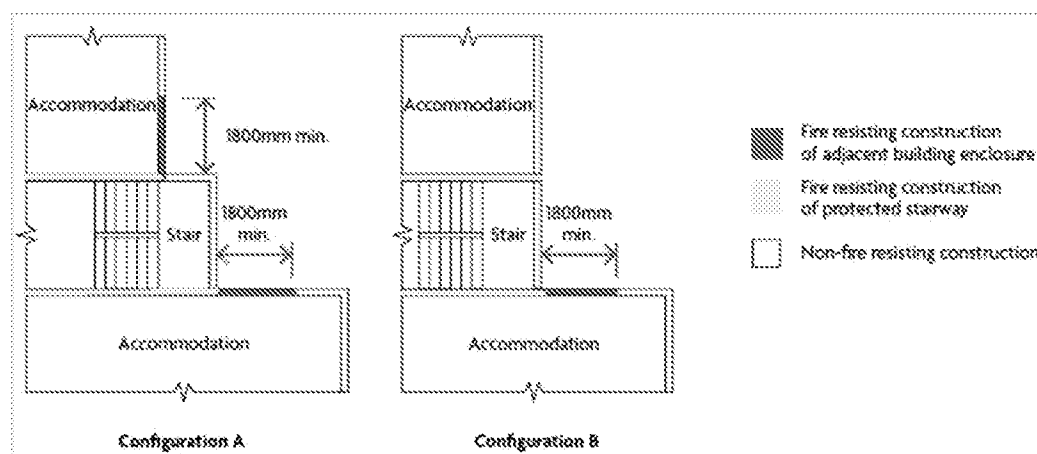


Figure 8: Protection of Staircase from External Fire

7.14 Protection of Ductwork

Ductwork should not help to transfer fire and smoke through the building.

Ductwork passing through compartment/fire-resisting walls will be either contained within fire-resisting construction or provided with fire and smoke dampers.

Ductwork and dampers should have fire resistance equal to the element of fire resisting construction that it passes through. Fire resisting ductwork should be employed in common stairs as fire dampers are not suitable for common escape stairs.

The ductwork should be provided with fire and smoke dampers activated automatically on the activation of the building FADS in the case where it is installed in any of the following areas (unless they are contained within fire-resisting construction throughout their route to fresh air):

- Ductwork serving both escape routes and accommodation, or;
- Ductwork passing through stair lobbies and ancillary accommodation, or;
- Ductwork passing through walls separating fire compartments

All fire-rated ductwork and dampers must be tested in accordance with BS EN 1366 Part 1, 2 and 10 and be classified to BS EN 13501. Testing should be carried out by a recognised UKAS accredited laboratory.

Any ductwork that penetrates the external walls of the building (i.e., bathroom / kitchen ventilation) should be constructed with fire rated ductwork (generally steel with a minimum thickness of 0.5mm). The fire rated ductwork should be used for at least the section that passes through the external wall. This will:

1. Maintain compartmentation between the room and the cavity.
2. Ensure the ductwork does not contribute to the fire loading in the external wall and therefore, achieve a performance of A2-s1, d0, or better.
3. Be suitable for extract ductwork serving kitchens.

The Designer should refer to the ASFP Grey Book: Fire and Smoke Resisting Dampers and ASFP Blue Book: Fire Rated and Smoke Outlet Ductwork published by the Association of Specialist Fire Protection for further information.

7.15 Concealed Spaces and Cavity Barriers

Concealed spaces or cavities in the construction of the building provide a ready route for smoke and flame spread, especially in voids above and below ceilings/floors. As the smoke or flames would be concealed it presents a greater danger because it may be transported some distance from the fire.

Cavity barriers should be located in accordance with Figure 24 of BS 9991 (please see Figure 9) and typically:

- At the edges of cavities, including around openings (such as windows, doors and exit/entry points for services). The fire resistance of the products used to protect these areas should achieve at least 30 minutes and be tightly fitted to a rigid construction and mechanically fixed in position.
- At the junction between an external cavity wall and every compartment floor, compartment wall and party wall. The fire resistance of the products used to protect these areas should achieve at least 60 minutes and be tightly fitted to a rigid construction and mechanically fixed in position.
- At the junction between an internal cavity wall and every compartment floor, compartment wall or other wall or door assembly forming a fire-resisting barrier. The fire resistance of the products used to protect these areas should achieve at least 60 minutes and be tightly fitted to a rigid construction and mechanically fixed in position.
- To sub-divide any cavities in concealed spaces every 10m. The fire resistance of the products used to protect these areas should achieve at least 30 minutes and be tightly fitted to a rigid construction and mechanically fixed in position.

The Designer should refer to Section 4 of BS 9991 for further information.

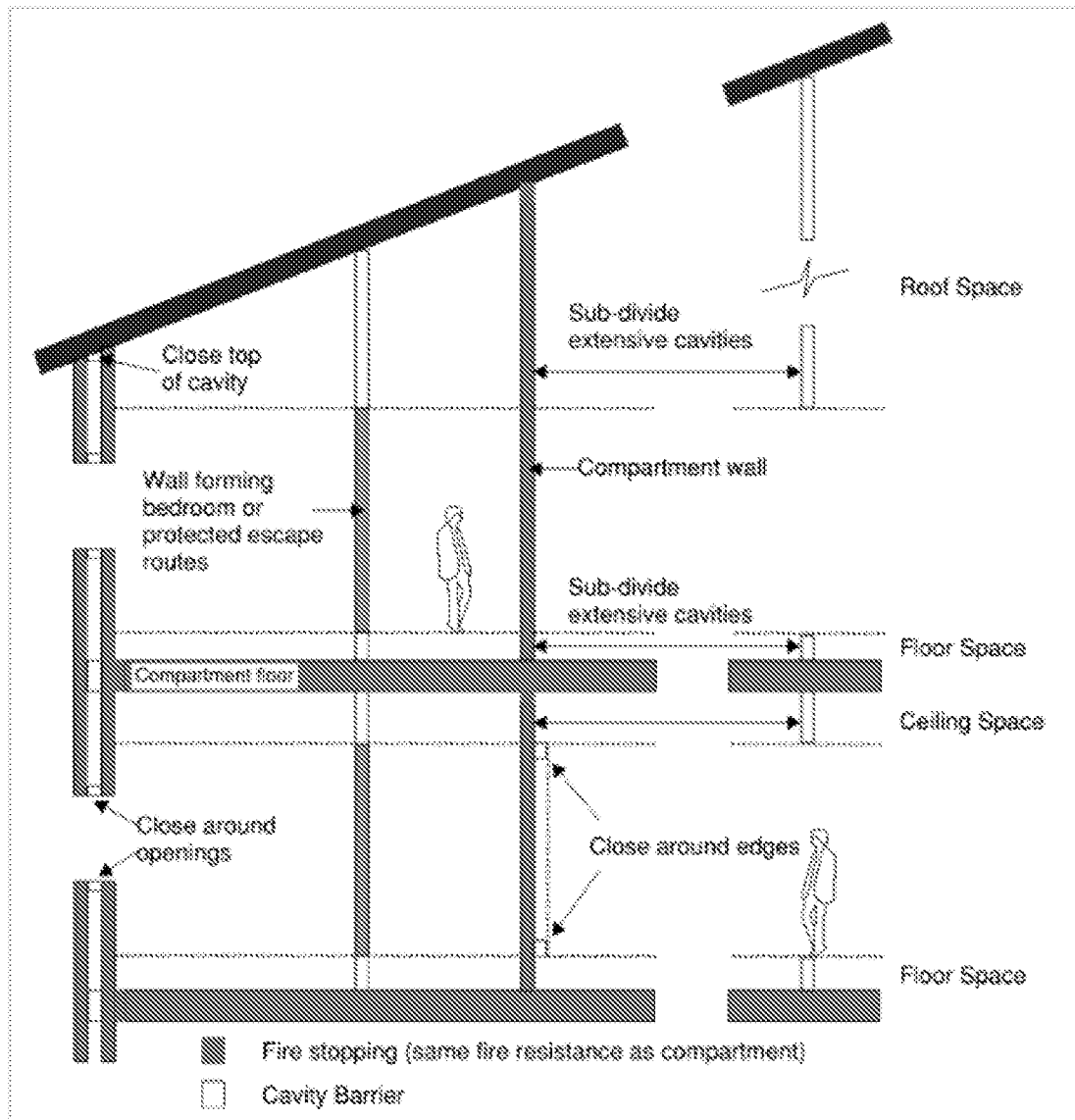


Figure 9 Provisions for Cavity Barrier

8 EXTERNAL FIRE SPREAD

8.1 External Wall Construction

The external walls of a building should not provide a medium for fire spread, if that is likely to be a risk to the health and safety of the users and occupants of the building. Combustible materials and cavities in external walls and attachments to them can present such a risk, particularly in tall buildings. The guidance in this section is designed to reduce the risk of vertical fire spread as well as the risk of ignition from flames coming from adjacent buildings.

Regulation 7 of the Building Regulation was updated in 2018 to include amendments to materials and workmanship. Regulation 7(4) identifies a building with a storey at least 18m above the ground level and which contains one or more dwelling to be a “Relevant Building”. The proposed building is not a “Relevant Building” as defined by the Building Regulations and therefore is not required to meet this update. Notwithstanding this, it is strongly recommended that the external walls are designed in accordance with the requirements for a ‘Relevant Building’. An external wall that does not meet this standard is likely to cause an elevated risk to people and property, possible approval issues, and potentially limitations in relation to selling the properties, or gaining insurance due to the likelihood of the building needing an EWS1 Form. The designer should refer to Regulation 7 of the Building Regulations for further details on ‘Relevant Building’ guidance.

Notwithstanding the above, to meet the minimum requirements of Part B4 of the Building Regulations, BS 9991 does not require any strict provisions for the surfaces of external walls in residential buildings when a building has a height of less than 18m, which is located further than 1m from the relevant boundary. This does not mean that any material can be used in the external wall construction, as functional requirement B4(1) needs to be met [*B4(1): 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*]. Therefore, it is Solas Realta’s opinion that the performance of the external surface of the walls should meet Class B-s3, d2 or better, and the performance of the private balconies should meet Class A2-s1, d0 or better for functional requirement B4(1) to be met.

It is imperative that the above is discussed with the relevant stakeholders and the nominated EWS1 consultant.

Any part of an external wall which has less fire resistance than the required structural fire resistance (60 minutes) is considered to be an unprotected area. An example of an unprotected area could be a window. The percentage of unprotected areas allowed are given in Section 8.3.

8.2 Roof Coverings

Performance of the resistance of roofs to external fire exposure, is measured in terms of penetration through the roof construction and the spread of flame over its surface.

Roof constructions are classified within the European system as B_{ROOF}(t₄), C_{ROOF}(t₄), D_{ROOF}(t₄), E_{ROOF}(t₄) or F_{ROOF}(t₄) in accordance with BS EN 13501-5. B_{ROOF}(t₄) indicates the highest performance and F_{ROOF}(t₄) the lowest.

The roof construction should meet European Class B_{ROOF}(t₄).

8.3 Space Separation

To prevent the risk of external fire spread from one building to another, the amount of unprotected area that is allowed on an elevation should be limited, or the separating distance should be sufficient so as to reduce the risk of excessive radiation causing fire spread.

The boundary can be the boundary of the land belonging to the building, or, where the land abuts a road, railway, canal or river, the centreline of that road, railway, canal or river.

BR 187 will be the guidance used to assess space separation. The radiation intensity used at the unprotected area (elevation) is 84kW/m².

As the floor levels have a similar layout, it is considered reasonable to carry out one assessment based on a worst-case arrangement.

AWFSS is included in the building, therefore the separation distance required has been halved.

Table 9 has taken the worst-case unprotected elevations and the minimum boundary distance separation for the building elevations.

Notional boundaries have been taken as the middle distance from the building to the two other proposed future buildings towards the East and West.

It is imperative that the Architect review the dimensions identified in Table 9 to ensure they are accurate. Please see Figure 10 for identification of the elevations.

Elevation	Enclosing rectangle (H × W)	Unprotected % Allowed	Minimum Boundary Distance Required (m)	Actual Boundary Distance (m)	Satisfactory ⁽¹⁾
A	3m × 40m	100	2.5 ⁽²⁾	>2.5	Yes
B	3m × 40m	100	2.5 ⁽³⁾	>2.5	Yes
C	3m × 9m	100	1.8 ⁽⁴⁾	>1.8	Yes
D	3m × 40m	100	2.5 ⁽³⁾	>2.5	Yes
E	3m × 40m	100	2.5 ⁽³⁾	>2.5	Yes
F	3m × 9m	100	1.8 ⁽²⁾	>1.8	Yes

Notes

1. This is based on all external walls achieving 60-minute fire resistance, with the windows being the only unprotected areas associated with the elevation.
2. Measured to the middle of the adjoining car park road, assumed to be part of the same site.
3. Measured to the centreline of distance from the proposed future building.
4. Measured to the actual site boundary.

Table 9: Space Separation Assessment

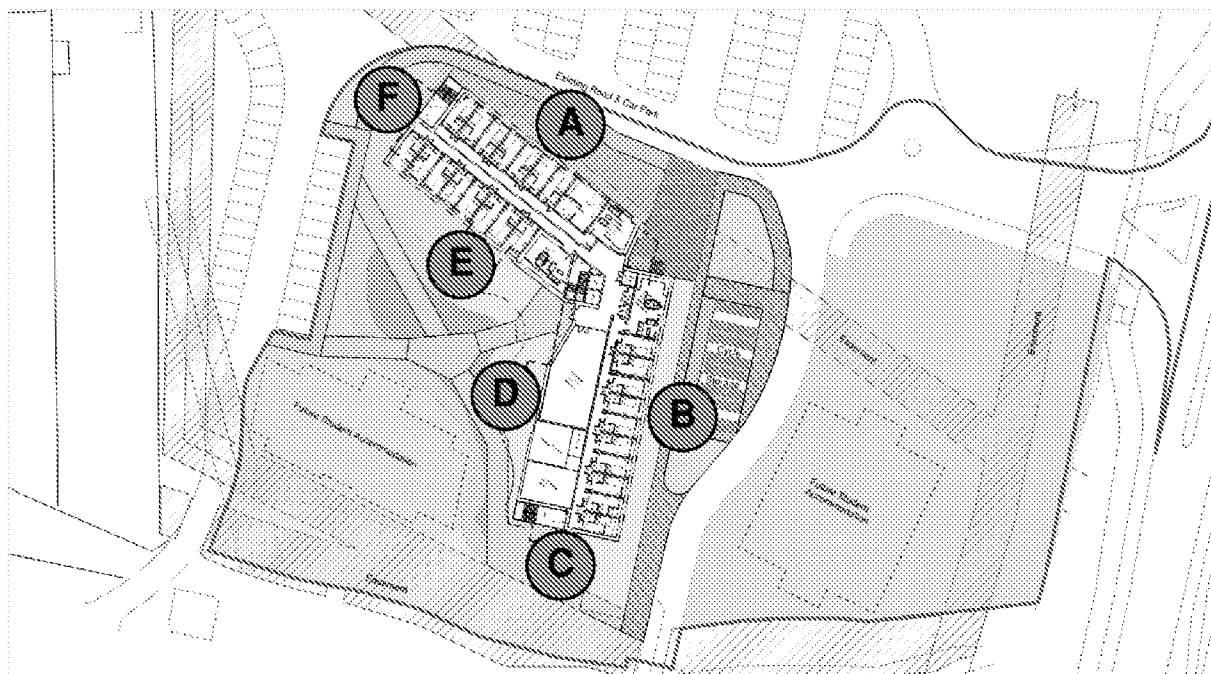


Figure 10: Elevation Identification

9 ACCESS & FACILITIES FOR THE FIRE SERVICE

9.1 Vehicle Access

Access to the building will be via Felpham Way to the East. From Felpham Way, there will be access on site via an existing private road leading to the proposed car park area at the North and West of the building. Due care should be given to ensure that the vehicle access route meets the requirements for a pumping appliance as shown in Table 10.

Any access/security measures in and around the site (especially any bollards preventing vehicle access) will need to be by-passable by the Fire Service. The details of the bypass arrangements will need to be developed and agreed with the Fire Service as applicable.

Turning facilities should be provided in any dead-end access route that is more than 20m long.

Appliance type	Minimum width of road between kerbs (m)	Minimum width of gateways (m)	Minimum turning circle between kerbs (m)	Minimum turning circle between walls (m)	Minimum clearance height (m)	Minimum carrying capacity (tonnes)
Pump	3.7	3.1	16.8	19.2	3.7	12.5

Notes

1. Fire appliances are not standardised. The building control body may, in consultation with the local fire and rescue service, use other dimensions.

Table 10: Typical Fire Service Vehicle Access Route Specification

9.2 Access into the Building for Fire Fighting Personnel

There should be vehicle access for a pumping appliance to a block of flats to within 45m of all points within each dwelling. This is not achievable; therefore, a dry riser main will be included in the central stair in accordance with BS 9990. The dry riser main should be conspicuous to the Fire Service, and should comprise of:

- A dry riser inlet box positioned adjacent to the entrance to the building.
- Vehicle access for a pumping appliance to within 18m of the dry riser inlet connections. The dry riser main should not extend more than 18m in a horizontal position.
- Dry riser outlet valves would typically be positioned at each floor level within the staircase. However, it is proposed that the outlet valves are located within the ventilated lobbies adjacent to the staircase, whereby there is more space for hose-laying, and the attending Fire Service have the option of not breaching the staircase door if desirable.
- As the building is afforded with an AWFSS, hose distances can be increased from 45m to 60m. All parts of the building can be reached within 60m of the dry riser outlet valves.

Please see a site plan in Section 9.7.

The statutory consultation between Building Control and the Fire Service will determine if the dry riser outlet valve locations are acceptable. Any recommendation made by the Fire Service should be implemented into the design.

9.3 Smoke Ventilation System

The attending Fire Service should be able to control the smoke ventilation system to aid firefighting. Typically, the following arrangements would be considered acceptable to the Fire Service in relation to controls:

1. A fireman's switch (open/close/auto) in each staircase controlling the AOVs that are associated with the corridors that are adjacent to that staircase as well as the AOV at the head of the staircase.

The statutory consultation between Building Control and the Fire Service will determine if Point 1 is considered acceptable. Any recommendation made by the Fire Service should be implemented into the design.

9.4 Wayfinding Signage

As the buildings have a height greater than 11m, wayfinding signage is required as a minimum as per the updated guidance issued in AD B. Numbering of floor levels and flats can offer significant advantages for navigating buildings during firefighting operations in terms of identifying floor levels and flat locations. To assist the fire service to identify each floor in a block of flats, floor identification signs and flat indicator signs should be provided. Each floor level should have its floor number clearly marked on each landing within each stair.

Please see Section 15.13 to 15.16 in the updated Approved Document B for further technical information on wayfinding signage.

9.5 Hydrant or Other Water Supplies

There should be a hydrant within 90m of each dry fire main inlet. Each fire hydrant should be clearly indicated by a plate, affixed nearby in a conspicuous position in accordance with BS 3251 and BS 9990. A site survey should be carried out to confirm the above criteria is achieved based on any existing hydrant provisions. If this survey establishes that the existing hydrants are inadequate, then an additional private hydrant or water supply will need to be included on the site.

9.6 PV Panels

The presence of a PV system on a building is not always obvious from ground level, thus a sign that indicates the presence of a PV system on a building or structure should be prominently displayed for the information of the fire and rescue service. The sign, measuring at least 100mm x 100mm shown in Figure 11, should be displayed at the consumer units or supplier's cut-out.

The PV panels should be afforded with a switch provided in a prominent position readily accessible to firefighters to isolate the DC side of the PV system (a 'fire service switch') to ensure the safety of firefighting personnel. Operation of the switch should as a minimum make the DC side of the wiring inside the building voltage-free.

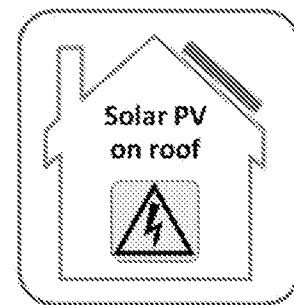


Figure 11: Sign Indicating PV Panels on Roof

9.7 B5 Site Plan Depiction

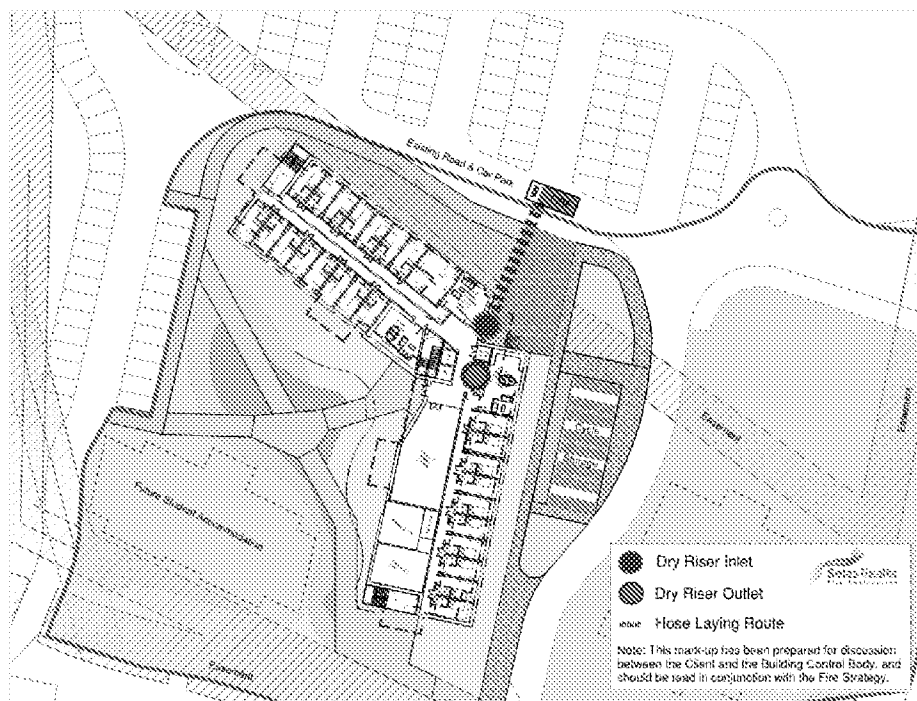


Figure 12: Mark-up of Site Plan

10 EMERGENCY POWER

10.1 Emergency Power Supplies

In the event of a failure of the mains power supply a secondary backup power supply is required for all life safety systems that require electricity to function. The following life safety systems will require a backup power supply:

- Automatic Water Fire Suppression System (AWFSS)
- Smoke Ventilation System
- Fire Alarm and Detection System (FADS)
- Emergency Lighting
- Automatic Sliding Doors (ASD)
- Dampers (if installed)

The selection, design and installation of the power supply systems should be in accordance with BS 8519, with additional protection measures as described in Section 37.2.3 of BS 9999.

11 MANAGEMENT

11.1 General

As the building is designed as a block of flats for students, there will need to be a form of management affiliated with the building. The functional goals of the management arrangements should be:

1. To ensure that health and safety standards are upheld within the building.
2. To maintain and control common parts of the building and areas within flats where appropriate
3. To take responsibility for the maintenance and testing of the fire safety provisions within the building.
4. There should be clear delineation within the terms of tenancy, in relation to responsibilities for the testing and maintenance of the fire safety systems that are relevant to individual flats e.g., FADS, AWFSS, etc.

11.2 Fire Safety Management Plan (FSMP)

This fire safety strategy has been developed on the assumption that the building will be properly managed. Procedures for the management of fire safety should be developed and documented in a FSMP. Guidance on fire safety management procedures is given in BS 9999 Annex H; and a typical FSMP should include:

- Fire safety policy statement;
- Fire safety management structure;
- Coordination with other parties (e.g., in a shared building);
- Emergency response;
- Evacuation of people with special needs;
- Contingency and salvage plans;
- Emergency responsibilities of designated staff;
- Summary of fire safety strategy and plans for the building;
- Fire Risk Assessment; and,
- Procedures for dissemination of information.

Note; The above list is not intended to be exhaustive, but only to highlight some key areas and should be incorporated into a building management strategy.

11.3 Fire Protection Systems

All fire safety provisions (active and passive) must be serviced and maintained in accordance with the relevant British Standards and manufacturer's specification. This includes:

- Fire Alarm and Detection System (FADS)
- Automatic Water Fire Suppression System (AWFSS)
- Smoke ventilation equipment
- Firefighting equipment (dry riser mains system and fire hydrant)
- Fire-resisting compartmentation
- Internal and external escape routes
- Dampers
- Fire doors and door security
- Automatic sliding entrance doors
- Emergency lighting

12 CONCLUSION

The primary objective of this Fire Strategy Report was to set out the key fire safety challenges for the scheme and to identify how the building design achieves an acceptable level of fire safety, commensurate with the requirements of Part B of the Building Regulations 2010.

It is imperative that this information is made available to the design team as early as reasonably practical and agreed by Authorities Having Jurisdiction (AHJ) before being implemented.

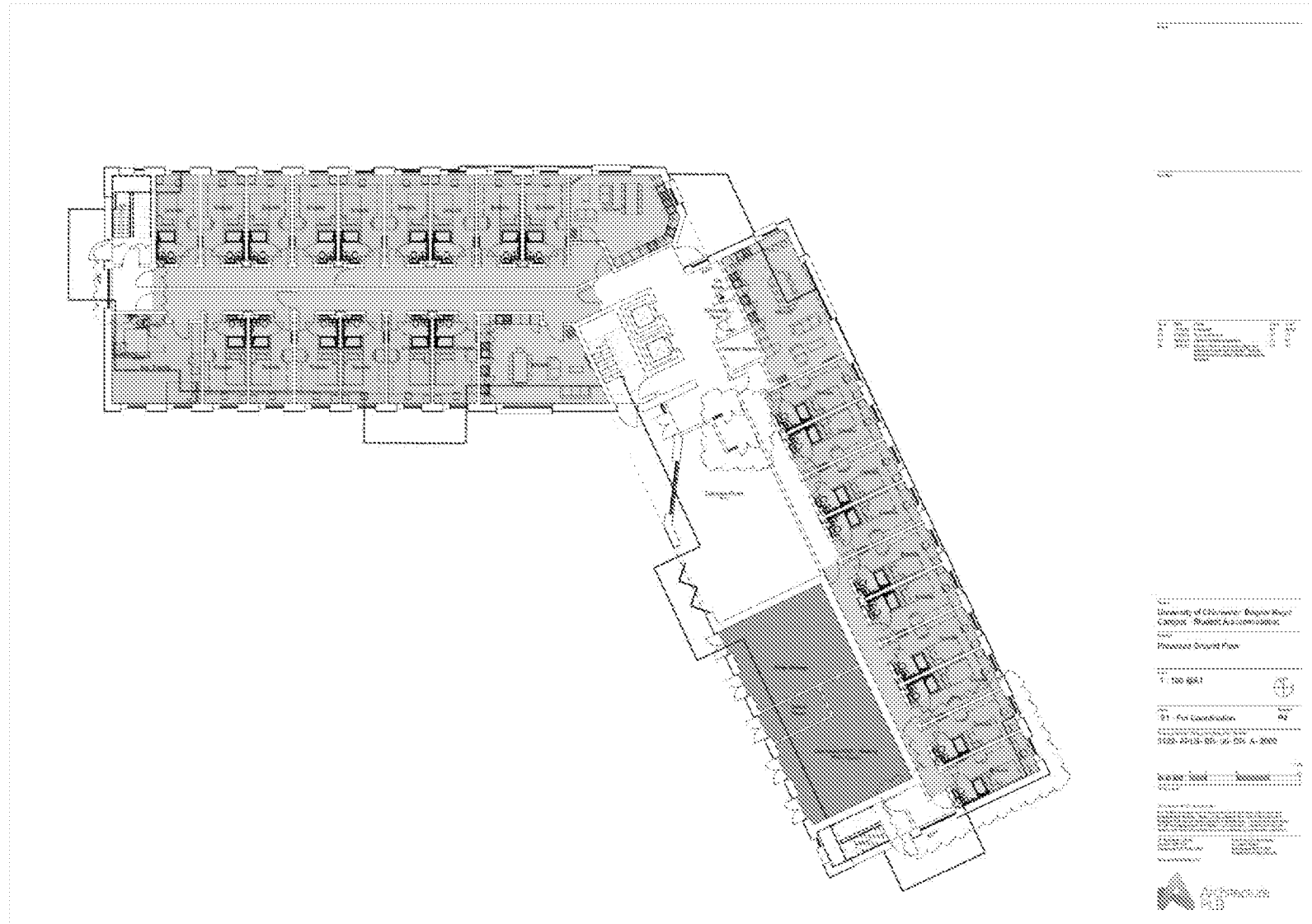
Compliance with the Building Regulations usually infers compliance with The Regulatory Reform (Fire Safety) Order 2005, provided that the fire safety management arrangements are suitable and fulfilled throughout the life cycle of the building.

It is recommended that the proposed building insurance company is consulted with in relation to the fire safety arrangements within the building to ensure that they are satisfied from a property protection perspective.

The requirements of the Building Regulations and The Regulatory Reform (Fire Safety) Order 2005 are set out in functional terms and can be interpreted in different ways. Therefore, it is essential that the recommendations of this report are agreed with the relevant Approval Authorities before implementation or occupying the building.

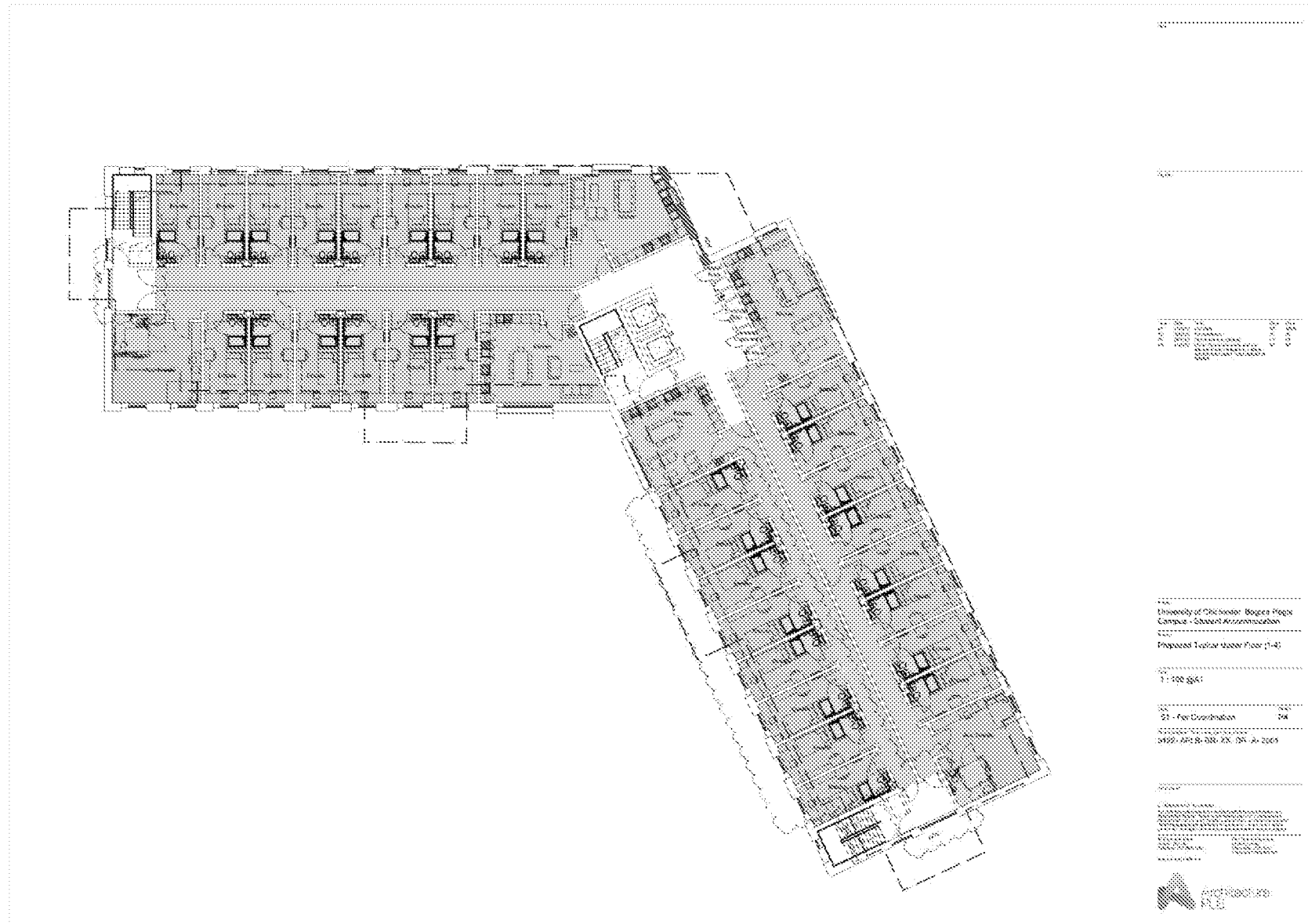
13 APPENDIX A: DRAWING PLANS

13.1 Ground Floor



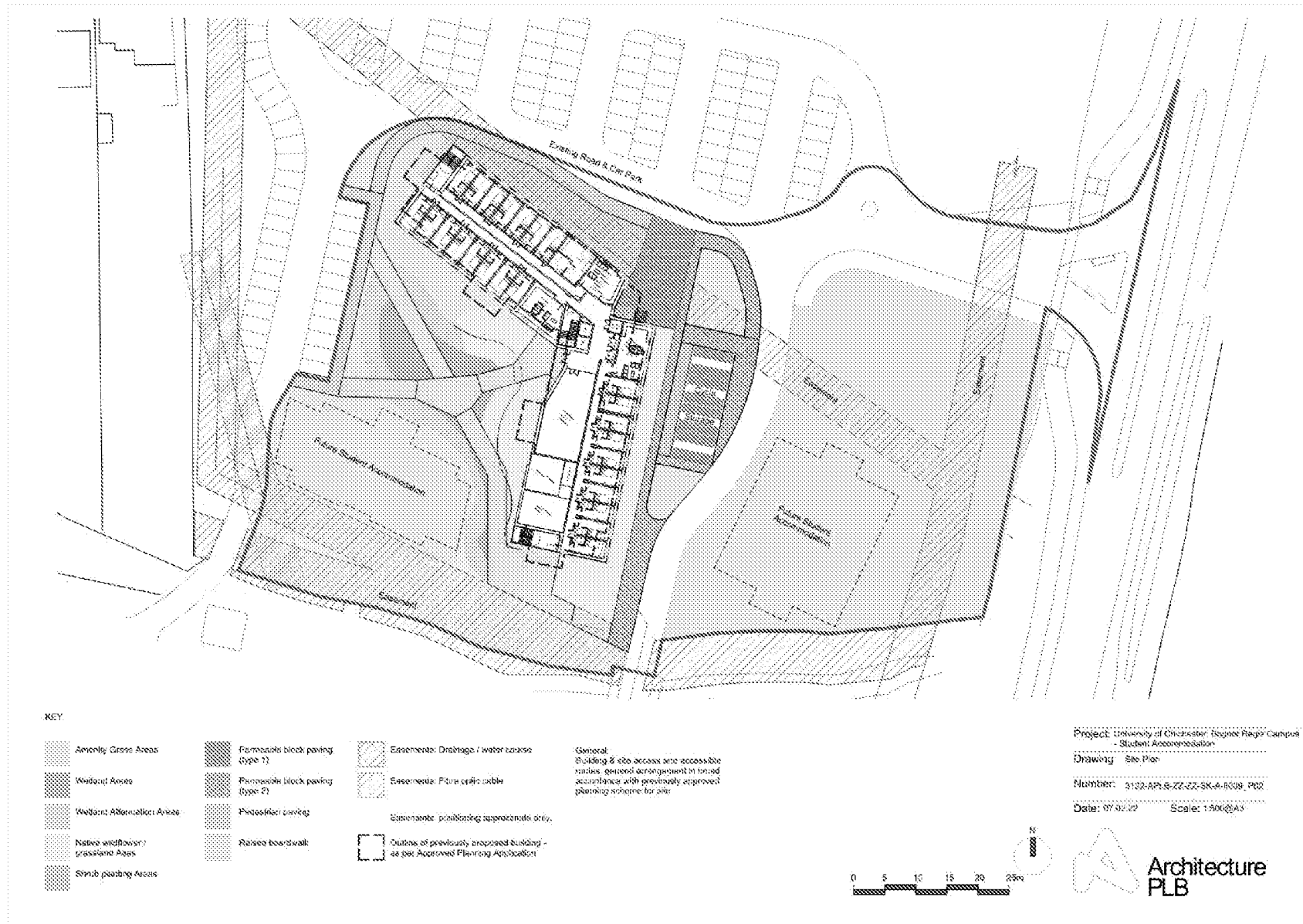
Ref: FE1355 / University of Chichester, Upper Bognor Road, Bognor Regis PO21 1HR
Type: Fire Safety Strategy

13.2 First to Fourth Floors



Ref: FE1355 / University of Chichester, Upper Bognor Road, Bognor Regis PO21 1HR
Type: Fire Safety Strategy

13.4 Site Plan



Ref: FE1355 / University of Chichester, Upper Bognor Road, Bognor Regis, PO21 1HR
Type: Fire Safety Strategy

14 APPENDIX B: INDICATIVE FADS / CAUSE & EFFECT

14.1 Detection activates at L00

Floor Level	Input	Output					
	Detection Activates	Corridor AOV	Staircase AOV	Sounder/strobe in Ancillary Rooms & Roof	Passenger Lifts	Electronic Door Security	HVAC & Dampers
L00	Yes	Yes ⁽¹⁾	Yes ⁽²⁾	Yes	The passenger lifts should safely become out of use in the event of a fire detector activating. See Section 5.13.	Electronic door security should release and allow doors to be freely open.	HVAC should shut down and any fire dampers should close.
L01	No	No					
L02	No	No					
L03	No	No					
L04	No	No					
L05	No	No					

14.2 Detection activates at L01

Floor Level	Input	Output					
	Detection Activates	Corridor AOV	Staircase AOV	Sounder/strobe in Ancillary Rooms & Roof	Passenger Lifts	Electronic Door Security	HVAC & Dampers
L00	No	No	Yes ⁽²⁾	Yes	The passenger lifts should safely become out of use in the event of a fire detector activating. See Section 5.13.	Electronic door security should release and allow doors to be freely open.	HVAC should shut down and any fire dampers should close.
L01	Yes	Yes ⁽¹⁾					
L02	No	No					
L03	No	No					
L04	No	No					
L05	No	No					

14.3 Detection activates at L02

Floor Level	Input	Output					
	Detection Activates	Corridor AOV	Staircase AOV	Sounder/strobe in Ancillary Rooms & Roof	Passenger Lifts	Electronic Door Security	HVAC & Dampers
L00	No	No	Yes ⁽²⁾	Yes	The passenger lifts should safely become out of use in the event of a fire detector activating. See Section 5.13.	Electronic door security should release and allow doors to be freely open.	HVAC should shut down and any fire dampers should close.
L01	No	No					
L02	Yes	Yes ⁽¹⁾					
L03	No	No					
L04	No	No					
L05	No	No					

14.4 Detection activates at L03

Floor Level	Input	Output					
	Detection Activates	Corridor AOV	Staircase AOV	Sounder/strobe in Ancillary Rooms & Roof	Passenger Lifts	Electronic Door Security	HVAC & Dampers
L00	No	No	Yes ⁽²⁾	Yes	The passenger lifts should safely become out of use in the event of a fire detector activating. See Section 5.13.	Electronic door security should release and allow doors to be freely open.	HVAC should shut down and any fire dampers should close.
L01	No	No					
L02	No	No					
L03	Yes	Yes ⁽¹⁾					
L04	No	No					
L05	No	No					

14.5 Detection activates at L04

Floor Level	Input	Output					
	Detection Activates	Corridor AOV	Staircase AOV	Sounder/strobe in Ancillary Rooms & Roof	Passenger Lifts	Electronic Door Security	HVAC & Dampers
L00	No	No	Yes ⁽²⁾	Yes	The passenger lifts should safely become out of use in the event of a fire detector activating. See Section 5.13.	Electronic door security should release and allow doors to be freely open.	HVAC should shut down and any fire dampers should close.
L01	No	No					
L02	No	No					
L03	No	No					
L04	Yes	Yes ⁽¹⁾					
L05	No	No					

14.6 Detection activates at L05

Floor Level	Input	Output					
	Detection Activates	Corridor AOV	Staircase AOV	Sounder/strobe in Ancillary Rooms & Roof	Passenger Lifts	Electronic Door Security	HVAC & Dampers
L00	No	No	Yes ⁽²⁾	Yes	The passenger lifts should safely become out of use in the event of a fire detector activating. See Section 5.13.	Electronic door security should release and allow doors to be freely open.	HVAC should shut down and any fire dampers should close.
L01	No	No					
L02	No	No					
L03	No	No					
L04	No	No					
L05	Yes	Yes ⁽¹⁾					

Notes

1. Only the AOV adjacent to the corridor where the smoke detector activated should open. Once a corridor AOV opens, all other corridor AOVs on other levels should stay closed.
2. Only the Stair AOV adjacent to the corridor where the smoke detector activated should open.

15 APPENDIX C: SMOKE VENTILATION SYSTEM

15.1 Introduction

The primary aim of smoke control in residential buildings is to protect the staircase enclosure. It can also provide some protection to the adjacent protected corridors.

Please see the following sections for details on the smoke ventilation systems associated with this building:

- Section 15.2 provides details on AOVs in the common corridors.
- Section 15.3 provides details on AOVs in the staircases.
- Section 15.4 provides a depiction of the smoke ventilation arrangements.

15.2 AOV's in the Common Corridor

The AOV's should have a minimum unobstructed cross-sectional free area of 1.5m² and be positioned as high as practicable so the top edge is at least as high as the top of the door to the adjoining staircase.

The Designer should refer to BS EN 12101-2 2003 and Sections 2.25 and 2.26 of AD B for details on specifications of natural smoke and heat exhaust ventilators.

15.3 AOV's in the Staircases

There should be an AOV, with a minimum unobstructed cross-sectional free area of 1.0m² from the top story of each staircase to outside. The AOV should be positioned on the horizontal plane and operate on activation of smoke detection in any common corridor.

The vents should open simultaneously with the associated corridor ventilation.

The Designer should refer to BS EN 12101-2 2003 and Sections 2.25 and 2.26 of AD B for details on specification of natural smoke and heat exhaust ventilators.

15.4 Depiction of Smoke Ventilation Arrangements

15.4.1 L00

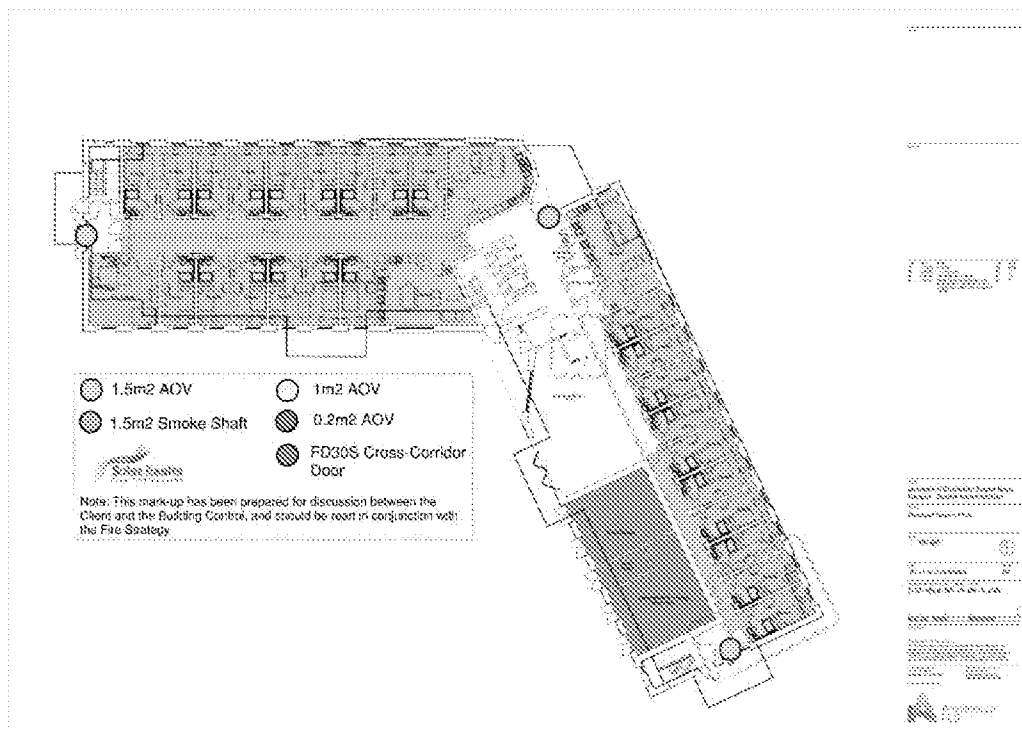
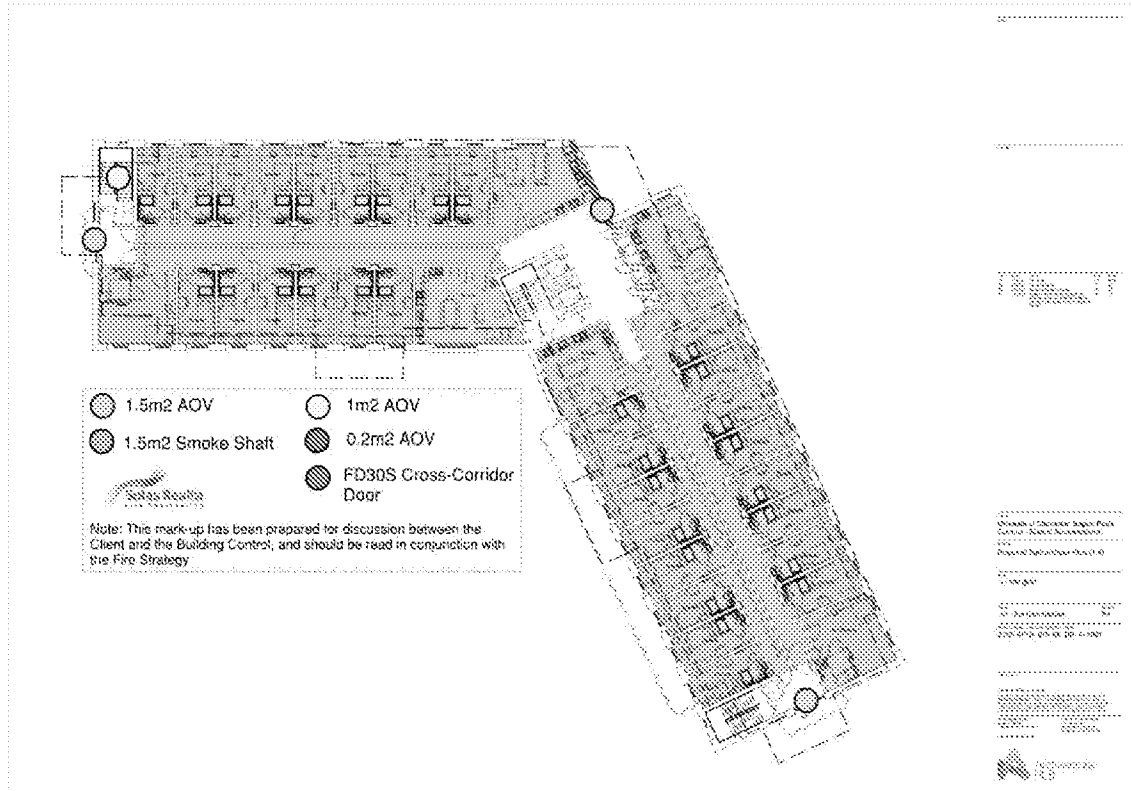


Figure 13: Ground Floor / Depiction of Smoke Ventilation Arrangements

15.4.2 L01 to L04



15.4.3 L05

