



Victoria House

Stage 2 Fire Safety Strategy *For Forshaw Group*

Revision 03

Formal

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EXECUTIVE SUMMARY

Building Description	Victoria House is a mixed-use development containing residential and commercial units. Victoria House is situated in Manchester, UK and is sited in between Great Ancoats street, Epworth Street and Longacre Street. The residential areas will house 177 apartments which will be a mixture of 1-bedroom (33%), 2-bedroom (64%) and 3-bedroom (3%). There are 25-storeys including basement and roof level and the top habitable storey of the building is approx. 71.4m. Currently the building is designed for life safety. Property protection has not been specially considered. It should also be confirmed within the later stage of the design whether the client’s insurers require any additional property protection measures.
Design Guidance and Legislation	The Fire Safety Strategy for Victoria House is to be developed in accordance with BS9991:2015 for residential area and BS999:2017 for non-residential areas. All deviations from this standard will require agreement with the approving authority and local Fire Service.
Fire Detection & Alarm Systems	The apartments are to be provided with an ‘open-plan’ design (i.e. bedrooms as inner rooms to kitchen / living space). Therefore, Grade D Category LD1 fire detection and alarm systems will be provided in each apartment where each system is designed and installed in accordance with BS5839-6:2013. It is proposed to provide the common residential areas (e.g. common corridors, stairs, etc.) with an L5 fire detection and alarm system (to operate the relevant smoke ventilation systems only – no sounders to be provided in these areas). The non-residential areas (e.g. ancillary accommodation, plant rooms, etc.) are to be provided with an L1 fire detection and alarm system. The fire detection and alarm systems within the retail units are subject to the unit fit-outs. The fire detection and alarm system within the common residential areas, non-residential areas and retail units are to be designed and installed in accordance with BS5839-1:2017.
Evacuation Strategy	The evacuation strategy for the residential areas is to be based on a ‘stay-put’ evacuation strategy where only the occupants within the compartment of fire origin are to evacuate and all other occupants within the building are to stay in place. The evacuation strategy for the non-residential areas (e.g. basement, retail areas and ancillary accommodation) is to be a single-staged simultaneous evacuation strategy. Means of escape meets the functional requirements of Part B of the Building Regulations 2010.

Structural Fire Protection	Elements of structure throughout the building are to achieve at least 120 minutes fire resistance with regard to load-bearing capacity.
Smoke Ventilation	All protected corridors and lobbies providing direct access to the escape stairs in the upper levels are to be provided with smoke ventilation. See Section 7.3
Fire Service Access	In accordance with Clause 50.2.1 BS 9991:2015 a fire-fighter shaft containing a fight-fighting stair, fire-fighting lobby, a fire-fighting main and a fire-fighting lift is to be provided due to the top habitable storey being over 18m in height. A wet riser is to be provided in the fire-fighting shaft due to the top habitable story being over 50m in height in accordance of Clause 51.1 BS9991:2015. All areas of the building should be within 60m (an increase from 45m due to the provision of sprinklers) of a wet riser outlet. See Section 6 for further information.
Sprinkler Protection	In accordance with Clause 50.2.1 BS 9991:2015 a fire-fighter shaft containing a fight-fighting stair, fire-fighting lobby, a fire-fighting main and a fire-fighting lift is to be provided due to the top habitable storey being over 18m in height. A wet riser is to be provided in the fire-fighting shaft due to the top habitable story being over 50m in height in accordance of Clause 51.1 BS9991:2015. All areas of the building should be within 60m (an increase from 45m due to the provision of sprinklers) of a wet riser outlet. See Section 6 for further information.
Alternative Approaches	The following deviations have been identified and are to be discussed and agreed in principle with Approving Authority and local fire service: - It is proposed not to provide sprinkler system in the retail units subject to an agreement with Approving Authority and Local Fire Service. See Section 7.4 of the Fire Safety Strategy Report for more information - The arrangement of the open-plan flats in Level 1 to 23 is considered acceptable. The kitchen within the flats are not proposed to be enclosed - this is subject to discussion and agreement with Approving Authority and Local Fire Service. See Section 3.3.2 of the Fire Safety Strategy Report for more information. - At both ground and basement level, the service shafts are open to the fire-fighting lobby, however, this is considered as acceptable subject to

	agreement with Approving Authority and Local Fire Service. See Section 3.4.2 of the Fire Safety Strategy Report for more information. • The cycle store has 117 space however the maximum occupancy is 60. It is unlikely the occupancy of the cycle store will exceed 60, therefore only one exit is required subject to agreement with the Approving Authority and Local Fire Service. • The omission of 0.4m² permanent ventilation to the protected lobby at the basement level to separate the ancillary area to the stair. This is subject to approval with the Approving Authority. See Appendix A of the Fire Safety Strategy Report for more information.
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1. INTRODUCTION

1.1 Purpose of Report

Hydrock Fire have been engaged by Forshaw Group to provide fire engineering services in relation to Victoria House development in Manchester; Great Ancoats Street.

The purpose of this report is to demonstrate to the Approving Authority that the proposed building meets all the functional requirements of the Building Regulations 2010 and identify the Fire Safety Strategy to the design team.

1.2 Basis of Report

This Fire Safety Strategy is based on the information provided by Simpson Haugh as outlined in Table 1.

Table 1 Information on which the Fire Safety Strategy is based

Description	Drawings No.	Revision	Date
Location Plan (Existing)	10122-A-B5D9-G100-XP-00-003	00	January 2020
Demolition Plan	10122-A-B5D9-G110-XP-00-003	00	January 2020
Proposed Site Plan	10122-A-B5D9-G100-P-00-003	00	January 2020
Basement Plan	10122-A-B5D9-G200-P-B1-003	00	January 2020
Ground Floor Plan	10122-A-B5D9-G200-P-00-003	00	January 2020
Level 01 Plan	10122-A-B5D9-G200-P-01-003	00	January 2020
Level 02 Plan	10122-A-B5D9-G200-P-02-003	00	January 2020
Level 03- 08 Plan	10122-A-B5D9-G200-P-03-003	00	January 2020
Level 09-18 Plan	10122-A-B5D9-G200-P-09-003	00	January 2020
Level 19-22 Plan	10122-A-B5D9-G200-P-19-003	00	January 2020
Level 23 Plan	10122-A-B5D9-G200-P-23-003	00	January 2020
Level 24 Plan	10122-A-B5D9-G200-P-24-003	00	January 2020
Roof Plan	10122-A-B5D9-G200-P-RF-003	00	January 2020
Section AA	10122-A-B5D9-G200-S-AA-003	00	January 2020

Section BB	10122-A-B5D9-G200-S-BB-003	00	January 2020
North East Elevation	10122-A-B5D9-G200-E-NE-003	00	January 2020
North West Elevation	10122-A-B5D9-G200-E-NW-003	00	January 2020
South West Elevation	10122-A-B5D9-G200-E-SW-003	00	January 2020
South East Elevation	10122-A-B5D9-G200-E-SE-003	00	January 2020

1.3 Limitations of Report

The Stage 2 Fire Safety Strategy Report represents only the best judgement of the consultants involved in its preparation, and is based, in part, on information provided by others. Under no circumstances is liability accepted for the accuracy of such information.

Furthermore, the fire safety strategy report proposes alternative methods to satisfy the functional requirements of the Building Regulations 2010 (as amended). Whilst alternative methods have been based on accepted codes of practice, they will be subject to the agreement of the Approving Authorities and Local Fire Service.

1.4 Building Description

1.4.1 Building Overview

Victoria House is a new development consisting of residential apartments on the upper floors, retail and storage on ground floor and a basement plant. The building is located on Great Ancoats Street, situated in Manchester as displayed in Figure 1.



Figure 1 Location of site

1.4.2 Building Height

The proposed development has a total of 25 stories including the basement and roof level, and is served by two stair cores; Stair 1 serves all levels and Stair 2 serves only Ground to Level 2. The basement level contains a large plant service room and the ground level contains retail units, refuse storage, co-working space and a gym. The upper levels contain apartments with communal areas (garden etc.) and bike storage on level 1.

For the purposes of the Fire Safety Strategy it should be noted that the top storey of the building (i.e. Level 23) is approximately 71.4m above Ground Level as illustrated in Figure 2. Therefore, Stair 1 which serves all levels within the building, is to be a fire-fighting stair.

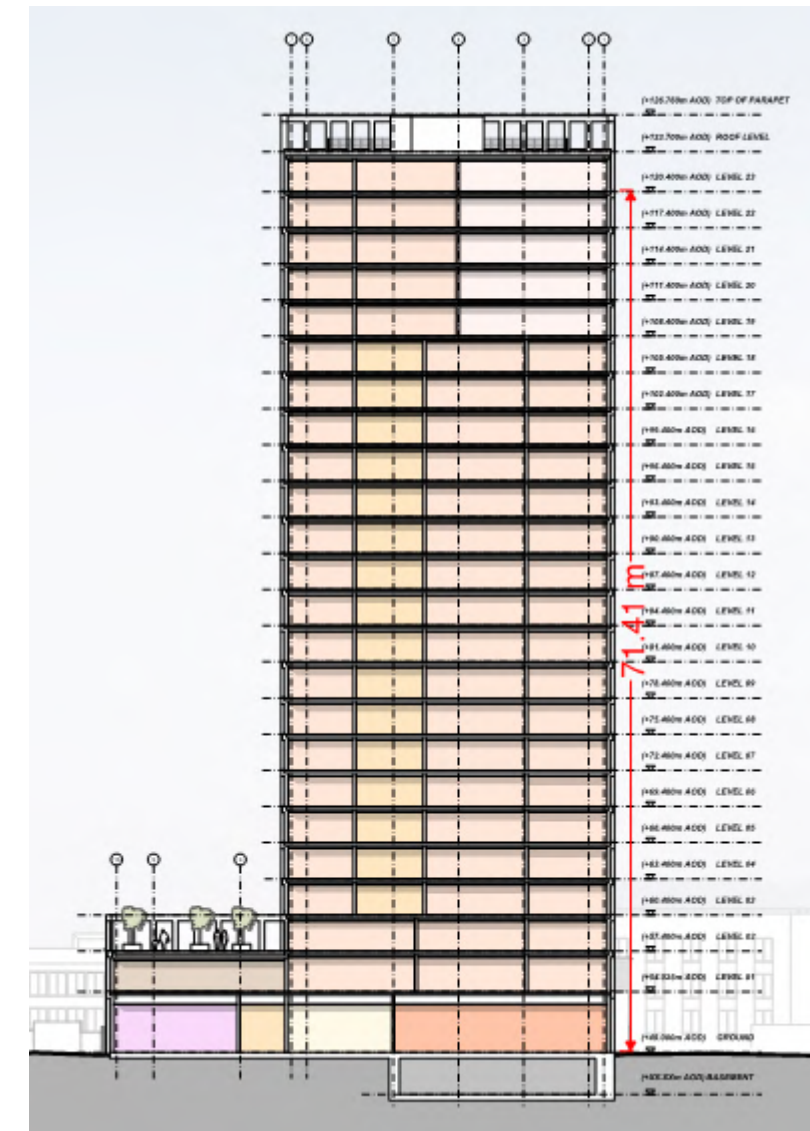


Figure 2 Building section

1.4.3 General Arrangement

1.4.3.1 Basement Level

As illustrated in Figure 3 the Basement Level is provided with Plant only and is served by a single stair.



Figure 3 Basement level general arrangement

1.4.3.2 Ground Level

As illustrated in Figure 4, the ground Level contains one retail units, refuse storage, substation and switch room as well as commercial areas such as the gym, co-working space and a residential lounge. Stair 1 and 2 discharge at this level. Stair 1 serves the basement and upper levels and Stair 2 serves the Levels 1 and 2 only.

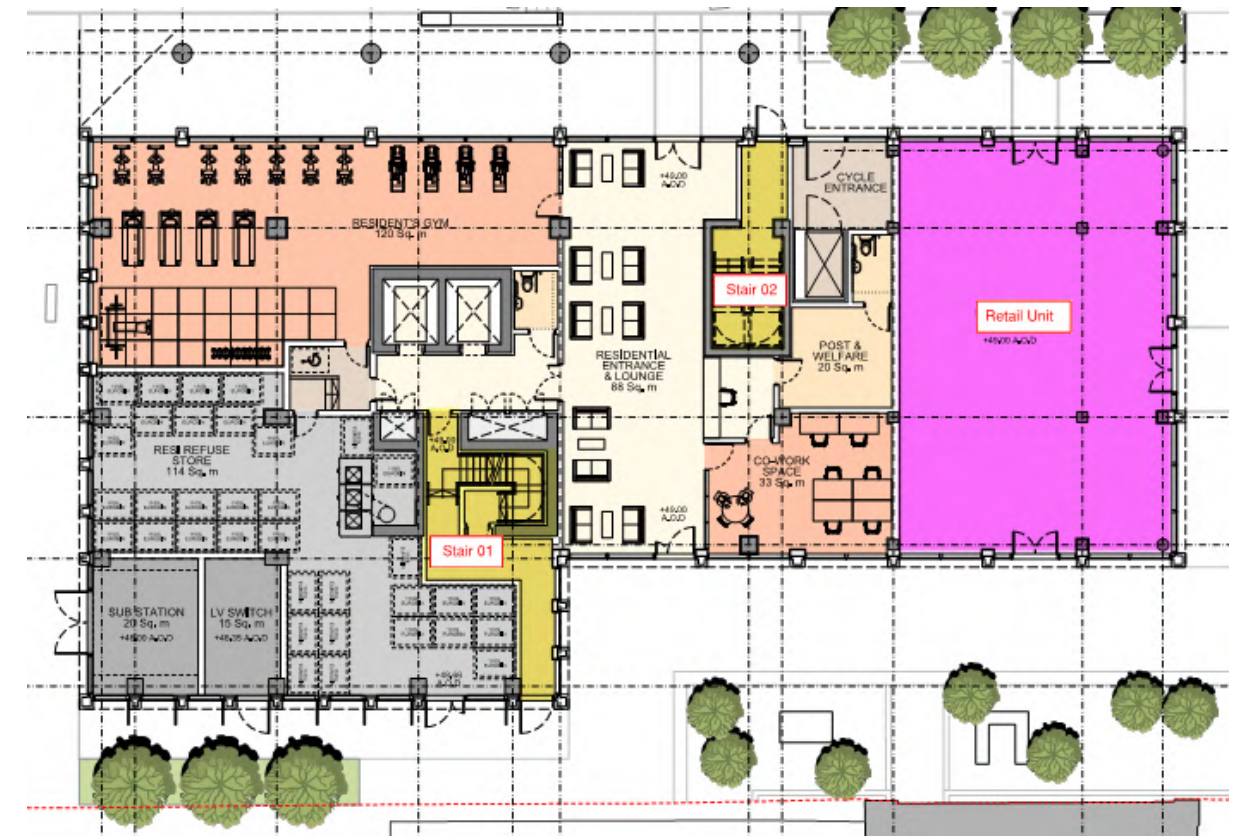


Figure 4 Ground level general arrangement

1.4.3.3 Level 1

As illustrated in Figure 5, Level 1 is served by Stairs 1 and 2. There are three 1-bedroom apartments and four 2-bedroom apartments. Level 1 also contains cycle storage and a store room.

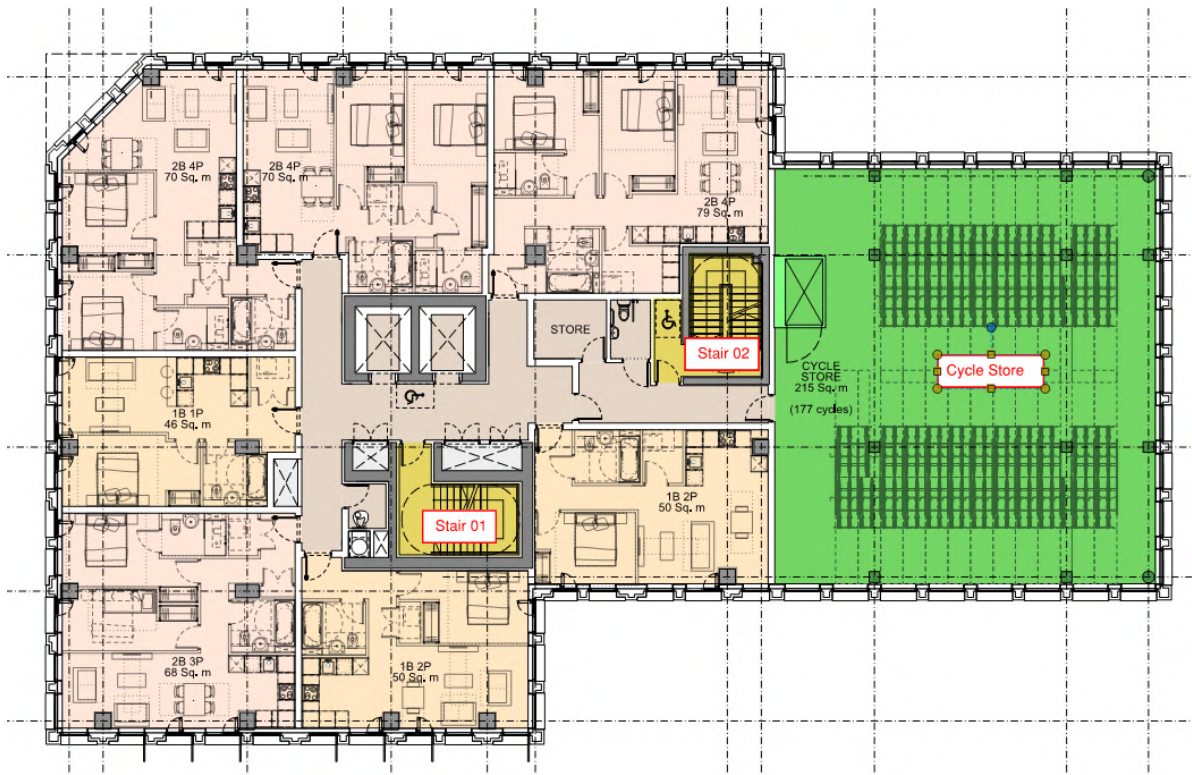


Figure 5 Levels 1 general arrangement

1.4.3.4 Level 2

As illustrated in Figure 6, There are three 1-bedroom apartments and four 2-bedroom apartments. Level 2 also contains a flexible amenity area (e.g. Residential Garden). Additionally, this level contains a store room.

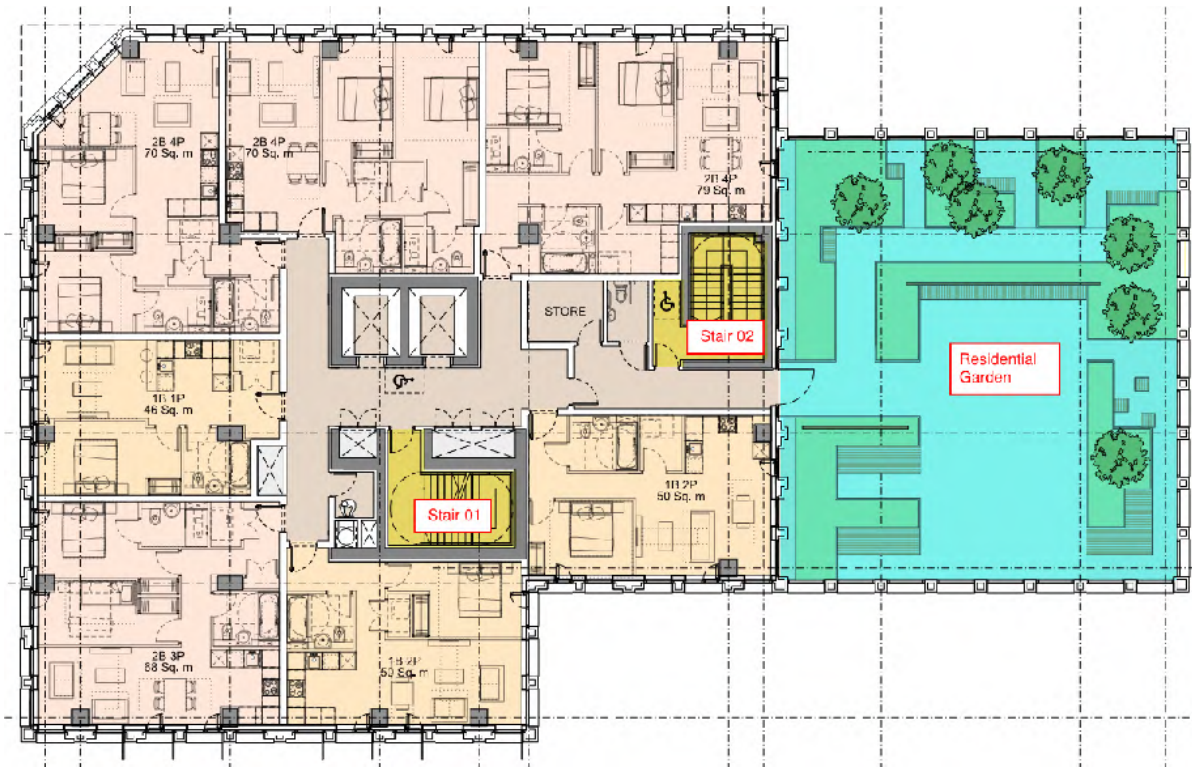


Figure 6 Level 2 general arrangement

1.4.3.5 Level 3 - 8

As illustrated in Figure 7, Levels 3 - 8 are served by stair 1 only as stair 2 no longer serves past level 2. These levels consist of residential apartments only (plus refuse chutes); Five 2-bedroom apartments and three 1-bedroom apartments.

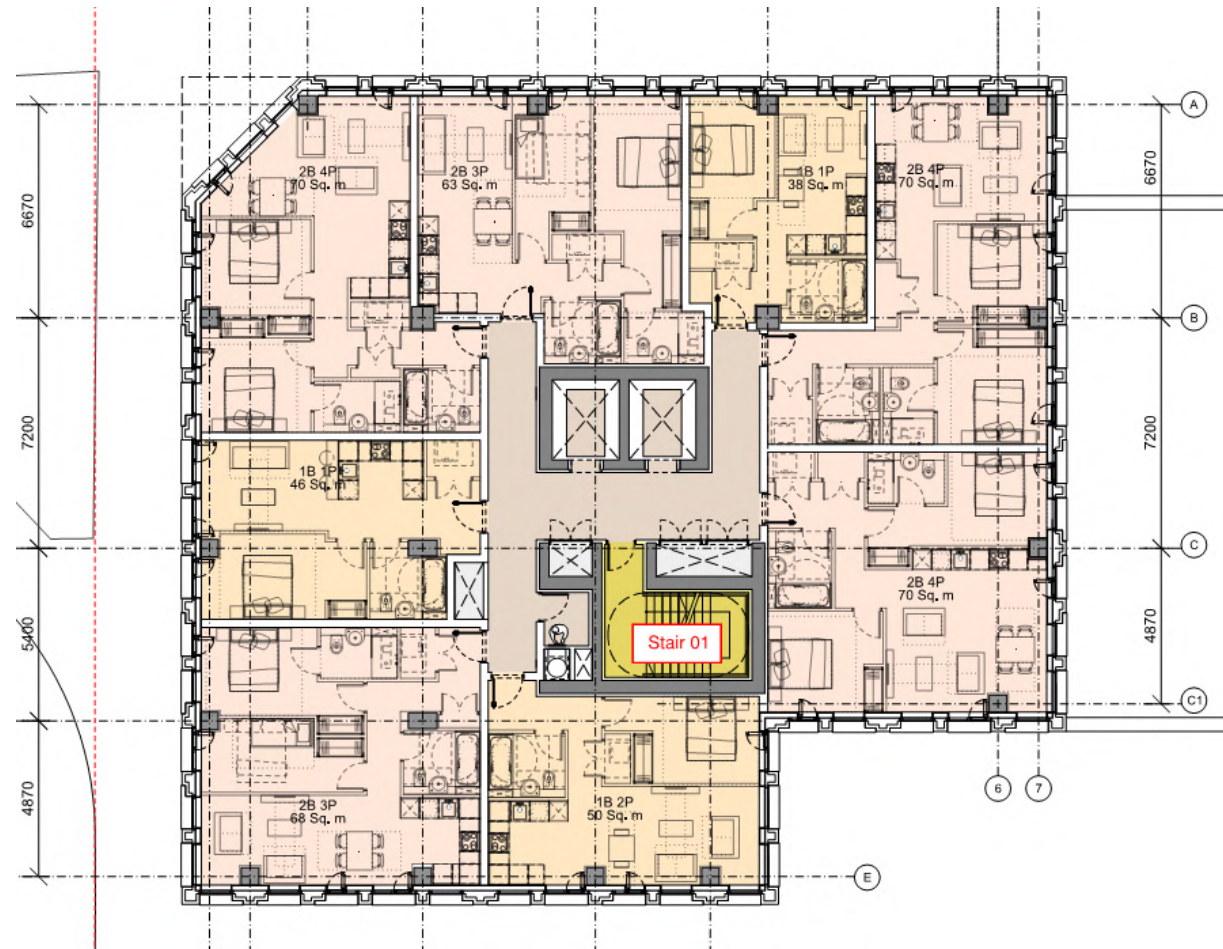


Figure 7 Level 3-8 general arrangement

1.4.3.6 Level 9 - 16

As illustrated in Figure 8, Levels 9 - 16 are served by stair 1 only. These levels consist of residential apartments only (plus refuse chutes); Five 2-bedroom apartments and three 1-bedroom apartments.



Figure 8 Level 9-16 general arrangement

1.4.3.7 Level 19-22

As illustrated in Figure 9, Level 19-22 is served by stair 1 only. This level consists of apartments only (plus refuse chutes); one three-bedroom apartment, five two-bedroom apartment and one one-bedroom apartment.

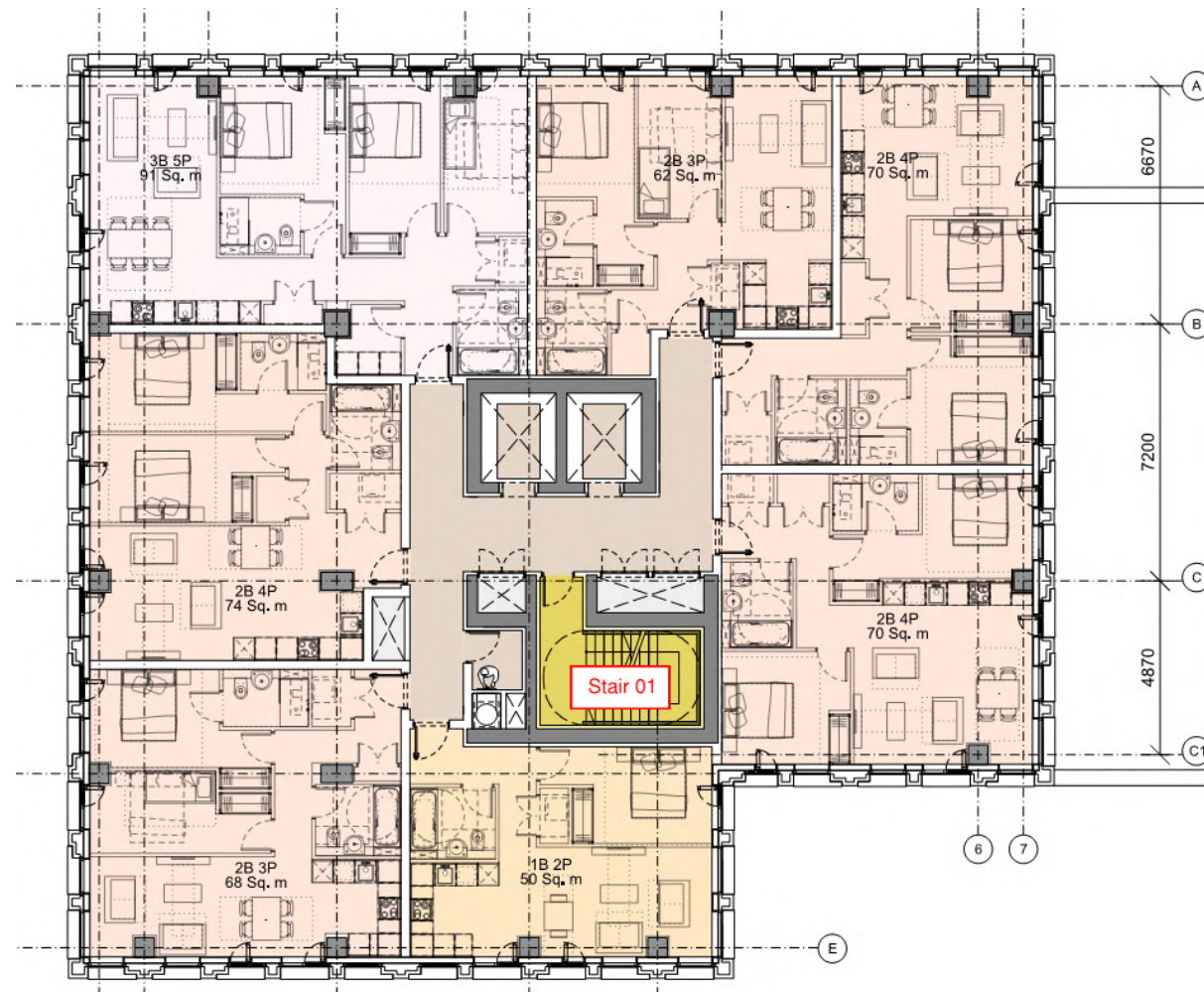


Figure 9 Level 19-22 general arrangement

1.4.3.8 Level 23

As illustrated in Figure 10, Level 23 is served by stair 1 only. This level consists of apartments only (plus refuse chutes); one three-bedroom apartment, five two-bedroom apartment and one one-bedroom apartment.

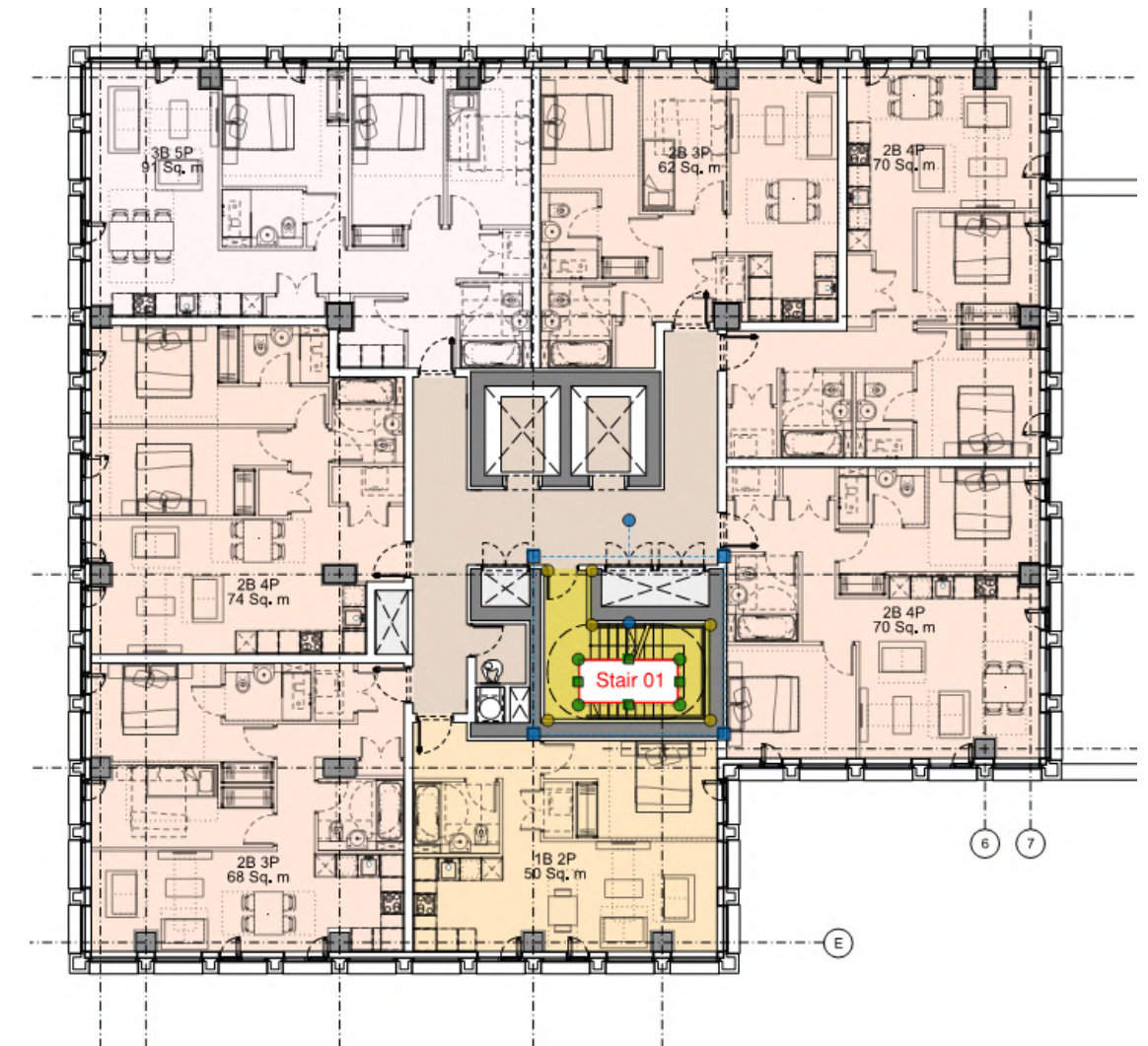


Figure 10 Level 23 general arrangement

1.4.3.9 Level 24

As illustrated in Figure 11, Level 24 is served by stair 1 only. It consists of a green roof and a maintenance access zone.

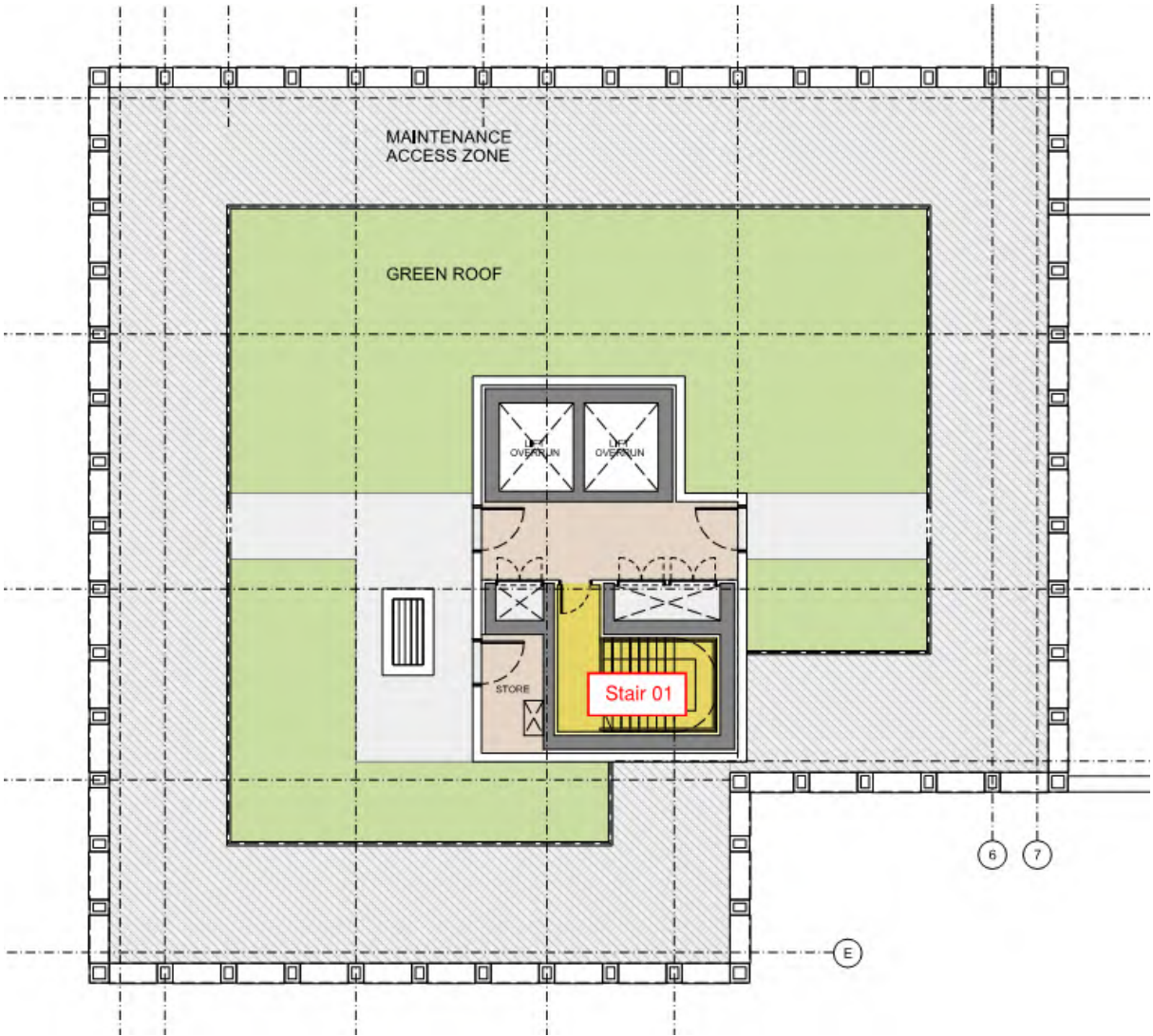


Figure 11 Level 24 general arrangement

2. LEGISLATION

The following sections provide an outline of the Regulations and Guidelines on which the Fire Safety Strategy is based.

2.1 The Building Regulations 2010

The building work will be subject to control under the restrictions of the Building Regulations 2010. The Building Regulations are concerned with the life safety of persons in and around a building. The development will be designed and constructed to satisfy the functional requirements of Part B fire safety to Schedule 1 of the Building Regulations 2010, which includes the following:

- B1 - Means of warning and escape;
- B2 - Internal fire spread (linings);
- B3 - Internal fire spread (structure);
- B4 - External fire spread;
- B5 - Access and facilities for the fire service.

2.2 Guidance Documents

Guidance referred to in this report includes, but is not limited to the following:

- BS9991:2015 'Fire safety in the design, management and use of residential buildings – Code of practice';
- BS9999:2017: 'Fire safety in the design, management and use of buildings – Code of practice';
- BS5839-1:2017 'Code of practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in non-domestic premises';
- BS5839-6:2019 'Code of practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in domestic premises';
- BS81-72:2015 'Safety rules for the construction and installation of lifts. Particular applications for passenger and goods passenger lifts. Firefighters lifts';
- BS5041-2:1985 'Fire hydrant systems equipment. Specification for landing valves for dry risers';
- BS5041-3:1975 'Fire hydrant systems equipment. Specification for inlet breechings for dry riser inlets';
- BS8414-2:2015+A1:2017 'Fire performance of external cladding systems. Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame';
- BS8414-1:2015+A1:2017 'Fire performance of external cladding systems. Test method for non-loadbearing external cladding systems applied to the masonry face of a building';

- BS 476-3:2004 'Fire tests on building materials and structures. Classification and method of test for external fire exposure to roofs';
- BS ISO3864-1:2011 'Graphical symbols. Safety colours and safety signs. Design principles for safety signs and safety markings'
- BS5499-1:2002 'Graphical symbols and signs. Safety signs, including fire safety signs. Specification for geometric shapes, colours and layout'.
- BR187:2014 'External Fire Spread – Building separation and boundary distances'

Guidance for the fire precautions will generally follow the recommendations contained within BS9991:2015 for residential areas and BS9999:2017 for non-residential areas. Any deviations from these standards will require justification demonstrating that the functional requirements of the Building Regulations are met and approval from the Approving Authority and Local Fire Service. Where no specific provision is mentioned in this document regarding any particular aspect reference should be made to BS9991:2015 and BS9999:2017. Consideration is also to be given to insurers and other stakeholders requirements.

The Fire Safety Strategy is to be read in conjunction with the Fire Strategy Drawings in Appendix A.

2.3 Other Applicable Legislation

2.3.1 The Regulatory Reform (Fire Safety) Order 2005

The RRO regulations shall apply to this development and are the Landlords responsibility. The RRO came into force in 2006 with the aim of resolving the overlap caused by a number of previous legislations. Therefore, a large number of legislations was rationalised and consolidated into the RRO with the result that it also rationalised the number of enforcement authorities involved in fire safety matters.

The RRO applies to all workplaces and other non-domestic areas and premises, requiring the 'Responsible Person' to undertake an assessment of the fire risk in their premises and to keep this assessment under review. It requires that where the 'Responsible Person' does not have the relevant training and experience to undertake such an assessment they must appoint a suitable 'Competent Person' to undertake the Risk Assessment.

The main focus of the Risk Assessment is to ensure that the premises are safe for the occupants to use and that all fire safety measures are adequate and appropriately maintained. In new buildings, the Fire Risk Assessment ensures that the fire safety provisions required under the Building Regulations 2010 are maintained, whereas in existing buildings it ensures that despite any modifications undertaken throughout the building's history, it is still safe for use. It is therefore important that the Fire Safety Strategy for more complex buildings (regardless of age) is clear and well documented.

2.3.2 Regulation 38

In conjunction with the RRO, Regulation 38 requires that information relating to the fire safety provisions within a building is provided to the 'Responsible Person' so that they (or an appointed 'Competent Person') can undertake the Fire Risk Assessment required under the RRO. It is therefore of paramount importance that the fire safety information for a building that falls under the requirements of the Building Regulation 2010 is kept up to date and a true reflection of the completed building.

This report does not form the Risk Assessment required under the RRO, nor does it absolve the client from exercising their duties under Regulation 38. However, the aim of this Fire Safety Strategy Report is to demonstrate how the project complies with the requirements of the Building Regulations 2010 and therefore should form part of the information provided to the 'Responsible Person' in order for them to undertake and maintain the Fire Risk Assessment for the project.

3. MEANS OF WARNING AND ESCAPE

Means of escape from the buildings is to be in accordance with BS9991:2015 for residential area and BS9999:2017 for non-residential areas. Where the proposed means of escape strategy deviates from these guidance documents it will require agreement with the Approving Authority.

3.1 Fire Detection and Alarm System

Fire detection and alarm systems are designed to give warning of fire at an early stage to enable all occupants to evacuate the building safely, before the escape routes are impassable owing to the presence of fire, smoke or toxic gases.

3.1.1 Non-Residential Fire Detection and Alarm

It is proposed to provide a Category L1 fire detection and alarm system within the non-residential areas in order to provide occupants with early warning. The fire detection and alarm system within the non-residential areas is to be designed, installed and commissioned in accordance with BS5839-1:2017.

3.1.2 Residential Fire Detection and Alarm

Common Areas

It is proposed to provide a Category L5 fire detection and alarm within the common residential areas (i.e. common corridors, lobbies and stairways) for the purpose of activating the relevant smoke ventilation systems only (sounders and manual call points are not to be provided within these areas). The fire detection and alarm system in the common residential areas is to be designed, installed and commissioned in accordance with BS5839-1:2017.

The communal gardens should have an audible alarm throughout and a flashing beacon for those with a hearing disability, which will be activated on the detection within ancillary accommodations.

Residential Apartments

The minimum level of detection within apartments is Grade D, Category LD2, designed and installed in accordance with BS5839-6:2013. However, in current design arrangement, all flats are “open-plan” flats. Due to the development is intended to be of private rental sector, the ‘open-plan’ flats are to be provided with a Grade D2 LD1 fire alarm and detection system in accordance with BS5839-6:2019.

3.2 Evacuation Strategy

The evacuation strategy for the residential apartments is to be based on a ‘stay put’ evacuation strategy, where only the occupants within the apartment of fire origin are to evacuate and all other occupants within the building are to stay in place.

Within the non-residential areas of the building, the evacuation strategy is to be based on a single-staged simultaneous evacuation strategy, where all occupants will escape at the same time upon a confirmed fire. Where commercial units are provided with independent escape routes separated from the rest of the building, they can be evacuated separately (i.e. occupants of commercial unit only to evacuate on detection of smoke within that unit), in accordance with Clause 4.5 of BS 9999:2017.

3.3 Residential Means of Escape

3.3.1 Common Corridors

In accordance with Clause 7.4 of BS9991:2015 the travel distances within the residential common corridors in Victoria House from the apartment entrance doors to the stair door (or a door to a stair lobby which is not accessed directly from any accommodation) are not to exceed 7.5m without sprinkler provision (where escape is available in a single direction only). The building contains an occupied storey more than 30m above ground floor. In accordance with Clause 11.1 of BS9991:2015, sprinklers should be provided throughout the building. In accordance with Figure 6 of BS9991:2015, with the provision of sprinkler protection throughout the building, the travel distance from apartment entrance door to the stair door can be increased to 15.0m, providing the stair lobby is provided with smoke ventilation in accordance with Section 7.3.1 of this report.

Based on the current design travel distances within the common corridors are compliant as illustrated in the Fire Strategy Drawings in Appendix A.

3.3.2 Internal Apartment Layouts

In current design, all single level apartments are open plan flats and therefore, they should meet the following arrangements in accordance with Clause 9.7 of BS9991:2015:

- Open plan flat should be fitted with a Grade D2 LD1 fire detection and alarm system in accordance with BS5839-6:2019 and a sprinkler system in accordance with BS 9251;
- The size of the open plan should not exceed 16m x 12m. However, larger size may be acceptable subjected to agreement with Approving Authority;
- Open plan flat should be situated on a single level only;
- Ceiling of the open plan flat should have a minimum height of 2.25m;
- Kitchen should be enclosed in open-plan flats having an area exceeding 8m x 4m. Cooking facility in open plan flats should not be adjacent to the entrance of the flat.

Note: The permissible travel distance when sprinklers and LD1 detection are provided to apartments is 20m (clause 9.4.2 BS 9991:2015)

The proposed design features unenclosed kitchens with cooking facilities located remotely from the means of escape route in line with the recommendations above, a travel distance of less than the 20m requirement, and sprinklers and an LD1 fire alarm and detection system.

We would consider the proposed design to meet the functional requirements of the Building Regulations based on the following:

- The requirement informing the size limitations of an open plan apartment are based on research undertaken by NHBC. The scope of the aforementioned study assessed apartments with a maximum are of 8m x 4m with an unenclosed kitchen, and 12m x 16m with an enclosed kitchen (enclosure not fire rated). The research could not make recommendations on apartments larger than 8m x 4m (unenclosed kitchen) as they were outside the scope of the study. Notwithstanding the above, this research did identify that an increased volume of apartment, sprinklers and enhanced alarm and detection improve the safety of the design.
- The maximum travel distance within any apartment is 11m, far less than the allowable distance 20m. It should be noted that this is only 2m in excess of the travel distance required for an apartment with no enhanced detection or sprinklers.
- The cooking facilities are located remotely from the escape route in line with the guidance of BS 9991, and recommendations of the NHBC.
- An apartment with an enclosed kitchen (12m x 16m) is not required to have a fire rated enclosure or fire door. This suggests that the increased open plan apartment size is permissible if the risk of radiation from a kitchen fire is low. As such the provision of the proposed apartments is considered to be reasonable.

The above is subject to approval by the Approving Authorities and Local Fire Service.

3.3.3 Inner Rooms

The co-working space and post & welfare are classed as inner rooms. There are certain requirements an inner room should meet due to the risk of a fire starting in the access room. In accordance with Clause 16.3.4 of BS 9999:2017 an inner room must meet the following conditions:

- The occupant capacity of the inner room does not exceed 60 (30 where the occupants require assistance escaping);
- The inner room is not a bedroom;
- The inner room is entered directly from the access room;
- The escape route from the inner room does not pass through more than one access room;

- The travel distance from any point in the inner room to the exit(s) from the access room does not exceed the allowable one-way travel distance;
- The access room is not a place of special fire hazard and is in the control of the same occupier as the inner room;
- One of the following arrangements is made:
 - » The enclosures (wall or partitions) of the inner room stop at least 500mm below the ceiling; or
 - » A suitably sited vision panel not less than 0.1m² is located in the door or wall of the inner room, to enable occupants of the inner room to see if a fire has started in the outer room; or
 - » The access room is protected by an automatic smoke detector that either operates an alarm that is immediately audible in the inner room, to a sound pressure level in accordance with the minimum recommended in BS 5839-1:2013, or gives an immediate visual alarm conforming to BS EN 54-23 in the inner room if the ambient noise levels are so great to make an alarm inaudible.

3.3.4 Residential Garden at Level 2

On Level 2, there is a communal garden accessible from the ancillary accommodations. The communal roof garden will be part of the escape route for the occupants escaping from the roof garden. In accordance with BS9999:2017, the following requirements are to be met:

- There are no ventilation openings of any kind within 3m of the escape route;
- Any wall, including a door or a window in the wall, within 3m of the escape route has at least 30 min fire resistance for integrity from the inside (E 30) and there is no unprotected area below a height of 1.1m measured from the level of the escape route;
- Any roof hatch or roof light forming part of the roof within 3m of the escape route has at least 30 min fire resistance for integrity (E 30) from the underside;
- The route is adequately defined and guarded by walls and/or protective barriers conforming to BS 6180.

The escape route over the roof garden is also considered as acceptable for the disabled occupants, based on the following provision, subject to agreement with approving authority:

- Escape route in the roof garden is usable for wheelchair;
- Disable refuge area is provided in the staircase.

3.4 Vertical Means of Escape

3.4.1 Common Stairs

The residential blocks are served by two staircases. Stair 01 serves the residential tower which is over 18m, therefore, in accordance with Section 5 of BS9991:2015 it is proposed stair 1 is constructed as a fire-fighting shaft.

The fire-fighting shaft should achieve a minimum clear width of 1100mm and further details of the fire-fighting shaft for the fire service is discussed in the Fire Service Access Section (Section 6.3) of this report.

Stair 2 is not required to be a fire-fighting shaft but is required to achieve a minimum clear width of 750mm, in accordance with Clause 28 of BS9991:2015.

3.4.2 Basement Stairs

In Victoria House, both Stair 1 and 2 discharge at ground level with Stair 01 extending to basement level via a door separation. Occupants within the upper floors exceeding Level 2 are only served by Stair 01. In accordance with Clause 30.2 of BS9991:2015, if a stair forms part of the only escape route from an upper storey or part thereof, the stair should not continue down to the basement. This is to prevent the stair at the basement level being filled with smoke and heat from a fire at basement level. However, the current design is considered to be acceptable based on the following provision:

- The stair core at the basement level is to be constructed as a fire-fighting shaft;
- The fire-fighting lobby at the basement level is ventilated by smoke shaft ventilation;
- The fire-fighting stair below and above ground floor level is separated by a FD30S self-closing door at the ground floor level.

3.4.3 Stair Discharge

In accordance with Clause 34a of BS9991:2015 residential stairs are to discharge to external directly or via a protected route which is lobby protected from any adjacent accommodation. Generally, the final exit from the stair is recommended to achieve the same width as required for the stair.

Both stairs in the designed are classed as protected stairs and a stated in BS 9991:2015 any protected corridor leading to a final exit should have the same standard of fire resisting enclosure and lobby protection as the stairway it serves and that it is not the common access corridor serving the dwellings at the exit level.

3.5 General

Doors on common corridor escape routes (whether or not the doors are fire doors) should either not be fitted with lock, latch or bolt fastenings, or be fitted only with simple fastenings that can be readily operated from the

side approached by all people (including disabled and elderly) making an escape. The operation of these fastenings should be readily apparent and without the use of a key and without having to manipulate more than one mechanism.

On activation of the fire alarm all electronic locks on means of escape doors from the evacuation zone in alarm are to fail-safe open. All escape doors to be provided with an electronic lock are also to be provided with a green break glass.

3.6 Escape Signage

Escape signage is to be provided within the common escape routes (including external escape routes) and designed and installed in accordance with BS5499-1. Signage utilised throughout the building is to be consistent and in accordance with BS ISO 3864-1.

3.7 Non-Residential Means of Escape

3.7.1 Ancillary Accommodation

Within the upper floors, ground floor and basement, there are areas of ancillary accommodation as follows:

- Basement - Plant Room;
- Ground Level - Retail Unit, Refuse Store and Substation, Resident Lounge and Gym;
- First Level - Cycle Storage and Store Room;
- Second Level - Residential Garden and Store Room;

3.7.2 Risk Profiles

BS9999:2017 takes a risk-based approach to developing the fire safety strategy. A risk profile is assigned to each occupancy type within the non-residential area of the building in order to determine the fire safety requirements for each occupancy type. The risk profile consists of an occupancy characteristic (A – occupants awake and familiar with the building layout, B – occupants awake but unfamiliar with the building layout and C – occupants potentially sleeping) and an expected fire growth rate (ranging from 1 – slow to 4 – ultra-fast) based on the expected fire load in the space. Where sprinkler protection is provided it is considered acceptable to assume the expected fire growth rate will be reduced. The relevant risk profiles for the non-residential areas of Victoria House in accordance with Table 7 of BS9999:2017 are outlined in Table 2.

Table 2 Risk Profiles

Level	Maximum Expected Occupancy ^[1]
Plant / Store	A3
Substation	A3

Gym, Co-Working Space and Residential Lounge ^[1]	A2
Roof Garden	A2
Retail Unit	B3
Cycle Store	A3

Notes:

1. It is assumed that these areas are residential amenity areas for residential occupants. It is therefore reasonable to assume that occupants are familiar with these areas.

For the purposes of means of escape, the maximum permitted travel distances within these areas are as follows in Table 3, in accordance with Table 11 of BS9999:2017.

Table 3 Travel distances

Location	Maximum Permitted Travel Distance			
	Single Direction of Escape		Multiple Directions of Escape	
	Direct	Actual	Direct	Actual
Plant Rooms	12.0m	18.0m	30.0m	45.0m
Substation	12.0m	18.0m	30.0m	45.0m
Gym, Co-Working Space and Residential Lounge ⁽¹⁾	15.0m	22.0m	37.0m	55.0m
Residential Garden	15.0m	22.0m	37.0m	55.0m
Retail Unit	11.0m	16.0m	27.0m	40.m
Cycle Store	12.0m	18.0m	30.0m	45.0m

Notes:

1. It is assumed that these areas are residential amenity areas for residential occupants. It is therefore reasonable to assume that occupants are familiar with these areas.

Travel distances from all ancillary accommodation areas are acceptable in accordance with BS9999:2017. These are demonstrated within Appendix A of this report.

3.7.3 Occupancy Capacity

The occupancies of the commercial units are given below in Table 4

Table 4 Estimated maximum occupancy

Use	Area	Floor space factors	Estimated Occupancy
Gym	120m ²	6m ² /person	20 ^[1]
Co-working Space	33m ²	-	15 ^[2]
Residential Entrance & Lounge	88m ²	-	30 ^[2]
Retail Unit	161 m ²	2m ² /person	80 ^[3]

Cycle Store	215m ²	-	60 ^[4]
Residential Garden	200m ²	-	60 ^[4]

Notes:

1. This is based on the assumption of the floor area of 6m² per person of the area.

2. The occupancy has been based on the number of seats in the floor plan times by a factor of safety of 1.5.

3. See section 3.7.4

4. The occupancy has been limited to 60 people due to only one exit being provided.

It should be noted that there are cycle spaces are 177. In reality, it is unlikely the occupancy of the cycle store will exceed 60, therefore only one exit is required subject to agreement with the approving authority.

3.7.4 Minimum Number of Exits

BS 9999:2017 provided a minimum number of escape routes and exits from a room dependant on the number of occupants. The minimum number of exits are given below in Table 5.

Table 5 Minimum number of exits

Maximum Occupancy	Minimum number of escape routes/exits
60	1
600	2
More than 600	3

It should be noted the door of retail unit should open in the direction of escape as the occupancy number is expected to be more than 60.

3.7.5 Minimum Required Clear Exit Widths

BS 9999:2017 provides the minimal door width per person for appropriate risk profile and it also states that the total door width will be:

- Not less than required to serve the expected occupancy; and
- Not less than 850mm where it provides access to a disabled refuge area; and
- Not less than 800mm regardless of risk profile.

In accordance with Clause 16.6.1 of BS9999:2017, the calculated minimum exit width required is based on discounting the largest exit based on the assumption the exit is unavailable due to the effects of fire or smoke.

Table 6 Estimated maximum occupancy

Use	Minimum Exit Width per Person (mm)	Maximum Number of Occupants	Minimum Door Width (mm)
Gym	3.6	20	850
Co-working Space	3.6	15	850
Residential Entrance & Lounge	3.6	30	850
Retail Unit	6.0	80	850
Cycle Store & Plant Room	4.6	60	850
Residential Garden	3.6	60	850

- Notes:
- 5. This is based on the assumption of the floor area of 6m² per person of the area.
 - 6. The occupancy has been based on the number of seats in the floor plan times by a factor of safety of 1.5.
 - 7. The occupancy has been limited to 60 people due to the doors not opening in the direction of escape.
 - 8. The occupancy has been limited to 60 people due to only one exit being provided.

3.7.6 Minimum Width Required for Stair 2

Stair 2 should be designed so it is wide enough to accommodate the number persons needing to use it in an emergency. This is dependant on the number of people using the stair on each storey. As stated in BS 9999:2017 the minimum stair width required is 1000mm (or 1100mm for a fire-fighter stair). The minimum stair width is based on the maximum number of occupants for the residential garden and cycle store and using a minimum width of stair per person of 4.6 based on risk profile A3. The minimum width for Stair 2 is shown below.

Stair 2

$$\text{minimum} \left((4.6 \times 120 = 552\text{mm}) , 1000\text{mm} \right) = 1000\text{mm}$$

Eq. 1

4. INTERNAL FIRE SPREAD

4.1 Internal Fire Spread (Linings)

The internal surface linings are to be in accordance with Table 7 throughout the building.

Table 7 Internal lining requirements

Location	British Standard Performance Class ^[1]	Euro Performance Class ^[2]
Residential enclosures have an area less than 4m²	3	D-s3, d2
Non-residential enclosures having an area less than 30m²	3	D-s3, d2
All other enclosures	1	C-s3, d2
Circulation spaces within dwellings	1	C-s3, d2
Other circulation spaces, corridors and stairwells	0	B-s3 d2

- Notes:
- 1. Relates to performance measures in BS 476: Parts 6 and 7 criteria as prescribed in Clause 20.1 from BS9991:2015.
 - 2. Relates to performance determined in accordance with BS EN 13501-1:2002

The surface linings of the walls and ceilings should generally conform to the classifications outlined in Table 7. Parts of walls in rooms may be of a lower class but not lower than Class 3 (National Class) or Class D-s3, d2 (Euro Class) provided that the total of those parts in any one room does not exceed 50% of the floor area of the room (subject to a maximum of 20m² within residential areas and 60m² in non-residential areas).

For the purposes of internal surface lining requirements, the following definitions should be noted:

Room	An enclosed space within a building that is not used solely as a circulation space. The term includes not only conventional rooms, but also cupboards that are not fittings and large spaces such as warehouses and auditoria. The term does not include voids such as ducts, ceiling voids and roof spaces;
Circulation Space	A space (including a protected stairway) mainly used as a means of access between a room and an exit from the building or compartment.

4.2 Internal Fire Spread (Structure)

4.2.1 Element of structure

The uppermost occupied storey of Victoria House is greater than 30m above Ground Level (71.4m). Therefore, in accordance with Clause 16.2.2 of BS9991:2015 the required fire resistance for the elements of structure is 120 minutes with the installation of sprinkler protection in accordance with BS 9251:2014.

It should also be noted that the elements of structure supporting a roof of the apartment block need not be fire rated unless it acts as a floor. The residential garden area is acting as a floor and should therefore achieve the same fire resistance as the elements of structure, i.e. 120mins.

4.2.2 Compartmentation

In accordance with BS9991:2015 all floors are to be compartment floors achieving the same level of fire resistance as that required for the elements of structure (i.e. 120 minutes fire resistance). With the exception of the separation of the retail unit which achieves a 180-minute fire resistance to omit the need for sprinkler protection. This is subject to approval with the approving authority and the Local Fire Service.

To accommodate the stay in place evacuation strategy each residential apartment within Victoria House will be required to be separated from the rest of the building by a minimum of 60 minutes fire resistance. Walls and floors separating residential accommodations from commercial units should be constructed to achieve the same fire resistance as the structure.

4.2.3 Additional Fire Resistance Requirements

Fire resistance to achieve the required compartmentation, protection to escape routes and enclosure to areas of fire risk is to be provided in accordance with BS9991:2015 as outlined in Table 8.

Table 8 Minimum fire resistance requirements

Part of the Building		Minimum provisions when tested to the relevant parts of BS 476 or relevant European standard (minutes)			Method of Exposure
		Load-Bearing Capacity	Integrity	Insulation	
Structural Frame, Beam or Column		120	N/A	N/A	Exposed faces
Load-Bearing Walls		120	N/A	N/A	Each side separately
Compartment Floors		120	120	120	From underside
Compartment Wall		120	120	120	Each side separately
Apartment enclosure		60	60	60	Each side separately
Roof	Any floor forming part of an escape route	30	30	30	From underside
	Any roof that forms the function of a floor	120	120	120	From underside
External Fire Spread	Less than 1000mm from relevant boundary	120	120	120	Each side separately
	More than 1000mm from relevant boundary ^[1]	-	120	15	From inside the building
	Adjacent to escape route	30	30	30	From inside the building
Protected Shafts (Risers)		120	120	120	Each side separately
Protected Stair		120	120	120	Each side separately
Enclosure of firefighting shaft	Construction separating fire-	120	120	120	From side remote from shaft

	fighting shaft from rest of building				
	Construction separating fire-fighting stair, fight-fighting lift shaft and fire-fighting lobby	60	60	60	From inside shaft
Plant room		60	60	60	Each side separately
Engineering Service Room		60	60	60	Each side separately
Substation ^[2]		120	120	120	Each side separately
Refuse Store		60	60	60	Each side separately
Cycle Store		30	30	30	Each side separately
Communal lounges		30	30	30	Each side separately
Retail Unit ^[3]		180	180	180	Each side separately
Cavity Barrier		N/A	30	15	Each side separately

- Notes:
- 1. This does not apply to allowable unprotected openings calculated within Section 5
 - 2. if the utility within substation is property of UKPN or another service provider. Substation should follow the utility provider standards which could require 240 minutes fire resistance construction
 - 3. It should be noted that the compartment floors between the retail unit and the cycle store is required to be 180 minutes fire resistance from the underside.

Notional fire resistance layouts meeting the requirements of the Fire Safety Strategy are illustrated on the Fire Strategy Drawings in Appendix A

4.3 Fire Doors

Fire doors should be provided in all fire rated enclosures noted within Section 4.2.2. Fire doors should be in accordance with BS 476: Part 22: 1987 (BS 476-22) and specified with cold smoke seals (only where smoke seals are required [S or Sa]) in accordance with the recommendations of BS 476-22 Section 31.1. The fire resistance requirements for the doors are shown in Table 9.

Table 9 Fire door requirements

Location	Tested to BS476-22 ^[1]
Compartment Walls	Same the wall it is fitted with (S)
Compartment Walls-Flats	FD30S
Protected Shafts (risers, stairs)	Half of the wall it is fitted (but not less than 30min) with (S)
Lift	Half of the wall it is fitted (but not less than 30min)
Firefighting Lift	Half the fire resistance as the wall it is fitted
Firefighting Stair	Half the fire resistance as the wall it is fitted, with (S)
Protected Lobby or Corridor	FD30S
Places of Special Fire Hazard – Opening into protected lobby or corridor	Same as the wall it is fitted with (S)
Places of Special Fire Hazard – Not opening into protected lobby or corridor	Same as the wall it is fitted without (S)
Cavity Barrier	FD30

Notes:
1. All fire doors except doors into places of special fire hazard should be fitted with self-closers when opening onto escape routes.

A fire door that is needed to resist the passage of smoke at ambient temperature conditions (the fire doors with the S against them) should either;

- Have a leakage rate not exceeding 3m³/h per metre, when tested in accordance with BS 746-31.1 with the threshold taped and subjected to a pressure of 25 Pa; or
- Meet the classification requirement of Sa when tested in accordance with BS EN 1634-3:2004.

Note: Smoke leakage control can be applied to non-fire-resisting doors.

Threshold gaps should be in accordance with BS 8214:2016.

4.3.1 Ductwork

Where air handling ducts pass through compartmentation / fire resisting construction the integrity of these compartments should be maintained. There are four basic methods in order to prevent smoke and flame spread through the building/ compartment. For more information see Clause 21 from BS9991:2015:

The requirements for each option are as follows.

Method 1 – Thermally actuated fire dampers;

- Fire dampers that are thermally operated can be provided where ductwork penetrates though fire resisting construction.
- Fire dampers only actuated by fusible links are not suitable for protected escape routes or sleeping risk.

Note: Fire dampers should be tested to BS EN 15650:2010. They should have an E classification equal to or greater than 60 minutes.

Note: Method 1 is not suitable for ductwork serving kitchen extracts or sleeping risk.

Method 2 - Fire resisting enclosures;

- The fire resisting enclosures should achieve the same fire resistance as the wall the ductwork penetrates, in order to form a compartment known as a protected shaft. This allows a multiplicity of services to be transferred together with the duct to traverse a number of compartments within the building without the need for further sub divisions. Fire dampers (thermally or actuated by automatic fire detector (AFD)) will only be required where the ductwork enters or leaves the protected shaft.
- Method 2 can only be used on ductwork that passes through an escape route providing the ductwork does not serve the escape route it passes through.

Method 3 - Protection using fire resisting ductwork.

- The ductwork itself forms a protected shaft. The ductwork should achieve the same fire resistance as the wall the ductwork penetrates. The fire resistance can be achieved by the ductwork material itself, or through the application of a protective material.
- Method 3 can only be used on ductwork that passes through an escape route providing the ductwork does not serve the escape route it passes through.

Note: The supporting hangers should be capable of supporting the ductwork for not less than the period of fire resistance of the ductwork.

Method 4 – Automatically actuated fire and smoke dampers triggered by smoke detectors

- Method 4 may be used for extract ductwork passing through the enclosures of protected escape routes, both where the ductwork does and does not serve the escape route.

Note: Method 4 is not suitable for ductwork serving kitchen extracts.

Note: Fire dampers should be tested to BS EN 15650:2010. They should have an ES classification equal to or greater than 60 minutes.

Air transfer grilles should be in accordance with BS9991:2015. Generally, air transfer grilles should not be installed in:

- Elements of construction enclosing compartments or protected shafts;
- Enclosures to protected stairways, protected lobbies, protected corridors, firefighting stairways or firefighting lobbies;

4.3.2 Fire Stopping

Fire stopping is to be provided at the following locations:

- In-line with fire rated walls and floors where there is a penetration of the wall / floor in order to maintain the fire resistance integrity of the wall / floor;
- Between fire rated walls/floors and an external wall to ensure the fire-resistant integrity of the wall / floor is maintained to the external wall.

Where fire stopping is provided it is to achieve the same level of fire resistance as required for the wall / floor is replaces. For more information see Clause 24.4 from BS9991:2015.

4.3.3 Cavity Barriers

In accordance with BS9991:2015 cavity barriers are to be provided in the cavity of:

- An external wall at all cavity edges and around all openings in the external wall (i.e. windows);
- An external wall in line with a fire rated floor / compartment floor where it meets the external wall;
- An external wall in line with a fire rated wall / compartment wall where it meets the external wall;
- An internal cavity wall at the junction with a fire rated wall / floor.

Cavity barriers should also be provided in cavities to prevent the excessive spread of unseen fire and smoke. Cavity barriers are to be provided to ensure the maximum dimensions of undivided concealed spaces does not exceed the requirements outlined in Table 10.

Table 10 Maximum dimensions of undivided cavities

Location of Cavity	Class Of Surface / Product Exposed In Cavity		Maximum Distance In Any Direction
	National Class	Euro Class	
Between roof and ceiling	Any	Any	20m
Any other cavity	Class 0 or Class 1	Class A1; or Class A2-s3, d2; or Class B-s3, d2; or Class C-s3, d2	20m
	Not Class 0 or Class 1	None of the above classes	10m

Cavity barriers in a stud wall, or provided around openings may be formed of the following;

- Steel at least 0.5mm thick;
- Timber at least 38mm thick;
- Polyethylene sleeved mineral wool or mineral wool slab (both require to be under compression when used in cavity barrier construction); or
- Calcium silicate, cement based or gypsum plaster boards at least 12mm thick.

Where a single room exceeds 20m in any direction cavity barriers within the ceiling void (and within any floor voids) need only to be placed on the line of enclosing walls/partitions of any room with, providing:

- The cavity barriers are no more than 40m apart; and
- The surface of the material/product exposed in the cavity being Class 0 or Class 1 (national class) or Class C s3, d2 or better (European Class).

Where provided cavity barriers are to achieve at least 30 minutes fire resistance for integrity and 15 minutes fire resistance for insulation.

5. EXTERNAL FIRE SPREAD

5.1 Fire Spread to Adjacent Properties

In order to prevent fire spread between properties it should be ensured sufficient separation distance is provided between fire compartments within the building and the relevant boundaries based on the extent of unprotected area to the fire compartments.

External fire spread analysis is to be conducted in the next stage based on the enclosing rectangle method as described in BR187:2014.

5.1.1 Enclosing Rectangle Method

The enclosing rectangle method considers each fire compartment within the building separately. The methodology for this analysis is summarised as follows:

- A plane of reference is defined which ‘touches’ the elevation under consideration at least once but does not pass through it;
- A rectangle is constructed enclosing all unprotected areas on the elevation. The dimensions of this rectangle are then rounded up to the nearest dimensions defined in the tables of BR187:2014;
- The unprotected area on the elevation projecting on to the plane of reference is taken as a percentage of the area of the ‘enclosing rectangle’;
- The tables in BR187:2014 are then used to determine the required minimum distance between the plane of reference and the relevant boundary based on the dimensions of the enclosing rectangle and the percentage unprotected area;
- The methodology of the enclosing rectangle analysis may also be carried out in ‘reverse’ based on a known boundary distance to determine the maximum percentage unprotected area on the elevation.

5.1.2 Enclosing Rectangle Analysis Assumptions

External fire spread analysis in accordance with BR187:2014 is based on the following assumptions:

- All areas on the elevation to the fire compartment that do not meet the fire resistance requirements for elements of structure with regards to integrity (i.e. 120 minutes) and 15 minutes for insulation are considered ‘unprotected’. It should be noted that the analysis will assume all glazed areas and curtain walling areas are unprotected (i.e. not fire rated) and all other areas of the elevation (i.e. solid construction) are protected (i.e. achieve 120 minutes fire resistance for integrity and 15 minutes for insulation);

- The relevant boundary distance is taken from the plane of reference to the adjacent site boundary except where the adjacent boundary is to a public roadway or river etc. In the case the adjacent boundary is a public roadway or river the relevant boundary distance may be taken to the middle of the road or river etc;
- Analysis for each fire compartment is to be conducted based on the relevant occupancy characteristic of the compartment;
- The analysis will consider the ‘worst case’ scenario for each elevation (i.e. compartment with greatest extent of unprotected area closest to the relevant boundary. Providing the analysis for the worst case demonstrates compliance, it is considered acceptable to assume all other compartments on the elevation are also acceptable with regards to external fire spread;

5.2 Re-Entrant Corners

The building design should prevent fire spread from occurring around walls / floors required to be fire rated via an external corner in the façade (i.e. re-entrant corners). Therefore, where the internal angle of a corner in the façade is less than 135° unprotected areas to areas of separate sides of a fire rated wall / floor are to be separated by at least 1800mm as illustrated in Figure 12.

Unprotected areas can be all of the following:

- Windows, doors or other openings;
- Any part of the external wall that has less than relevant fire resistance suggested in guidance;
Any part of the external wall to the external face of which combustible material more than 1mm thick is attached or applied, whether for cladding or any other purpose.

Fire resistance should be provided from the internal fire line to 1800mm in either direction (see variations in Figure 12) to minimise the risk of fire breaking into multiple compartments. The fire resistance requirement of the external wall should be from the both inside and outside of the building. In most cases, fire resistance specifications of the external and internal walls are similar to that of elements of structure.

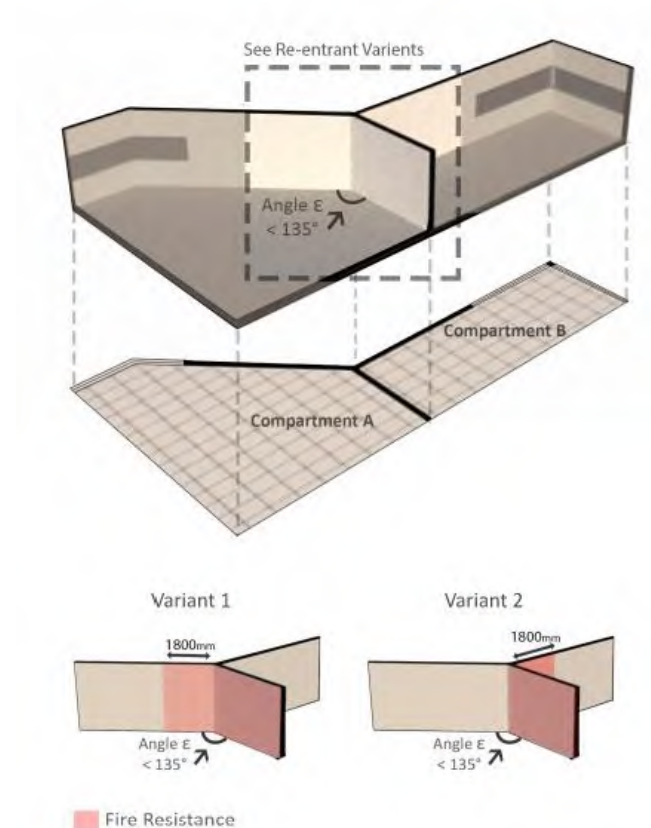


Figure 12 Re-entrance corners

5.3 Building Façade

In accordance with BS9991:2015 external walls should either meet the performance criteria given in BR135:2013 when tested in accordance with BS8414 or they should meet the following requirements:

- Regulation 7(2) of the Building Regulations 2010 requires all materials which become part of an external wall or specified attachment in a residential building achieve Class A2-s1,d0 or Class A1, classified in accordance with BS EN 13501-1, other than those exempted by regulation 7(3).
- Cavity barriers are to be provided as defined in Section 4.3.3.

5.4 Roof Coverings

Roof coverings refer to the external material layers, not the roof structure as a whole. Clause 18.6 from BS9991:2015 describes the separation distances according to the type of roof covering,

As the site has a relevant boundary distance of less than 6m on at least one elevation the covering of roof or part of roof should achieve AA, AB or AC in accordance with BS476-3.

6. FACILITIES FOR FIREFIGHTING

The following section describes the arrangements for firefighting provisions in the event of a fire in order to comply with Section B5 of The Building Regulations 2010.

6.1 Firefighting Access

Firefighting access will be via Great Ancoats Street, Longacre Street and Epworth Street. This is illustrated within Figure 13. The red arrows indicate access point into the building.

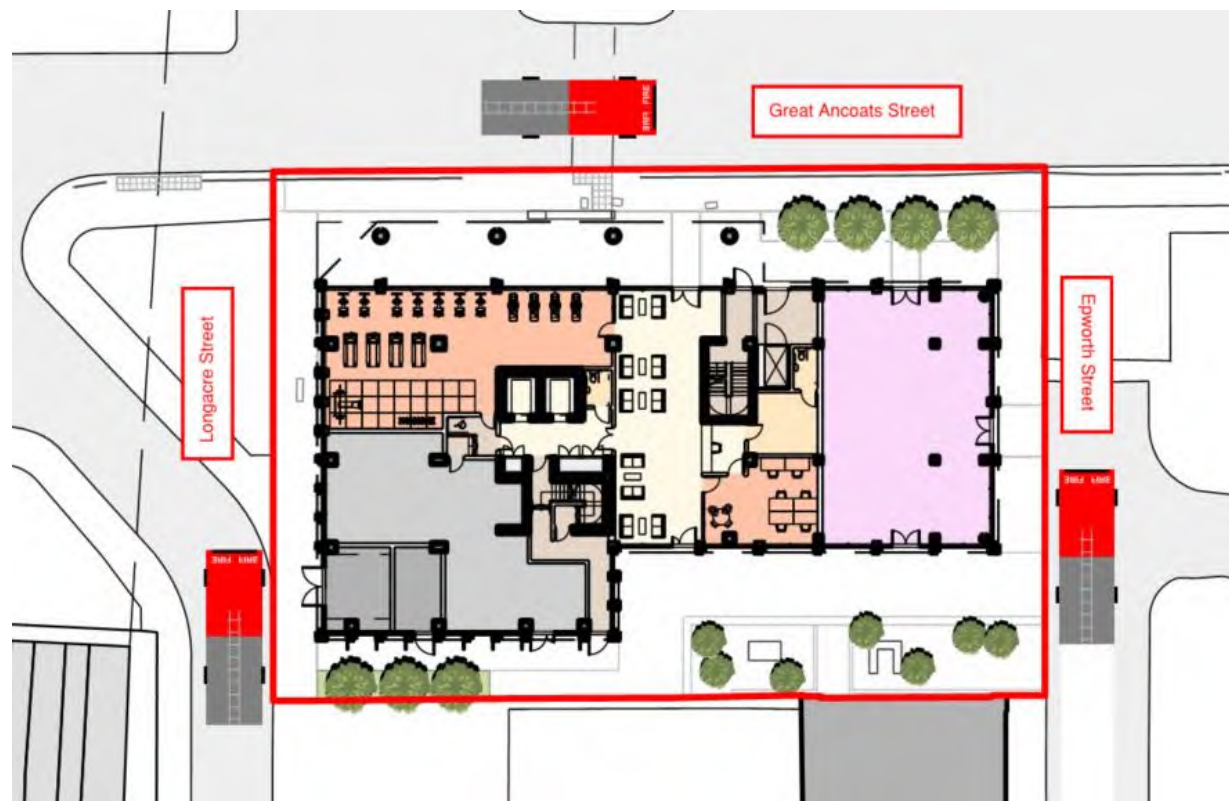


Figure 13 Fire Service Access

In accordance with BS9991:2015, fire-fighting shafts are to be accessed at ground level either directly from external or via a protected route which is lobbied from any adjacent accommodation. As illustrated in the Fire Strategy Drawings in Appendix A, access to the fire-fighting shaft is considered compliant and the fire service will have alternate access into the fire-fighting stair via the north of the building.

6.2 Fire Appliance Access

Where access for a fire appliance is required for the purposes of the Fire Safety Strategy it is to meet the following requirements:

- The minimum width between kerbs on fire tender accessible roadways is to be no less than 3.7m;

- The minimum width of a fire tender accessible gateway is 3.1m;
- The minimum clearance height is to be no less than 3.7m.
- Minimum turning circles between kerbs is 16.0m and between walls is 19.2m.
- The minimum carrying capacity should be no less than 12.5 tonnes.

The fire appliance should not have to reverse more than 20m, if this is the case the route should be provided with a turning circle or hammerhead.

Fire appliance access should be provided for the wet fire mains:

- Within 18m of, and within sight of, a suitable entrance giving access to the wet fire main; and;
- Within sight of the inlet for the emergency replenishment of the suction tank for the wet fire main.

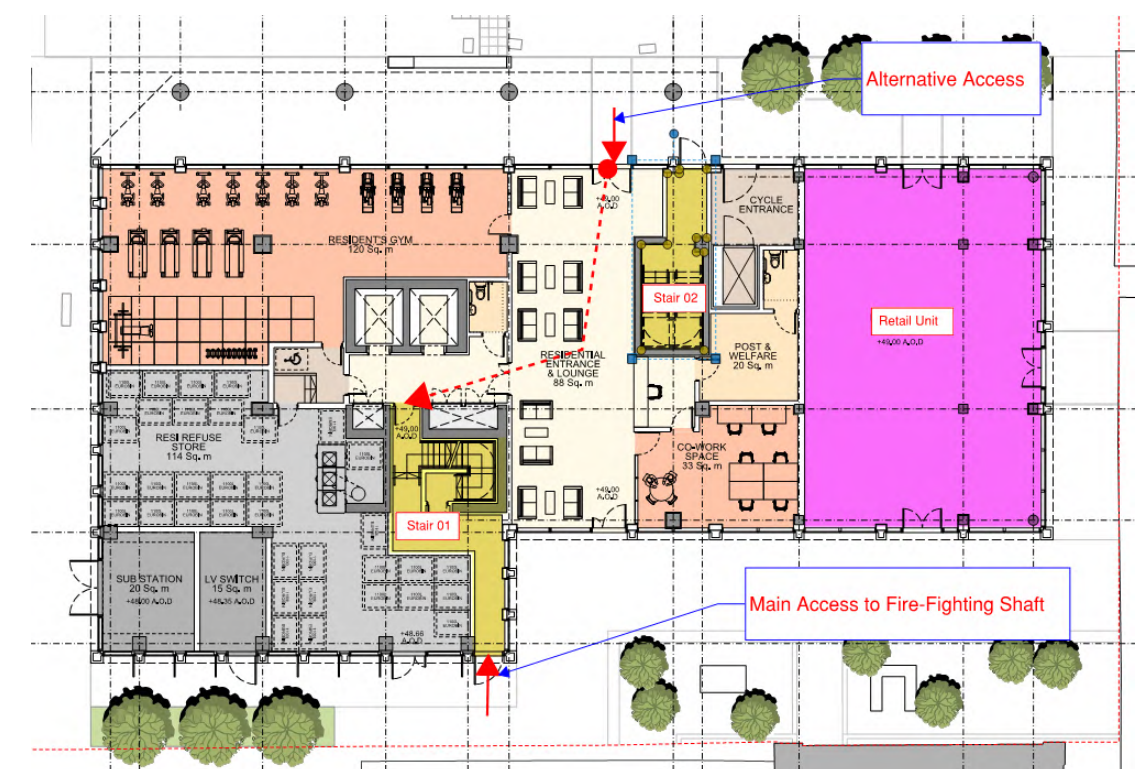


Figure 14 Alternative Fire Service Access

The building height is greater than 50.0m (71.4m) thus wet risers are to be installed into the building. It is proposed to install wet rising mains at every level in the stair serving residential tower.

Note: The retail units on the ground floor could achieve 45m hose run distances from fire appliance set-down points on the Great Ancoats Street and will not require a riser.

6.3 Fire Fighting Shaft Provisions

The firefighting shafts should be provided with the following:

- Firefighting stair (with a minimum effective width of 1100mm);
- Firefighting lift designed, installed and commissioned in accordance with BS81-72:2015;
- Wet rising main accessible from the firefighting stair enclosure;
- Firefighting stairs are to be accessed on the upper levels via a ventilated firefighting lobby only. At residential levels a ventilated residential common corridor / stair lobby may act as the firefighting lobby.

In accordance with Clause 20.2.3 of BS9999:2017, only services associated with the fire-fighting shaft should pass through or be contained within the fire-fighting shaft. A fire-fighting shaft should not contain any cupboards or provide access to service shafts serving the remainder of the building. At both ground and basement level, the service shafts are open to the fire-fighting lobby, however, this is considered as acceptable based on the following, subject to agreement with approving authority and Local Fire Service:

- The service shaft at the basement level does not introduce higher fire risk into the building than the service shafts into the residential lobbies at the upper floor level;
- The service shaft at the basement level are enclosed by fire resistant construction of 120 min fire resistance.

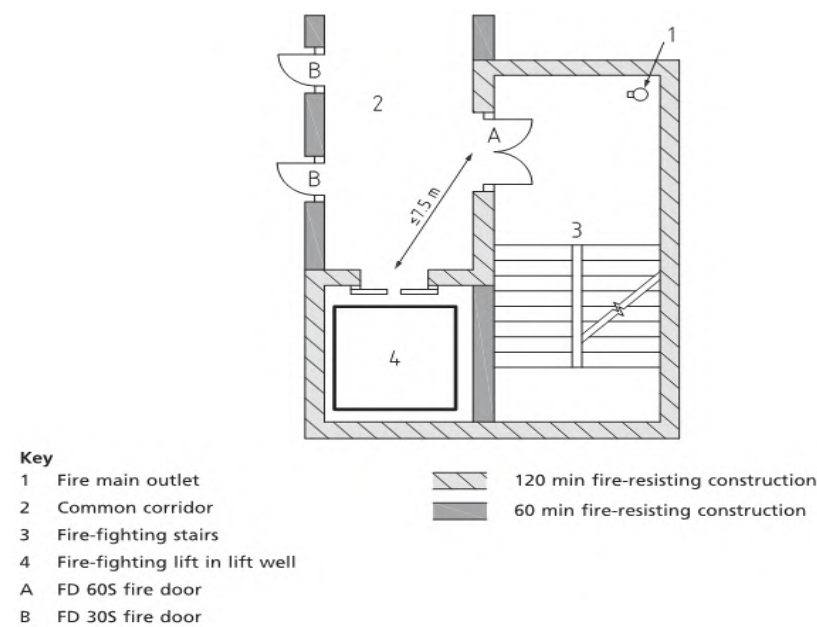


Figure 15 Fire-Fighting shaft layout

6.3.1 Fire-Fighting stair

The minimum clear width for a firefighting stair is 1100mm. The stairs should be designed in accordance with Clause 50.3.2.1 of BS 9991:2015.

6.3.2 Fire Fighting Lift

The firefighting lift installation includes the lift car itself, the lift installation within the well and the lift machinery spaces, together with lift control system and the fire service communications system. The firefighting installations should conform to BS81-72:2015.

The power supply to the lift and lighting should consist of primary and secondary supplies. There should also be a means to minimize the effect of water penetration into the firefighting lift well.

Access points to the lift are to be designed in accordance with BS81-72:2015.

6.3.3 Rising Mains

The uppermost occupied floor of the building exceeds 50m (71.4m). It is therefore required that wet riser to be installed in Stair 1. In addition, any point within the floor including the ancillary accommodations is within 60m (extension from 45m due to the provision of sprinklers) from the wet riser. Therefore, a fire main within the Stair 2 is not required.

Landing valves (wet riser outlets) should be provided at every storey excluding the basement (for test purposes if practicable) and be located within the stair enclosure on the full landing. The furthest point at basement level can be reach from the wet riser outlet within the stair at ground floor so the wet riser outlet at basement can be omitted. Fire main is to be designed in accordance with BS9990:2015.

Where the apartment block is provided with a fire main all areas of the block are to be accessible within 60m of a landing valve located within a fire-fighting shaft, with the provision of sprinkler system throughout the building.

The fire-fighting stair and fire-fighting lobby requires smoke control, see Section 7.3 of this report for more details.

6.4 Fire Hydrants

It is to be ensured a fire hydrant is provided within 90m of an entry point to the building and not more than 90m apart. If existing fire hydrants are not available, new fire hydrants should be designed and installed in accordance with BS9990:2015.

Note: Fire hydrants are life saving devices so it is important that site access is available to Fire Service personnel, so that fire hydrants can be inspected and adopted by the Fire Authority. The fire hydrants should be kept free and not covered or obstructed and will be accessible in the event of a fire.

7. FIRE PROTECTION SYSTEMS

This section describes the fire protection systems to be provided with the development in order to ensure the safety of occupants and Fire Service personnel in the event of a fire.

7.1 Secondary Supply Power

All power supplies, electrical wiring, and control equipment should be protected against fire for an appropriate period of time where the effects of fire are likely to result in the failure or incorrect operation of the life safety system. Power and control cables should be installed in accordance with BS8519:2010.

A single intake from the external substation may be acceptable, provided that the following recommendations are met, in accordance with Clause 15 of BS9991:2015:

- The life safety system should be connected to an independent distribution board used exclusively for that system;
- The life safety distribution board should be clearly marked at the point of isolation with a warning explaining that isolation would switch off the life safety system;
- The life safety distribution board should be located in a separate fire-resisting enclosure (with a minimum of 60 minutes fire-resisting construction) to the primary main electrical distribution board and should not be accessible directly from the communal areas of the building or from a part of the building where dual supply is required;
- The enclosure surrounding the primary main electrical distribution board should be provided with a minimum of 60 minutes fire-resisting construction;
- The substation or transformer room should be either located outside the building, or separated by 120 minutes fire-resisting construction and directly accessible from the outside.

Refer to Clause 15 of BS9991:2015 for further information.

7.2 Emergency Lighting

Emergency lighting is to be provided throughout the development designed, installed and commissioned in accordance with BS5266-1:2016.

7.3 Smoke Ventilation

7.3.1 Residential Common Lobby & Stairs

In accordance with Clause 7.4 and Figure 6 of BS9991:2015 all residential common lobby that serve the stair are to be provided with smoke ventilation. The smoke ventilation to the residential common lobby is to be achieved by natural ventilation or mechanical ventilation.

7.3.1.1 Natural Smoke Shaft Ventilation

Natural smoke shaft ventilation is to consist of the following:

- A 1.5m² (minimum free area) natural smoke shaft is to be provided communicating the common corridor / stair lobby via a 1.0m² (minimum free area) automatic opening vent at each level. The natural smoke shaft is to have a minimum dimension of 0.85m in any direction;
- In accordance with BS9991:2015 the smoke shaft is to extend at least 2.5m above the ceiling of the top level served therefore consideration is to be given to the following:
- In lieu of being served by the natural smoke shaft the top level is to be served by a 1.5m² (minimum free area) automatic opening vent direct to external;
- The natural smoke shaft is to extend at least 0.5m above any construction within a 2m radius of the smoke shaft;
- A 1.0m² (minimum free area) automatic opening vent is to be provided at the head of the stair;
- On detection of smoke within a residential common corridor / stair lobby the vent into the smoke shaft at the level of detection is to open, vents to the smoke shaft at all other levels are to be closed and the vent at the head of the stair is to open;
- The automatic opening vent at the head of the stair should also open on detection of smoke within the stair enclosure;
- No services other than those relating to the smoke shaft should contained within the smoke shaft;

7.3.1.2 Mechanical Smoke Shaft Ventilation

Where venting the common lobby with natural smoke shaft is not viable, consideration is to be given to the following mechanical smoke ventilation system. Computational Fluid Dynamics (CFD) analysis would be required to demonstrate the effectiveness of the mechanical system. It should be noted this will require the agreement with the approving authority. Mechanical smoke shaft is to consist of the followings:

- A 0.6m² (free area) mechanical smoke shaft is to be provided within 4.5m of either end of the corridor communicating with the common corridor/stair lobby via a 0.6m² (free area) automatic open vent;
- Duty/standby fans are to be provided serving the mechanical smoke shaft;
- A 1.0m² (free area) automatic opening vent is to be provided at the head of the stair;
- On detection of smoke within a residential common corridor / stair lobby the vent into the smoke shaft at the level of detection is to open, vents to the smoke shaft at all other levels are to be closed ant the vent at the heat of the stair is to open (allowing supply air for the smoke ventilation system into the stair);

- Either:
 - » The door to the stair at each level is to open into the residential common corridor / stair lobby and is to be calibrated to allow the smoke ventilation to "pull" the door open and permanently all supply air from the stair into the corridor / lobby where smoke is being extracted. In this case, fans may be fixed speed; or
 - » The doors between the common corridors / stair lobbies and stair need not open into common corridors / stair lobbies and pressure sensor are to be provided within common corridors/ stair lobbies to control the speed of the fans and prevent over-pressurisation of the corridor / lobby when the stair door is closed. In this case, fans are to be variable speed;
- The automatic opening vent at the head of the stair should also be open on detection of smoke within the stair enclosure.

It should also meet the following requirements, in accordance with BS9991:2015:

- The smoke shaft should be fully open to the external air at the top and closed at the base;
- The top of the lobby or corridor vent should be located as close to the ceiling of the lobby or corridor as is practicable, and should be at least as high as the top of the door connecting the lobby or corridor to the stairwell;
- No services other than those relating to the smoke shaft should be contained in the smoke shaft;
- A mechanical smoke ventilation system should demonstrate conditions in the lobby or corridor and stairs that are equivalent to or better than the natural ventilation system that is replaces;
- The design of the mechanical smoke ventilation system should limit pressure differentials so that door opening force do not exceed 100 N at the door handle when the system is in operation;
- A secondary power supply should be provided to the fans and all actuators and controls;
- Fan sets should usually be provided with a standby fan that operates automatically upon failure of the duty fan.

7.3.2 Basement Smoke Ventilation

Where a basement level is more than 3m below ground level and has a floor area exceeding 200m² it is to be provided with smoke clearance achieved either naturally or mechanically:

7.3.2.1 Natural Smoke Clearance

Natural smoke outlets to be providing achieving a free area of at least 2.5% of the basement floor area. The smoke outlets are to be located at high level, evenly distributed around the perimeter of the basement in locations where they will not block escape routes from the building.

7.3.2.2 Mechanical Smoke Clearance

The basement is to be provided with a sprinkler system designed, installed and commissioned in accordance with BSEN12845.

The mechanical smoke clearance should be capable of achieving 10 air changes per hour and handling gas temperatures of 300°C for not less than 60 minutes.

7.3.3 Basement Lobby Ventilation

Clause 14.1.6 of BS9991, stair should be separated from an area with higher fire risk by a protected lobby with minimum 0.4m² permanent natural ventilation. The 0.4m² permanent natural ventilation can be omitted here based on the following provisions but subject to agreement with approving authority:

- Basement is provided with sprinkler which will reduce the fire load;
- If a fire occurs within plant room, there are three fire doors provided to prevent the smoke entering the stair serves levels above ground floor.

7.4 Refuse Store/Chutes

Refuse stores are located on the ground floor of the building and Refuse Chutes are located at each floor level above ground. In accordance with Clause 47 of BS9991:2015, the refuse store/chutes should be accessed directly via the external or a protected lobby with a 0.2m² permanent natural ventilation (or suitable mechanical equivalent).

7.5 Automatic Water Fire Suppression System (AWFSS)

Victoria House Development contains a storey more than 30m above Ground Level therefore, in accordance with BS9991:2015, it is required to be provided with sprinkler protection throughout designed, installed and commissioned in accordance with BS 9251:2014. The BS 9251 category 2 sprinkler system is to be provided in the flats/apartments and the category 3 sprinkler system is to be provided in the residential ancillary accommodations, including, reception area, store rooms, plants etc.

However, it is proposed not to provide sprinkler system in the retail units based on the following, subject to agreement with the approving authority and Local Fire Service:

- 120min is the required separation between commercial and residential areas. If the sprinkler is to be omitted for retail units, the retail units should be provided with enhanced structural fire protection and compartmentation (i.e. areas separated from all other areas of the building by a minimum of 180 minutes fire resisting construction and 180 minutes structural fire protection);

- All retail units are located at Ground Level and are provided with direct access to external (i.e. units do not communicate directly with the building).

8. PROVISIONS FOR DISABLED OCCUPANTS

The Equality Act became law in October, 2010. It replaced previous legislation (Disability Discrimination Act 1995) and provides employers and employees information on what they need to do to make their workplaces a fair environment and comply with the law.

With regard to fire safety, it is generally assumed that disabled occupants will be able to escape to a place away from danger without assistance from the fire service. However, there will be a certain proportion of building occupants, such as those who are non-ambulant disabled, i.e. wheelchair users, who will not be able to negotiate stairs unaided; therefore, an evacuation management procedure for disabled occupants will be incorporated into the fire safety management strategy. This is the responsibility of the end user of the building or 'The Responsible Person'.

Fire safety procedures will therefore, where appropriate, make provision for occupants who might need assistance to make their way to a place of ultimate safety in a fire. If there is a need to make specific arrangements, then it is assumed that consultation with the individual(s) or representative organisations should take place at the earliest opportunity.

8.1 Disabled Refuge

The non-residential areas of Victoria House are to be based on a simultaneous evacuation strategy. Stair 1 is designed to provide alternative means of escape for the occupants in the non-residential areas. Therefore, disabled refuges located within Level 1 and Level 2 (within protected lobby or protected stairway) provide a place of relative safety for occupants with impaired mobility. Disabled refuges are to have an area of no less than 1400mm x 900mm and are to be provided within a protected area with direct access to a protected escape route to external.

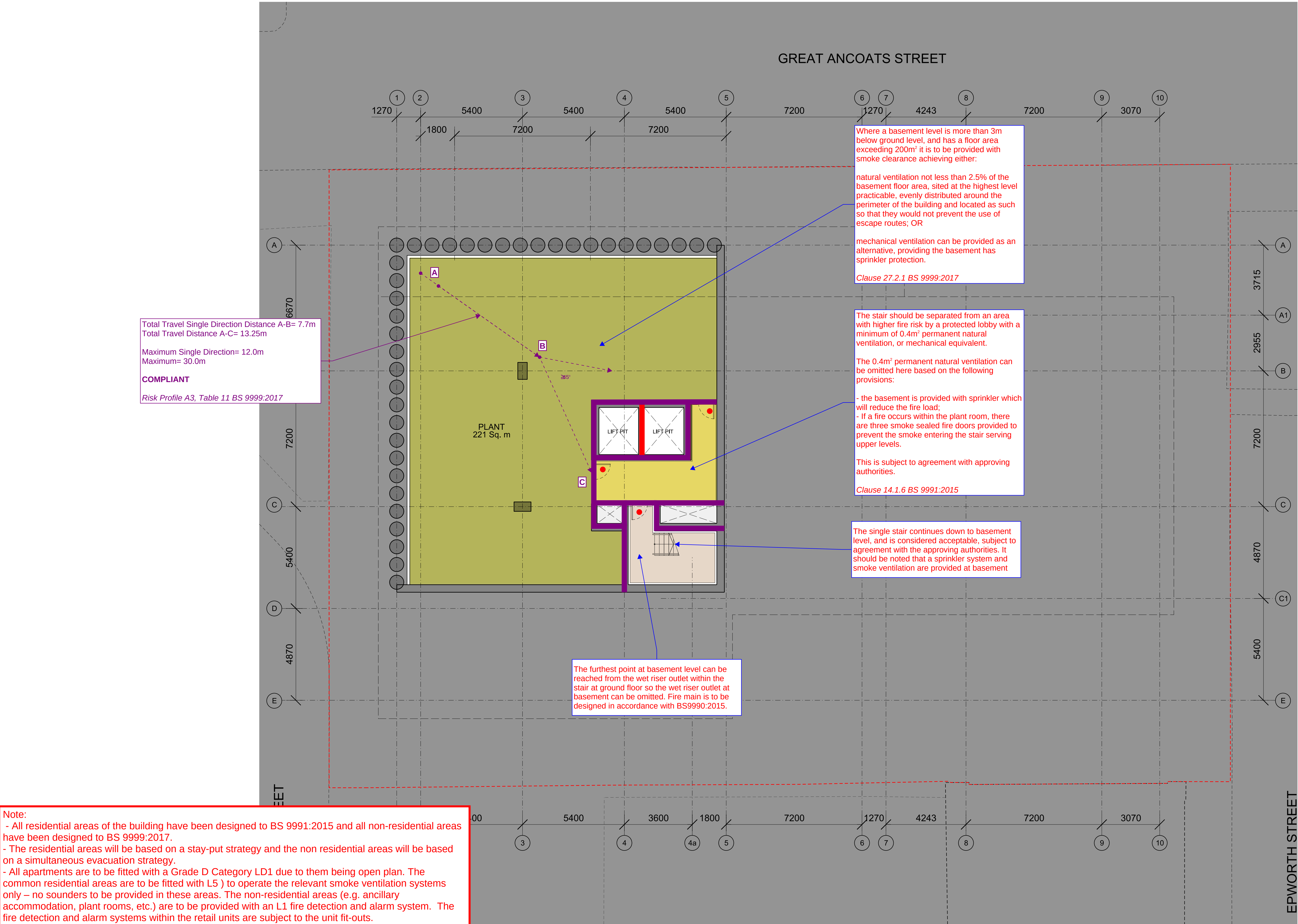
The disabled refuge areas are to be provided with a two-way emergency voice communication (EVC) system linked to management.

Consideration may also be given to utilising the firefighting lift for the evacuation of disabled occupants. The omission of the disabled refuge area adjacent to the firefighting lift will require discussion and agreement with the Approving Authority at a later stage.

APPENDIX A – FIRE STRATEGY DRAWINGS

Note:

- All residential areas of the building have been designed to BS 9991:2015 and all non-residential areas have been designed to BS 9999:2017.
- The residential areas will be based on a stay-put strategy and the non residential areas will be based on a simultaneous evacuation strategy.
- All apartments are to be fitted with a Grade D Category LD1 due to them being open plan. The common residential areas are to be fitted with L5) to operate the relevant smoke ventilation systems only – no sounders to be provided in these areas. The non-residential areas (e.g. ancillary accommodation, plant rooms, etc.) are to be provided with an L1 fire detection and alarm system. The fire detection and alarm systems within the retail units are subject to the unit fit-outs.
- Elements of structure throughout the building are to achieve at least 120 minutes fire resistance with regard to load-bearing capacity.
- A smoke shaft need to be provided to ventilate the protected corridor which accesses the fire-fighting stair.
- The building is to be provided with a sprinkler protection throughout designed, installed and commissioned in accordance with BS 9251:2014.
- A wet riser must be provided at every level with the exception of the basement, an indicative location of the wet riser is demonstrated on the drawings.
- Kitchens should be enclosed in open plan apartments having an area exceeding 8m x 4m. However, it is considered acceptable not to enclose the kitchen but subject to agreement with approving authority. The cooking facilities should be located at least 1.8m from the escape route.



- Notes**
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 3. This drawing is to be read in conjunction with the Fire Safety Strategy Report.
 4. Fire Strategy Drawings will require agreement with the local approving authorities and insurers.

Legend:

- FD30 fire door
- FD60 fire door
- FD30S fire door
- FD60S fire door
- 30 minute fire rated construction
- 60 minute fire rated construction
- 120 minute fire rated construction
- 180 minute fire rated construction
- Single travel distance
- Total travel distance
- Ventilation
- Wet Riser Outlet
- Enclosed Corner

03	05.02.20	Stage 2 Issue	EK	DA
02	17.12.18	Stage 2 Issue	RS	CA
01	12.11.18	Stage 2 Issue	WN	RS
00	17.10.18	Stage 2 Draft	WN	RS
Rev	Date	Description	By	Ckd

Architect :

SimpsonHaugh

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Client :

Forshaw

Project Title:

Victoria House

Drawing Title:

**Basement Level
Fire Strategy Drawing**

Drawing Status:

Stage 2 Issue

Hydrock Job No:

C-10243-C

Drawn	Checked	Scale @ A1	Date	Issue Date
EK	DA	1:100	27.01.20	05.02.20

Drawing Number:	Revision:
VIC-HYD-XX-B1-RP-FE-0001	03

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- FD60 fire door
- FD30S fire door
- FD60S fire door
- 30 minute fire rated construction
- 60 minute fire rated construction
- 120 minute fire rated construction
- 180 minute fire rated construction
- Single travel distance
- Total travel distance
- Ventilation
- Wet Riser Outlet
- Enclosed Corner

If occupancy number in retail unit is more than 60 people, door should open in the direction of escape

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02	17.12.18	Stage 2 Issue	RS	CA
01	12.11.18	Stage 2 Issue	WN	RS
00	17.10.18	Stage 2 Draft	WN	RS
Rev	Date	Description	By	Ckd

Architect :

SimpsonHaugh



Client :

Forshaw

Project Title:

Victoria House

Drawing Title:

Ground Level
Fire Strategy Drawing

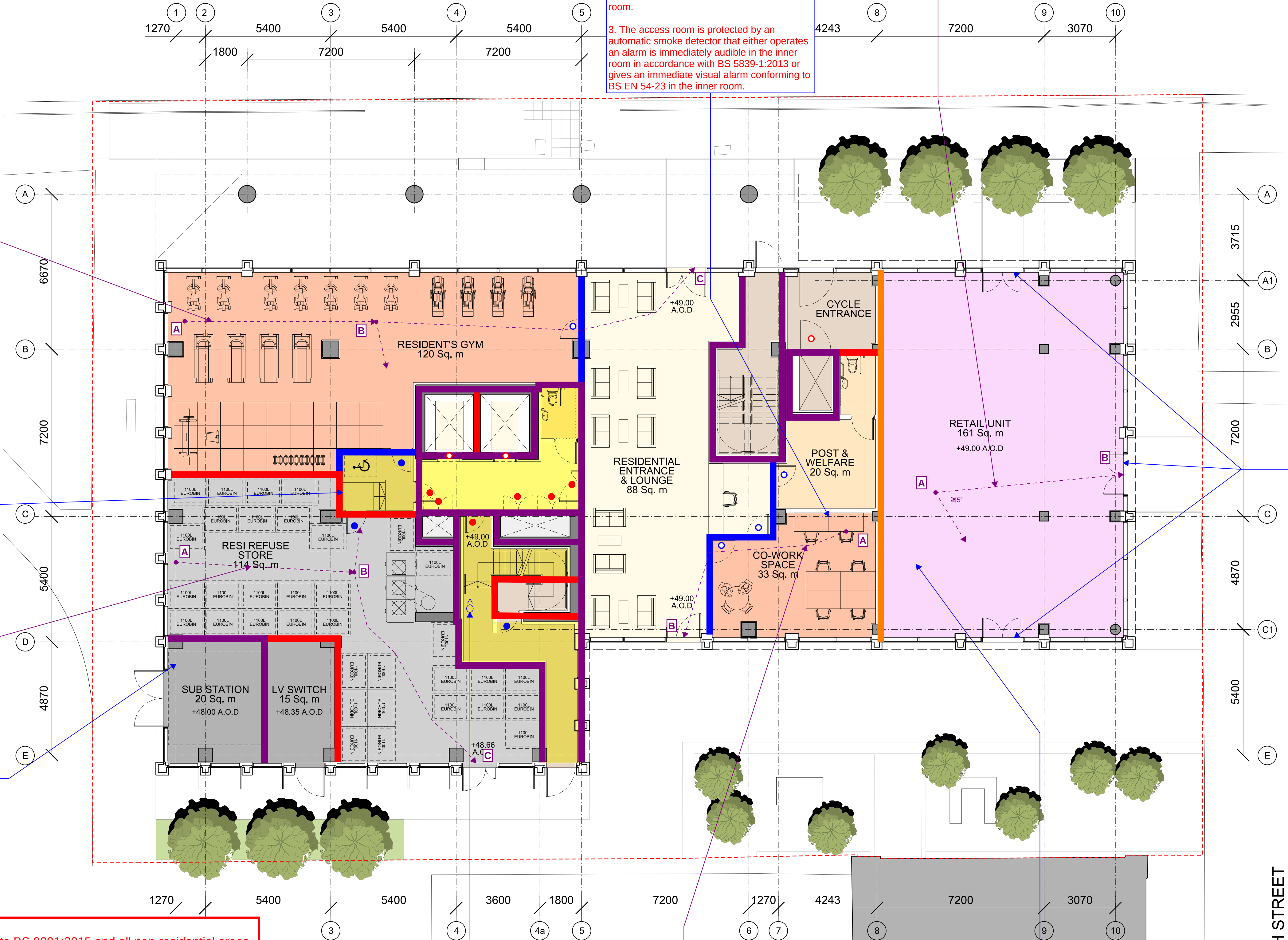
Drawing Status:

Stage 2 Issue

Hydrock Job No:

C-10243-C

Drawn	Checked	Scale @ A1	Date	Issue Date
EK	DA	1:100	27.01.20	05.02.20
Drawing Number:				Revision:
VIC-HYD-XX-00-RP-FE-0001				03



PWORTH STREET

Total Travel Single Direction Distance A-B= 8.25m
Total Travel Distance A-C= 23.0m
Maximum Single Direction= 22.0m
Maximum= 55.0m

COMPLIANT

Risk Profile A2 (This is assuming the gym is only for use of residents), Table 11 BS 9999:2017

Protected Lobby to be provided with no less than 0.2m² of permanent ventilation, or mechanical equivalent.

Clause 15.10 BS 9999:2017

Total Travel Single Direction Distance A-B= 7.7m
Total Travel Distance A-C= 17.7m
Maximum Single Direction= 9.0m
Maximum= 18.0m

COMPLIANT

Table 14 BS 9991:2015

If the substation is property of UKPN it will require a 240 minute fire rated wall. (EDS 07-0116)

The co-working space, post & welfare and reception are classed as inner rooms. Hence one of the following arrangements needs to be made:

1. The enclosures of the inner room stop at least 500mm below ceiling; or
2. A suitably sited vision panel not less than 0.1m² is located in the door or wall of the inner room.
3. The access room is protected by an automatic smoke detector that either operates an alarm is immediately audible in the inner room in accordance with BS 5839-1:2013 or gives an immediate visual alarm conforming to BS EN 54-23 in the inner room.

Total Travel Distance A-B = 8.13m

Maximum = 27.0m

COMPLIANT

Risk Profile B3, Table 11 BS 9999:2017

Total Travel Single Direction Distance A-B = 9.9m

Maximum = 22.0m

COMPLIANT

Risk Profile A2, Table 11 BS 9999:2017

This is an indicative location of a wet riser outlet. A wet riser outlet must be provided on every level (except basement level).

structural fire protection and compartmentation (i.e. areas separated from all other areas of the building by a minimum of 180 minutes fire resisting construction and 180 minutes structural fire protection), sprinkler of retail unit can be omitted but subject to agreement with approving authorities.

Note:

- All residential areas of the building have been designed to BS 9991:2015 and all non-residential areas have been designed to BS 9999:2017.
- The residential areas will be based on a stay-put strategy and the non residential areas will be based on a simultaneous evacuation strategy.
- All apartments are to be fitted with a Grade D Category LD1 due to them being open plan. The common residential areas are to be fitted with L5) to operate the relevant smoke ventilation systems only – no sounders to be provided in these areas. The non-residential areas (e.g. ancillary accommodation, plant rooms, etc.) are to be provided with an L1 fire detection and alarm system. The fire detection and alarm systems within the retail units are subject to the unit fit-outs.
- Elements of structure throughout the building are to achieve at least 120 minutes fire resistance with regard to load-bearing capacity.
- A smoke shaft need to be provided to ventilate the protected corridor which accesses the fire-fighting stair.
- The building is to be provided with a sprinkler protection throughout designed, installed and commissioned in accordance with BS 9251:2014.
- A wet riser must be provided at every level with the exception of the basement, an indicative location of the wet riser is demonstrated on the drawings.
- Kitchens should be enclosed in open plan apartments having an area exceeding 8m x 4m. However, it is considered acceptable not to enclose the kitchen but subject to agreement with approving authority. The cooking facilities should be located at least 1.8m from the escape route.

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Legend:

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- FD60 fire door
- FD30S fire door
- FD60S fire door
- 30 minute fire rated construction
- 60 minute fire rated construction
- 120 minute fire rated construction
- 180 minute fire rated construction
- Single travel distance
- Total travel distance
- Ventilation
- Wet Riser Outlet
- Enclosed Corner

Total Travel Distance A-B = 20.3m
Maximum = 18.0m
Currently NON-COMPLIANT
Due to the presences of a sprinkler system an extension may be granted. This is subject to approval with the approving authorities.
Risk Profile A3, Table 11 BS 9999:2017

03	05.02.20	Stage 2 Issue	EK	DA
02	17.12.18	Stage 2 Issue	RS	CA
01	12.11.18	Stage 2 Issue	WN	RS
00	17.10.18	Stage 2 Draft	WN	RS
Rev	Date	Description	By	Ckd

Architect :
SimpsonHaugh

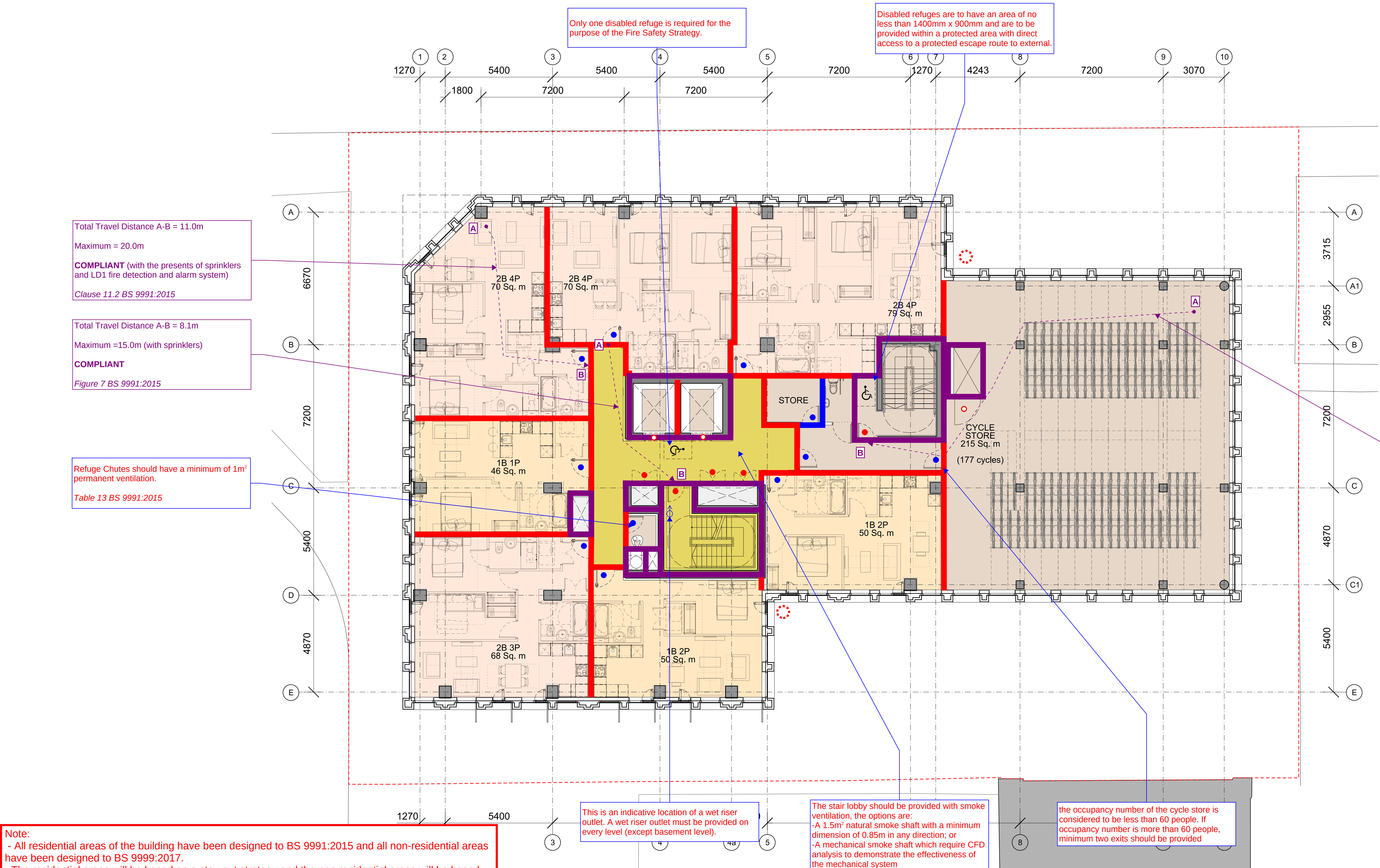
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www.hydrock.com

Client :
Forshaw

Project Title:
Victoria House
Drawing Title:
**First Level
Fire Strategy Drawing**

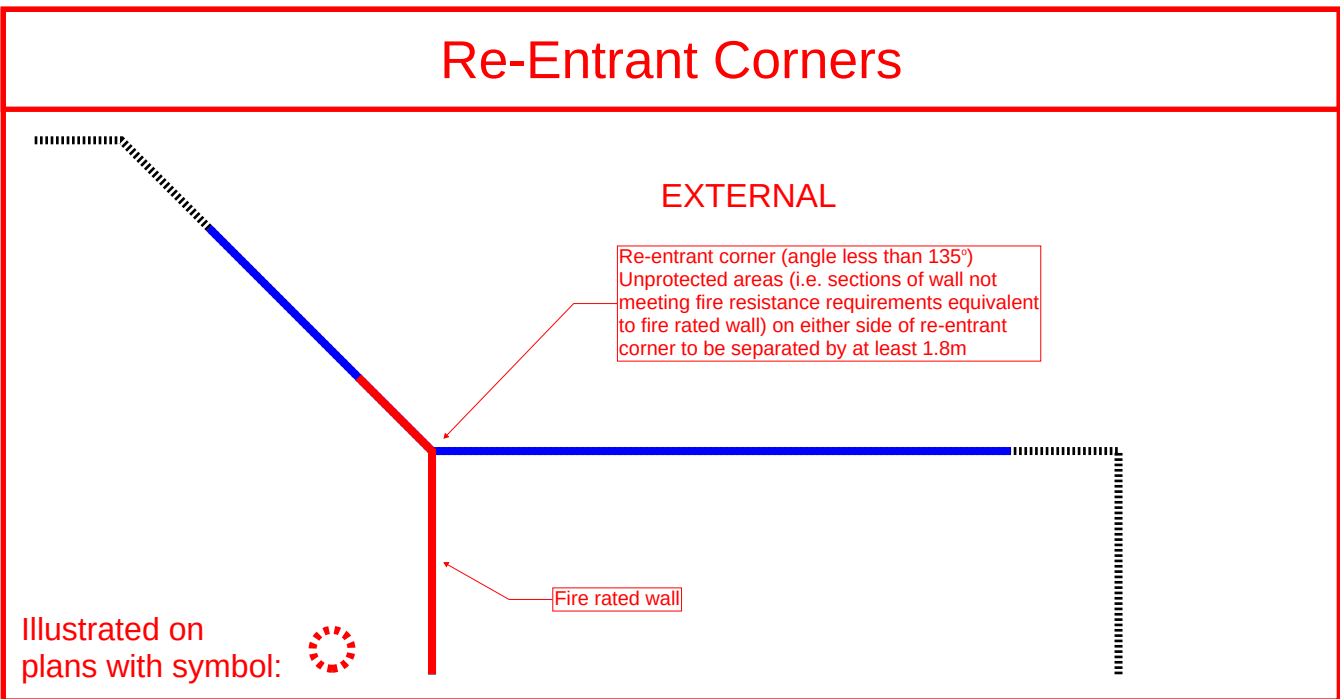
Drawing Status:
Stage 2 Issue
Hydrock Job No:
C-10243-C

Drawn	Checked	Scale @ A1	Date	Issue Date
EK	DA	1:100	27.01.20	05.02.20
Drawing Number:	Revision:			
VIC-HYD-XX-01-RP-FE-0001	03			



Note:

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- All apartments are to be fitted with a Grade D Category LD1 due to them being open plan. The common residential areas are to be fitted with L5) to operate the relevant smoke ventilation systems only – no sounders to be provided in these areas. The non-residential areas (e.g. ancillary accommodation, plant rooms, etc.) are to be provided with an L1 fire detection and alarm system. The fire detection and alarm systems within the retail units are subject to the unit fit-outs.
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- A smoke shaft need to be provided to ventilate the protected corridor which accesses the fire-fighting stair.
- The building is to be provided with a sprinkler protection throughout designed, installed and commissioned in accordance with BS 9251:2014.
- A wet riser must be provided at every level with the exception of the basement, an indicative location of the wet riser is demonstrated on the drawings.
- Kitchens should be enclosed in open plan apartments having an area exceeding 8m x 4m. However, it is considered acceptable not to enclose the kitchen but subject to agreement with approving authority. The cooking facilities should be located at least 1.8m from the escape route.



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 - Fire Strategy Drawings will require agreement with the local approving authorities and insurers.

Legend:

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- FD60 fire door
- FD30S fire door
- FD60S fire door
- 30 minute fire rated construction
- 60 minute fire rated construction
- 120 minute fire rated construction
- 180 minute fire rated construction
- Single travel distance
- Total travel distance
- Ventilation
- Wet Riser Outlet
- Enclosed Corner

Total Travel Distance A-B = 19.4m
Maximum = 22.0m
COMPLIANT
Risk Profile A2, Table 11 BS 9999:2017

Total Travel Distance A-B = 11.0m
Maximum = 20.0m
COMPLIANT (with the presents of sprinklers and LD1 fire detection and alarm system)
Clause 11.2 BS 9991:2015

Total Travel Distance A-B = 8.1m
Maximum =15.0m (with sprinklers)
COMPLIANT
Figure 7 BS 9991:2015

Refuge Chutes should have a minimum of 1m² permanent ventilation.
Table 13 BS 9991:2015

Only one disabled refuge is required for the purpose of the Fire Safety Strategy.

occupancy number limited to 60 people as only one exit provided

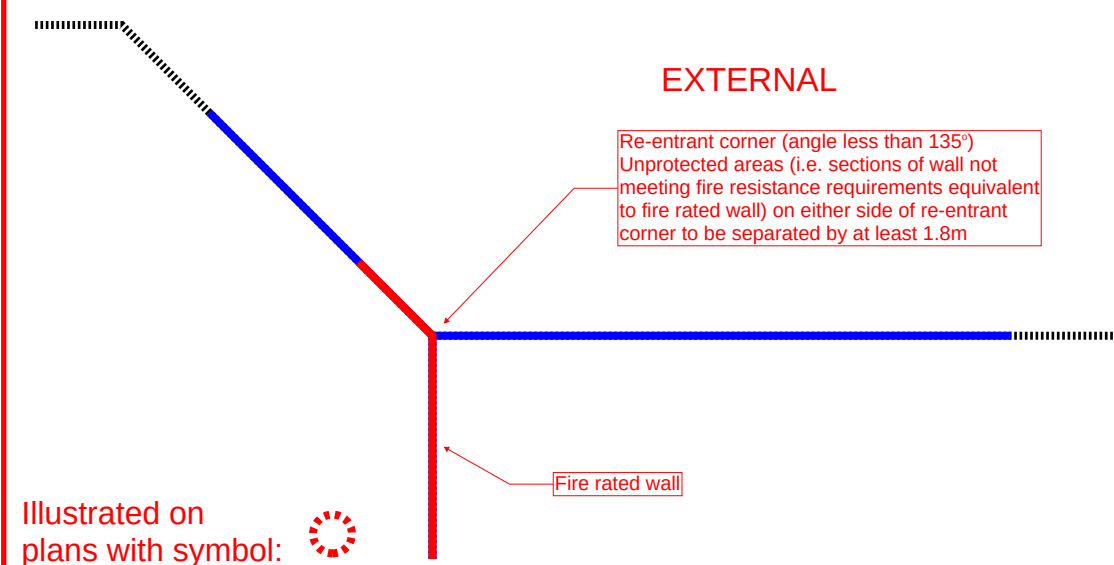
Note:

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- Kitchens should be enclosed in open plan apartments having an area exceeding 8m x 4m. However, it is considered acceptable not to enclose the kitchen but subject to agreement with approving authority. The cooking facilities should be located at least 1.8m from the escape route.

This is an indicative location of a wet riser outlet. A wet riser outlet must be provided on every level (except basement level).

The stair lobby should be provided with smoke ventilation, the options are:
-A 1.5m² natural smoke shaft with a minimum dimension of 0.85m in any direction; or
-A mechanical smoke shaft which require CFD analysis to demonstrate the effectiveness of the mechanical system

Re-Entrant Corners



03	05.02.20	Stage 2 Issue	EK	DA
02	17.12.18	Stage 2 Issue	RS	CA
01	12.11.18	Stage 2 Issue	WN	RS
00	17.10.18	Stage 2 Draft	WN	RS
Rev	Date	Description	By	Ckd

Architect :

SimpsonHaugh



Client :

Forshaw

Project Title:

Victoria House

Drawing Title:

Second Level
Fire Strategy Drawing

Drawing Status:

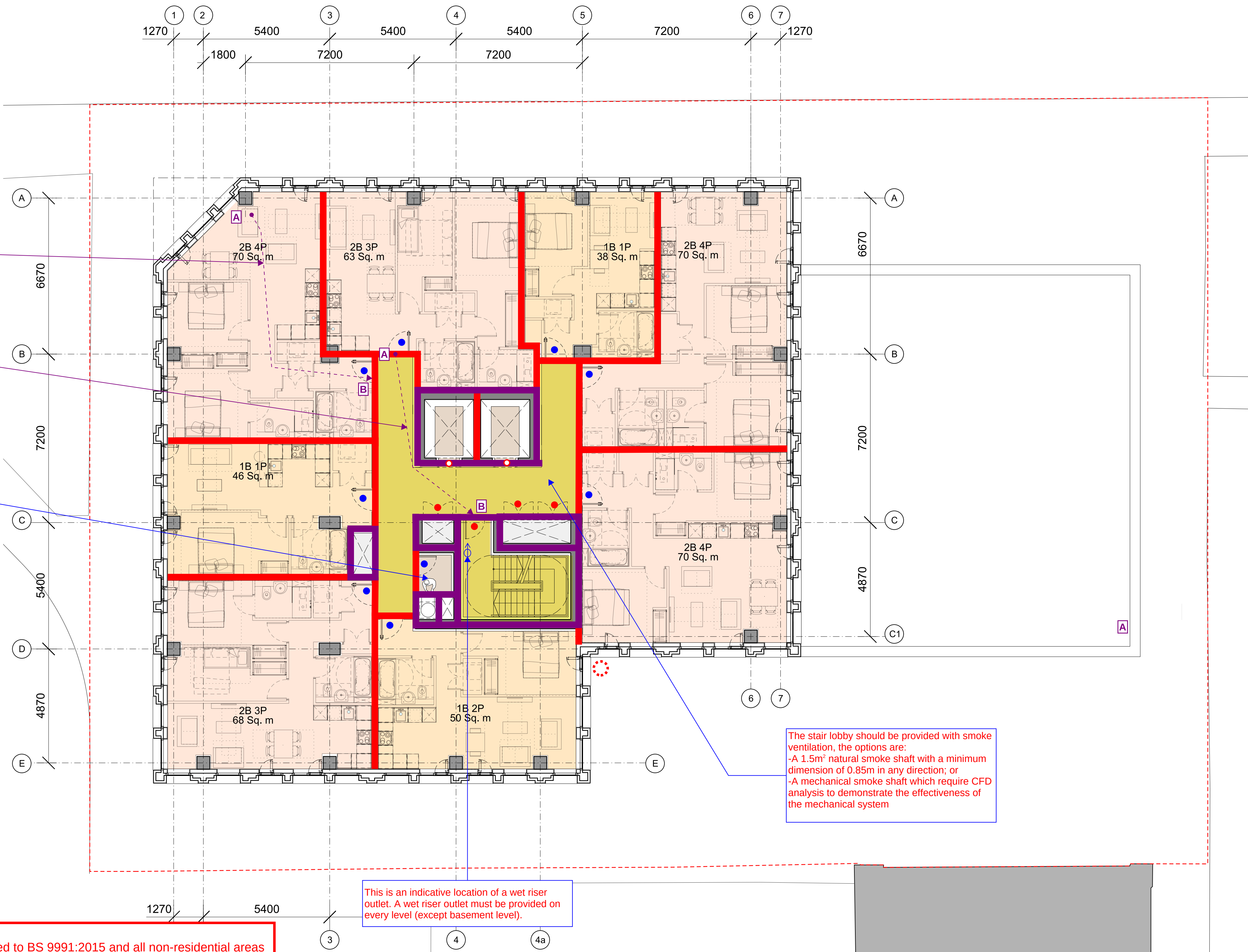
Stage 2 Issue

Hydrock Job No:

C-10243-C

Drawn	Checked	Scale @ A1	Date	Issue Date
EK	DA	1:100	27.01.20	05.02.20
Drawing Number:	Revision:			
VIC-HYD-XX-02-RP-FE-0001	03			

GREAT ANCOATS STREET



Total Travel Distance A-B = 11.0m
Maximum = 20.0m
COMPLIANT (with the presents of sprinklers and LD1 fire detection and alarm system)
Clause 11.2 BS 9991:2015

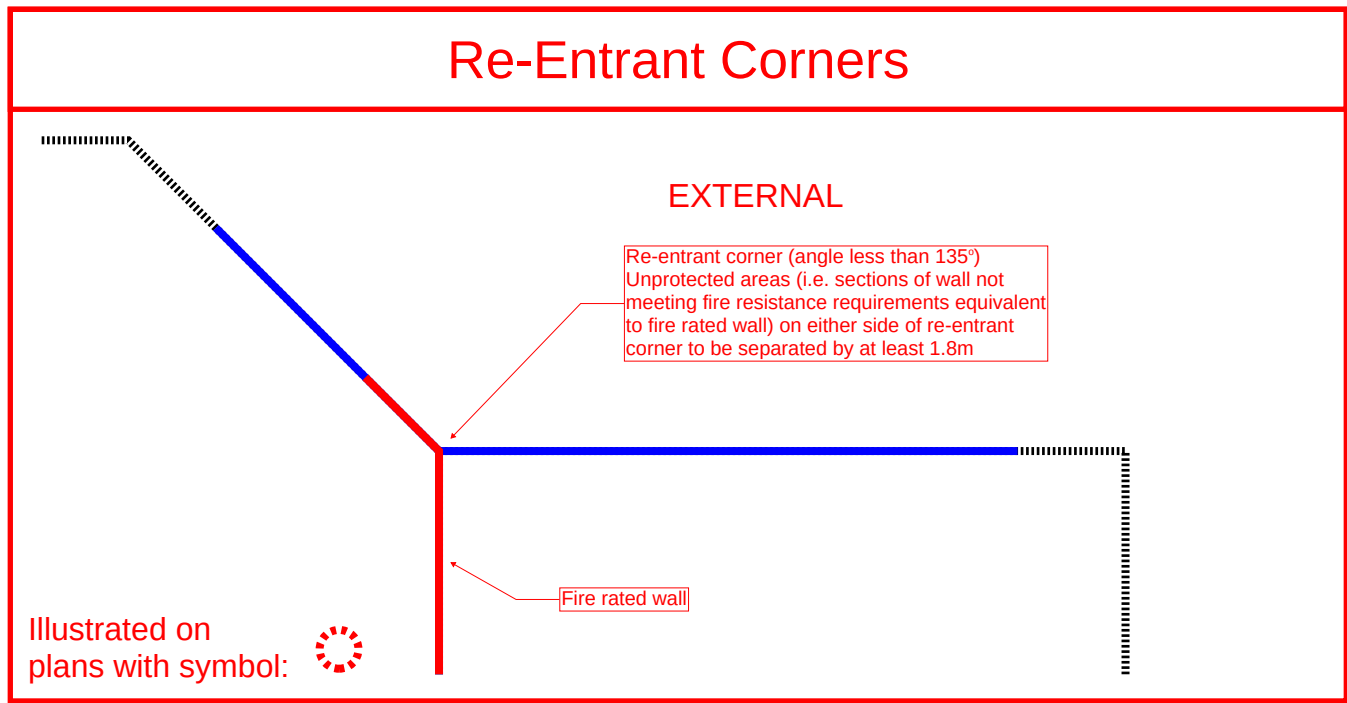
Total Travel Distance A-B = 8.1m
Maximum =15.0m (with sprinklers)
COMPLIANT
Figure 7 BS 9991:2015

Refuge Chutes should have a minimum of 1m² permanent ventilation.
Table 13 BS 9991:2015

The stair lobby should be provided with smoke ventilation, the options are:
-A 1.5m² natural smoke shaft with a minimum dimension of 0.85m in any direction; or
-A mechanical smoke shaft which require CFD analysis to demonstrate the effectiveness of the mechanical system

This is an indicative location of a wet riser outlet. A wet riser outlet must be provided on every level (except basement level).

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- All residential areas of the building have been designed to BS 9991:2015 and all non-residential areas have been designed to BS 9999:2017.
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- Legend:**
- FD30 fire door
 - FD60 fire door
 - FD30S fire door
 - FD60S fire door
 - 30 minute fire rated construction
 - 60 minute fire rated construction
 - 120 minute fire rated construction
 - 180 minute fire rated construction
 - Single travel distance
 - Total travel distance
 - Ventilation
 - Wet Riser Outlet
 - Enclosed Corner

03	05.02.20	Stage 2 Issue	EK	DA
02	17.12.18	Stage 2 Issue	RS	CA
01	12.11.18	Stage 2 Issue	WN	RS
00	17.10.18	Stage 2 Draft	WN	RS
Rev	Date	Description	By	Ckd

Architect :
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Client :
Forshaw

Project Title:
Victoria House

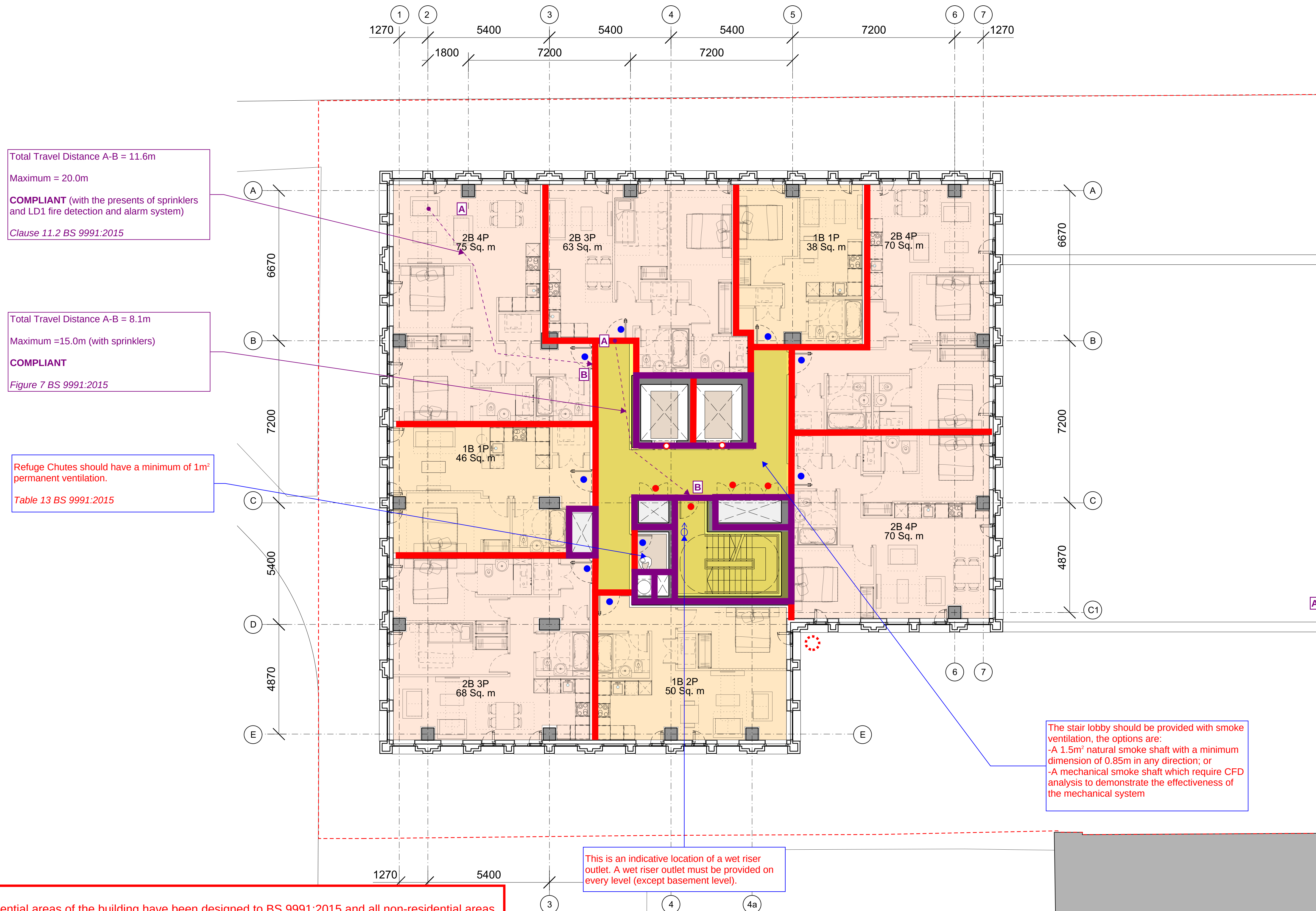
Drawing Title:
**Third to Eighth Level
Fire Strategy Drawing**

Drawing Status:
Stage 2 Issue

Hydrock Job No:
C-10243-C

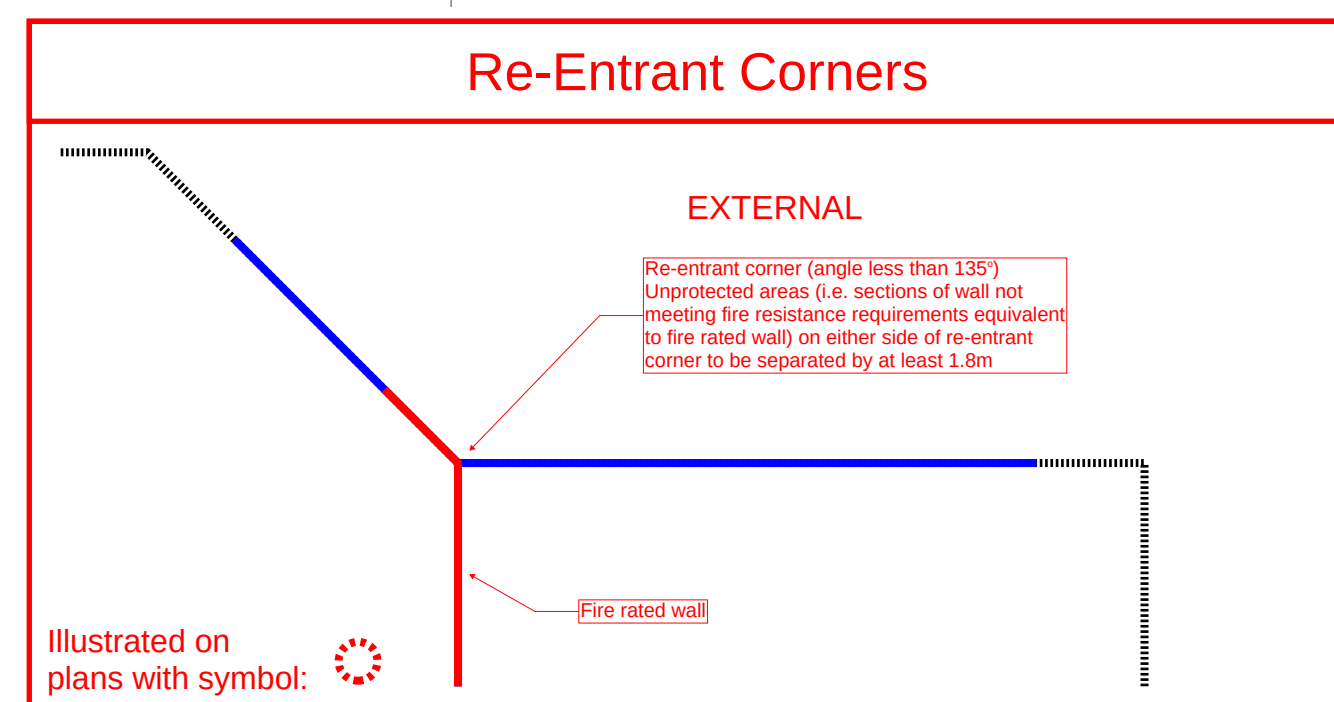
Drawn	Checked	Scale @ A1	Date	Issue Date
EK	DA	1:100	27.01.20	05.02.20
Drawing Number:	Revision:			
VIC-HYD-XX-03-RP-FE-0001	03			

GREAT ANCOATS STREET



Note:

- All residential areas of the building have been designed to BS 9991:2015 and all non-residential areas have been designed to BS 9999:2017.
- The residential areas will be based on a stay-put strategy and the non residential areas will be based on a simultaneous evacuation strategy.
- All apartments are to be fitted with a Grade D Category LD1 due to them being open plan. The common residential areas are to be fitted with L5) to operate the relevant smoke ventilation systems only – no sounders to be provided in these areas. The non-residential areas (e.g. ancillary accommodation, plant rooms, etc.) are to be provided with an L1 fire detection and alarm system. The fire detection and alarm systems within the retail units are subject to the unit fit-outs.
- Elements of structure throughout the building are to achieve at least 120 minutes fire resistance with regard to load-bearing capacity.
- A smoke shaft need to be provided to ventilate the protected corridor which accesses the fire-fighting stair.
- The building is to be provided with a sprinkler protection throughout designed, installed and commissioned in accordance with BS 9251:2014.
- A wet riser must be provided at every level with the exception of the basement, an indicative location of the wet riser is demonstrated on the drawings.
- Kitchens should be enclosed in open plan apartments having an area exceeding 8m x 4m. However, it is considered acceptable not to enclose the kitchen but subject to agreement with approving authority. The cooking facilities should be located at least 1.8m from the escape route.



- ## Notes
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 2. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reports to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
 3. This drawing is to be read in conjunction with the Fire Safety Strategy Report.
 4. Fire Strategy Drawings will require agreement with the local approving authorities and insurers.

Legend:

- | | |
|---|------------------------------------|
|  | FD30 fire door |
|  | FD60 fire door |
|  | FD30S fire door |
|  | FD60S fire door |
|  | 30 minute fire rated construction |
|  | 60 minute fire rated construction |
|  | 120 minute fire rated construction |
|  | 180 minute fire rated construction |
|  | Single travel distance |
|  | Total travel distance |
|  | Ventilation |
|  | Wet Riser Outlet |
|  | Enclosed Corner |

03	05.02.20	Stage 2 Issue	EK	DA
02	17.12.18	Stage 2 Issue	RS	CA
01	12.11.18	Stage 2 Issue	WN	RS
00	17.10.18	Stage 2 Draft	WN	RS
Rev	Date	Description	By	Checked

Architect : _____

SimpsonHaugh



Client : _____

Forshaw

Project Title: _____

Victoria House

Drawing Title:

Ninth to Eighteenth Level
Fire Strategy Drawing

Drawing Status:

Stage 2 Issue

Hydrex Job No: _____

C-10243-C

Drawn	Checked	Scale @ A1	Date	Issue Date
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EK	DA	1:100	27.01.20	05.02.20
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Drawing Number:	Revision:
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GREAT ANCOATS STREET

- Notes
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 - This drawing is to be read in conjunction with the Fire Safety Strategy Report.
 - Fire Strategy Drawings will require agreement with the local approving authorities and insurers.

Legend:

- FD30 fire door
- FD60 fire door
- FD30S fire door
- FD60S fire door
- 30 minute fire rated construction
- 60 minute fire rated construction
- 120 minute fire rated construction
- 180 minute fire rated construction
- Single travel distance
- Total travel distance
- Ventilation
- Wet Riser Outlet
- Enclosed Corner

Total Travel Distance A-B = 12.7m
Maximum = 20.0m
COMPLIANT (with the presents of sprinklers and LD1 fire detection and alarm system)
Clause 11.2 BS 9991:2015

Total Travel Distance A-B = 8.1m
Maximum =15.0m (with sprinklers)
COMPLIANT
Figure 7 BS 9991:2015

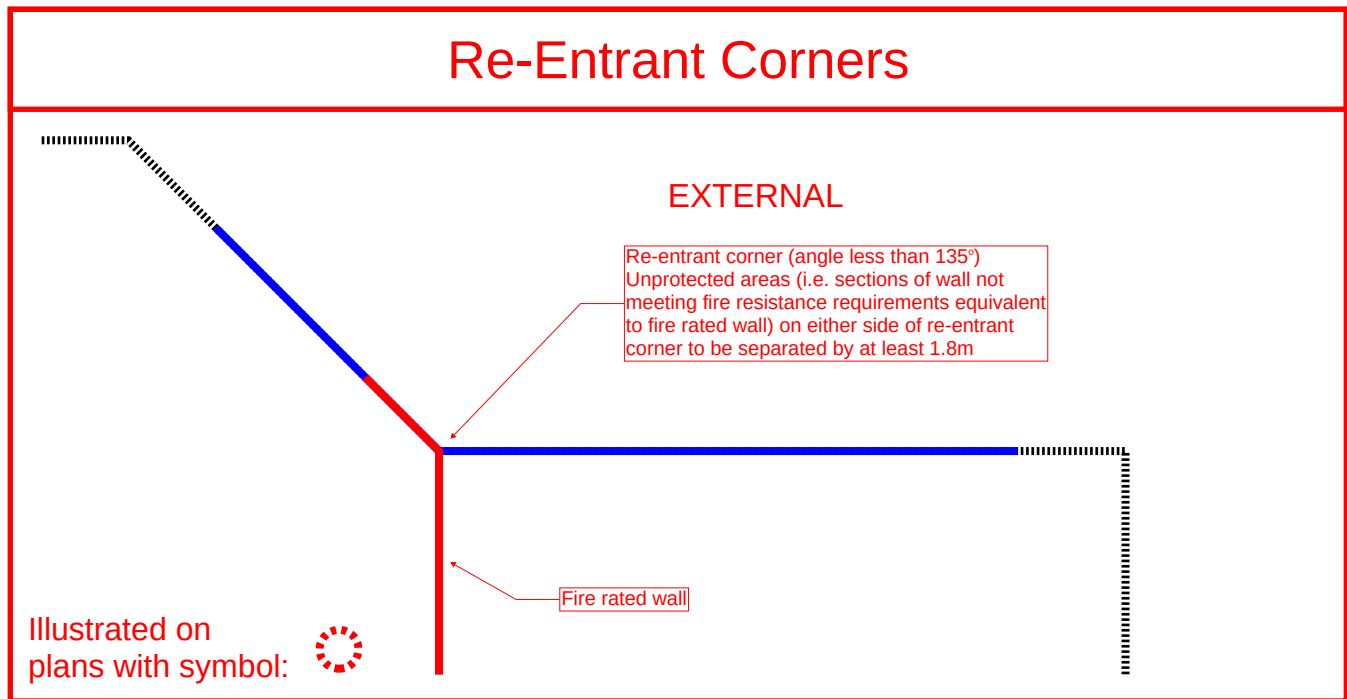
Refuge Chutes should have a minimum of 1m² permanent ventilation.
Table 13 BS 9991:2015

The stair lobby should be provided with smoke ventilation, the options are:
-A 1.5m² natural smoke shaft with a minimum dimension of 0.85m in any direction; or
-A mechanical smoke shaft which require CFD analysis to demonstrate the effectiveness of the mechanical system

This is an indicative location of a wet riser outlet. A wet riser outlet must be provided on every level (except basement level).

Note:

- All residential areas of the building have been designed to BS 9991:2015 and all non-residential areas have been designed to BS 9999:2017.
- The residential areas will be based on a stay-put strategy and the non residential areas will be based on a simultaneous evacuation strategy.
- All apartments are to be fitted with a Grade D Category LD1 due to them being open plan. The common residential areas are to be fitted with L5) to operate the relevant smoke ventilation systems only – no sounders to be provided in these areas. The non-residential areas (e.g. ancillary accommodation, plant rooms, etc.) are to be provided with an L1 fire detection and alarm system. The fire detection and alarm systems within the retail units are subject to the unit fit-outs.
- Elements of structure throughout the building are to achieve at least 120 minutes fire resistance with regard to load-bearing capacity.
- A smoke shaft need to be provided to ventilate the protected corridor which accesses the fire-fighting stair.
- The building is to be provided with a sprinkler protection throughout designed, installed and commissioned in accordance with BS 9251:2014.
- A wet riser must be provided at every level with the exception of the basement, an indicative location of the wet riser is demonstrated on the drawings.
- Kitchens should be enclosed in open plan apartments having an area exceeding 8m x 4m. However, it is considered acceptable not to enclose the kitchen but subject to agreement with approving authority. The cooking facilities should be located at least 1.8m from the escape route.



03	05.02.20	Stage 2 Issue	EK	DA
02	17.12.18	Stage 2 Issue	RS	CA
01	12.11.18	Stage 2 Issue	WN	RS
00	17.10.18	Stage 2 Draft	WN	RS
Rev	Date	Description	By	Ckd

Architect :
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Client :
Forshaw

Project Title:
Victoria House

Drawing Title:
**Nineteenth to Twenty-Second Level
Fire Strategy Drawing**

Drawing Status:
Stage 2 Issue

Hydrock Job No:
C-10243-C

Drawn	Checked	Scale @ A1	Date	Issue Date
EK	DA	1:100	27.01.20	05.02.20

Drawing Number:	Revision:
VIC-HYD-XX-19-RP-FE-0001	03

GREAT ANCOATS STREET

- Notes
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 - This drawing is to be read in conjunction with the Fire Safety Strategy Report.
 - Fire Safety Drawings will require agreement with the local approving authorities and insurers.

Legend:

- FD30 fire door
- FD60 fire door
- FD30S fire door
- FD60S fire door
- 30 minute fire rated construction
- 60 minute fire rated construction
- 120 minute fire rated construction
- 180 minute fire rated construction
- Single travel distance
- Total travel distance
- Ventilation
- Wet Riser Outlet
- Enclosed Corner

Total Travel Distance A-B = 13.1m
Maximum = 20.0m
COMPLIANT (with the presents of sprinklers and LD1 fire detection and alarm system)
Clause 11.2 BS 9991:2015

Refuge Chutes should have a minimum of 1m² permanent ventilation.
Table 13 BS 9991:2015

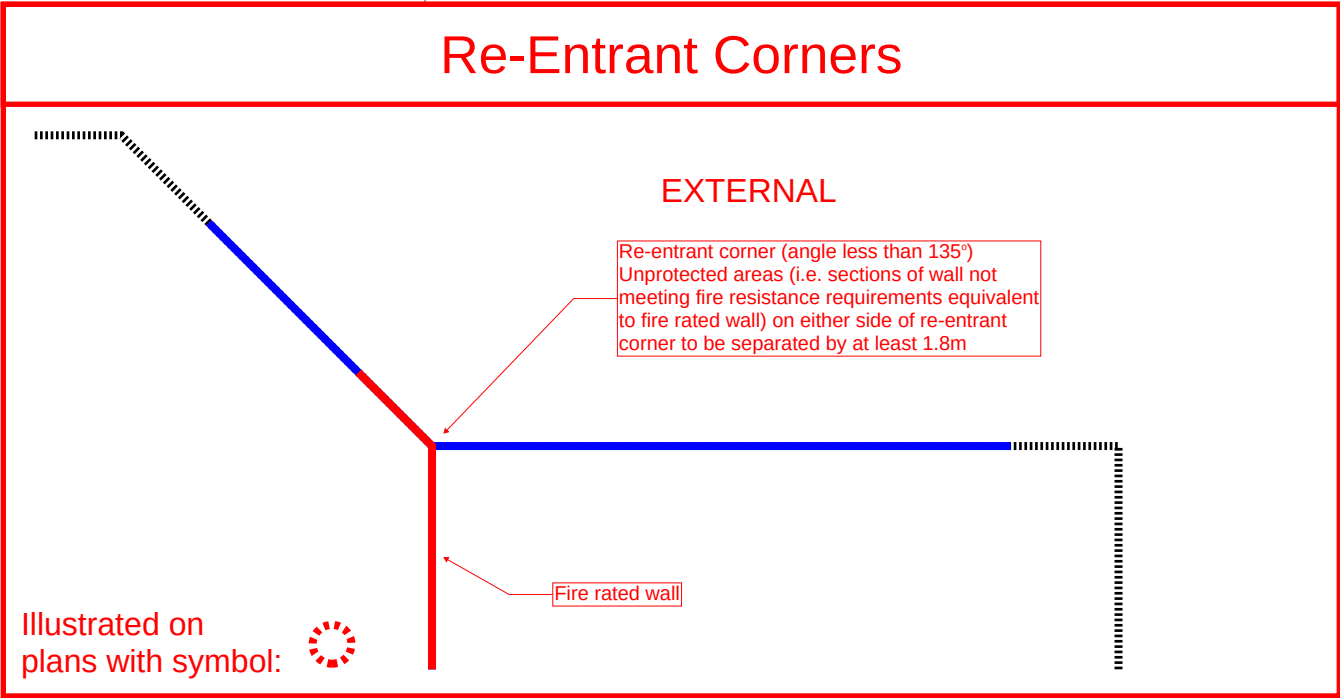
Total Travel Distance A-B = 8.1m
Maximum =15.0m (with sprinklers)
COMPLIANT
Figure 7 BS 9991:2015

The stair lobby should be provided with smoke ventilation, the options are:
-A 1.5m² natural smoke shaft with a minimum dimension of 0.85m in any direction; or
-A mechanical smoke shaft which require CFD analysis to demonstrate the effectiveness of the mechanical system

This is an indicative location of a wet riser outlet. A wet riser outlet must be provided on every level (except basement level).

Note:

- All residential areas of the building have been designed to BS 9991:2015 and all non-residential areas have been designed to BS 9999:2017.
- The residential areas will be based on a stay-put strategy and the non residential areas will be based on a simultaneous evacuation strategy.
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03	05.02.20	Stage 2 Issue	EK	DA
02	17.12.18	Stage 2 Issue	RS	CA
01	12.11.18	Stage 2 Issue	WN	RS
00	17.10.18	Stage 2 Draft	WN	RS
Rev	Date	Description	By	Ckd

Architect :
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Client :
Forshaw

Project Title:
Victoria House

Drawing Title:
**Twenty-Third Level
Fire Strategy Drawing**

Drawing Status:
Stage 2 Issue

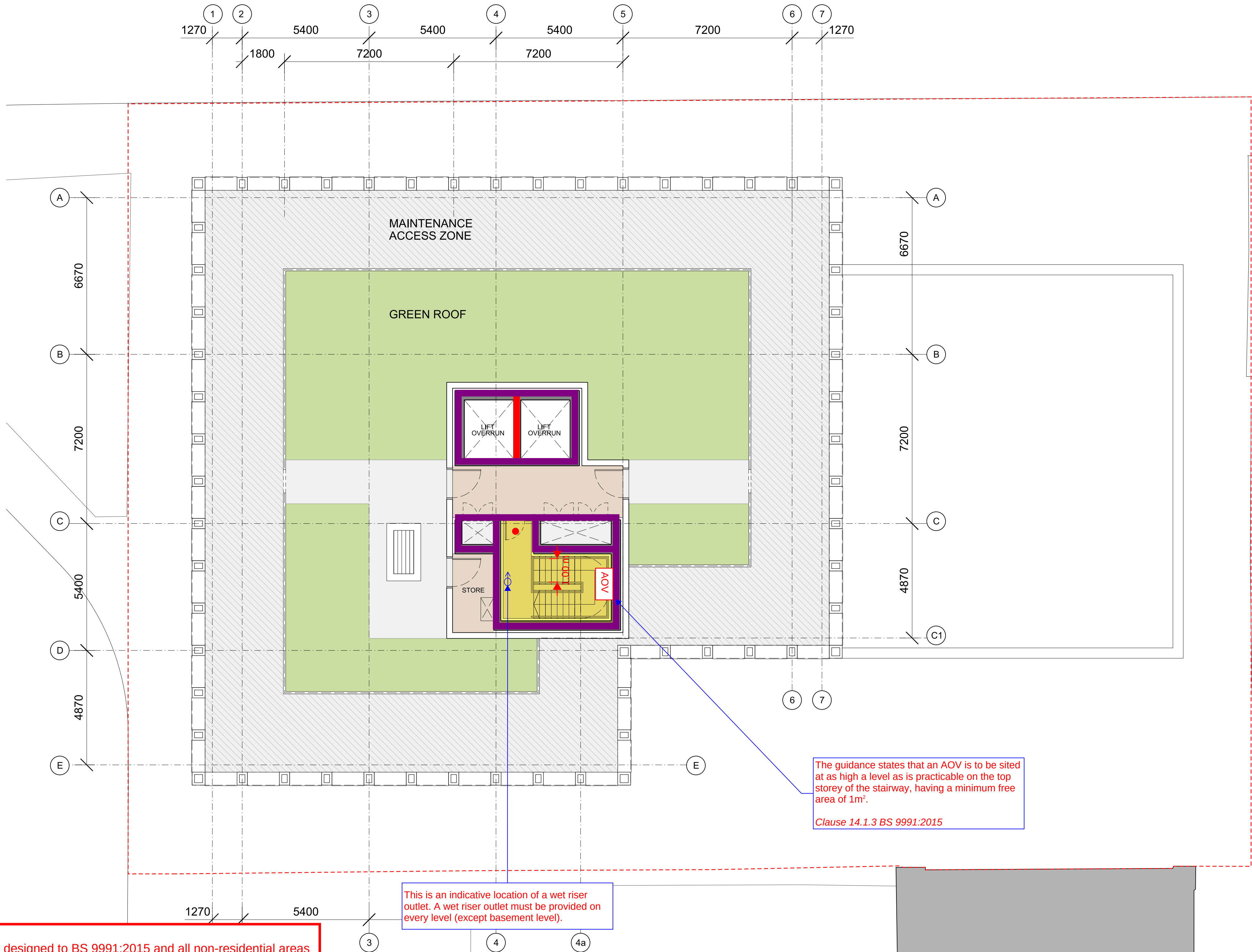
Hydrock Job No:
C-10243-C

Drawn	Checked	Scale @ A1	Date	Issue Date
EK	DA	1:100	27.01.20	05.02.20

Drawing Number:	Revision:
VIC-HYD-XX-23-RP-FE-0001	03

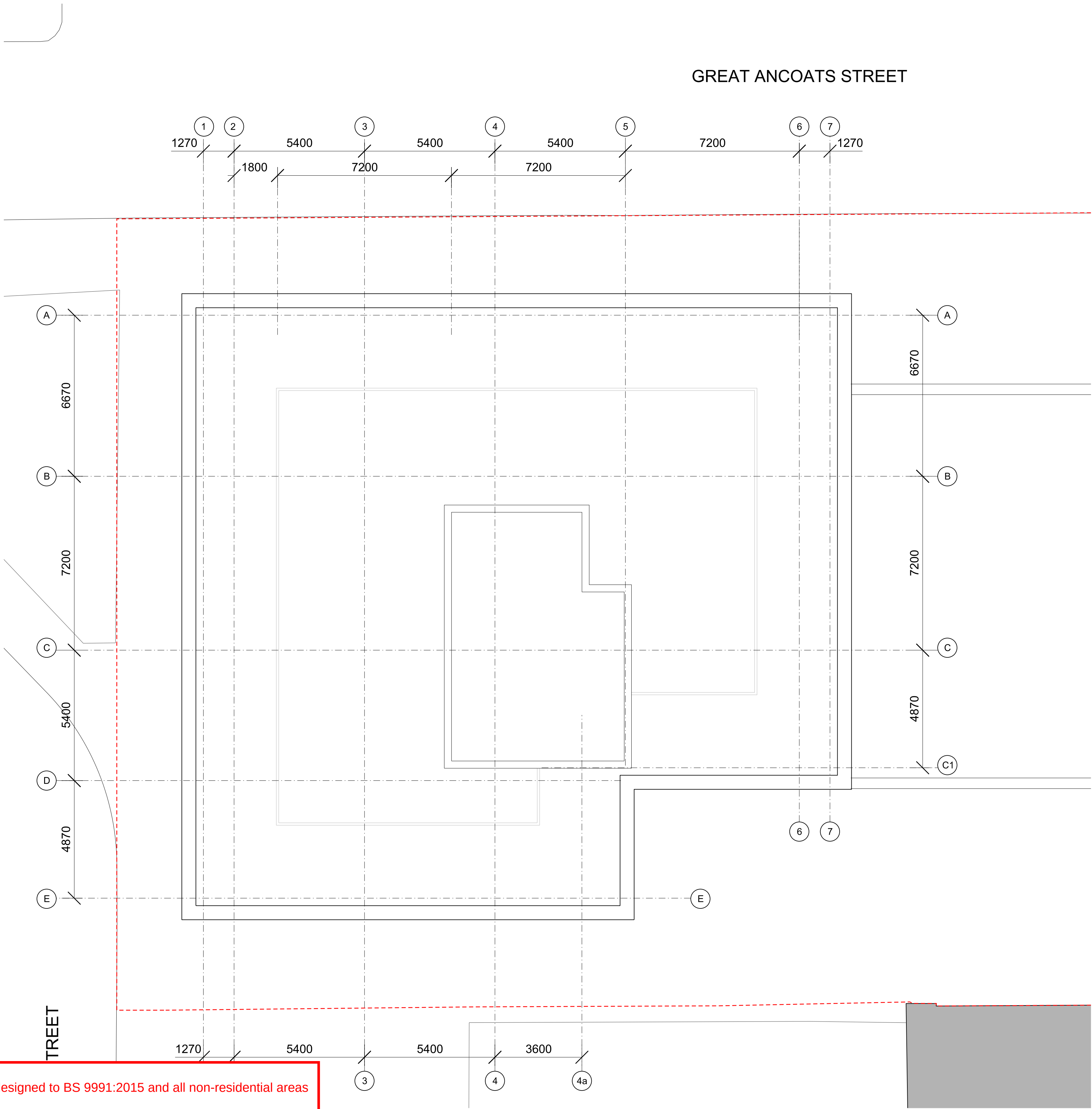
Note:

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Note:

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- The residential areas will be based on a stay-put strategy and the non residential areas will be based on a simultaneous evacuation strategy.
- All apartments are to be fitted with a Grade D Category LD1 due to them being open plan. The common residential areas are to be fitted with L5) to operate the relevant smoke ventilation systems only – no sounders to be provided in these areas. The non-residential areas (e.g. ancillary accommodation, plant rooms, etc.) are to be provided with an L1 fire detection and alarm system. The fire detection and alarm systems within the retail units are subject to the unit fit-outs.
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- Legend:
- FD30 fire door
 - FD60 fire door
 - FD30S fire door
 - FD60S fire door
 - 30 minute fire rated construction
 - 60 minute fire rated construction
 - 120 minute fire rated construction
 - 180 minute fire rated construction
 - Single travel distance
 - Total travel distance
 - Ventilation
 - Wet Riser Outlet
 - Enclosed Corner

03	05.02.20	Stage 2 Issue	EK	DA
02	17.12.18	Stage 2 Issue	RS	CA
01	12.11.18	Stage 2 Issue	WN	RS
00	17.10.18	Stage 2 Draft	WN	RS

Rev	Date	Description	By	Ckd
Architect :				
SimpsonHough				

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Client :
Forshaw

Project Title:
Victoria House

Drawing Title:
Roof Level Fire Strategy Drawing

Drawing Status:
Stage 2 Issue
Hydrock Job No:
C-10243-C

Drawn	Checked	Scale @ A1	Date	Issue Date
EK	DA	1:100	27.01.20	05.02.20
Drawing Number:				Revision:
VIC-HYD-XX-RF-RP-FE-0001				03