Ham Close Regeneration

Planning Application:

Fire Strategy Statement

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Hill Created for Living

rhp

LONDON BOROUGH OF RICHMOND UPON THAMES

FIRE **STRATEGY** STATEMENT

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Ham Close, Richmond

Date:
18/08/2022

Part 1 Reference Number:
AFF_20700_01_Ham Close, Richmond - Residential_FSS_08

Part 2 Reference Number:
AFF_20700_01_Ham Close, Richmond – Non-Residential_FSS_07

Overview

Affinity Fire Engineering (UK) Ltd has been engaged to develop a Fire Strategy Statement in support of a planning application for the Ham Close residential development, which includes the demolition of existing buildings on-site and phased mixed-use development comprising 452 residential homes (Class C3) up to six storeys; a Community/Leisure Facility (Class F2) of up to 3 storeys in height, a "Maker Labs" (sui generis) of up to 2 storeys together with basement car parking and site wide landscaping. The site is located at Ham Close, Ham, Richmond Upon Thames, TW10 7PG

This Fire Statement is split into 2 parts: Part 1 addresses the residential elements of the site; and Part 2 addresses the non-residential elements of the site including the Community Centre and Richmond Maker Labs.

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1 INTRODUCTION

1.1 Scope

Affinity Fire Engineering (UK) Ltd has been engaged to develop a Fire Strategy Statement in support of a planning application for the Ham Close residential development, which includes the demolition of existing buildings on-site and phased mixed-use development comprising 452 residential homes (Class C3) up to six storeys; a Community/Leisure Facility (Class F2) of up to 3 storeys in height, a "Maker Labs" (sui generis) of up to 2 storeys together with basement car parking and site wide landscaping. The site is located at Ham Close, Ham, Richmond Upon Thames, TW10 7PG

Part 1 of this Fire Statement addresses the residential elements of the site only. Refer to Part 2 (document reference: ***AFF_20700_01_Ham Close, Richmond - Non-Residential Buildings_FSS_07)*** for the Fire Statement covering the Community Centre and Richmond Maker Labs.

The Fire Statement is provided to demonstrate:

- The method of compliance with the London Plan Policy D12 and D5 requirements (see **Section 1.3** below). This is based on the London Plan Guidance (LPG) for Fire Safety published by the Greater London Authority. Affinity Fire Engineering (UK) Ltd confirm that the fire strategy of the proposed development and the fire safety information for the planning application complies with the requirements of the London Plan Policy D12 and D5 (B5).
- The method of compliance with the Building Regulations 2010 Part B (fire), to the level of information required to support the planning application and London Plan Policy (above). To this end, this statement provides high level advice at this early stage on how an acceptable level of life safety may be achieved commensurate with the Functional Requirements of the Building Regulations 2010 for Means of Egress (B1), Internal Fire Spread Structure (B3), External Fire Spread (B4) and Firefighting Access (B5) only.

It is noted the project design has moved into RIBA Stage 03 for planning application, however, RIBA Stage 02 is stated for the purposes of this Fire Statement.

1.2 Primary Legislation

The Building Regulations 2010 is the Statutory Instrument which seeks to ensure that the policies set out in the Building Act 1984 are implemented. The Functional Requirements of the Building Regulations 2010 may be met in one of two ways; compliance with an accepted design guidance (i.e., British Standards or Approved Documents), or through a fire engineered approach.

In this instance the primary design guidance used has been **BS 9991 2015** for all residential areas. It should be noted that a draft **BS 9991 2022** has been released for technical review/ comment and has not yet been officially published as current guidance. However, the guidance contained in this draft document has been applied where it is more strict than the minimum recommendations of current guidance. It is considered that compliance with the new draft guidance will also result in compliance with current guidance and therefore provides a safeguarding measure in the event the new draft guidance is published during the design stages of the Ham Close residential development.

In addition to The Building Regulations, this statement has been prepared in support of a planning application and therefore regard must also be had to the relevant policies of the London Plan, specifically Policy D12 (Fire Safety) and D5 (Inclusive Design – Part B5). This statement has considered the London Plan requirements of Policy D12 & D5.

Where deviations from the prescriptive recommendations are proposed these have been identified and will be assessed as part of a fire engineered approach. All fire engineered solutions will be justified by following the general methodology proposed within **BS 7974.**

1.3 London Plan Policy Requirements

Within this section, the requirements of Policy D12 & D5 (B5) are itemised, and it is identified where in this document the relevant assessment has been made against each policy (see **Table 1**).

Table 1: Policy D12 and D5 breakdown

Policy Section	Topic	Section in the Report
D5 (B5)	Inclusive design: Incorporate safe and dignified emergency evacuation for all building users.	**Section 3**
D12 Section A 1) a	Identify suitably positioned unobstructed outside space for fire appliances to be positioned on.	**Section 7.1**
D12 Section A 1) b	Identify suitably positioned unobstructed outside space appropriate for use as an evacuation assembly point	**Not applicable in residential buildings**
D12 Section A 2)	Incorporate appropriate features which reduce the risk to life and the risk of serious injury in the event of a fire including appropriate fire alarm systems and passive and active fire safety measures	**Sections 4 & 5**
D12 Section A 3)	Minimise the risk of fire spread	**Section 6**
D12 Section A 4)	Provide suitable and convenient means of escape, and associated evacuation strategy for all building users	**Section 3**
D12 Section A 5)	Develop a robust strategy for evacuation which can be periodically updated and published, and which all building users can have confidence in	**Section 3**
D12 Section A 6)	Provide suitable access and equipment for firefighting which is appropriate for the size and use of the development.	**Section 7**
D12 Section B 1)	The building's construction: methods, products and materials used, including manufacturers' details	**Section 5**

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Policy Section	Topic	Section in the Report
D12 Section B 2)	The means of escape for all building users: suitably designed stair cores, escape for building users who are disabled or require level access, and associated evacuation strategy approach	**Section 3**
D12 Section B 3)	Features which reduce the risk to life: fire alarm systems, passive and active fire safety measures and associated management and maintenance plans	**Sections 4 & 5**
D12 Section B 4)	Access for fire service personnel and equipment: how this will be achieved in an evacuation situation, water supplies, provision and positioning of equipment, firefighting lifts, stairs and lobbies, any fire suppression and smoke ventilation systems proposed, and the ongoing maintenance and monitoring of these	**Section 7**
D12 Section B 5)	How provision will be made within the curtilage of the site to enable fire appliances to gain access to the building	**Section 7**
D12 Section B 6)	Ensuring that any potential future modifications to the building will take into account and not compromise the base build fire safety/protection measures.	**See note [A]**

Note [A]: The fire strategy has been produced so it does not restrict the possibility of future modifications that are within reason.

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2 ARCHITECTURAL REVIEW

2.1 Site Overview

The proposed works for the Ham Close residential scheme includes demolition of existing buildings on-site and phased mixed-use development comprising 452 residential homes up to six storeys together with basement car parking and site wide landscaping. The Ham Close residential scheme consists of the following accommodation:

- 4 x studio (0.8%)
- 220 x 1 bed (48.7%)
- 165 x 2 bed (36.5%)
- 21 x 3 bed (4.6%)
- 34 x 4 bed (7.5%)
- 8 x 5 bed (1.8%)

The proposed site can be seen in **Figure 1.**

Figure 1: Site Layout

2.2 Building Heights

The building height definitions are as follows:

1. Height of the building which is measured from mean ground level to mean roof level. This measurement is used for **Section 6.3.2** (Reaction to Fire properties for the cladding).
2. Firefighting access height, which is measured from firefighting access level to the height of the topmost storey. This measurement is used for **Section 7.1** (Fire Service Access).
3. The height of the topmost storey has been defined by Regulation 7 as the height measured from the lowest ground level adjacent to the building to the topmost habitable storey. This measurement is used for **Section 5.2.1** (Structural Fire Resistance) and **Section 6.3.1** (Combustibility of external wall construction).

It has been determined that Regulation 7 will not apply for external wall construction as the buildings are <18m to the topmost habitable storey.

2.2.1 Summary of Building Heights

From **Table 2** below, the various heights of each building can be seen.

Table 2: Building Heights

Block	Mean Ground Floor Level to the Mean Roof Level (m)	Lowest Side of Ground Floor Level to the Topmost Habitable Floor Slab (m)	Fire Service Access Height (m)
Block A	13m	9.2m	9.2m
Block B	13m	9.2m	9.2m
Block C	19.5m	15.8m	15.8m
Block D	13m	9.2m	9.2m
Block E	19.5m	15.8m	15.8m
Block I	19.5m	15.8m	15.8m
Block M	19.5m	15.8m	15.8m
Block N	13m	9.2m	9.2m
Block O	13m	9.2m	9.2m
Block R	16m	12.3m	12.3m
Block S	19.5m	15.8m	15.8m

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Block	Mean Ground Floor Level to the Mean Roof Level (m)	Lowest Side of Ground Floor Level to the Topmost Habitable Floor Slab (m)	Fire Service Access Height (m)
Block TU	13m	9.2m	9.2m
Block V	19.5m	15.8m	15.8m
Block W	13.4m	9.7m	9.7m
Townhouses:			
Blocks F & L	9.5m	6.2m	6.2m
Block H & J	13m	9.5m	9.5m
Blocks G & K	9.1m	5.8m	5.8m
Block P & Q	10.2m	6.2m	6.2m

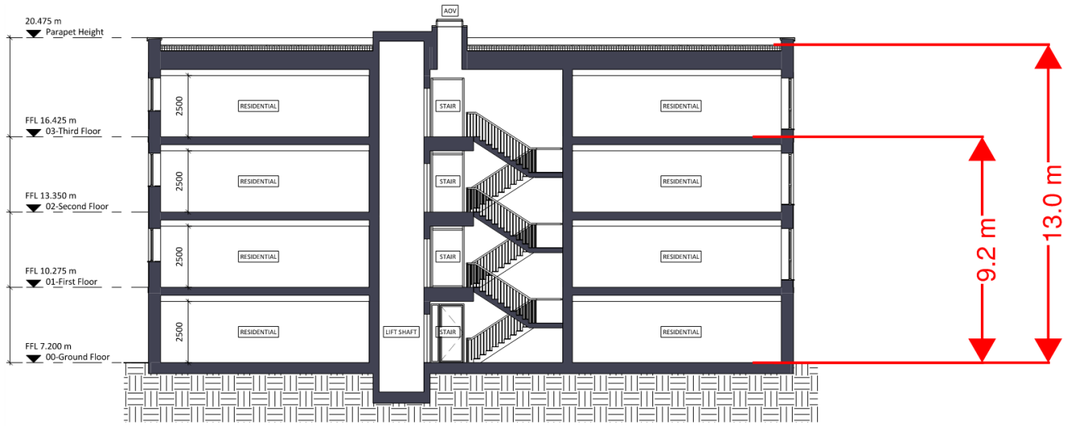

Figure 2: Building Heights – Block A

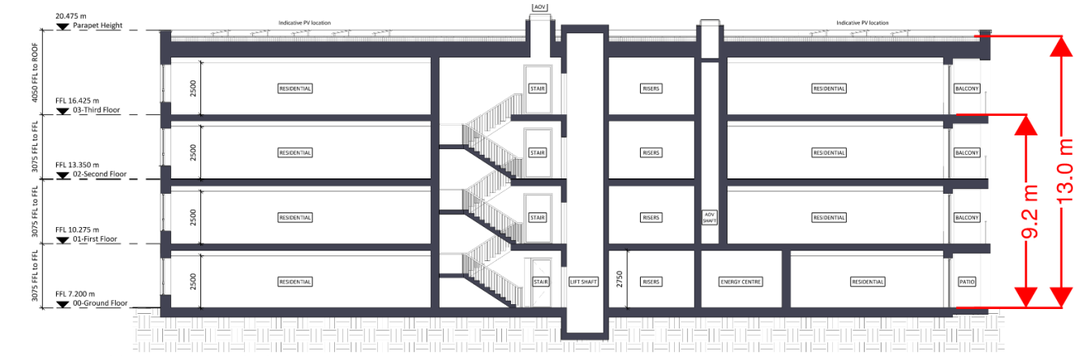

Figure 3: Building Heights – Block B

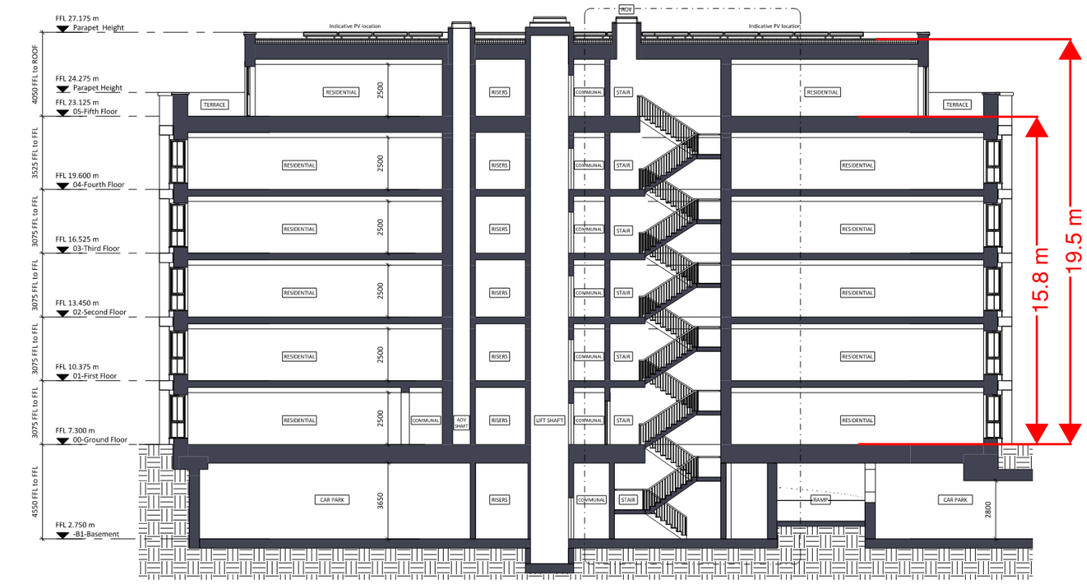

Figure 4: Building Heights – Block C

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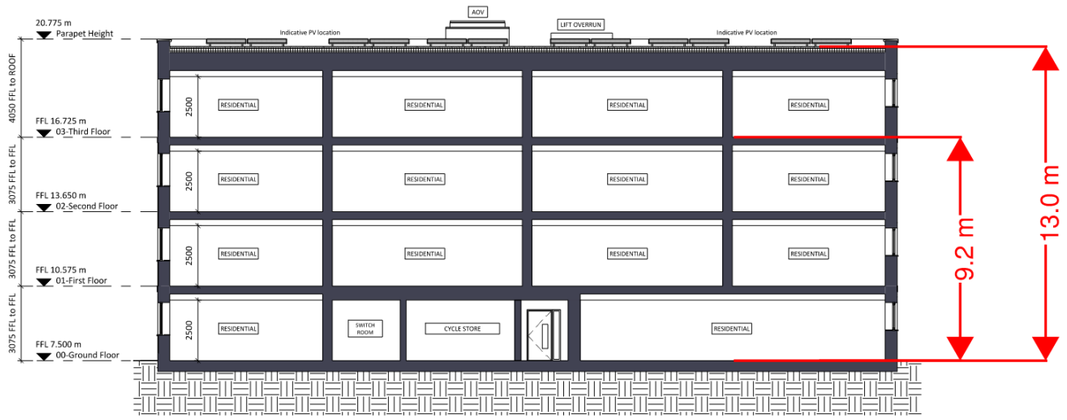

Figure 5: Building Heights – Block D

Figure 6: Building Heights – Block E

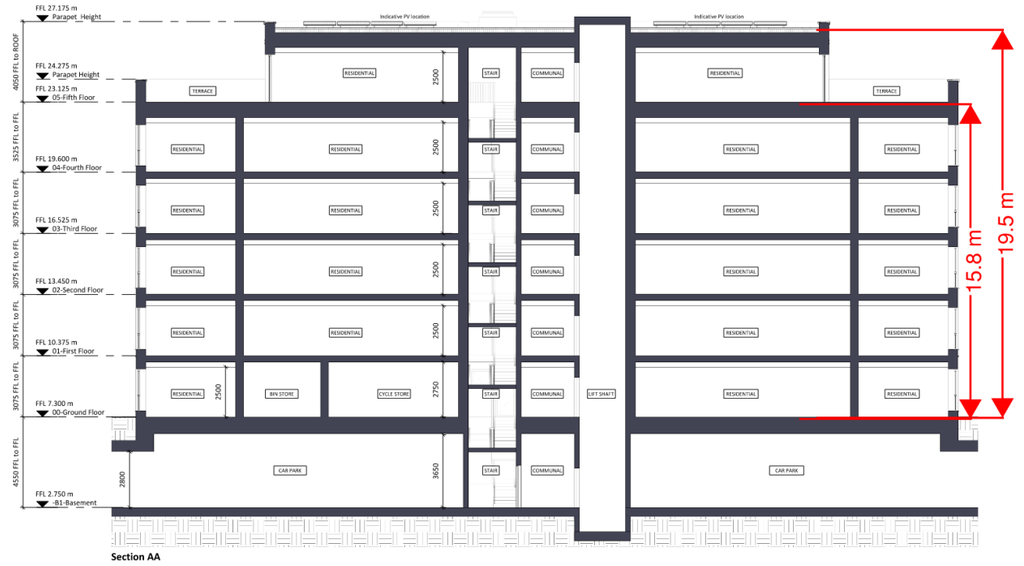

Figure 7: Building Heights – Block I

Figure 8: Building Heights – Block M

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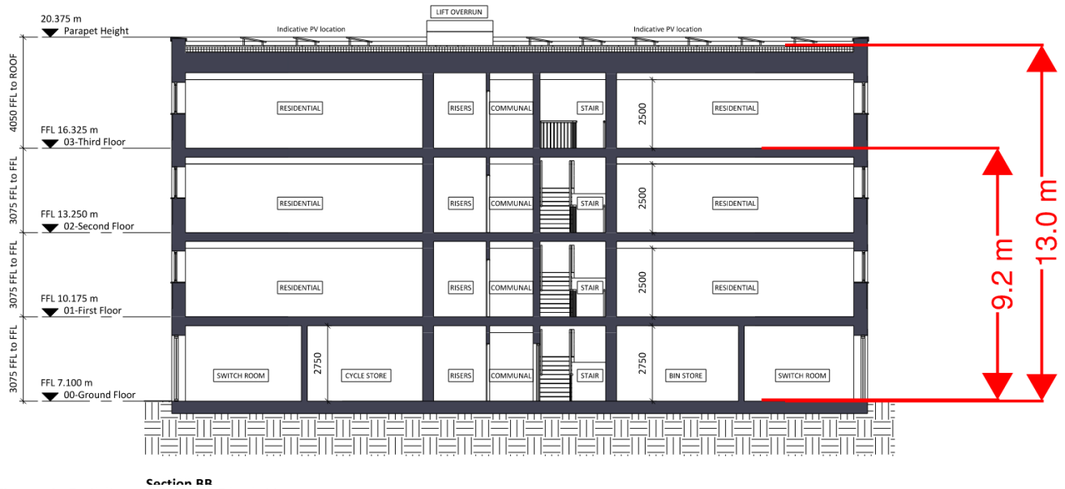

Figure 9: Building Heights – Block N

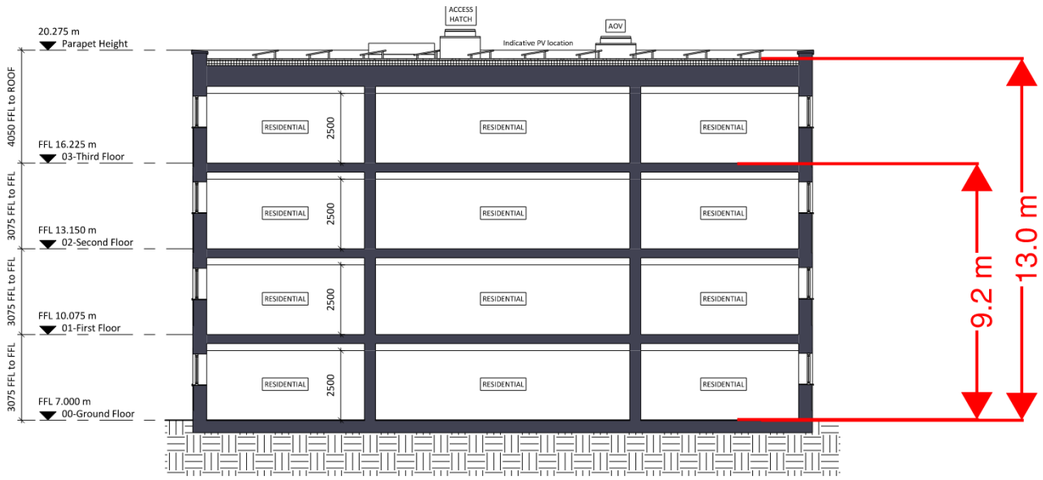

Figure 10: Building Heights – Block O

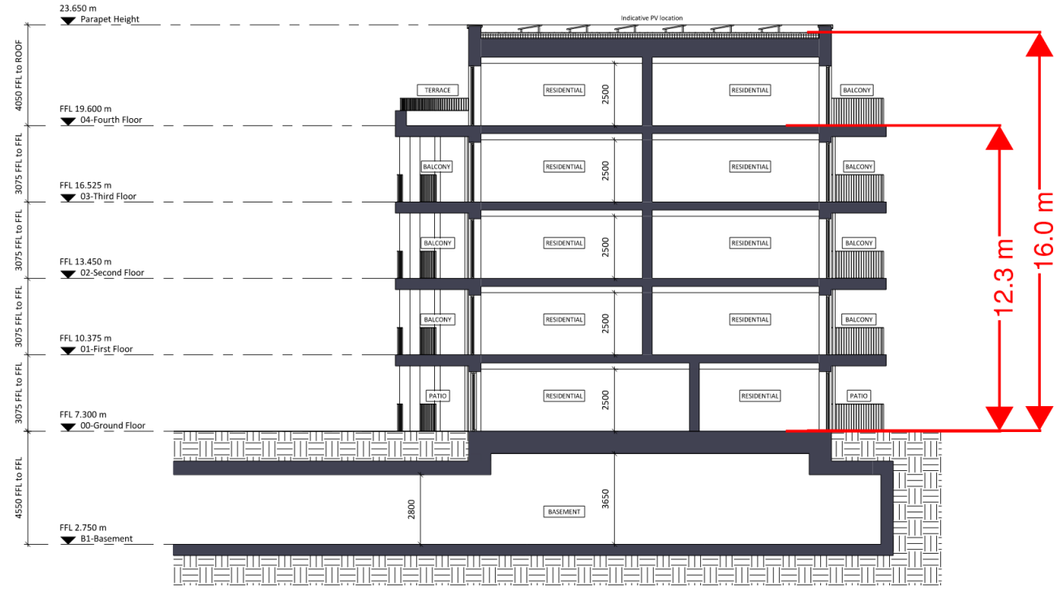

Figure 11: Building Heights – Block R

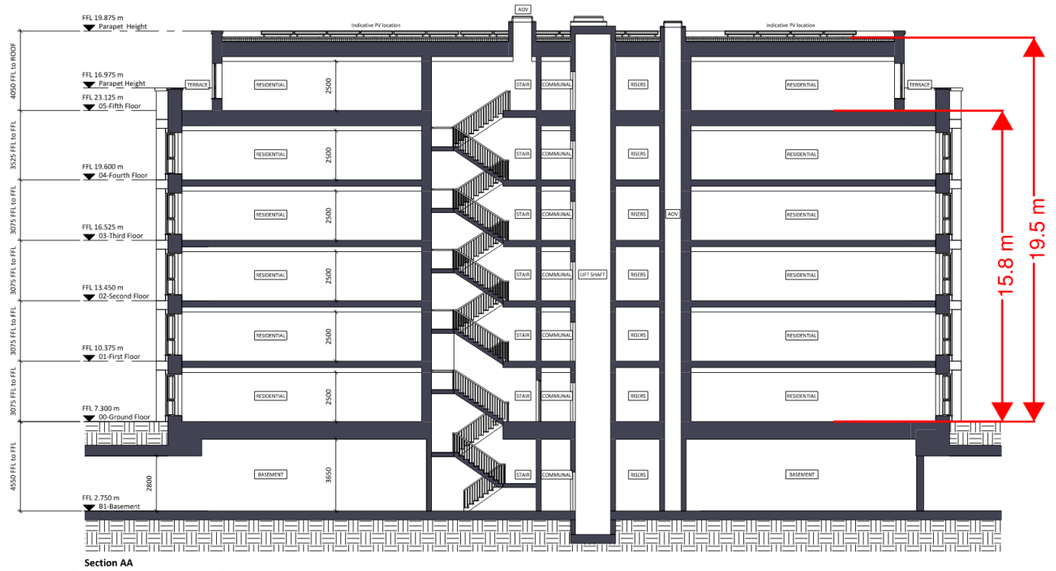

Figure 12: Building Heights – Block S

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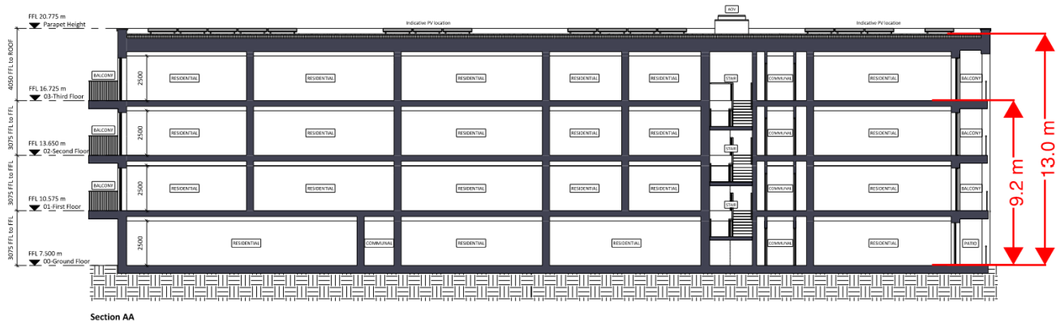

Figure 13: Building Heights – Block TU

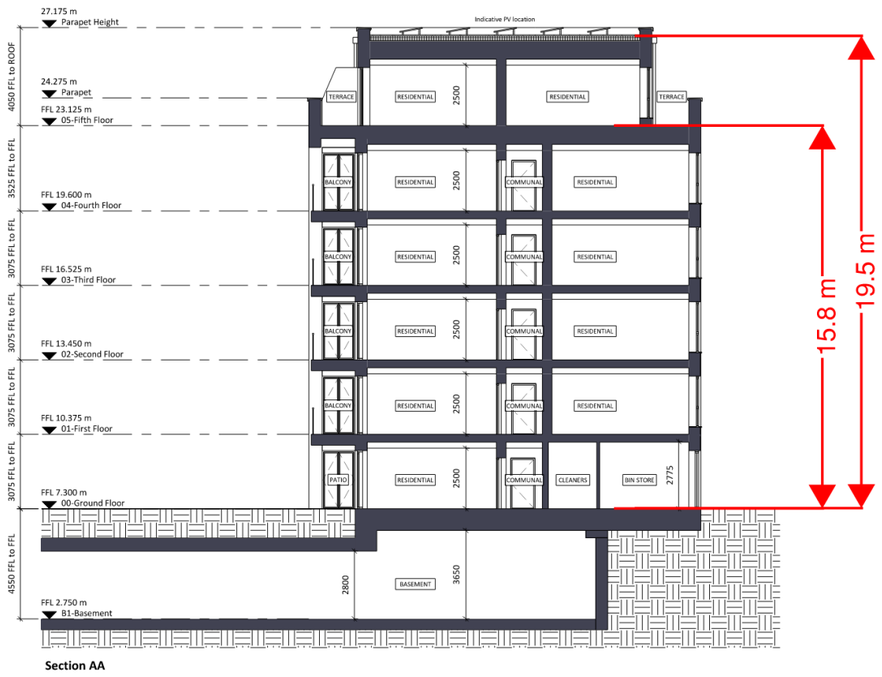

Figure 14: Building Heights – Block V

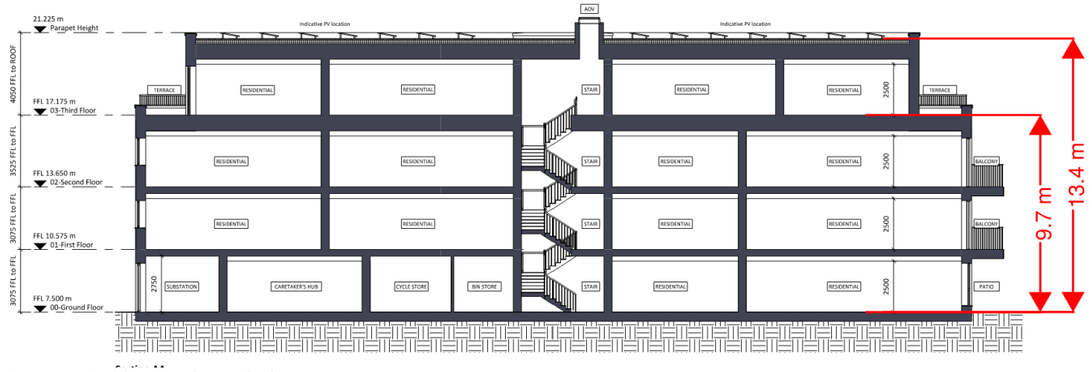

Figure 15: Building Heights – Block W

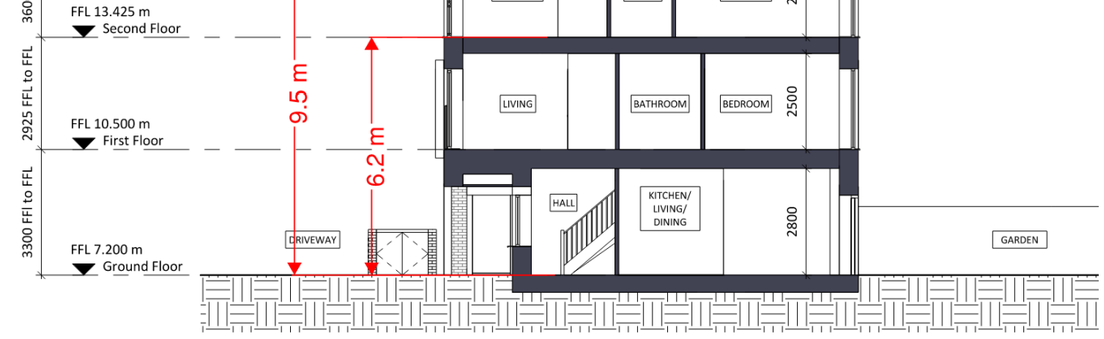

Figure 16: Building Heights – Block F and L

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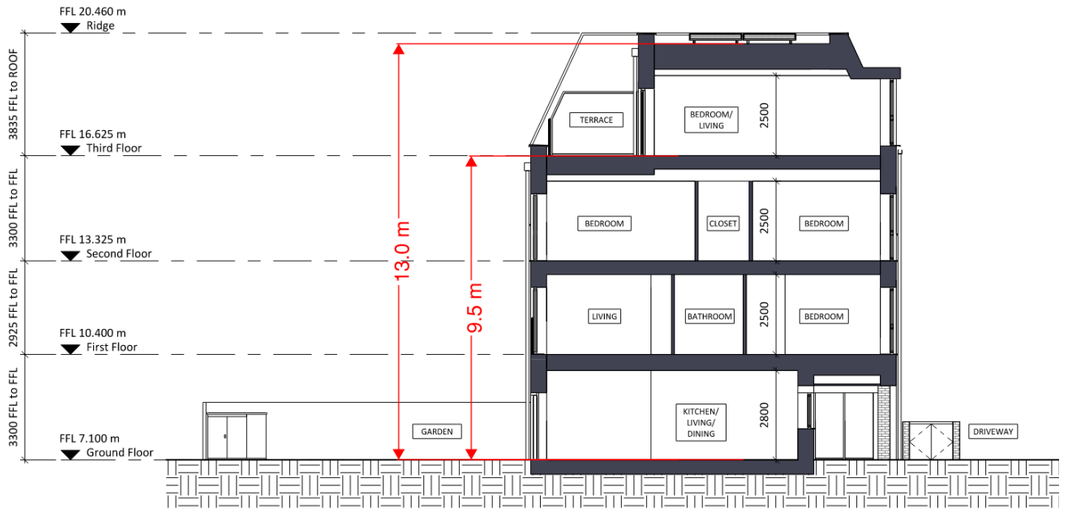

Figure 17: Building Heights – Block H and J

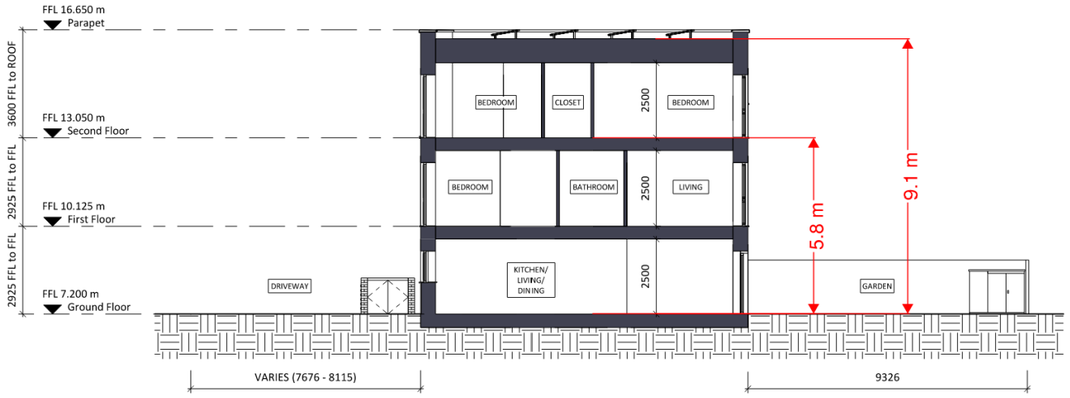

Figure 18: Building Heights – Block G and K

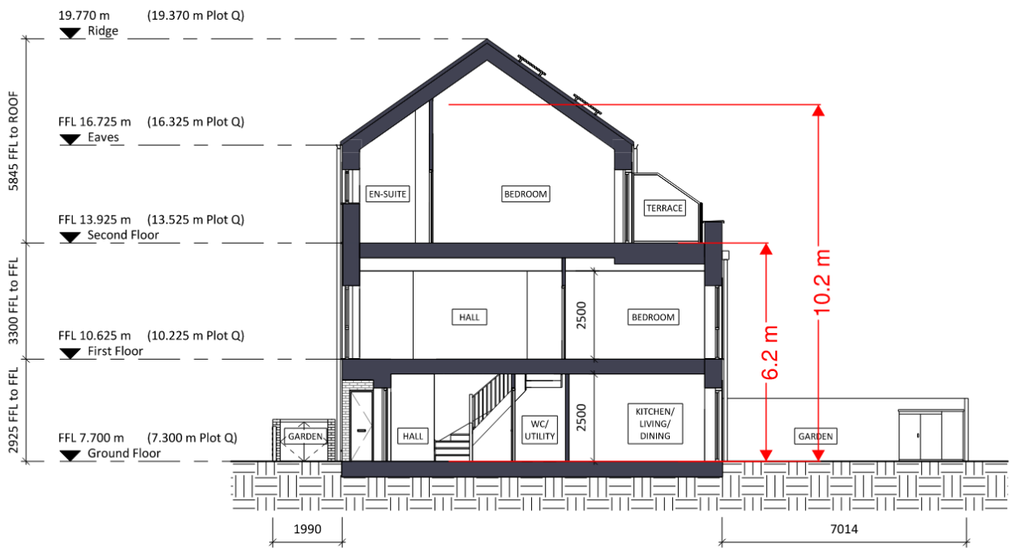

Figure 19: Building Heights – Block P and Q

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3 MEANS OF EGRESS

3.1 Overview

Section A 4) and B 2) of the Planning Policy D12 requires that suitable means of escape is provided for all building users. The following sections detail the active systems which will be in place to achieve this:

3.2 Evacuation Philosophy

The fire strategy design of the proposed residential buildings has been developed to facilitate a **'Stay Put'** evacuation policy, whereby:

- Occupants of the home of fire origin are reasonably expected to evacuate as soon as they are aware of a fire within their premises.
- Occupants of all other homes are not automatically made aware of fire within another home, and as such are afforded suitable protection against the spread of fire such that they should be able to remain within their own home in relative safety. This is not to imply that residents should 'stay put' should they wish to evacuate, and suitable provisions are made to allow for occupants to safely egress from the building at any time.

The 'Stay Put' evacuation strategy has been implemented within the proposed residential buildings so as to limit the risk that occupants will ignore alarm signals if there are repeated false, or nuisance, alarm activations within the building.

The evacuation scheme for occupants within accommodation ancillary to the residential parts of the buildings (communal areas, basement car park) will be '**Simultaneous'**.

3.3 Means of Egress within Flats

Flats having an entrance on the same level as the flat meet the following recommendations of BS 9991:

3.3.1 Open Plan Flats

All flats within Blocks A, B, C, D, E, I, M, N, O, R, S, T, U, V and W are to be provided with sprinklers and LD1 fire detection and alarm. Therefore, all flats meet the following recommendations:

- The travel distance from the furthest point of the flat to the flat entrance is no more than 20m. See **Figure 20** below.
- Where a wheelchair charge point & storage is provided directly off the internal hallway, they are separated from the hallway via 30/30/30 minutes fire resistance.

On the above basis, internal protected entrance hallways are not needed and kitchens can either be open or separated.

Figure 20: Example of Travel Distance within Open Plan Flats

3.3.2 Cooking Facilities

Cooking facilities are sited approximately 2m away from the internal escape routes from bedrooms and private balconies as outlined in **Figure 21** below.

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Figure 21: Location of Cooking Facilities

3.4 Means of Egress from Common Areas

3.4.1 All Upper Levels

The common corridors on the upper floors of all blocks of flats are assessed as having a travel distance of <15m measured from the furthest flat door to the stair door and are therefore in accordance with guidance. **Figure 22** below illustrates a worst-case travel distance which is in Block V.

Figure 22: Block V - Worst Case Upper Floor Corridor Travel Distance

3.4.2 Ground Floor Level

The common corridors on Ground Floor of all blocks of flats are assessed as having a travel distance of <15m measured from the furthest flat door to a final exit and are therefore in accordance with guidance.

3.5 Means of Escape from Basement and Ancillary Areas

It is assessed that travel distances within ancillary areas are limited to those recommended by BS 9991 below:

Table 3: Travel Distances within Ancillary Areas

Area	One-way travel distance limit (m) [A]	Two-way travel distance limit (m) [B]
To nearest storey exit	18	45
To nearest storey exit	18	45

Note A: Where escape is possible in one direction only.

Note B: Where escape is possible in more than one direction, at least 45 degrees apart.

From the **Figure 23** below, it can be seen that all areas of the basement are within the travel distance recommendations set out in BS 9991:

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Figure 23: Means of Escape from Basement Ancillary Areas

3.6 Blocks C, D and E - Townhouses

Townhouses are to be provided with a protected entrance hallways enclosing the stair on all levels using 30 minute fire resisting construction which extends to the final exit.

The proposed means of escape arrangements for each house can be seen within the following figure:

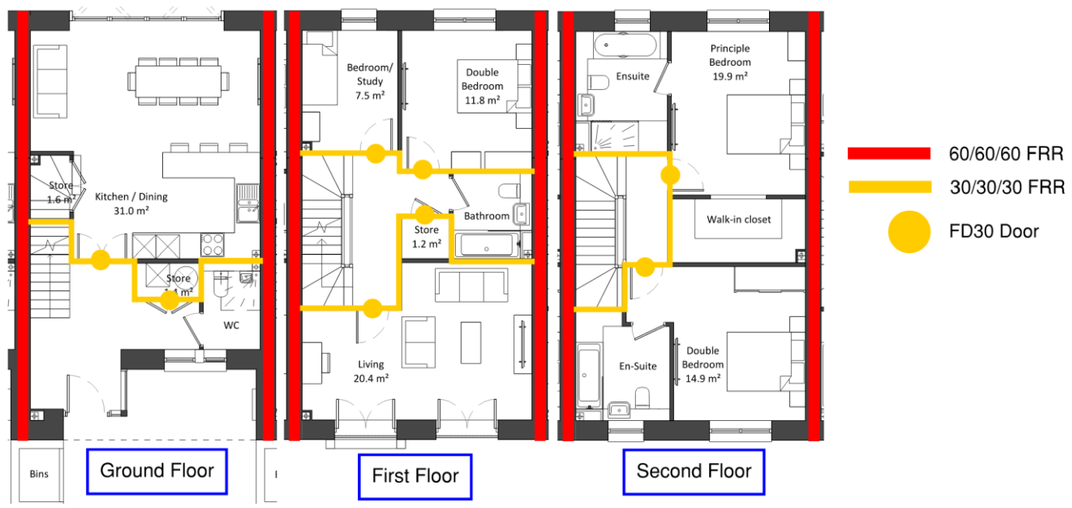

Figure 24: Townhouses - Means of Escape

3.7 Evacuation Lifts

To meet the requirements of Policy D5 of the London Plan, an evacuation lift will be provided in each core to assist the evacuation of persons of restricted mobility. Evacuation lifts will be designed and installed in accordance with BS EN 81-20 and BS EN 81-70 and provided with a secondary power supply, such as a generator or supply from a separate utility, meeting the recommendations in BS 8519.

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4 ACTIVE FIRE SAFETY SYSTEMS

4.1 Overview

Sections A 2) and B 3) of the Planning Policy D12 requires that appropriate active fire safety systems are in place to reduce the risk to life. The following sections detail the active systems which will be in place to achieve this:

4.2 Fire Alarm and Detection Systems

The following detection and alarm provisions are made in support of the evacuation philosophy above:

Table 4: Fire Alarm and Detection

Location	Minimum System Category	Comments
All blocks of Flats:		
All Flats	Grade D1 Category LD1 fire detection and alarm in accordance with BS 5839-6.	This system will raise an alarm in the flat of fire origin only. Private balconies are to be afforded an alarm. This could be achieved using the sounders within the homes, provided the required decibel level is achieved (to be confirmed at later stages). On this basis, no dedicated external alarm is needed on the balconies.
Common Residential Areas	Category L5 fire detection in accordance with BS 5839-1.	This system will actuate the smoke control at the head of the stair and in the common corridors. [A] This system will not raise an alarm anywhere in the building.
All Townhouses:		
All Townhouses	D1 Category LD2 fire detection and alarm in accordance with BS 5839-6.	This system will raise an alarm in the houses of fire origin only.
Basement Car Park:		
Basement Car Park	Category L5/M fire detection and alarm in accordance with BS 5839-1.	This system will actuate the smoke control. Alarm to be raised in car park only. Heat detectors to be considered in basement car park to avoid false alarms.
Ancillary Areas	Category M fire alarm in accordance with BS 5839-1.	N/A

Note [A]: Activation of the detection will automatically open vents in the following areas: 1.5m^2 Smoke Shafts/Automatic Opening Vents (AOVs) in the common corridors of detection only and 1.0m^2 AOV's at the heads of the stairs.

4.3 Automatic Suppression

The following sprinkler coverage is to be provided:

Table 5: Sprinkler Coverage

Location	System Category / Standard	Comments
Blocks of Flats (Blocks A, B, C, D, E, I, M, N, O, R, S, TU, V and W):		
All flats	Category 2 in accordance with BS 9251:2021	N/A
Non-sterile communal areas	Category 3 in accordance with BS 9251:2021	Non-sterile communal areas include plant, refuse and bike stores.
4 Storey Townhouses (Blocks H and J):		
All areas	Category 1 in accordance with BS 9251:2021	N/A
Basement Car Park:		
All areas	Category OH2 in accordance with BS EN 12845:2015	As the basement car park has a floor area > 100m^2, guidance recommends that an OH2 sprinkler system designed and installed in accordance with BS EN 12845 should be provided.

Note: All other townhouses shall not be provided with automatic suppression.

4.4 Smoke Ventilation

4.4.1 Common Stairs

The common stairs in all blocks of flats will be provided with the following:

- The head of each stair is to be provided with a 1.0m^2 AOV. The AOV is to be actuated by the Category L5 detection system anywhere in the building.

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- A fire man's switch is to be provided beside the main entrance door to the buildings to actuate the smoke control systems within each block.

4.4.2 Upper Levels

The common corridors on the upper levels of all blocks of flats have a travel distance >4.5m. Therefore, to meet the recommendations of BS 9991, the common corridors will be provided with either of the following:

- A 1.5m^2 Smoke Shaft in accordance with **Section 4.6** and shown in **Figure 25** is to be provided to ventilate the common corridor. The smoke shaft AOV is to be actuated by the local Category L5 detector head within the common corridor of detection only. Or
- A 1.5m^2 AOV natural ventilation via the windows shown in **Figure 26** is to be provided to ventilate the common corridor. The AOV is to be actuated by the local Category L5 detector head within the common corridor of detection only.

The AOVs are to be designed and installed in accordance with BS EN 12101-2.

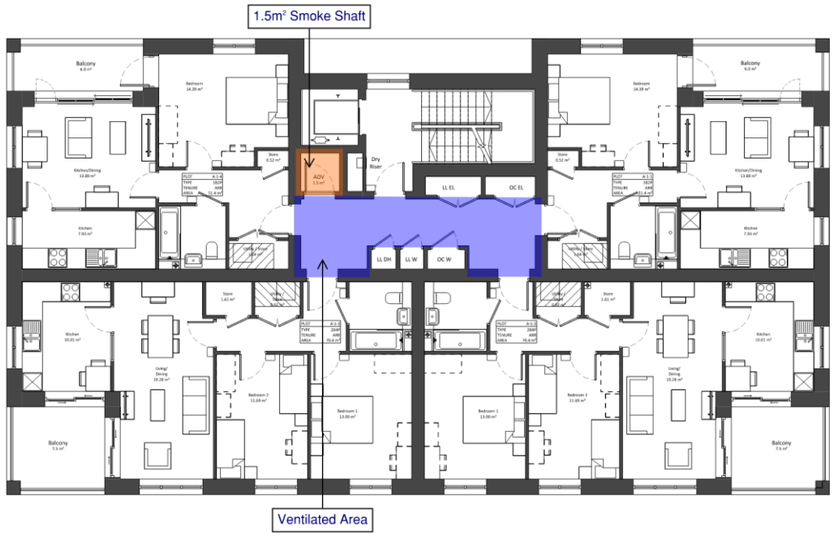

Figure 25: Block A - Example of a 1.5m^2 Smoke shaft to ventilate upper floors common corridors

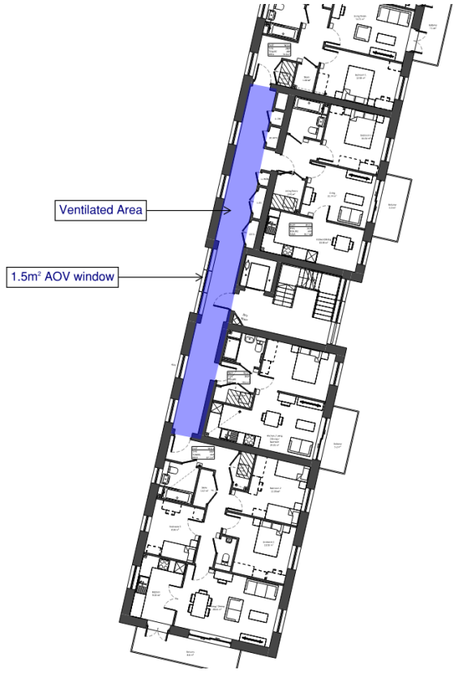

Figure 26: Block W - Example of a 1.5m^2 AOV window to ventilate upper floors common corridors

4.4.3 Ground Floor

The common corridors of all blocks of flats are to be provided with either of the following:

- A 1.5m^2 smoke shaft in accordance with **Section 4.6** and shown in **Figure 27** is to be provided to ventilate the common corridor. The smoke shaft AOV is to be actuated by the local Category L5 detector head within the common corridor of detection only. Or
- A 1.5m^2 AOV is to be provided to ventilate the common corridor. The AOV is to be actuated by the local Category L5 detector head within the common corridor of detection only.

The AOVs are to be designed and installed in accordance with BS EN 12101-2.

Note: In some instances, the ventilation noted above will be achieved using a 1.5m^2 plenum duct to outside.

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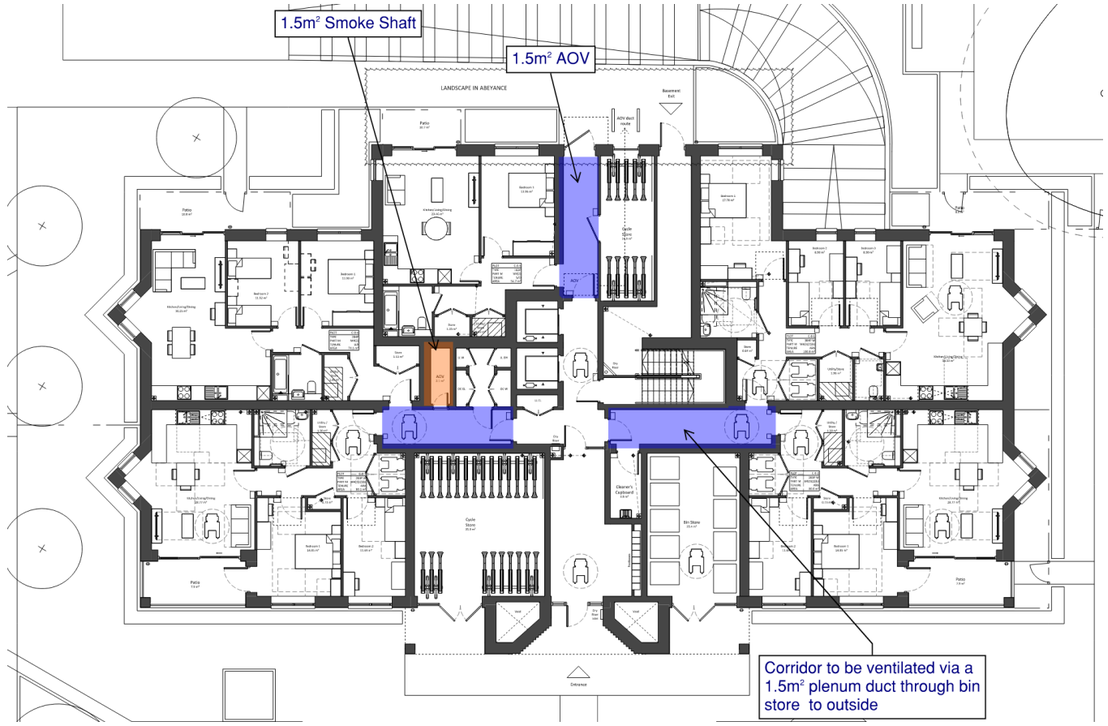

Figure 27: Block C - Example of a 1.5m² Smoke shaft to Ventilate Ground Floor Common Corridors

4.5 Venting of Smoke and Heat from Basement Car Park

The basement car park will be afforded with mechanical ventilation. System design shall be confirmed at later stages, however the following points are provided to summarise:

1. The system should be independent of any other ventilating system and designed to operate at 10 air changes per hour during a fire.
2. The system should run in two parts, each of which is:
    a. capable of extracting 50% of the rates set out in item 1.
    b. able to operate alone or with the other part
    c. provided with an independent power supply capable of operating if the main supply fails.
3. 50% of the outlets should be at high level and 50% at low level.
4. The system should use E, I and S ductwork in accordance with BS EN 1366-8.

4.6 Smoke Shafts for Natural Ventilation

The design of natural smoke shafts shall be confirmed at later stages, however see below points to summarise smoke shaft design:

- The smoke shaft should be fully open to the external air at the top and closed at the base.
- The opening at the top of the smoke shaft should be located at least 0.5 m above any surrounding structures that fall within a 2m radius on a horizontal plane so that it is not subject to adverse wind effects.
- The shaft should extend a minimum length of 2.5 m above the ceiling of the highest storey which is served by the shaft.
- The cross-sectional area (free area) of the smoke shaft should be at least 1.5 m², with a minimum dimension of 0.85 m in any direction.
- The lobby or corridor vent, the opening at the head of the shaft and all internal locations (such as safety grilles) within the shaft should have a free area of at least 1.0 m².
- 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.
- The lobby or corridor vents, in the closed position, should have a minimum fire and smoke resistance performance of 30 min and integrity (leakage) no greater than 360 m³/h/m² when tested in accordance with BS EN 1366-2.
- The smoke shaft should be constructed either of non-combustible materials conforming to BS 476-4 or of any material which, when tested in accordance with BS 476-11, does not flame or cause any rise in the temperature on either the centre of the specimen or the furnace thermocouples. The smoke shaft should run vertically from top to bottom with no more than 4 m of the shaft at an inclined angle (max 30°).

No services other than those relating to the smoke shaft will be contained within the smoke shaft.

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5 PASSIVE FIRE SAFETY SYSTEMS

5.1 Overview

Section A 2) of the Planning Policy D12 requires all buildings are designed to reduce the risk to life safety including appropriate passive fire safety systems. The following sections detail the passive systems which will be in place to achieve this:

5.2 Fire Resistance Levels

5.2.1 Structural Fire Resistance

Structural fire resistance is to be provided as follows in **Table 6:**

Table 6: Minimum standard of structural fire resistance

Block	Building Height to Topmost Habitable Storey (m)	Minimum Structural Fire Resistance
Blocks of Flats:		
Block A	9.22m	60/-/-
Block B	9.22m	60/-/-
Block C	15.78m	60/-/-
Block D	9.2m	60/-/-
Block E	15.82m	60/-/-
Block I	15.82m	60/-/-
Block M	15.82m	60/-/-
Block N	9.18m	60/-/-
Block O	9.18m	60/-/-
Block R	12.30m	60/-/-
Block S	15.82m	60/-/-
Block TU	9.21m	60/-/-
Block V	15.82m	60/-/-
Block W	9.66m	60/-/-
Townhouses:		
Blocks F & L	6.0m	60/-/-
Block H & J	9.0m	60/-/-
Blocks G & K	6.0m	60/-/-
Block P & Q	6.0m	60/-/-

Note: Substations are be provided with 240 minutes fire resistance.

5.2.2 Fire Resistance Rating

Further fire resistance ratings will be confirmed in the full fire strategy report, however, refer to the Fire Strategy Drawings at the end of this document for an overview.

5.2.3 Compartmentation

Compartmentation is to be provided as follows:

- Walls and floors separating flats are to achieve 60/60/60 fire resistance.
- Separating walls between townhouses are to achieve 60/60/60 fire resistance.

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6 EXTERNAL FIRE SPREAD

6.1 Overview

Section A 3) of the Planning Policy D12 requires that the buildings be constructed in a way to minimise the risk of fire spread. The following sections detail how this is to be achieved in relation to external fire spread from buildings to relevant boundaries.

6.2 Fire Spread between Buildings / Boundaries

6.2.1 Overview

The assessment in **Section 6.2.2** below assess the risk of fire spread from an elevation of a building on site to the relevant boundary. The relevant boundary can be either: the site boundary line; the middle of a publicly owned space (e.g. a road); or the halfway point between 2 buildings on the same site (also referred to as the notional boundary). **Figure 28** below indicates the distances to the relevant boundaries.

The external fire spread calculations have followed the methodology presented in BR 187, the inputs of which have been presented in table format (**Table 7** below) along with the results measured as a percentage (%) for maximum unprotected area permitted.

The following is a summary of the results:

- Elevations which achieve 100% maximum unprotected area (highlighted green) are assessed as being a sufficient distance away from their relevant boundary and the risk of external fire spread is considered negligible. Therefore, these elevations do not require any fire resistance to limit external fire spread.
- All other elevations which do not achieve 100% maximum unprotected area present a risk of external fire spread to their relevant boundaries. Therefore, these elevations will be fire rated to minimise the risk of external fire spread. The extent of fire rating needed for an elevation depends on the % of maximum unprotected area permitted as calculated in **Table 7** below.

Figure 28: Relevant Boundaries

6.2.2 Fire Resistance of External Wall

Table 7 below summaries the results of the external fire spread assessment in accordance with the methodologies of BR 187. Elevations which do not achieve 100% maximum unprotected area will be 60-minute fire rated and the percentage of maximum unprotected area permitted will not bed exceeded.

Table 7: External Fire Spread

Block	Elevation	Width (m)	Height (m)	Distance to boundary (m)	Maximum unprotected Area %	Area requiring protection (m^2)
Block A	North	8.5m	2.75m	6.6m	100%	-
	South	9.4m	2.75m	12.0m	100%	-
	East	5.2m	2.75m	6.6m	100%	-
	West	5.2m	2.75m	1.5m	68%	15.7m^2

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Block	Elevation	Width (m)	Height (m)	Distance to boundary (m)	Maximum unprotected Area %	Area requiring protection (m^2)
Block B	North	9.6m	2.75m	5.5m	100%	-
	South	8.2m	2.75m	6.6m	100%	-
	East	7m	2.75m	2.2m	100%	-
	West	7m	2.75m	7.8m	100%	-
Block C	North	13.2m	2.75m	7.5m	100%	-
	South	11.1m	2.75m	10.5m	100%	-
	East	8.2m	2.75m	3.9m	100%	-
	West	10.7m	2.75m	6.9m	100%	-
Block D	North	11.1m	2.75m	9.1m	100%	-
	South	12.9m	2.75m	7.5m	100%	-
	East	<1m to relevant boundary			0%	Entire Elevation
	West	15.1m	2.75m	5.6m	100%	-
Block E	North	10.8m	2.75m	10.5m	100%	-
	South	9.6m	2.75m	5.4m	100%	-
	East	10.5m	2.75m	7.0m	100%	-
	West	10.5m	2.75m	8.0m	100%	-
Block F	North	10.5m	9.5m	5.4m	76.6%	22.1m^2
	South	10.5m	9.5m	4.7m	54.6%	42.9 m^2
	East	5.9m	9.5m	9.9m	100%	-
	West	5.9m	9.5m	7.8m	100%	-
Block G	North	6.0m	9.1m	4.7m	100%	-
Block H	South	6.0m	9.1m	13.4m	100%	-
	East	9.9m	9.1m	4.9m	62.1%	33.8 m^2
	West	9.9m	9.1m	6.6m	100%	-
	North	10.5m	13m	5.5m	100%	-
	South	10.5m	13m	4.7m	100%	-
	East	5.9m	13m	6.4m	100%	-
	West	5.9m	13m	9.9m	100%	-
Block I	North	10.8m	2.75m	10.5m	100%	-
	South	9.6m	2.75m	5.3m	100%	-
	East	10.6m	2.75m	7.7m	100%	-
	West	10.6m	2.75m	7.0m	100%	-
Block J	North	10.5m	13m	5.4m	100%	-
	South	10.5m	13m	4.7m	100%	-
	East	5.9m	13m	9.9m	100%	-
	West	5.9m	13m	6.4m	100%	-
Block K	North	6.0m	9.1m	4.7m	100%	-
	South	6.0m	9.1m	13.4m	100%	-
	East	9.9m	9.1m	9.0m	100%	-
	West	9.9m	9.1m	4.9m	62.1%	32.9 m^2
Block L	North	10.5m	9.5m	5.3m	74.9%	23.7 m^2
	South	10.5m	9.5m	4.7m	54.6%	42.9 m^2

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Block	Elevation	Width (m)	Height (m)	Distance to boundary (m)	Maximum unprotected Area %	Area requiring protection (m^2)
	East	5.9m	9.5m	7.4m	100%	-
	West	5.9m	9.5m	9.9m	100%	-
Block M	North	12.8m	2.75m	11.7m	100%	-
	South	9.8m	2.75m	3.6m	100%	-
	East	Limited risk of external fire spread (relevant boundary >10m) [A]			100%	-
	West	10.9m	2.75m	7.7m	100%	-
Block N	North	8.0m	2.75m	3.6m	100%	-
	South	8.0m	2.75m	3.9m	100%	-
	East	9.4m	2.75m	7.4m	100%	-
	West	8.7m	2.75m	7.4m	100%	-
Block O	North	8.8m	2.75m	5.1m	100%	-
	South	8.8m	2.75m	3.7m	100%	-
	East	Limited risk of external fire spread (relevant boundary >10m) [A]			100%	-
	West	5.7m	2.75m	7.4m	100%	-
Block P	North	5.9m	10.2m	15.0m	100%	-
	South	5.9m	10.2m	9.8m	100%	-
	East	<1m to relevant boundary			0%	Entire Elevation
	West	<1m to relevant boundary			0%	Entire Elevation
Block Q	North	5.9m	10.2m	15.0m	100%	-
	South	5.9m	10.2m	8.1m	100%	-

Block	Elevation	Width (m)	Height (m)	Distance to boundary (m)	Maximum unprotected Area %	Area requiring protection (m^2)
	East	9.8m	10.2m	6.3m	100%	-
	West	<1m to relevant boundary			0%	Entire Elevation
Block R	North	9.4m	2.75m	8.5m	100%	-
	South	5.8m	2.75m	10.5m	100%	-
	East	8.5m	2.75m	3.9m	100%	-
	West	8.4m	2.75m	3.9m	100%	-
Block S	North	10.2m	2.75m	8.1m	100%	-
	South	11.1m	2.75m	10.5m	100%	-
	East	6.9m	2.75m	6.3m	100%	-
	West	7.0m	2.75m	3.9m	100%	-
Block TU	North	9.7m	2.75m	9.5m	100%	-
	South	6.7m	2.75m	6.5m	100%	-
	East	11.5m	2.75m	14.3m	100%	-
	West	9.2m	2.75m	6.3m	100%	-
Block V	North	12.7m	2.75m	6.5m	100%	-
	South	11.5m	2.75m	11.7m	100%	-
	East	Limited risk of external fire spread (relevant boundary >10m) [A]			100%	-
	West	15.2m	2.75m	6.3m	100%	-
Block W	North	4.8m	2.75m	9.6m	100%	-
	South	Limited risk of external fire spread (relevant boundary >10m) [A]			100%	-

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Block	Elevation	Width (m)	Height (m)	Distance to boundary (m)	Maximum unprotected Area %	Area requiring protection (m^2)
	East	10.6m	2.75m	6.9m	100%	-
	West	10.6m	2.75m	2.1m	100%	-

Note A: Limited risk of external fire spread for these elevations based on the red boundary line indicated on the site drawing *HCR-BPTW-S01-00-DR-A-0120-P03-S4 - Detailed Masterplan Ground Floor.*

6.3 External Fire Spread

6.3.1 Combustibility of Construction

The primary elements of the external wall construction (except those listed below) are to be designed to achieve a Reaction to Fire Classification A2-s1, d0 or better. This exceeds the minimum recommendations of guidance which places no limitation on the provision of combustible materials within the external wall construction. The external wall construction will be reviewed in further detail in the next stage of design.

The following elements are not considered primary elements:

- Cavity trays.
- Door frames, doors, window frames and glass.
- Electrical installations.
- Seals, gaskets, fixings, sealants and backer rods.
- Thermal break materials.
- Intumescent and firestopping materials.
- Insulation and water proofing materials used below ground level.
- Membranes.

6.3.2 Cladding

It is noted the external surfaces of walls will be facing brickwork and therefore will achieve a Reaction to Fire Classification A2-s1, d0 or better. This exceeds the minimum recommendations of guidance which recommends Class B-s3, d2 if the building is in close proximity to the relevant boundary.

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7 ACCESS AND FACILITIES FOR THE FIRE SERVICE

7.1 Vehicle Access

Sections A 1) and B 5) of the Planning Policy D12 requires that suitable outside space and access routes are provided for the fire service. This is demonstrated as being achieved as follows:

7.1.1 Sitewide Access

This site access roads meet with the minimum access recommendations from guidance given in **Table 8** below.

Table 8: Typical access route specifications

Appliance type	Minimum width of roads between kerbs (m)	Minimum width of gateways	Minimum turning circle between kerbs (m)	Minimum turning circle between walls (m)	Minimum clearance height (m)	Minimum carrying capacity (tonnes)
Pump	3.7	3.1	16.8	19.2	3.7	14.0 [A]

Note A: Minimum carrying capacity as recommended by the London Fire Brigade.

In addition to **Table 8** above the fire tender, it is assessed the following recommendations of BS 9991 are met:

- A fire tender will not have to reverse more than 20m via a dead-end to gain access to a building.
- A fire tender can park within 18m of a dry riser inlet or access point for every building.

The fire service access is shown below in **Figure 29 & Figure 30.**

Figure 29: Fire Service Access – Part 1

Figure 30: Fire Service Access – Part 2

7.2 Water Supplies

7.2.1 Fire Hydrants

Existing hydrant locations will be confirmed as design progresses. If an existing hydrant is not within 100m of a dry riser inlet, a new hydrant will be provided which is within 90m of the dry riser inlet.

7.2.2 Dry Rising Mains – Residential

All stair cores in all blocks of flats will be provided with dry rising mains designed and installed in accordance with BS 9990. It is assessed the dry risers meet the following recommendations:

- The distance from the fire tender parking position to the ground floor fire main inlet is <18m.
- The horizontal dry run of pipe from the inlet to the ground floor fire main outlet is <18m.
- An outlet is provided on each level, whether that be on the full landing within the protected stair or within the lobby adjacent to the stair.

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7.2.3 Dry Falling Mains - Carpark

All stair cores serving the car park will be provided with dry falling mains designed and installed in accordance with BS 9990. It is assessed the dry falling mains meet the following recommendations:

- The distance from the fire tender parking position to the ground floor fire main inlet is <18m.
- The horizontal dry run of pipe from the inlet to the ground floor fire main outlet is <18m.

7.2.4 Hose Lay Distance

For all blocks of flat including the basement car parks, it is assessed that the hose lay distance from the dry riser outlet to the most remote point is <45m.

For non-sprinklered townhouses, it is assessed that the hose lay distance from the parked fire tender position to the furthest point of the townhouse is <45m.

For sprinklered townhouses, it is assessed that the hose lay distance from the parked fire tender position to the furthest point of the townhouse is <75m.

The following figures illustrate an example of the points above.

Figure 31: Hose Lay Distances – Block V

Figure 32: Hose Lay Distances - Basement Car Park

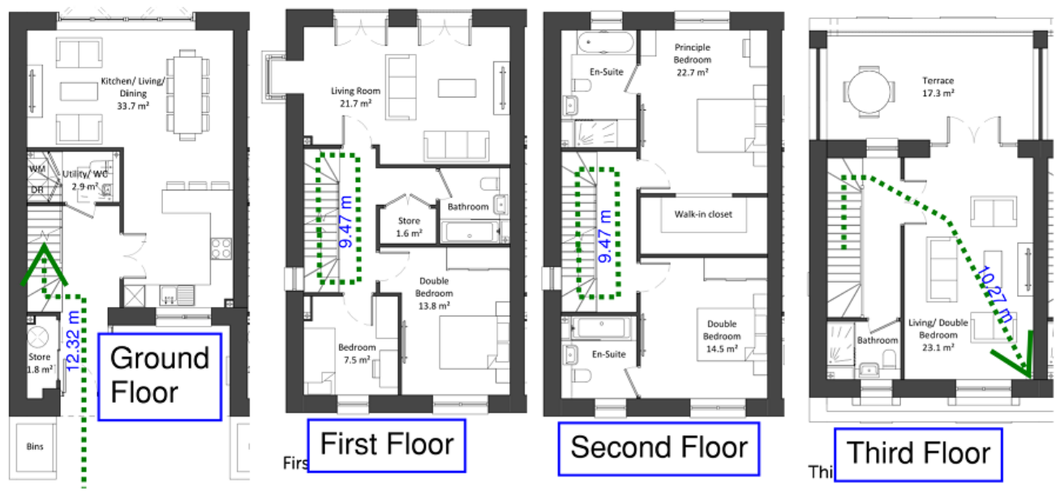

Figure 33: Hose Lay Distances - Townhouses

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8 FIRE SAFETY MANAGEMENT

8.1 Introduction

The ongoing management and maintenance of the building for the block of flats shall fall under the control of the Regulatory Reform (Fire Safety) Order 2005. So as to allow for any future fire safety management to be co-ordinated with design of the building this section is provided to identify:

- The minimal standard of Fire Safety Management upon which this Fire Strategy has been developed. And,
- Specific Fire Safety Management requirements which are made as part of the Fire Strategy which must be adopted as part of the Fire Safety Management Plan to maintain the building in a condition consistent with the Fire Strategy.

8.2 Management Level

This fire strategy for the blocks of flats has been developed on the basis that the Fire Safety Management of the building will achieve at least the standard required to comply with the Regulatory Reform (Fire Safety) Order 2005.

8.3 Assembly Point

Potential fire assembly points are indicated below.

The end user should ultimately confirm a suitable fire assembly point and this should be effectively communicated to all residents.

Figure 34: Fire Assembly Points

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QUALITY CONTROL

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Rev	Date Issued	Comment	Prepared by	Reviewed by	Verified by
01	28/02/2022	1st Draft issue for comments	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
02	28/03/2022	2nd Draft issue for comments	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
03	07/04/2022	Planning issue – Incorporating latest drawings	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
04	20/04/2022	Planning issue – Incorporating comments from Sphere25	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
05	20/04/2022	Planning issue	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
06	26/04/2022	Planning issue	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
07	01/08/2022	Planning issue – Included declaration of compliance	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
08	18/08/2022	Planning issue – Included assembly points and CVs	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE

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1 INTRODUCTION

1.1 Scope

Affinity Fire Engineering (UK) Ltd has been engaged to develop a Fire Strategy Statement in support of a planning application for the Ham Close residential development, which includes the demolition of existing buildings on-site and phased mixed-use development comprising 452 residential homes (Class C3) up to six storeys; a Community/Leisure Facility (Class F2) of up to 3 storeys in height, a "Maker Labs" (sui generis) of up to 2 storeys together with basement car parking and site wide landscaping. The site is located at Ham Close, Ham, Richmond Upon Thames, TW10 7PG

Part 2 of this Fire Statement addresses the Community Centre and Richmond Maker Labs only. Refer to Part 1 (document reference: ***AFF_20700_01_Ham Close, Richmond - Residential_FSS_08***) for the Fire Statement covering the residential development.

The Fire Statement is provided to demonstrate:

- The method of compliance with the London Plan Policy D12 and D5 requirements (see **Section 1.3** below). This is based on the London Plan Guidance (LPG) for Fire Safety published by the Greater London Authority. Affinity Fire Engineering (UK) Ltd confirm that the fire strategy of the proposed development and the fire safety information for the planning application complies with the requirements of the London Plan Policy D12 and D5 (B5).
- The method of compliance with the Building Regulations 2010 Part B (fire), to the level of information required to support the planning application and London Plan Policy (above). To this end, this statement provides high level advice at this early stage on how an acceptable level of life safety may be achieved commensurate with the Functional Requirements of the Building Regulations 2010 for Means of Egress (B1), Internal Fire Spread Structure (B3), External Fire Spread (B4) and Firefighting Access (B5) only.

It is noted the project design has moved into RIBA Stage 03 for planning application, however, RIBA Stage 02 is stated for the purposes of this Fire Statement.

1.2 Primary Legislation

The Building Regulations 2010 is the Statutory Instrument which seeks to ensure that the policies set out in the Building Act 1984 are implemented. The Functional Requirements of the Building Regulations 2010 may be met in one of two ways; compliance with an accepted design guidance (i.e. British Standards or Approved Documents), or through a fire engineered approach.

In this instance the primary design guidance used has been **BS 9999 2017**.

In addition to The Building Regulations, this statement has been prepared in support of a Planning application and therefore should adhere to the policies set out in the London Plan, specifically Policy D12 (Fire Safety) and D5 (Inclusive Design – Part B5). This statement has considered the London Plan requirements and provides advice on how Policy D12 & D5 (B5) can be achieved.

Where deviations from the prescriptive recommendations are proposed these have been identified and will be assessed as part of a fire engineered approach. All fire engineered solutions will be justified by following the general methodology proposed within **BS 7974.**

1.3 London Plan Policy Requirements

Within this section, the requirements of Policy D12 & D5 (B5) are itemised, and it is identified where in this document the relevant assessment has been made against each policy (see **Table 1**).

Table 1: Policy D12 and D5 breakdown

Policy Section	Topic	Section in the Report
D5 (B5)	Inclusive design: Incorporate safe and dignified emergency evacuation for all building users.	**Section 3**
D12 Section A 1) a	Identify suitably positioned unobstructed outside space for fire appliances to be positioned on.	**Section 7.1**
D12 Section A 1) b	Identify suitably positioned unobstructed outside space appropriate for use as an evacuation assembly point	**Section 7**
D12 Section A 2)	Incorporate appropriate features which reduce the risk to life and the risk of serious injury in the event of a fire including appropriate fire alarm systems and passive and active fire safety measures	**Sections 4 & 5**
D12 Section A 3)	Minimise the risk of fire spread	**Section 6**
D12 Section A 4)	Provide suitable and convenient means of escape, and associated evacuation strategy for all building users	**Section 3**
D12 Section A 5)	Develop a robust strategy for evacuation which can be periodically updated and published, and which all building users can have confidence in	**Section 3**
D12 Section A 6)	Provide suitable access and equipment for firefighting which is appropriate for the size and use of the development.	**Section 7**
D12 Section B 1)	The building's construction: methods, products and materials used, including manufacturers' details	**Section 5**
D12 Section B 2)	The means of escape for all building users: suitably designed stair cores, escape for building users who are	**Section 3**

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Policy Section	Topic	Section in the Report
	disabled or require level access, and associated evacuation strategy approach	
D12 Section B 3)	Features which reduce the risk to life: fire alarm systems, passive and active fire safety measures and associated management and maintenance plans	**Sections 4 & 5**
D12 Section B 4)	Access for fire service personnel and equipment: how this will be achieved in an evacuation situation, water supplies, provision and positioning of equipment, firefighting lifts, stairs and lobbies, any fire suppression and smoke ventilation systems proposed, and the ongoing maintenance and monitoring of these	**Section 7**
D12 Section B 5)	How provision will be made within the curtilage of the site to enable fire appliances to gain access to the building	**Section 7**
D12 Section B 6)	Ensuring that any potential future modifications to the building will take into account and not compromise the base build fire safety/protection measures.	**See note [A]**

Note [A]: The fire strategy has been produced so it does not restrict the possibility of future modifications that are within reason.

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2 ARCHITECTURAL REVIEW

2.1 Site Overview

The proposed scheme incorporates a Community Centre and Richmond Maker Labs. Each proposed building can be seen in **Figure 1** & **Figure 2.**

Figure 1: Community Centre - Site Layout

Figure 2: Richmond Maker Labs - Site Layout

2.2 Building Heights

The building height definitions are as follows:

1. Height of the building which is measured from mean ground level to mean roof level. This measurement is used for **Section 6.3.2** (Reaction to Fire properties for the cladding).
2. Firefighting access height, which is measured from firefighting access level to the height of the topmost storey. This measurement is used for **Section 7.1** (Fire Service Access).
3. The height of the topmost storey has been defined by Regulation 7 as the height measured from the lowest ground level adjacent to the building to the topmost habitable storey. This measurement is used for **Section 5.2.1** (Structural Fire Resistance) and **Section 6.3.1** (Combustibility of the external wall construction).

It has been determined that Regulation 7 will not apply for external wall construction as the buildings are not relevant buildings.

2.2.1 Summary of Building Heights

From **Table 2** and **Figure 3** & **Figure 4** below, the various heights of each building can be seen.

Table 2: Building Heights

Building	Mean Ground Floor Level to the Mean Roof Level (m)	Lowest Side of Ground Floor Level to the Topmost Habitable Floor Slab (m)	Fire Service Access Height (m)
Community Centre	11.5m	7.2m	7.2m
Richmond Maker Labs	5.7m	3.0m	3.0m

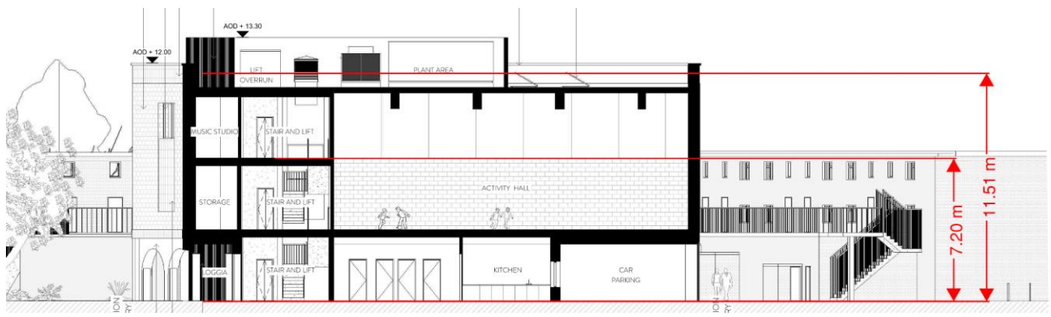

Figure 3: Community Centre – Building Heights

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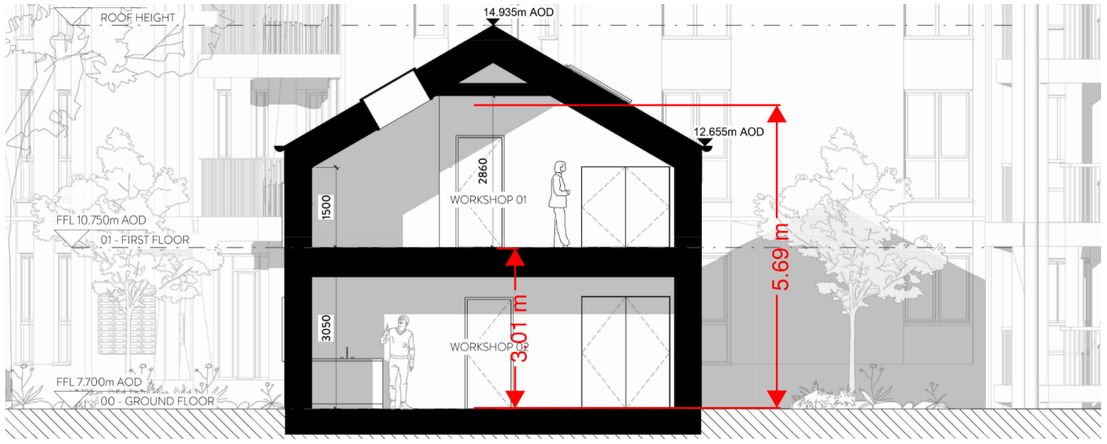

Figure 4: Richmond Maker Labs – Building Heights

2.3 Risk Profile

As part of the approach taken from BS 9999, a risk profile of the premises is to be established, which will form the basis of the fire safety design of the building or area in question. Based upon the assessment of occupancy and occupancy risks above the following assessment is made of the risk profile within these buildings:

Table 3: Risk rating for application of BS 9999

Building Element	Occupant Characteristic	Fuel Load	Risk Profile
Community Centre	Awake and Unfamiliar - B	Medium – 2	B2
Richmond Maker Labs	Awake and Unfamiliar - B	Fast – 3	B3

2.4 Enhancement Factors

The following enhancement factors have been applied in line with the guidance of BS 9999:

Table 4: Enhancement Factors

Building	Factor	Adjustment to Travel Distances	Adjustment to Egress Route Widths
Community Centre	Enhanced Detection & Alarm	+15%	-15%

2.5 Population Assessment

This fire strategy is based upon the following worst-case population usage:

Table 5: Population Assessment

Building	Floor	Usage	Floor Area (m^2)	Floor Space Factor (m^2/person)	Calculated Population (persons)	Maximum Allowable Population (persons)
Community Centre	Ground	Community Lounge	44	1	44	600
		Reception	30	6	5	
	First	Activity Hall	163.1	1	164	60 [A]
		Meeting room	9.9	1	10	
		Meeting Room	30.7	1	31	
		Sensory Room	13.8	6	3	
	Second [B]	Music Studio	22.7	6	4	60 [A]
		Music Studio	8.8	6	2	
		Art Room	28.6	6	5	
		Meeting room	12.9	1	13	
				Community Centre Total =	**281**	
Richmond Maker Labs	Ground	Workshop	35.1	5	8	60 [A]
	First	Workshop	37.5	5	8	60 [A]
				Richmond Maker Labs Total =	**16**	

Note A: It is assessed that on floors where there is only one egress route, the population of this floor should be limited to 60 persons at all times.

Note B: It is assessed that any occupants who are using the terraces are occupants who are vacant from other rooms located on the Second Floor

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3 MEANS OF EGRESS

3.1 Overview

Section A 4) and B 2) of the Planning Policy D12 requires that suitable means of escape is provided for all building users. The following sections detail the active systems which will be in place to achieve this:

3.2 Evacuation Strategy

The Community Centre and Richmond Maker Labs shall adopt a 'Simultaneous' evacuation strategy where the occupants shall escape without delay upon activation of the fire alarm system serving the building of fire origin only.

3.3 Means of Egress

3.3.1 Number of Egress Routes

All locations are assessed as meeting the following recommendations in regard to the number of egress routes:

Table 6: Number of Egress Routes Criteria

Population of Location/Area (persons)	Minimum No. of Egress Routes
<60	1
<600	2

3.3.2 Travel Distances

All travel distances to the nearest final exit or protected egress route are assessed as meeting the following travel distance recommendations with the addition of enhanced fire detection and alarm system in the Community Centre. The Richmond Maker Labs achieves adequate travel distances without additional measures:

Table 7: Travel Distance Criteria

Building Element	Risk Profile	Single Direction Only (m)	Multiple Directions Available (m)
Community Centre	B2	23 [A]	57.5 [A]
Richmond Maker Labs	B3	16	40

Note A: Due to enhanced fire detection and alarm system discussed in **Section 4.2.**

As can be seen in **Figure 5**, all areas within the Community Centre has a travel distance in accordance with guidance.

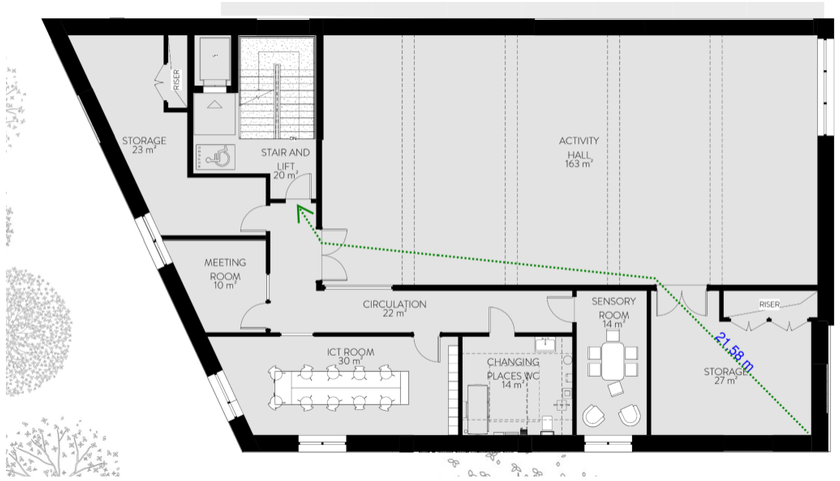

Figure 5: Travel Distances from Community Centre First Floor

As can be seen in **Figure 6**, the travel distance within the Richmond Maker Labs is < 16m and is therefore in accordance with guidance.

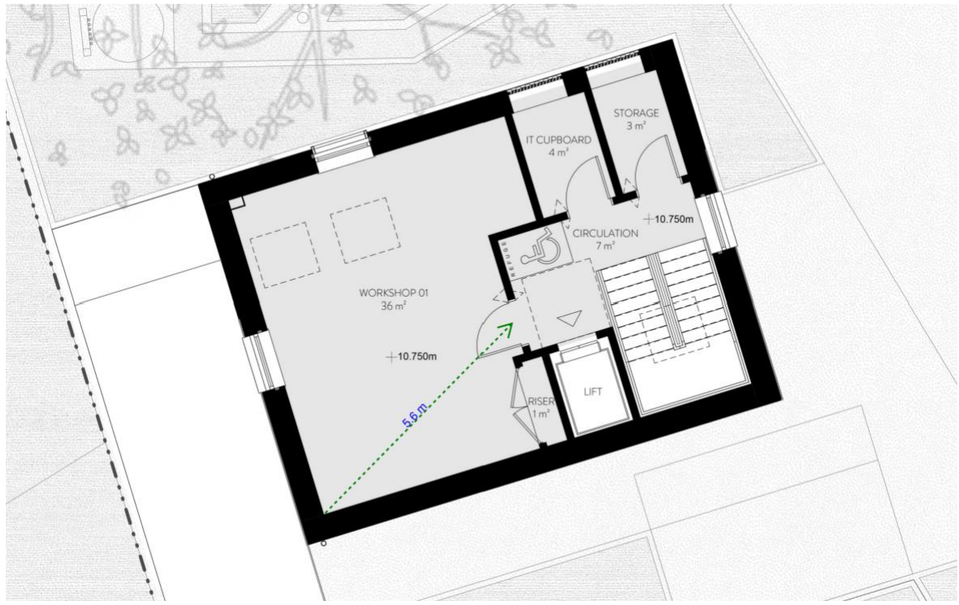

Figure 6: Travel Distances within the Richmond Maker Labs

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3.3.3 Horizontal Egress Capacity

Using the methodology within BS 9999, an egress capacity assessment has been undertaken with the current layout which results in the following:

Table 8: Exit Capacity

Building	Floor	Width (mm)	Width Factor (mm/person)	Exit Capacity (persons)	Comment	Total Capacity (Persons)	Maximum Population (Persons)	OK?
Community Centre	Ground Floor	1,800	3.49 [A]	515	Front Entrance discounted due to fire	143	49	YES
		900		143	-			
	First Floor	1,000		143	-	143	60 [B]	
	Second Floor	1,000		143	-	143	24	
Richmond Maker Labs	Ground Floor	910	4.6	109	-	109	8	YES
	First Floor	910	4.6	109	-	109	8	YES

Note A: Due to enhanced fire detection and alarm system discussed in **Section 4.2.**

Note B: It is assessed that on the Second Floor of the Community Centre there is only one egress route, the population of this floor is to be limited to 60 persons at all times.

As shown in the table above, the current egress capacity for both buildings are in accordance with guidance.

The following figures highlight the exit locations for each building.

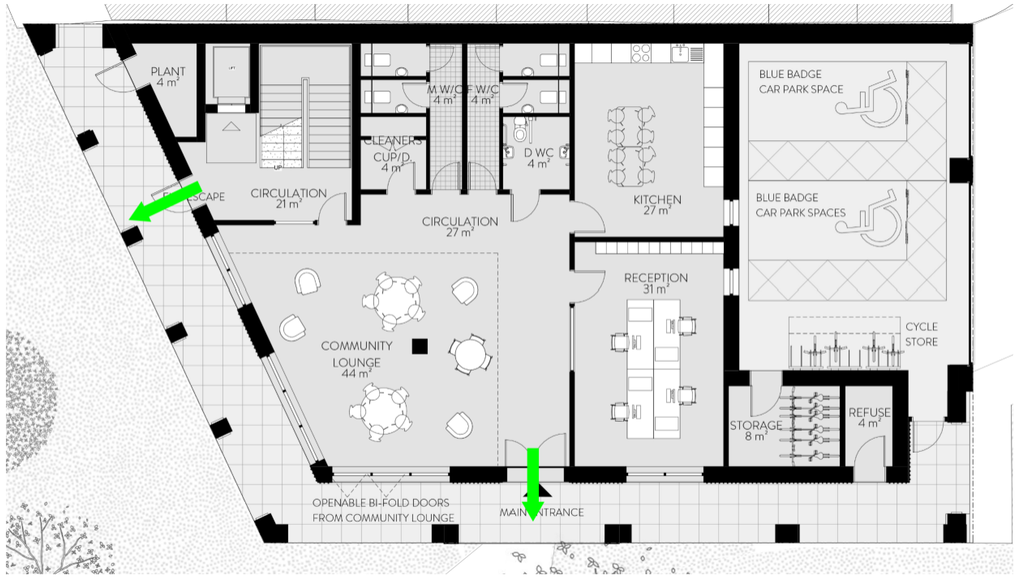

Figure 7: Exit locations on Ground Floor – Community Centre

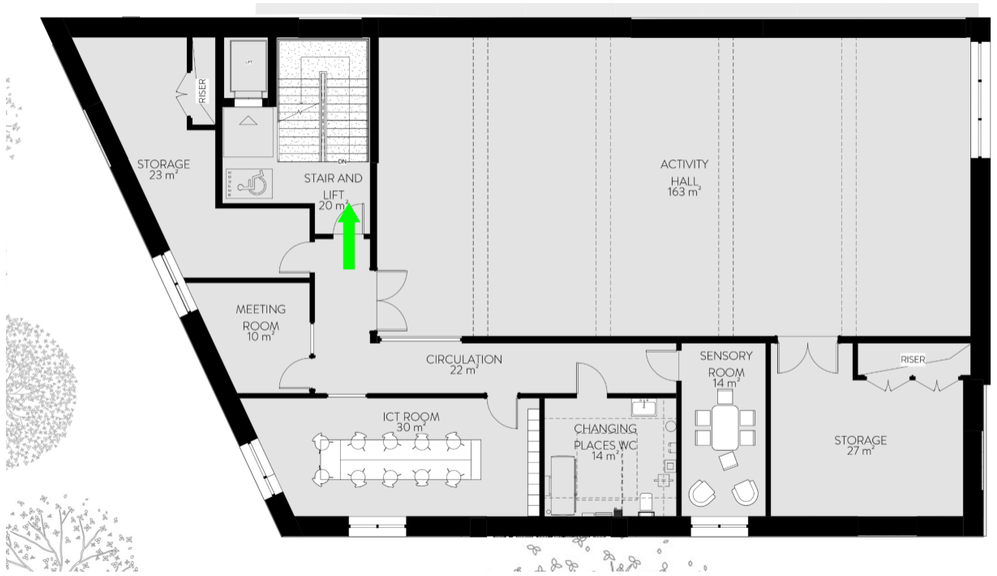

Figure 8: Exit locations on First Floor – Community Centre

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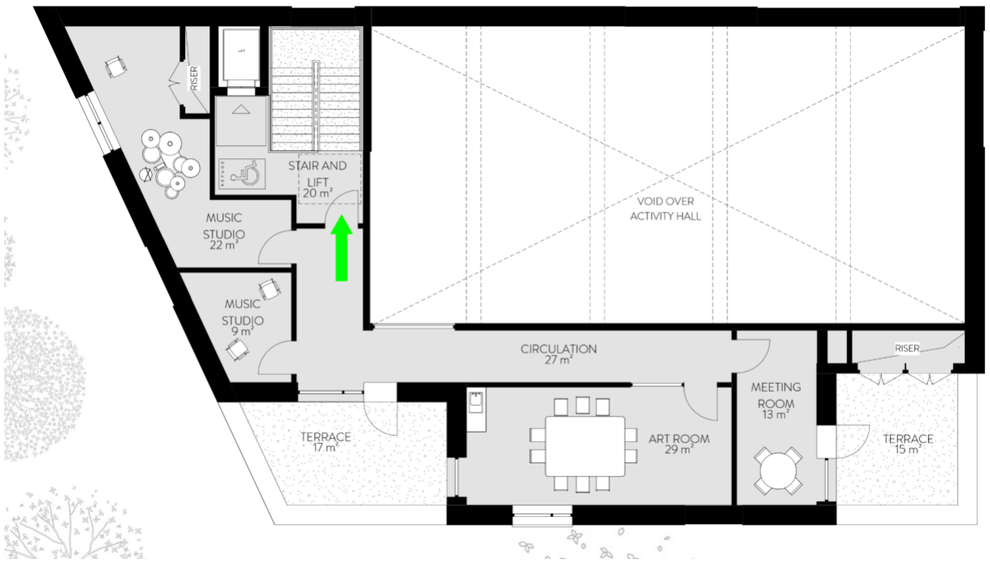

Figure 9: Exit locations on Second Floor – Community Centre

Figure 10: Exit locations on Ground Floor – Richmond Maker Labs

3.3.4 Above Ground Vertical Egress

The following assessment is made of vertical egress capacity for all levels above ground and it has been determined that the egress routes from the buildings afford sufficient egress capacity relative to the population assessment made in **Table 5.**

Table 9: Above Ground Vertical Egress Capacity

Building	Levels Using Stair	Number of Storeys	Risk Profile	Stair Width (mm)	Width Factor (mm/person)	Stair Capacity Total (Persons)	Occupancy of upper floors (persons)	Satisfied?
Community Centre	1st to 2nd	2	B2	1,000	3.4 [A]	294	60 [B]	Yes
Richmond Maker Labs	1st	1	B3	1,000	7.0	143	8	Yes

Note A: Due to enhanced fire detection and alarm system discussed in **Section 4.2.**

Note B: It is assessed that on the Second Floor of the Community Centre there is only one egress route. The population of this floor will be limited to 60 persons at all times.

3.4 Egress for People with Reduced Mobility

The escape stairs on the upper floors of both buildings are to be provided with a refuge for people with reduced mobility, where they can wait in a place of relative safety until they are evacuated to outside as part of a managed procedure. The refuges meet the recommendations of BS 9999 as follows:

- Each refuge space is to provide a location of no less than 900mm x 1400mm of free space which is accessible in accordance with Approved Document M.
- The refuge space is to be designed such that it does not cause a narrowing in the egress route from all other locations.
- The refuge location is located within a protected lobby or stair enclosure directly accessible from the storey exit.

3.5 Evacuation Lifts

To meet the requirements of Policy D5 of the London Plan, an evacuation lift will be provided to assist the evacuation of persons of restricted mobility. Evacuation lifts should be designed and installed in accordance with BS EN 81-20 and BS EN 81-70 and provided with a secondary power supply, such as a generator or supply from a separate utility, meeting the recommendations in BS 8519.

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4 ACTIVE FIRE SAFETY SYSTEMS

4.1 Overview

Sections A 2) and B 3) of the Planning Policy D12 requires that appropriate active fire safety systems are in place to reduce the risk to life. The following sections detail the active systems which will be in place to achieve this:

4.2 Fire Alarm and Detection Systems

The following detection and alarm provisions are made in support of the evacuation philosophy above:

Table 10: Fire Alarm and Detection

Building	Minimum System Category	Comments
Community Centre	Category L2 fire detection and alarm in accordance with BS 5839-1.	This system will raise an alarm in the building of fire origin only. This system is an enhancement that allows an extra 15% travel distance and a reduction of 15% to the allowable mm/person for the stair capacity calculation.
Richmond Maker Labs	Category L2 fire detection and alarm in accordance with BS 5839-1.	This system will raise an alarm in the building of fire origin only.

5 PASSIVE FIRE SAFETY SYSTEMS

5.1 Overview

Section A 2) of the Planning Policy D12 requires all buildings are designed to reduce the risk to life safety including appropriate passive fire safety systems. The following sections detail the passive systems which will be in place to achieve this:

5.2 Fire Resistance Levels

5.2.1 Structural Fire Resistance

Structural fire resistance is to be provided as follows in **Table 11:**

Table 11: Minimum standard of structural fire resistance

Building	Building Height to Topmost Habitable Storey (m)	Minimum Structural Fire Resistance
Community Centre	7.2m	60/-/-
Richmond Maker Labs	3.0m	60/-/-

5.2.2 Fire Resistance Rating

Further fire resistance ratings will be confirmed in the full fire strategy report, however, refer to the Fire Strategy Drawings at the end of this document for an overview.

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6 EXTERNAL FIRE SPREAD

6.1 Overview

Section A 3) of the Planning Policy D12 requires that the buildings be constructed in a way to minimise the risk of fire spread. The following sections detail how this is to be achieved.

6.2 Fire Spread between Buildings / Boundaries

6.2.1 Overview

The assessment in **Section 6.2.2** below assess the risk of fire spread from an elevation of a building on site to the relevant boundary. The relevant boundary can be either: the site boundary line; the middle of a publicly owned space (e.g. a road); or the halfway point between 2 buildings on the same site (also referred to as the notional boundary). **Figure 11** and **Figure 12** below indicate the distances to the relevant boundaries.

The external fire spread calculations have followed the methodology presented in BR 187, the inputs of which have been presented in table format (**Table 12** below) along with the results measured as a percentage (%) for maximum unprotected area permitted.

The following is a summary of the results:

- Elevations which achieve 100% maximum unprotected area (highlighted green) are assessed as being a sufficient distance away from their relevant boundary and the risk of external fire spread is considered negligible. Therefore, these elevations do not require any fire resistance to limit external fire spread.
- All other elevations which do not achieve 100% maximum unprotected area present a risk of external fire spread to their relevant boundaries. Therefore, these elevations will be fire rated to minimise the risk of external fire spread. The extent of fire rating needed for an elevation depends on the % of maximum unprotected area permitted as calculated in **Table 12** below.

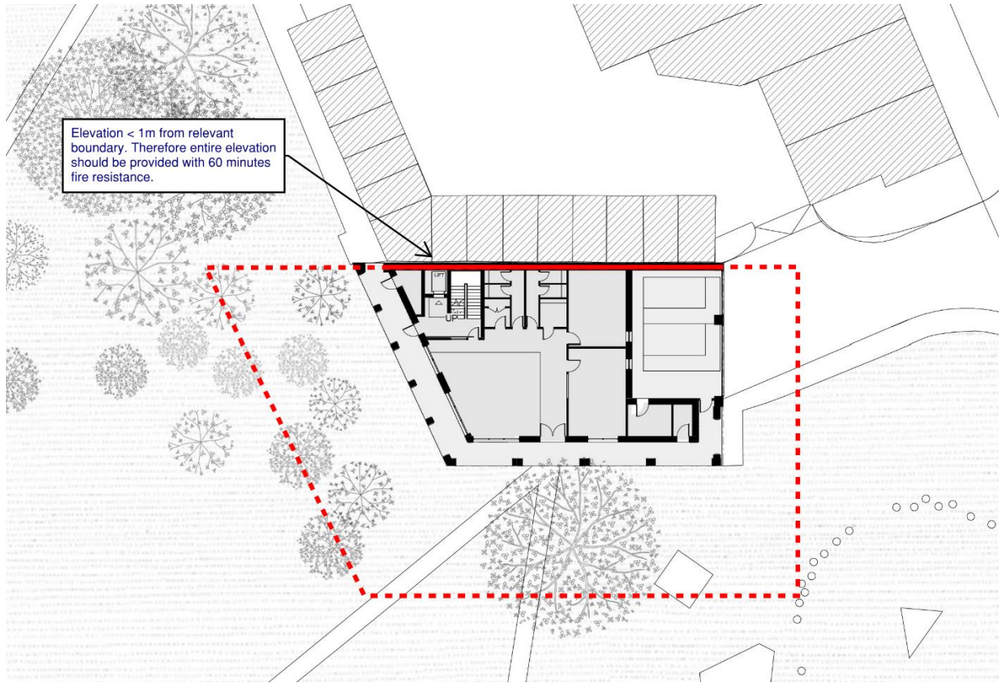

Figure 11: External Fire Spread – Community Centre

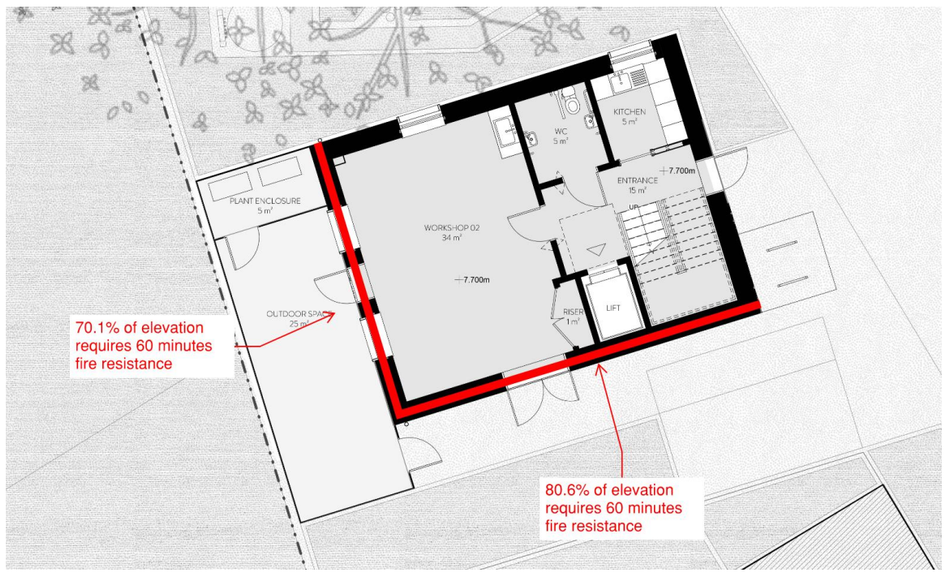

Figure 12: External Fire Spread – Richmond Maker Labs

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6.2.2 Fire Resistance of External Wall

Table 12 below summaries the results of the external fire spread assessment in accordance with the methodologies of BR 187.

It is assessed that all elevations may achieve 100% allowable unprotected area with the exception of the following:

- Community Centre East Elevation achieves 0% allowable unprotected area as it lies < 1m from the relevant boundary and therefore the full elevation will be 60 minute fire rated at all levels.
- Richmond Maker Labs South Elevation achieves 19.4% allowable unprotected area as it lies 2.9m from the relevant boundary and therefore 80.6% of the elevation will be 60 minute fire rated at all levels.
- Richmond Maker Labs West Elevation achieves 29.9% allowable unprotected area as it lies 3.3m from the relevant boundary and therefore 70.1% of the elevation will be 60 minute fire rated at all levels.

Table 12: External Fire Spread

Building	Elevation	Width (m)	Height (m)	Distance to boundary (m)	Maximum unprotected Area %	Area Requiring Protection (m^2)
Community Centre	North	8.5m	11.51m	6.0m [A]	100%	-
	South	12.7m	11.51m	6.9m [A]	100%	-
	East	<1m from relevant boundary			0%	Entire Elevation
	West	16.0m	11.51m	8.4m [A]	100%	-
Richmond Maker Labs	North	10.7m	5.7m	11.4m	100%	-
	South	10.7m	5.7m	2.9m	19.4%	12.6m^2
	East	8.0m	5.7m	8.2m	100%	-
	West	8.0m	5.7m	3.3m	29.9%	15.1m^2

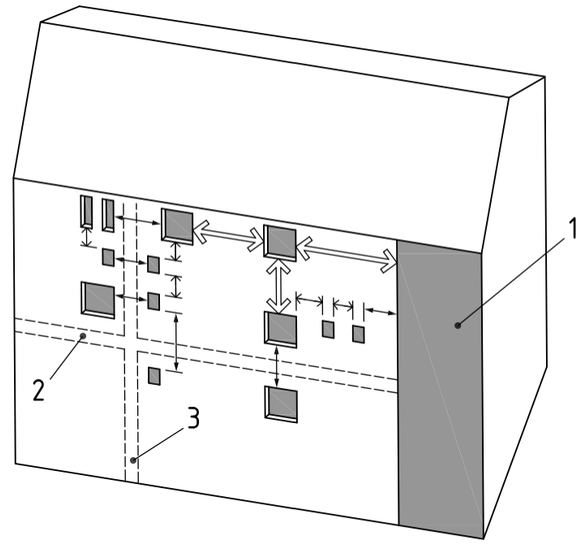
Note A: Minimum distance required to achieve 100% allowable Unprotected Area.

6.2.3 Small Unprotected Areas

The following do not contribute to the extent of unprotected area and may therefore be exempted from fire resistance on the external wall:

1) any part of an external wall of a stairway in a protected shaft.

2) small-unprotected areas in an otherwise protected façade according to the constraints shown in **Figure 13**.



Key

1 Unprotected area of the external wall of a stairway forming a protected shaft (this may be disregarded for separation distance purposes)
2 Compartment floor
3 Compartment wall

Unprotected area of not more than 1 m^2

Two or more smaller areas within an area of 1 m × 1 m

Area of not more than 0.1 m^2

Minimum distance 4 m

Minimum distance 1.5 m

Dimension unrestricted

Figure 13: Allowable unprotected areas

6.3 External Wall Construction

6.3.1 Combustibility of Construction

The building are <18m in height and therefore the following Reaction to Fire Classifications will be achieved for the primary external wall elements (except those listed below) in line with relevant guidance:

- No Provision - A distance > 1m from relevant boundary from the elevation.
- Euro Class B-s3,d2 - A distance < 1m from relevant boundary from the elevation.

The external wall construction will be reviewed in further detail in the next stage of design.

The following elements are not considered primary elements:

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- Cavity trays.
- Door frames, doors, window frames and glass.
- Electrical installations.
- Seals, gaskets, fixings, sealants and backer rods.
- Thermal break materials.
- Intumescent and firestopping materials.
- Insulation and water proofing materials used below ground level.
- Membranes.

6.3.2 Cladding

The external surfaces of walls will primarily be masonry construction and therefore will achieve a Reaction to Fire Classification A2-s1, d0 or better. Timber cladding will also be used on the external surfaces of walls which will meet the recommendations in the table below. Refer to the elevation drawings issued by WRAP architects for the extent of timber cladding.

All surfaces of external walls will meet the minimum Reaction to Fire Classification as recommended in guidance and given below in **Table 13**.

Table 13: Reaction to Fire Classification - Cladding

Building	Building Height to Mean Roof Level (m)	Surface spread of flame or Reaction to fire classification
Community Centre	<18m	Euro Class B-s3,d2
Richmond Maker Labs	<18m	Euro Class B-s3,d2

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7 ACCESS AND FACILITIES FOR THE FIRE SERVICE

7.1 Vehicle Access

Sections A 1) and B 5) of the Planning Policy D12 requires that suitable outside space and access routes are provided for the fire service. This is demonstrated as being achieved as follows:

7.1.1 Perimeter Access

Both the Community Centre and Richmond Maker Labs meet the recommendations of guidance by providing at least 15% perimeter access within 18m of the fire tender parking position. The available perimeter access for each building is shown in **Table 14** below.

Table 14: Typical access route specifications

Building	Building Perimeter (m)	Available access to building perimeter (m)	% of perimeter (%)	Acceptable?
Community Centre	69.9m	19.3m	27.6%	Yes
Richmond Maker Labs	37.1m	27.4m	73.9%	Yes

It is assessed that these buildings meet the recommendations outlined above. The Perimeter Access for the Community Centre and Richmond Maker Labs is shown below in **Figure 14** & **Figure 15.**

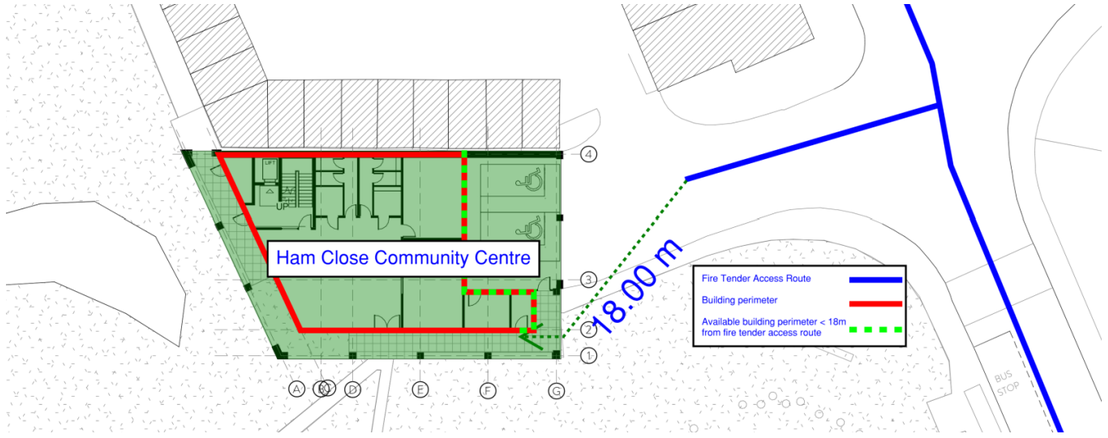

Figure 14: Perimeter Access – Community Centre

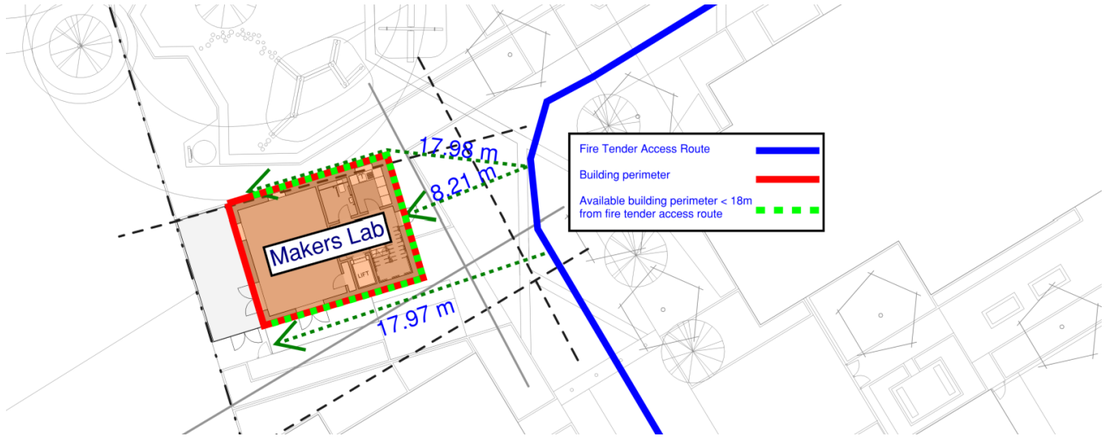

Figure 15: Perimeter Access – Richmond Maker Labs

7.2 Water Supplies

7.2.1 Fire Hydrants

Existing hydrant locations will be confirmed as design progresses. If an existing hydrant is not within 100m of a firefighting access point to a building, a new hydrant will be provided which is within 90m of the access point to a building

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8 FIRE SAFETY MANAGEMENT

8.1 Introduction

The ongoing management and maintenance of the building for each building shall fall under the control of the Regulatory Reform (Fire Safety) Order 2005. So as to allow for any future fire safety management to be co-ordinated with design of the building this section is provided to identify:

- The minimal standard of Fire Safety Management upon which this Fire Strategy has been developed. And,
- Specific Fire Safety Management requirements which are made as part of the Fire Strategy which must be adopted as part of the Fire Safety Management Plan to maintain the building in a condition consistent with the Fire Strategy.

8.2 Management Level

This fire strategy for each building has been developed on the basis that the Fire Safety Management of the building will achieve at least the standard required to comply with the Regulatory Reform (Fire Safety) Order 2005.

8.3 Assembly Point

The Community Centre carpark is noted to be a suitable assembly point.

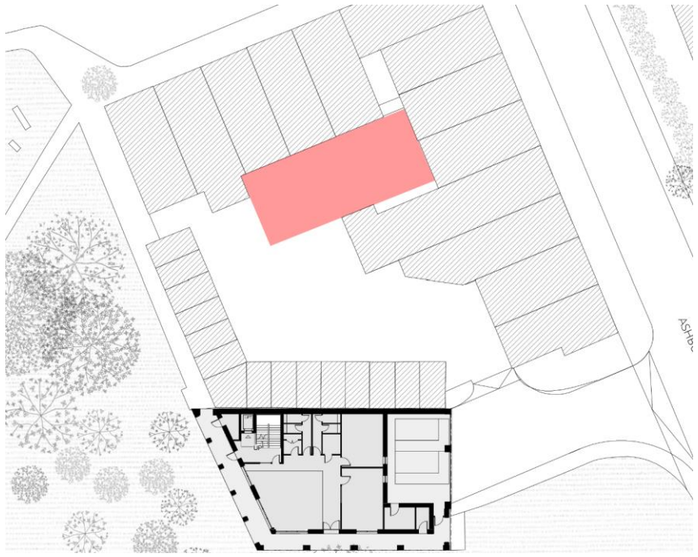

Figure 16: Community Centre Assembly Point

A suitable assembly point for the Maker Labs is shown below.

Figure 17: Maker Labs Assembly Point

The end user should ultimately confirm a suitable fire assembly point and this should be effectively communicated to all residents.

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QUALITY CONTROL

Document Reference No: **AFF_20700_01_Ham Close, Richmond – Non-Residential Buildings_FSS_07**

Rev	Date Issued	Comment	Prepared by	Reviewed by	Verified by
01	28/03/2022	1st Draft issue for comments	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
02	07/04/2022	Planning issue – Incorporating latest drawings	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
03	20/04/2022	Planning issue – Incorporating comments from Sphere25	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
04	20/04/2022	Planning issue	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
05	26/04/2022	Planning issue	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
06	01/08/2022	Planning issue - Included declaration of compliance	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE
07	18/08/2022	Planning issue - Included assembly points and CVs	**Aidan McCready** BEng (Hons) AIFireE	**Evan Doherty** BEng (Hons) AIFireE	**Jeremy Ockenden** MSc BEng (Hons) AIFireE

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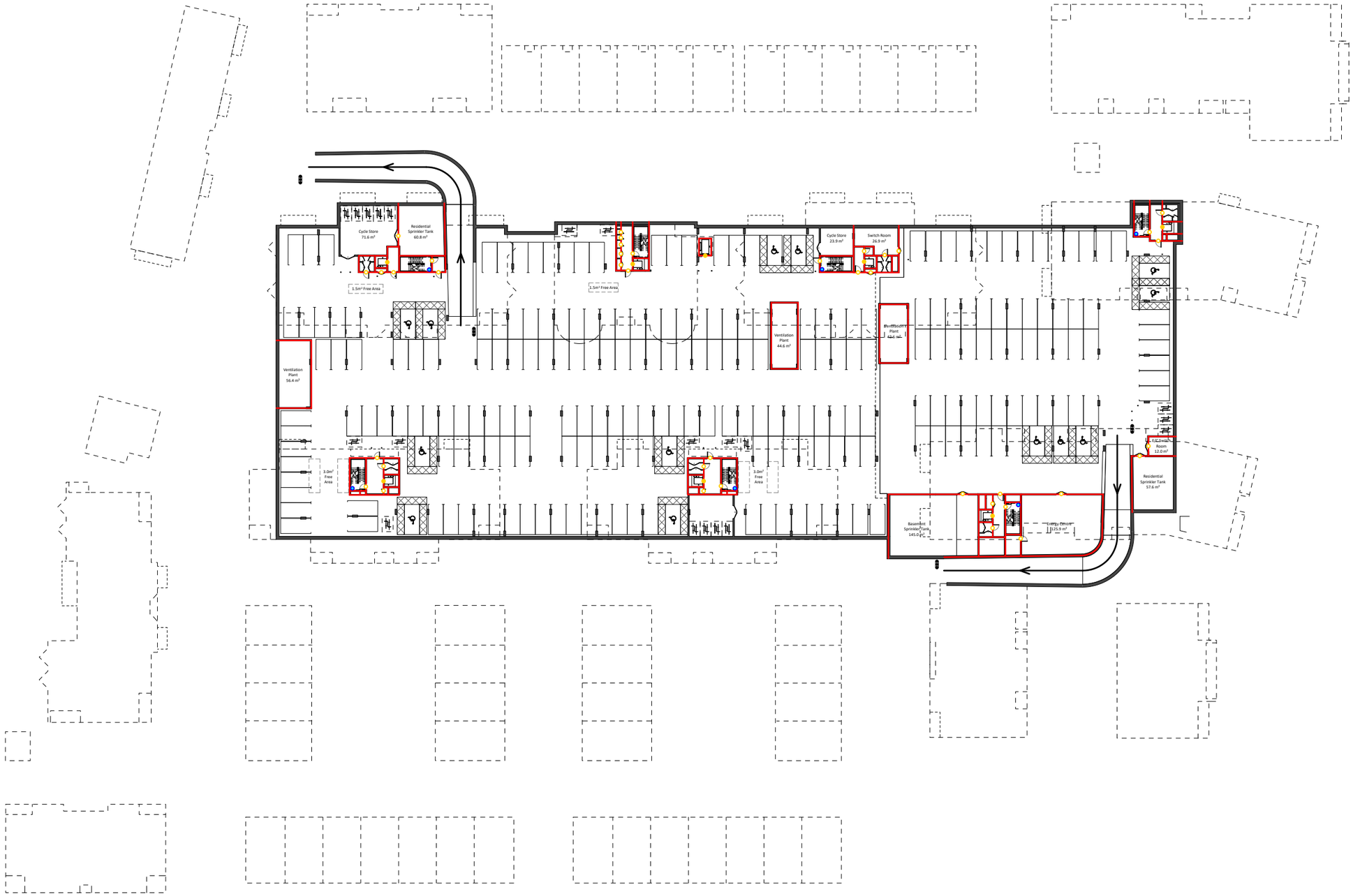
APPENDIX 1. FIRE STRATEGY DRAWINGS – RESIDENTIAL (PART 1)



Project Name:		Ham Close, Richmond - Residential					
Drawing Name:		Basement					
Drawing Reference:		AFF_20700_01_Ham Close, Richmond - Residential_FSD_03					
Date:	07/04/2022	Drawn By	QC	Checked By	ED	Approved By	JO

Legend:

- Alternative Exit
- FD30 Door
- FD60 Door
- FD90 Door
- FD120 Door
- FD30S Door
- FD60S Door
- FD90S Door
- FD120S Door
- 30/30/30 FRR
- 60/60/60 FRR
- 90/90/90 FRR
- 120/120/120 FRR
- Dry Riser Outlet
- Dry Riser Inlet
- Fire Hydrant

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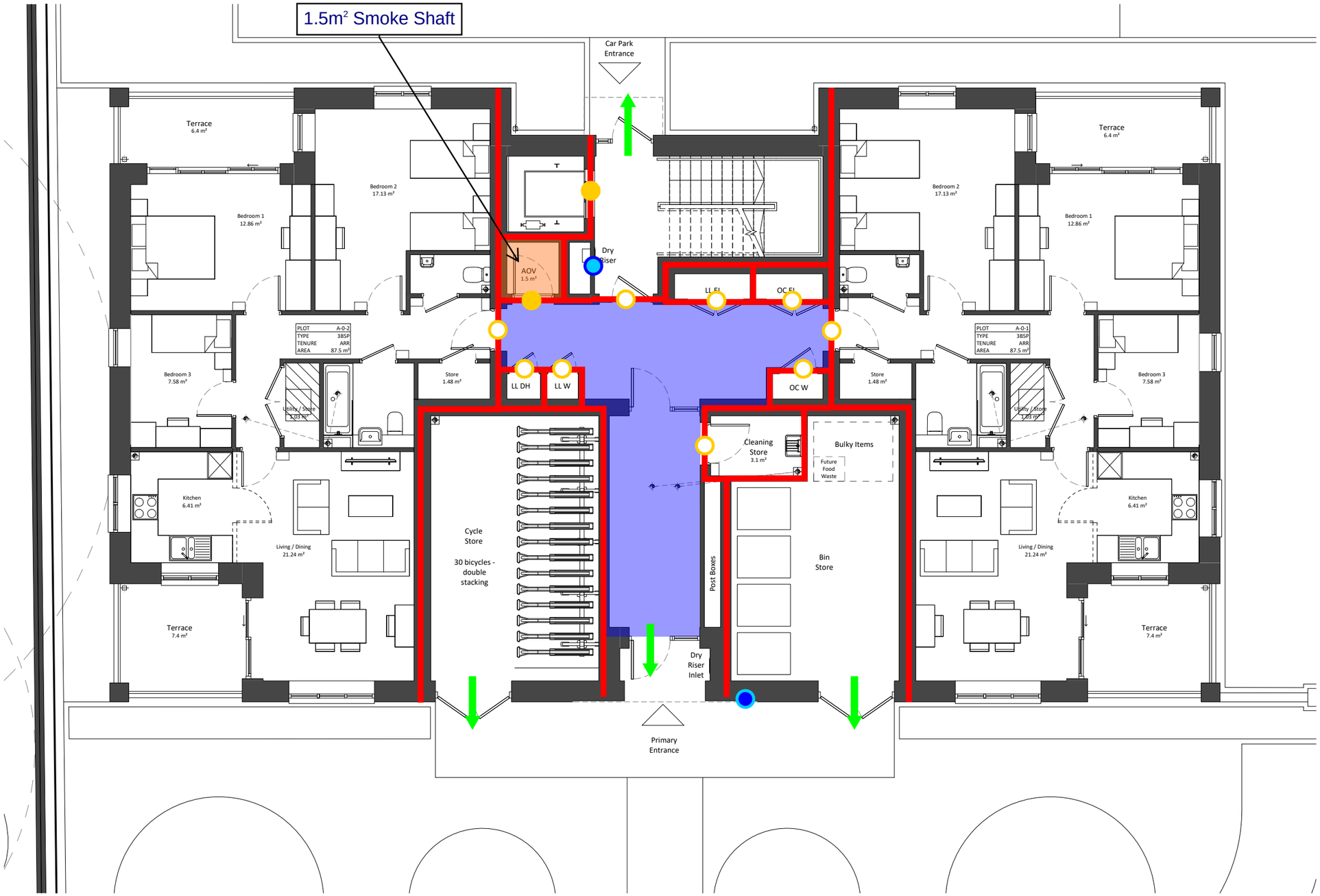

Project Name:	Ham Close, Richmond - Residential						
Drawing Name:	Block A - Ground Floor						
Drawing Reference:	AFF_20700_01_Ham Close, Richmond - Residential_FSD_03						
Date:	07/04/2022	Drawn By	QC	Checked By	ED	Approved By	JO

Legend:

- Alternative Exit
- FD30 Door
- FD60 Door
- FD90 Door
- FD120 Door
- FD30S Door
- FD60S Door
- FD90S Door
- FD120S Door
- 30/30/30 FRR
- 60/60/60 FRR
- 90/90/90 FRR
- 120/120/120 FRR
- Dry Riser Outlet
- Dry Riser Inlet
- Fire Hydrant

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