



# Fire Safety Strategy

RIBA Stage 2

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Plots 04 & 05, Central Square, City Centre, Cardiff

For Information

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## Executive Summary

<b>Purpose of Report</b>	<p>This report has been developed by Artec Fire Ltd (hereafter referred to as Artec Fire) for REAP 3 Limited (hereafter referred to as the Client).</p> <p>This report summarises the fire safety strategy for the named development with the following purposes:</p> <ul style="list-style-type: none"> <li>provide guidance to allow the design team to embed the fire safety strategy into the design; and</li> <li>demonstrate to the approving authorities how the proposed scheme satisfies the functional requirements of Part B of Schedule 1 to the Building Regulations 2010.</li> </ul>
<b>Limitations</b>	<p>The following limitations are to be noted for this report:</p> <ul style="list-style-type: none"> <li>This report is based, fully or partially, on information provided by others, such as the client and other parties of the design team. Although Artec Fire will carry out necessary due diligence, Artec Fire take no liability for the accuracy of information provided by others and the consequence of these inaccuracies.</li> <li>This report outlines the principle of fire safety requirements that would need to be embedded into the design to ensure it is fit for use by the end user and satisfy the functional requirements of building regulations. However, it is, by no means, to cover all the requirements of all the fire protection systems from relevant design standards. Where no specific provision is mentioned in this document regarding any aspect reference should be made to relevant guidance and standards.</li> <li>Where alternative methods to satisfy the functional requirements of Building Regulations 2010 (as amended) are detailed in this report, they will be subject to the agreement of the approving authorities and Local Fire Rescue Services.</li> </ul>
<b>Development Overview</b>	<p>The description of the proposed development is as follows:  <i>"Mixed-use development to provide residential accommodation, flexible non-residential uses, cycle parking, landscaping and other associated works"</i></p> <p>The development contains a 52 storey (B+G+M+49) mixed-residential high-rise tower, with an additional flexible Class A1 and A3 (non-residential) building – known as the Pavilion – location on the same site.</p> <p>The ground floor and mezzanine level will contain a separate occupancy, of which will be a bike hub.</p>
<b>Guidance and Deviations</b>	<p>This Fire Safety Strategy has generally been developed in accordance with the recommendations of BS 9991:2024. Reference is made to Approved Document B – Volume 1 (2019, inc. 2020 and 2022 amendments) [ADB1:2022] and BS 9999:2017, where required.</p> <p>Where this report outlines an alternative approach deviating from these guidance documents, this will require agreement with the approving authorities.</p> <p>This report is, by no means, intended to cover all the requirements of all aspects of the development design. Where no specific provision is mentioned in this document regarding any particular aspect, reference should be made to relevant guidance and standards. For supporting design standards, where a dated reference is used, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.</p>
<b>Structural Fire Protection</b>	<p>Elements of structure throughout the main building are to achieve at least 120 minutes fire resistance with regard to load-bearing capacity (R120).</p> <p>Elements of structure throughout the Pavilion building are to achieve at least 30 minutes fire resistance with regard to load-bearing capacity (R 30). The ground floor to the Pavilion should be supported by basement structure achieving at least 60 minutes fire resistance (R 60), however, if the basement structure is also supporting the</p>

	tower or the failure of the basement structure could cause the instability of the tower, they should be achieving 120min (R 120).
<b>Compartmentation</b>	More information about the compartmentation fire resistance requirements can be found in Section 7.2 and Appendix A – Fire Strategy Drawings.
<b>Fire Detection and Alarm Systems</b>	More information about the fire detection and alarm systems can be found in Section 10.1
<b>Smoke Ventilation</b>	More information about the fire detection and alarm systems can be found in Section 10.2
<b>Fire Suppression</b>	More information about the fire suppression can be found in Section 10.3
<b>Fire Service Access</b>	More information about the fire service access can be found in Section 9

## 1. Introduction

### 1.1 Purpose of Report

This report has been developed by Artec Fire Ltd (hereafter referred to as *Artec Fire*) for REAP 3 Limited (hereafter referred to as *the Client*).

This report summarises the fire safety strategy for the named development with the following purposes:

1. provide guidance to allow the design team to embed the fire safety strategy into the design; and
2. demonstrate to the approving authorities how the proposed scheme satisfies the functional requirements of Part B of Schedule 1 to the Building Regulations 2010.

### 1.2 Limitations

The following limitations are to be noted for this report:

1. This report is based, fully or partially, on information provided by others, such as the client and other parties of the design team. Although Artec Fire will carry out necessary due diligence, Artec Fire take no liability for the accuracy of information provided by others and the consequence of these inaccuracies.
2. This report outlines the principle of fire safety requirements that would need to be embedded into the design to ensure it is fit for use by the end user and satisfy the functional requirements of building regulations. However, it is, by no means, to cover all the requirements of all the fire protection systems from relevant design standards. Where no specific provision is mentioned in this document regarding any aspect reference should be made to relevant guidance and standards.
3. Where alternative methods to satisfy the functional requirements of Building Regulations 2010 (as amended) are detailed in this report, they will be subject to the agreement of the approving authorities and Local Fire Rescue Services.

### 1.3 Information Provided by Others

This report is based on the information provided by others as detailed in Table 1.

Table 1 List of information provided by others

Document Title	Document Reference	Revision	Date
Proposed General Arrangement Basement	06159 5PA-B1-B1-DR-A-22200	00	25/07/2025
Proposed General Arrangement Ground Floor and Mezzanine	06159 5PA-B1-XX-DR-A-22200	00	25/07/2025
Proposed General Arrangement Amenity Floor	06159 5PA-B1-XX-DR-A-22201	00	25/07/2025
Proposed General Arrangement Typical Floors 4th-48th	06159 5PA-B1-XX-DR-A-22202	00	25/07/2025
Proposed General Arrangement Roof Terrace and Roof	06159 5PA-B1-XX-DR-A-22203	00	25/07/2025
Proposed General Arrangement Roof - BMU	06159 5PA-B1-50-DR-A-22204	00	25/07/2025
Proposed General Arrangement Basement Level	06159 5PA-B2-00-DR-A-22199	00	25/07/2025
Proposed General Arrangement Ground Floor	06159 5PA-B2-00-DR-A-22200	00	25/07/2025
Proposed General Arrangement First Floor	06159 5PA-B2-01-DR-A-22201	00	25/07/2025
Site Plan Proposed Buildings	06159 5PA-MP-00-DR-A-001200	00	25/07/2025
Proposed Site Section Section AA	06159 5PA-MP-ZZ-DR-A-52201	00	25/07/2025

## 2. Development Overview

### 2.1 Site Layout

The proposed development is located in Plots 4 and 5 of Central Square, City Centre, Cardiff, as illustrated in Figure 1.

It is a single-block high-rise building of which has 52 storeys (B+G+M+49). In addition, there is also to be an additional commercial building located to the east of the site known as the Pavilion. The Pavilion and the main building will share a basement level, but are not connected on any other level.

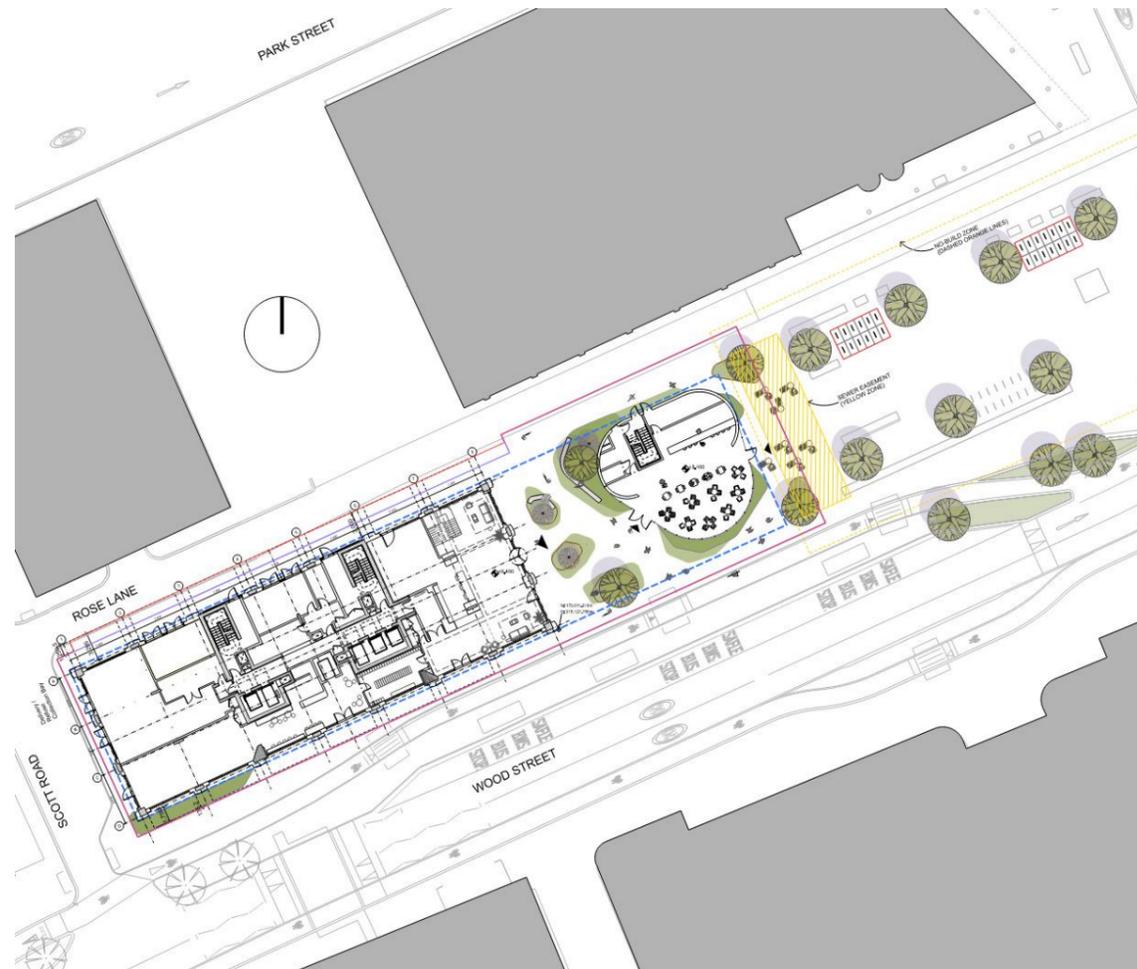


Figure 1 Site layout

### 2.2 Building Height

The height to the top storey (level 49) of the building, measured from the upper floor surface of the top storey to the ground level on the lowest side of building, is approximately 160m, as illustrated in Figure 2.

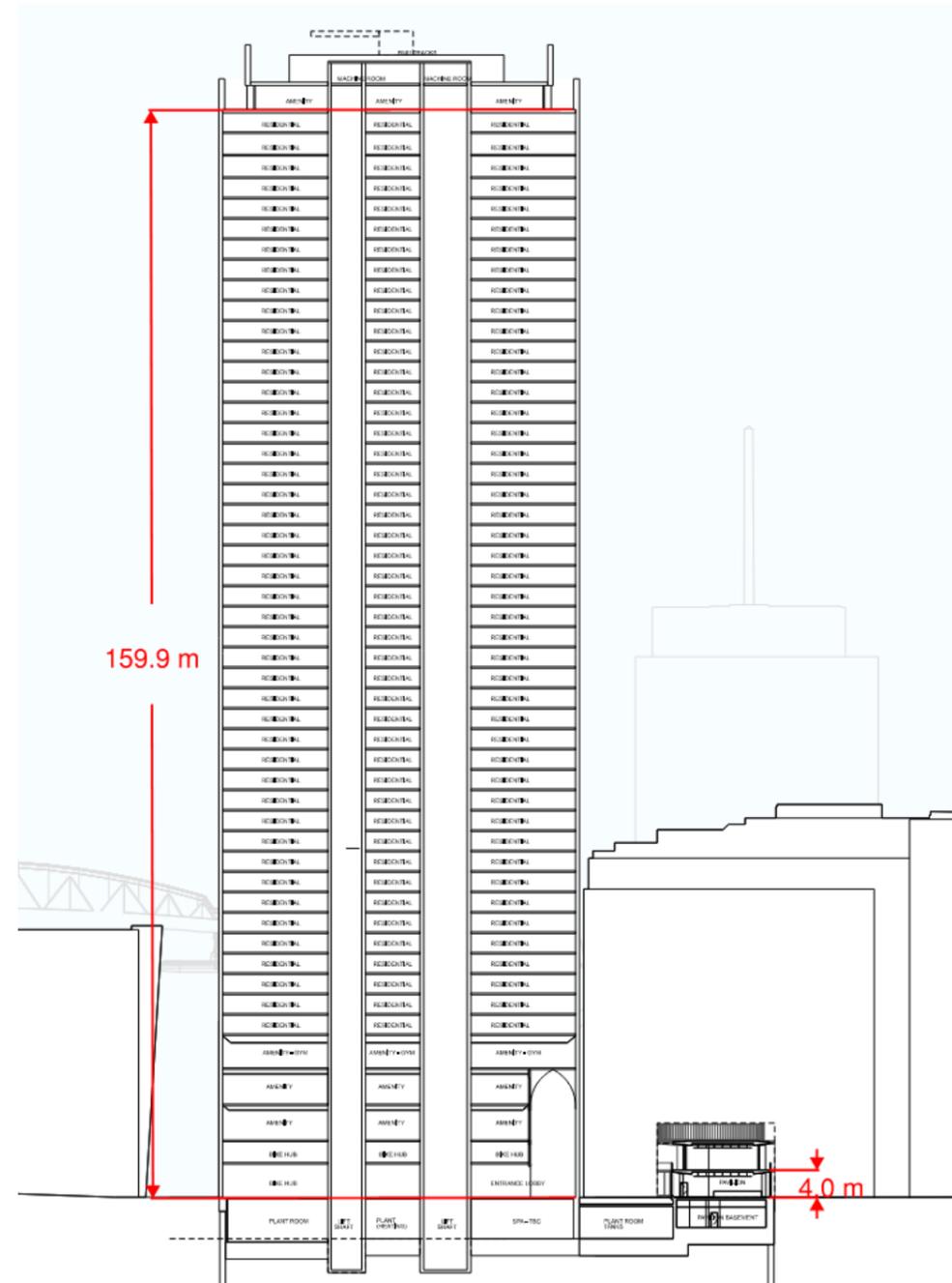


Figure 2 Section illustrating building height

The Pavilion has a top floor height of approximately 4m above the ground level.

### 2.3 General Arrangement

The main building comprises of a basement, ground, mezzanine and 49 upper floor levels. Basement – Level 03 will comprise of solely of ancillary accommodation and residential amenity only. In addition, a bike hub will be provided within both the ground and mezzanine level. Level 04 – level 48 will comprise solely of residential dwellings. Level 49 will comprise of amenity space for the residents.

All residential dwellings are to single-storey open plan flats.

Two stairs are provided to the main building and serve all floor levels. As the upper floor levels exceed 900m<sup>2</sup> in area, both stairs are to be firefighting stairs as part of firefighting shafts.

The Pavilion building is three storeys (B+G+1) and is served by a single stair.

The proposed uses at each floor level are outlined in Table 2.

Table 2 Occupancy uses at each level

Building	Level	Uses
Main	Basement	Plant space
	Ground	Plant space
		Bin store
		Bike hub
		Entrance lobby
	Mezzanine	Plant space
		Bike hub
01 – 03	Residential amenity	
04 – 48	Residential dwellings	
49	Residential amenity	
Pavilion	Basement	WCs
		Kitchen
	Ground	Serving and seating
First	Seating	

A typical upper floor level of the main building is illustrated in Figure 3. Further detail of the general arrangements can be seen on the Fire Strategy Drawings in Appendix A.

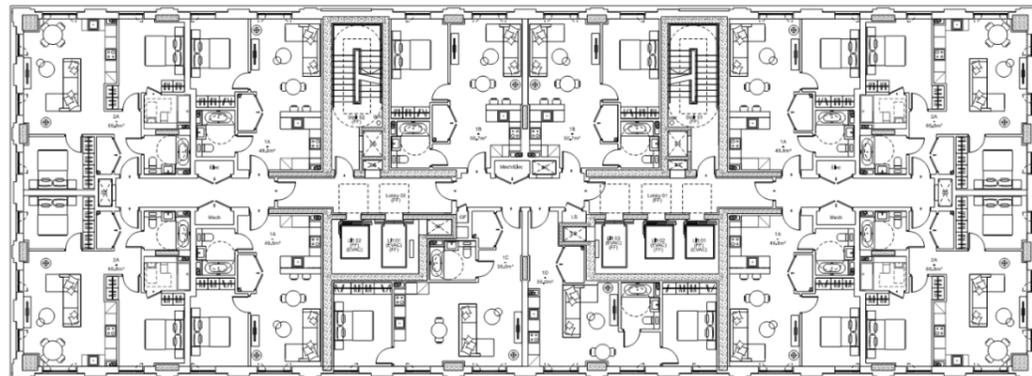


Figure 3 Typical upper floor level

### 3. Statutory Legislation

#### 3.1 The Building Regulations

The development is subject to control under the restrictions of the Building Regulations 2010 and, therefore, the design is required to satisfy the functional requirements of Part B to Schedule 1 of these regulations as detailed as follows.

B1	Means of Warning and Escape	(1)	The building shall be designed and constructed so that there are appropriate provisions for the early warning of fire, and appropriate means of escape in case of fire from the building to a place of safety outside the building capable of being safely and effectively used at all material times.
B2	Internal Fire Spread (Linings)	(1)	To inhibit the spread of fire within the building, the internal linings shall <ol style="list-style-type: none"> <li>adequately resist the spread of flame over their surfaces; and</li> <li>have, if ignited, either a rate of heat release or a rate of fire growth, which is reasonable in the circumstances</li> </ol>
		(2)	In this paragraph "internal linings" means the materials or products used in lining any partition, wall, ceiling, or other material structure.
B3	Internal Fire Spread (Structure)	(1)	The building shall be designed and constructed so that, in the event of fire, its stability will be maintained for a reasonable period.
		(2)	A wall common to two or more building shall be designed and constructed so that it adequately resists the spread of fire between those buildings. For the purposes of this sub-paragraph a house in a terrace and a semi-detached house are each to be treated as a separate building.
		(3)	Where reasonably necessary to inhibit the spread of fire within the building, measures shall be taken, to an extent appropriate to the size and intended use of the building, comprising either or both of the following: <ol style="list-style-type: none"> <li>sub-division of the building with fire resistance construction;</li> <li>installation of suitable automatic fire suppression systems.</li> </ol>
		(4)	The building shall be designed and constructed so that the unseen spread of fire and smoke within the concealed spaces in its structure and fabric is inhibited.
B4	External Fire Spread	(1)	The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building.
		(2)	The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building.
B5	Access and Facilities for the Fire Service	(1)	The building shall be designed and constructed so as to provide reasonable facilities to assist the fire fighters in the protection of life.
		(2)	Reasonable provision shall be made within the site of the building to enable fire appliance to gain access to the building.

#### 3.2 Regulatory Reform (Fire Safety) Order 2005

The Regulatory Reform (Fire Safety) Order 2005 (commonly known as the Fire Safety Order) provides a framework for regulating fire safety in all non-domestic premises including workplaces and the parts of multi-occupied residential buildings used in common in England and Wales. It is not applicable to individual private homes (including within flats in blocks of flats as well as individual houses).

The Fire Safety Order firmly places a responsibility on the 'Responsible Person' to manage fire safety within the relevant premises. This requires the 'Responsible Person' to undertake an assessment of the fire risk (i.e. Fire Risk Assessment) and keep the assessment under review at all times.

The Fire Safety Act 2021 (commenced on 16 May 2022) amends the Regulatory Reform (Fire Safety) Order 2005 (the Fire Safety Order). This Act clarifies that responsible persons for multi-occupied residential buildings must manage and reduce the risk of fire for the structure and external walls of the building, including cladding, balconies and windows, and entrance doors to individual flats that open into common parts. The Act applies to England and Wales.

#### 3.3 Guidance for the Fire Safety Strategy

This Fire Safety Strategy has generally been developed in accordance with the recommendations of BS 9991:2024. Reference is made to Approved Document B – Volume 1 (2019, inc. 2020 and 2022 amendments) [ADB1:2022] and BS 9999:2017, where required.

The Pavilion building is developed solely in accordance with BS 9999:2017.

Where this report outlines an alternative approach deviating from these guidance documents, this will require agreement with the approving authorities.

This report is, by no means, intended to cover all the requirements of all aspects of the development design. Where no specific provision is mentioned in this document regarding any particular aspect, reference should be made to relevant guidance and standards. For supporting design standards, where a dated reference is used, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

## 4. B1 – Means of Warning and Escape (Main Building)

### 4.1 Evacuation Strategy

The evacuation strategy for the residential areas of the development is to be a stay-put policy where only occupants within the flat of fire origin are to be alerted and evacuate immediately – there is no alarm link between adjacent flats. However, this does not preclude the event that other occupants in neighbouring flats may self-evacuate, should they wish to do so. Any additional evacuation from adjacent flats is also possible at the direction of the local Fire Service, utilising the Evacuation Alert System.

The client may also consider installing a landlord fire alarm system, capable of identifying the fire location and displaying it on a central landlord fire alarm panel. This could support both building management and FRS intervention during an incident.

Refer to Section 10.1 for more information relating to fire detection and alarm systems.

The evacuation strategy for the ancillary areas is to be a simultaneous evacuation strategy, where all occupants within these areas of the building are to be alerted on detection of fire immediately and are to evacuate simultaneously.

#### 4.1.1 Provisions for Disabled Occupants

An evacuation management procedure for disabled occupants (including those who will not be able to negotiate stairs unaided, e.g. wheelchair users), will need to be incorporated into the Fire Safety Management Strategy. This is the responsibility of the end user of the building or 'The Responsible Person'. If there is a need to make specific arrangements, then it is expected that consultation with the individual(s) or representative organisations should take place at the earliest opportunity.

A means for disabled occupants on residential levels to evacuate from the fire-affected floor will be provided by means of evacuation lifts. Refer to Section 4.5 for more detail regarding evacuation lifts.

### 4.2 Internal Flat Layouts

All flats provided to the building are to be single-level open plan arrangements (i.e., bedrooms accessed from living spaces).

BS 9991:2024 requires any open plan flats to have an internal travel distance limit no more than 9m. This is measured from the furthest remote point (excluding bathrooms) to the apartment entrance. This can be extended to 20m if the flat is provided with a Grade D, Category LD1 detection and alarm system and sprinkler protection. Open plan flats should also adhere to the following recommendations to be in accordance with BS 9991:2024:

- The size should not exceed 16m x 12m
- They should be located on a single level only

- The ceilings should be no less than 2.25m from the floor level
- Any open plan flats with on-enclosed kitchens should:
  - Be provided with a sprinkler system in all rooms (see Section 10.3 for more detail on sprinkler systems)
  - Be provided with a Category LD1 detection and alarm system
  - All cooking facilities should be located in accordance with Figure 6.

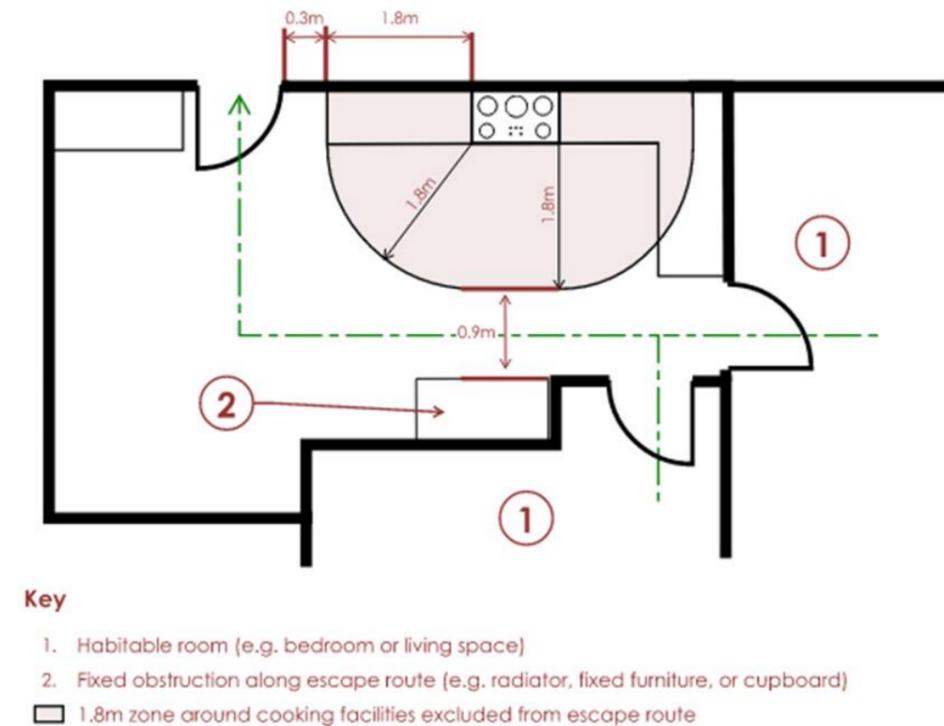


Figure 6 Cooking facilities in open plan apartments

Where:

- 1.8m is a zone around the cooking facilities whereby no occupants should need to enter to evacuate from the flat
- 0.9m is the minimum separation between the 1.8m zone and any fixed obstruction (such as partitions, radiators or cupboards)
- 0.3m is the minimum separation between the cooking facilities and the leading edge of the exit door

Currently, there are a number of apartments which show cooking facilities in locations such that the separation distances above can not be achieved. As such, it is recommended that the layouts are amended to ensure that the distances within Figure 4 are maintained.

#### 4.2.1 Private Balconies

In accordance with Annex E of BS 9991:2024, balconies more than 4.5m above ground level (i.e. level 02 and above) should meet the following recommendations:

- The escape route from the balcony should not pass through more than one access room;
- The interior of the access room should be clearly visible from all parts of the balcony unless provided by a fire detection and alarm system in accordance with BS5839-6:2019;
- Any cooking risk in the access room should be enclosed with fire-resisting construction unless the open plan kitchen provisions set out in Section 4.2 are met.

It is found that all balconies are in line with the provisions set out in Annex E of BS 9991:2024.

#### 4.3 Residential Common Corridors

The typical layouts of the common corridors are such that there are two wings either side of the stair, with a central area shared between the two stairs. The two wings result in occupants having a single direction of escape. The central zone affords occupants directly with two directions of escape.

BS 9991:2024 permits the following travel distance limits for common corridors. Note that the limits below take into consideration that the building is provided with a sprinkler system in accordance with BS 9251:2021, as well as the common corridors being provided with smoke control.

- 15m for dead end corridors (between an apartment and the lift lobby entrance)
- 45m for corridors with two directions of escape (between an apartment and the lift lobby entrance)
- 7.5m between the lift lobby entrance and the stair core entrance

#### 4.3.1 Smoke Ventilation Strategy and General Arrangements

All common corridors and lift lobbies are to be served by smoke control systems. Refer to Section 10.2 for further detail on smoke ventilation systems.

#### 4.4 Ancillary Accommodation

Ancillary accommodation is provided to the entirety of the basement to level 03. Level 49 also accommodates an amenity space. This is formed mainly of plant space and residential amenity. In addition, the bike hub facilities are included within this section.

#### 4.4.1 Travel Distances

The travel distance from these areas to a place of relative safety (e.g. final exit or protected escape stair) is to be limited in accordance with BS 9991:2024 for the residential ancillary areas. Such travel distances are listed in Table 3.

Table 3 Maximum permitted travel distances in ancillary accommodation

Space	Maximum Permitted Travel Distance	
	Escape Available In One Direction Only	Escape Available In More Than One Direction
Plant room, transformer/switchgear rooms, refuse stores	Within the room	9m
	Overall distance to nearest storey exit	18m
Communal lounges and common amenity areas	18m	45m
Bike Hub	9m	18m
Rooftop plant	60m	200m

Travel distances are measured in the drawings in Appendix A – Fire Strategy Drawings.

#### 4.4.2 Exit Requirements

It should be ensured that any ancillary accommodation has sufficient exit provisions to accommodate the maximum expected number of occupants. As there is an absence of information relating to the required number of exits to ancillary accommodation, BS 9999:2017 is referenced.

##### 4.4.2.1 Number of Escape Routes

The minimum number of escape routes required from each area is determined based on the maximum expected occupancy of the area as outlined in Table 4.

Table 4 Number of escape routes

Maximum Occupancy	Minimum Number of Exits
Up To 60	1
61-600	2
More Than 600	3

All ancillary areas of the building have been assessed and are considered to meet the requirements outlined in Table 4.

##### 4.4.2.2 Exit Capacities

The minimum exit width required is 4.1mm/person, as noted by BS 9991:2024.

Using the above exit width value, the capacity an exit can accommodate is found by dividing the width of an exit by either of the widths stated above. Note that any exit less than 1050mm in width must be assumed as 500mm. For example, a 900mm exit serving an A1 risk profile area would have a capacity of no more than 121 people (500/4.1). Note that this is a requirement set out by BS 9999:2017.

Where multiple exits are available for an area, the exit with the largest capacity should be discounted when determining the occupancy capacity of the space. This is to consider the worst-case scenario that the exit is blocked by the effects of fire/smoke. Nevertheless, the location of the exits should also be considered and exits in close proximity to each other may be blocked simultaneously.

Any exit that swings against the direction of evacuation must be limited to serving no more than 60 people. This is regardless of its width.

Table 5 outlines the exit capacity of each habitable ancillary accommodation. Any single leaf door indicated on the drawing plans are assumed to be less than 1050mm in width. Any double-leaf door is assumed to be 1050mm in width. This is considered a conservative assessment.

**Note: the actual widths of the doors should be confirmed at the soonest possible time. The subsequent exit capacities can then be re-assessed.**

Table 5 Minimum required storey exit widths from each level

Floor	Area	Summary of Exits Provided	Exit Capacity
Ground	Entrance Lobby	<ul style="list-style-type: none"> <li>- 1x single leaf door swinging against the direction of evacuation</li> <li>- 1x double leaf door swinging against the direction of evacuation</li> </ul>	60 people
	Bike hub	<ul style="list-style-type: none"> <li>- 1x double leaf door swinging against the direction of evacuation</li> <li>- 1x single leaf door swinging with the direction of evacuation</li> </ul>	60 people
Mezzanine	Bike Hub	<ul style="list-style-type: none"> <li>- 1x double leaf door swinging against the direction of evacuation</li> <li>- 1x single leaf door swinging with the direction of evacuation</li> </ul>	60 people
Level 01	Amenity Lounge	<ul style="list-style-type: none"> <li>- 2x single leaf doors swinging with the direction of evacuation</li> </ul>	121 people
Level 02	Amenity Lounge	<ul style="list-style-type: none"> <li>- 2x single leaf doors swinging with the direction of evacuation</li> </ul>	121 people
Level 03	Amenity Lounge	<ul style="list-style-type: none"> <li>- 2x single leaf doors swinging with the direction of evacuation</li> </ul>	121 people
Level 49	Amenity Lounge	<ul style="list-style-type: none"> <li>- 2x single leaf doors swinging with the direction of evacuation</li> </ul>	121 people

#### 4.4.3 Inner rooms

An inner room, as defined by BS 9999:2017, is a normally occupied room from which the only escape route is through another room. An inner room results in an increased level of risk, as occupants within the inner room may not be aware of a fire risk within the room that the inner room is accessed from (known as the access room).

The requirement for the inner room which are given below should be followed:

1. The occupant capacity of the inner room is not to exceed 60;
2. The inner room is to be entered directly off the access room;
3. The escape route from the inner room is not to pass through more than one access room;

4. The one-way travel distance from any point in the inner room should not exceed the appropriate given limit;
5. The access room is not to be a place of special fire hazard;
6. The access room is in the control of the same occupier; and
7. One of the following arrangements is to be provided:
  - a. The enclosures (walls or partitions) of the inner room should be stopped at least 500mm below the ceiling; or
  - b. a suitably sited vision panel not less than 0.1m<sup>2</sup> should be located in the door or walls of the inner room; or
  - c. the access room should be fitted with a suitable automatic fire detection and alarm system.

## 4.5 Escape Stairs

### 4.5.1 Stair Capacities

Due to both stairs serving ancillary accommodation on the mezzanine to 3<sup>rd</sup> level, as well as level 49, it is likely that they will need to accommodate a significant number of occupants during a fire scenario within the accommodation areas.

Each stair is therefore considered to serve four storeys with a simultaneous evacuation. As per Table 13 of BS 9999, this would suggest a minimum stair width of 2.75mm/person – as per an A1 risk profile. However, as the stair extends through a large number of storeys between level 03 and 49, the stair capacity will actually be larger than what is permitted for four storeys. As such, 2.75mm/person is considered a conservative assessment.

Both stairs are measured to be 1200mm based on the drawing plans. As such, each stair can accommodate no more than 436 people.

### 4.5.2 Stair Construction and Protection

Both stairs are firefighting stairs and are to be enclosed in 120-minute fire rated construction (REI 120).

Firefighting stairs should have a width no less than 1100mm. It should be noted that where the handrails protrude by no more than 100mm into the escape stair width they may be ignored for the purposes of determining the clear width of the stairs.

Due to the stairs serving floor levels over 50m from the ground, a low-mounted way guidance system should be provided within the stairway.

Any escape stair should not have direct access to any accommodation. There should be a ventilated protected lobby between the stair and any accommodation, including ancillary accommodation.

Any protected lobby separating the stair from ancillary accommodation (other than high risk ancillary accommodation) should be provided with a 0.4m<sup>2</sup> permanent vent. This should be increased to 1.0m<sup>2</sup> for where the protected lobby separated the stair from higher risk areas, such as substations or car parks.

Since all stairs are to be accompanied by evacuation lifts, the evacuation lift lobbies are to be considered similar to stairs with respect to smoke ventilation (see Section 10.2).

#### 4.5.3 Basement Stairs

Where a building has more than one common stair from an upper storey, at least one of them should terminate at ground level. Any other stair may connect to the basement, so long as it is separated from the basement accommodation by a protected lobby. However, where any stair serving the basement level is a firefighting stair, it should be separated at ground level by a fire door.

Both stairs are proposed to openly continue down to the basement level. This is to be justified at a later stage, to where it is intended to demonstrate via CFD modelling that smoke and heat will not enter the stairs at basement level. This is to be achieved by a mechanical smoke and heat clearance system maintaining the stairs as tenable.

**The above justification should be agreed with by the approval bodies and Fire Service.**

#### 4.5.4 Stair Discharge

Escape stairs and evacuation lifts should discharge to a final exit either separately or using a common discharge route. Discharge routes and final exits from escape stairs and evacuation lifts should meet the following to be in accordance with BS 9991:2024:

- They should either discharge directly to the external or into a protected corridor leading to a final exit
- Any protected corridor leading to a final exit should have the same standard of fire-resisting enclosure and lobby protection as the stairway and/or evacuation lift that it serves
- Where two stairs or evacuation lifts provide alternative means of escape from a dwelling, they should not terminate in the same enclosure at final exit level
- Final exits should discharge directly to a street, passageway, walkway or open space that allows for the rapid dispersal of persons away from the vicinity of the building. Where a route from two or more final exits combines outside the building to reach a street or public highway, the width of the external route should be sufficient for the total number of people expected to use the route at any one time
- Final exits should have a level threshold and should lead to level ground where practicable. Where there is no level ground, a suitable ramp or a step should be provided. Where a step is provided, there should be a suitable and apparent landing

- Ancillary areas should be separated from the exit route using a protected lobby with ventilation
- The final exits serving the stairs should have widths that are no less than the width of the stairs.

#### 4.6 Evacuation Lifts

In accordance with BS 9991:2024, there should be evacuation lifts provided to the building due to there being lift access. The use of evacuation lifts is considered necessary only on floors containing residential dwellings. As such, access to evacuation lifts is not considered necessary for ancillary and amenity levels.

There should be no less than one evacuation lift per required stair core. Since the building requires no less than two stairs, there should be no less than a total of two evacuation lifts. Each of the two stairs are provided with a single evacuation lift.

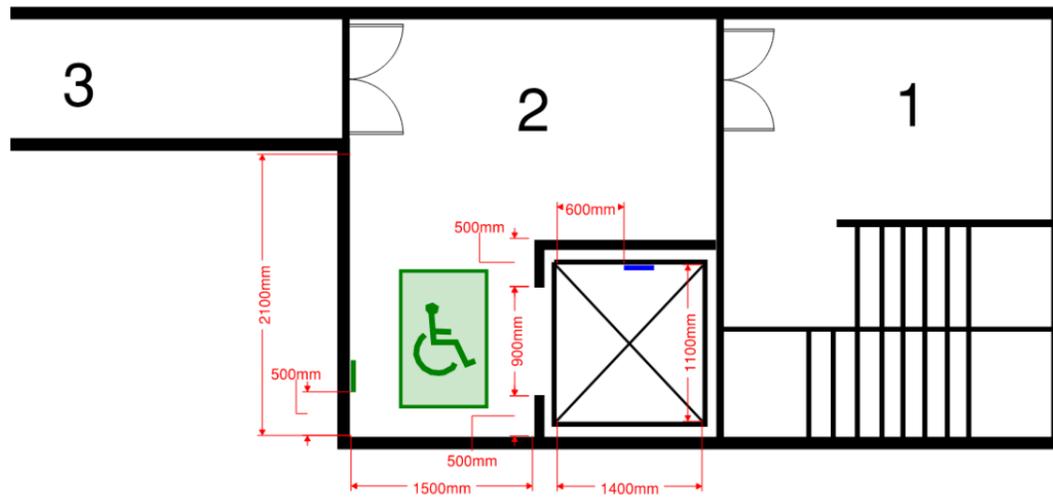
Evacuation lifts are to be provided with a means of water ingress protection via a raised ramp floor to the lift landing entrance on all storeys.

#### 4.7 Evacuation Lift Access and Final Exit

All evacuation lifts within buildings with floor levels over 50m should be accessed from sterile protected lobbies (i.e., not from within an escape stair). The lobbies are to be considered similar to a stair with respect to smoke ventilation – the aim is to prevent smoke ingress into the lift lobby. This is to be achieved by the common corridor smoke control system (refer to Section 10.2) or permanent vents where the evacuation lift lobby accessed ancillary accommodation.

The waiting space should be within a lobby that is no less than 2100mm x 1500mm in area. The waiting space for the evacuation lift should be provided with an emergency voice communication (EVC) system in accordance with BS 5839-9. Any EVC point should be no less than 500mm from wall.

Figure 4 illustrates a typical layout of an evacuation lift and its respective access.



- 1 Escape stair
- 2 Evacuation lift lobby
- 3 Ventilated corridor/lobby
-  Waiting Space
-  Emergency voice communication (EVC) system
-  Lift controls

Figure 4 Typical Evacuation Lift/Access

## 5. B1 – Means of Warning and Escape (Pavilion)

### 5.1 Evacuation Strategy

The evacuation strategy for the Pavilion building will be a simultaneous evacuation, where all occupants within these areas of the building are to be alerted on detection of fire immediately and are to evacuate simultaneously.

### 5.2 Provisions For Disabled Occupants

An evacuation management procedure for disabled occupants (including those who will not be able to negotiate stairs unaided, e.g. wheelchair users), will need to be incorporated into the Fire Safety Management Strategy. This is the responsibility of the end user of the building or 'The Responsible Person'. If there is a need to make specific arrangements, then it is expected that consultation with the individual(s) or representative organisations should take place at the earliest opportunity.

#### 5.2.1 Disabled Refuge Areas

A refuge is a location of relative safety for people with impaired mobility who may have delayed evacuation, so that they can await assistance with the next part of their movement to a place of ultimate safety.

The escape stair is to be provided with a disabled refuge area (no less than 1400mm x 900mm) at every level except the discharge level, located either within the protected escape stair or within a protected lobby with direct access to the protected escape stair.

Communication between the responsible party/staff organising the evacuation of the building and the refuge area should be facilitated by a system of two-way emergency voice communication (EVC) system, located next to the disabled refuge areas, with a master station located at the Fire Service access point / reception at the access level for each stair. The system is to be designed and installed in accordance with BS 5839-9:2021.

### 5.3 Maximum Expected Occupancy Levels

The maximum expected occupancy within each area and each floor is summarised in Table 6. These are mainly based on the number of seats indicated in the drawing plans. The kitchen is based on a floor space factor of 7m<sup>2</sup>/person. Note that areas such as WCs and storerooms are not considered to contribute a significant number of occupants. This is due to such rooms not being likely being permanently occupied.

Table 6 Maximum expected occupancy levels

Floor	Area	Total Maximum Expected Occupancy
Basement	Kitchen (140m <sup>2</sup> )	20
Ground	Bar and seating	55
First Floor	Seating	51

## 5.4 Horizontal Means of Escape

### 5.4.1 Travel Distances

Travel distance is the actual distance to be travelled by a person from any point within the floor area to the nearest storey exit or final exit, having regard to the layout of walls, partitions and fixings in the floor plans.

BS 9999 recommends limits on travel distances for occupancy based on the risk profile of the building/area. The maximum travel distances within each area of this building are outlined in Table 3.

Table 7 Maximum permitted travel distances

Space	Maximum Permitted Travel Distance			
	Escape Available In One Direction Only		Escape Available In More Than One Direction	
	Layout Unknown	Layout Known	Layout Unknown	Layout Known
Bar/seating <sup>[1]</sup>	13m	20m	33m	50m
Kitchen <sup>[2]</sup>	15m	22m	37m	55m

Note:

1. Based on a B2 risk profile
2. Based on an A2 risk profile

### 5.4.2 Exit Requirements

It should be ensured that the Pavilion has sufficient exit provisions to accommodate the maximum expected number of occupants.

Refer to Section 4.4.2.1, of which shares similar provisions that should be adopted for the Pavilion with respect o number of exits.

#### 5.4.2.1 Exit Capacities

The minimum exit widths required for the kitchen (A2) and bar/seating (B2) is 3.6mm/person and 4.1mm/person respectively.

The calculation process of assessing exit capacities is set out in Section 4.4.2.2.

Any exit that swings against the direction of evacuation must be limited to serving no more than 60 people. This is regardless of its width.

Table 8 Minimum required storey exit widths from each level outlines the exit capacity of each habitable ancillary accommodation. Any single leaf door indicated on the drawing plans are assumed to be less than 1050mm in width. Any double-leaf door is assumed to be 1050mm in width. This is considered a conservative assessment.

**Note: the actual widths of the doors should be confirmed at the soonest possible time. The subsequent exit capacities can then be re-assessed.**

Table 8 Minimum required storey exit widths from each level

Floor	Area	Summary of Exits Provided	Exit Capacity
Basement	Kitchen	- 1x single leaf door swinging with the direction of evacuation	60 people
Ground	Bar/seating area	- 3x single leaf door swinging with the direction of evacuation	242 people
Level 01	Seating area	- 1x single leaf door swinging with the direction of evacuation	60 people

#### 5.4.3 Inner rooms

Any inner rooms presented within the pavilion should be in accordance with Section 4.4.3.

### 5.5 Escape Stairs

#### 5.5.1 Stair Capacities

The single stair provided to the pavilion serves three floors. As per Table 13 of BS 9999, this would suggest a minimum stair width of 3.40m/person – as per a B1 risk profile.

The stair is measured to be 1200mm based on the drawing plans. As such, the stair can accommodate no more than 353 people. This exceeds the likely occupancy of the Pavilion building.

#### 5.5.2 Basement Stairs

Due to the Pavilion building being less than 11m in height (measured from the external ground level to the top floor), the escape stair may extend to serve the basement level. However, it should be ensured that it is separated from the basement accommodation by a protected lobby with a 0.4m<sup>2</sup> permanent vent.

#### 5.5.3 Stair Discharge

The exit route from an escape stair is to be at least as wide as required for the stair leading to it, in accordance with BS 9999. Where a merging flow exists at the stair discharge route (e.g. merging flow between occupants escaping via stair and occupants from discharge level also utilising stair discharge route for escape, etc.) the width of the route is to be sufficient to serve all occupants. However, since the number of occupants expected to likely egress via the stair cores from the ground level is very low, a merging flow assessment is not necessary.

Protected escape stairs are to discharge to external either directly or via a protected passageway. The discharge routes from protected escape stairs are to be provided with the same standard of fire-resistant enclosure and lobby protection as the relevant stair they serve.

## 6. B2 – Internal Fire Spread (Linings)

### 6.1 Internal Surface Linings

The internal wall and ceiling linings are to achieve the requirements outlined in Table 9 or better throughout the development.

Table 9 Minimum internal surface lining requirements

Space		Reaction to Fire Classification <sup>[1]</sup>
Rooms	Residential rooms with area less than 4m <sup>2</sup>	D-s3, d2
	Non-residential rooms with area less than 30m <sup>2</sup>	D-s3, d2
	Other rooms	C-s3, d2
Circulation Spaces	Circulation space within dwellings	C-s3, d2
	Other circulation spaces	B-s3, d2

Notes:

1. Based on performance criteria outlined in BS EN 13501-1
2. For the purposes of internal surface lining requirements, a room is defined as:  
'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 cavities such as ducts, ceiling cavities and roof spaces.'
3. For the purposes of internal surface lining requirements, a circulation space is defined as:  
'A space (including a protected stairway) mainly used as a means of access between a room and an exit from the building or compartment.'

## 7. B3 – Internal Fire Spread (Structure)

### 7.1 Loadbearing Elements of Structure

The topmost occupied storey of the main building is over 30m from the external ground level. The Pavilion is approximately 4m above ground level. Therefore, the following should be considered for the elements of structures:

- in accordance with Table 4 of BS 9991:2024, elements of structure throughout the main building are to achieve at least 120 minutes fire resistance with regard to load-bearing capacity (R120)
- in accordance with Table 23 of BS 9999:2024, elements of structure throughout the Pavilion building are to:
  - achieve at least 60 minutes fire resistance with regards to load-bearing capacity (R60) for any structures supporting the ground floor (above basement). However, if the basement structural also supports the tower or the failure of the basement structure could lead to instability of the tower, the basement structure should achieve 120min fire resistance (i.e. R 120);
  - achieve at least 30 minutes fire resistance with regards to load-bearing capacity for any other elements of structure.

Elements of structure is deemed to include structural frames, beams, columns, loadbearing walls (internal and external), floor structures and gallery structures. However, the following are excluded from the requirement for structural fire protection:

- A structure that supports only a roof unless; the roof performs the function of a floor (e.g. for car parking or providing means of escape), or the structure supporting the roof is essential for supporting walls that are required to achieve a fire resistance classification (e.g. portal frames).
- The lowest floor of the building.
- A platform floor.
- External walls that are not required to be fire resisting for external fire spread purposes and transmit only self weight and wind loads and do not transmit floor load.

*Note: If one element of structure supports or stabilises another, as a minimum the supporting element should have the same fire resistance as the other element.*

### 7.2 Compartmentation

In accordance with Clause 23.1 and Table 5 of BS 9991:2024, the main building should consider:

- Each flat within the building is to be separated from all other areas of the building by at least 60-minute fire-resisting construction.

- All floors within the building are to be compartment floors – refer to Table 10 for fire resistance requirements.
- Ancillary accommodation should be separated from the remainder of the building by fire-resisting walls/floors – refer to Table 11 for fire resistance requirements.

The ground floor of the Pavilion should be a compartment floor. Refer to Table 10 for fire resistance requirements.

Certain vertical penetrations of the compartment floors should be constructed as protected shafts. These include vertical penetrations such as stairs, service shafts and lifts. Walls and floors making up a protected shaft should be compartment walls and floors.

The ground floor of the Pavilion should be a compartment floor.

It is noted that there is an accommodation stair linking the Level 01 amenity area to the Level 03 amenity area. This should be enclosed in 120-minute fire resisting construction to maintain floor-to-floor compartmentation.

### 7.3 Fire Resistance Requirements Summary

The construction of the development is to achieve the fire resistance requirements summarised in Table 10.

Table 10 Minimum fire resistance requirements summary

Part of the Building		Minimum Fire Resistance <sup>[2]</sup> (minutes)			Method of Exposure
		Load-bearing Capacity (R)	Integrity (E)	Insulation (I)	
Structural frame, beam or column		[1]	-	-	Exposed faces
Load-bearing wall element		[1]	-	-	Each side separately
Floor (including compartment floors)		[1]	[1]	[1]	From the underside
Roof	Any part forming an escape route	30	30	30	From the underside
	Any roof that performs the function of a floor	[1]	[1]	[1]	From the underside
External Wall	Any part within 1m of a relevant boundary	[1]	[1]	[1]	Each side separately
	Any part 1m or more from a relevant boundary <sup>[4]</sup>	[1]	[1]	15	From inside the building
	Any part within 1.8m of an external escape route	30	30	-	From inside the building
Compartment Wall	Walls enclosing flats	60	60	60	Each side separately
	Other compartment walls	[1]	[1]	[1]	Each side separately
Protected Shaft (Excluding Any Firefighting Shaft)	Any other part between protected corridor/lobby <sup>[5]</sup>	30	30	30	Each side separately
	Any other part of shaft enclosure	[1]	[1]	[1]	Each side separately
Firefighting Shaft	Separation between shaft and rest of building	120	120	120	From outside the shaft
		60	60	60	From inside the shaft
	Separation between stair, lift and lobby within shaft	60	60	60	Each side separately
Enclosure	Protected Lobby/Corridor	30	30	30	Each side separately
	Protected Internal Stairway	30	30	30	Each side separately
	Ancillary Accommodation	[3]	[3]	[3]	Each side separately

Notes:

1. Refer to Section 7.1 for fire resistance requirement based on requirement for elements of structure
2. Based on performance criteria in the relevant European Standard (BS EN 1364/1365, classified in accordance with BS EN 13501-2) or in accordance with BS476 (parts 21-24). Classification in accordance with BS EN 13501-2 is the recommended approach.
3. Refer to Section 7.4 for details regarding the required fire resistance of the enclosures to ancillary accommodation
4. This requirement is only applicable to parts of the external walls required to achieve a fire resistance based on external fire spread requirements as detailed in Section 8.2.
5. This is considered to be applicable only to stairs which do not have a fire resistance requirement of more than 60 minutes and are served by a protected lobby/corridor which is enclosed in a minimum REI 30 fire-resisting construction

## 7.4 Ancillary Accommodation

Ancillary accommodation is to be separated from all other areas of the building (including walls, ceilings, and floors) by fire-resisting construction, as detailed in Table 11.

Table 11 Minimum required fire resistance to ancillary accommodation enclosures

Ancillary Accommodation	Minimum Fire Resistance <sup>[1]</sup> (minutes)
Plant and Engineering Services	60
Refuse Store	60
Communal Lounge/Amenity Spaces	30
Bike hub	60
Storerooms	30
Any Switchroom or Transformer Room <sup>[2]</sup>	120
Pavilion kitchen	30

Notes:

1. When tested in accordance with the relevant parts of BS 476 or BS EN 1364/1365 (classified in accordance with BS EN 13501-2), for load-bearing capacity, integrity, and insulation (REI). Exposure method – each side separately.
2. Including both LV and HV

Note: Where two fire resistance requirements overlap, the most onerous level of protection is to be implemented.

Refer to Section 7.1 for fire resistance requirement based on requirement for elements of structure

The fire resistance requirements outlined in Table 11 indicate the minimum only for each enclosure. There may be instances where the level of fire resistance needs to be increased, such as for firefighting access routes, which prescriptively require a 120-minute (REI 120) fire-resisting enclosure. Refer to the Fire Strategy Drawings in Appendix A for full notional fire resistance layouts.

## 7.5 Fire Doors

Where doors are to be provided within fire-resisting elements (walls and floors) they are to achieve the required fire resistance and smoke seal provision as outlined in Table 12.

Table 12 Minimum door fire resistance requirements

Position of Door		Minimum Fire Resistance <sup>[1]</sup>	
		BS 476-22 <sup>[2]</sup>	BS EN 13501-1 <sup>[3]</sup>
Compartment Walls	Between residential unit and common area	FD30S	E30S <sub>α4</sub>
	Enclosing a protected shaft forming a stair situated wholly or partly above the adjoining ground	FD30S	E30S <sub>α4</sub>
	Enclosing a protected shaft forming any other stair or a service shaft	[4]	[4]
	Enclosing a protected shaft forming a lift	[5]	[5]
	All other compartment walls	[6] [7]	[6] [7]
Compartment Floor		[6]	[6]
Firefighting Shaft	Enclosing firefighting stair	FD60S	E60S <sub>α4</sub>
	Enclosing firefighting lift	FD60	E60
Common Protected Lobby / Corridor / Lift Lobby		FD30S	E30S <sub>α4</sub>
Corridor Sub-division		FD30S	E30S <sub>α4</sub>
Protected Internal Entrance Hall / Stairway		FD30	E30
Ancillary Accommodation		[6]	[6]

- Notes:
1. Relates to the fire-resisting integrity of the door only
  2. Based on performance criteria when tested in accordance with BS 476-22
  3. Based on the performance criteria when classified in accordance with BS EN 13501-2
  4. At least half the period of fire resistance required of the wall in which it is fitted but not less than FD30, and with smoke seals
  5. At least half the period of fire resistance required of the wall in which it is fitted but not less than FD30
  6. As for the wall or floor in which it is fitted
  7. Smoke seal only required where compartment wall is utilised for progressive horizontal evacuation

A fire door that is required to resist the passage of smoke at ambient temperature conditions (i.e. with suffix 'S' [BS 476-31.1] or 'S<sub>α4</sub>' [BS EN 13501-2]) should either:

- have a leakage rate not exceeding 3m<sup>3</sup>/h/m, when tested in accordance with BS 476-31.1; or
- meet the classification requirement of S<sub>α4</sub>, when classified in accordance with BS EN 13501-2.

### Fire Strategy Drawings

Notional fire resistance (including fire doors) layouts are illustrated within Appendix A – Fire Strategy Drawings.

## 7.6 Re-Entrant Corners

The building design should prevent fire spread from occurring around walls/floors required to be fire-resisting and 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-resisting wall/floor are to be separated by:

- at least 1000mm for dwelling to dwelling (see Figure 5).
- at least 1800mm for ancillary accommodation to any other area.
- at least 1800mm to any protected escape route (e.g. stair or protected corridor/lobby leading to a stair), where the top storey of the building is more than 50m above ground level or the building is not provided with sprinklers (see Figure 6).

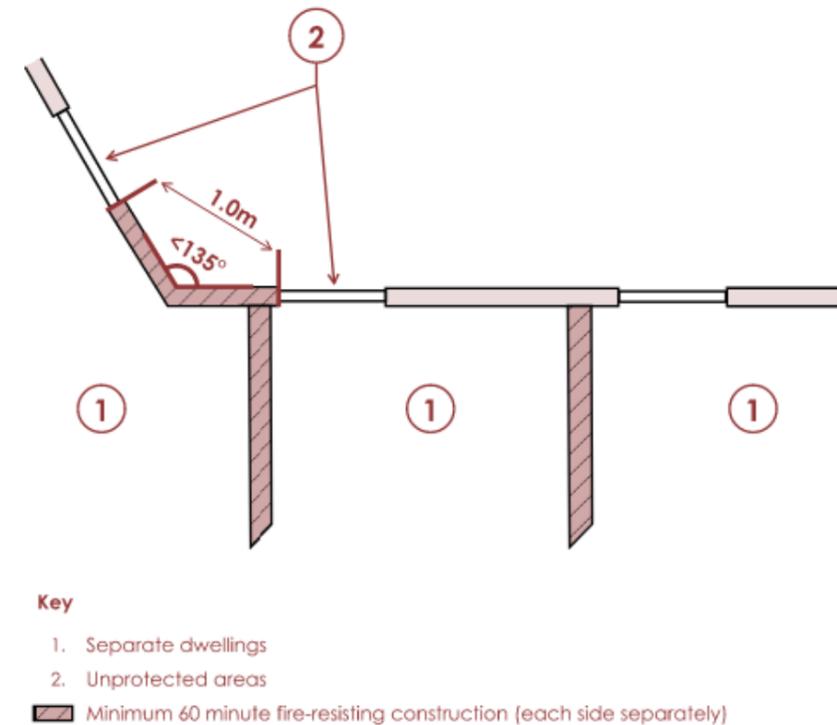
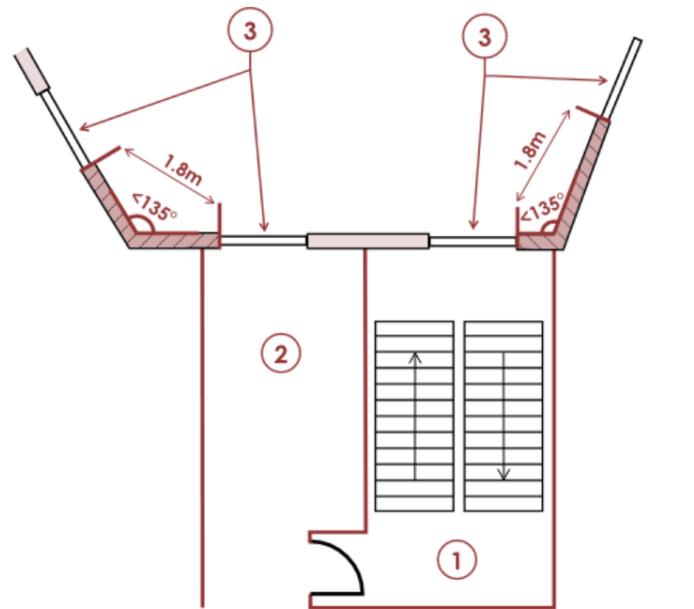


Figure 5 Re-entrant corner requirements for dwelling to dwelling fire spread



- Key**
- 1. Escape stair
  - 2. Protected escape route
  - 3. Unprotected areas
  -  External wall construction with appropriate level of fire resistance (equivalent to fire-resisting construction required to internal enclosure)

Figure 6 Re-entrant corner requirements for protection to escape routes

## **8. B4 – External Fire Spread**

### 8.1 External Wall Materials

#### 8.1.1 Regulation 7(2)

Since the building contains a storey more than 18m above ground level, Regulation 7(2) is applicable as the building is considered a “relevant building”.

“Relevant building” means buildings with a storey (not including roof-top plant areas or any storey consisting exclusively of plant rooms) at least 18m above ground level and which contains one or more dwellings of an institution or any room for residential purposes. The height of the building above the ground floor level should be measured from the lowest ground level adjoining the outside of a building to the top of the floor surface of the storey. The Regulation 7(2) requires that all materials, which become part of an external wall or specific attachment of a relevant building, should achieve Class A2-s1, d0 or Class A1, other than those exempted by Regulation 7(3).

### 8.2 Fire Spread Between Properties

B4 (External Fire Spread) will be reviewed in more detail during the Stage 3 design stage and Stage 3 Fire Safety Strategy report.

## 9. B5 – Access and Facilities for the Fire Service

### 9.1 Main Building

#### 9.1.1 Firefighting Shafts

The top floor of the main building is more than 18m in height from the Fire Service access level. Therefore, firefighting shafts are to be provided to the building. The main building should be served by no less than two firefighting shafts due to it having floor levels over 900m<sup>2</sup> in area.

All firefighting shafts are to contain a firefighting lift, firefighting stair, and firefighting lobby and should serve all storeys they pass through. Each firefighting stair should have an AOV at the head with an aerodynamic free area no less than 0.7m<sup>2</sup>. In addition, there should be a fire main provided to within either the firefighting stair or lobby.

Normally the residential common corridors act as the firefighting lobby in residential buildings. However, the inclusion of evacuation lifts to this building creates separate evacuation lift lobbies separated from residential common corridor. Such evacuation lift lobbies are permitted to also function as firefighting lobbies.

Due to the height of the building over 50m, communications should be extended by the installation of systems such as a radiating cable (leaky feeder), distributed antennae system or the installation of fire telephone.

#### 9.1.2 Fire Mains

A wet rising main in accordance with BS 9990:2015 is to be provided to the firefighting stairs within the main building.

#### 9.1.3 Wayfinding Signage for the Fire Service

Since the building contains a storey more than 11m above ground level it is to be provided with wayfinding signage (floor indication signs and flat indication signs) to assist the fire service to identify each floor and flat.

This wayfinding signage is to be designed and installed in accordance with Section 48.2 of BS 9991:2024.

### 9.2 Overall Site Access

The main access for the fire service will be via Wood Street. The two firefighting stairs are accessed from the rear (northern) elevation, of which is accessed via a road stemming from Scott Road and Havelock Street.

The access provisions are to be in accordance with Table 13. The service area does not have adequate turning facilities, but it does not require the fire appliance to traverse a dead end over 20m in length.

Table 13 Vehicle access requirements

Applicable Type	Minimum width of road between kerbs	Minimum width of gateways	Minimum turning circle between kerbs	Minimum turning circle between walls	Minimum clearance height	Minimum carrying capacity
Pump	3.7m	3.1m	16.8m	19.2m	3.7m	12.5 tonne
High-reach	3.7m	3.1m	26.0m	29.0m	4.0m	17.0 tonnet

Fire appliance access to the building is illustrated in Figure 7.

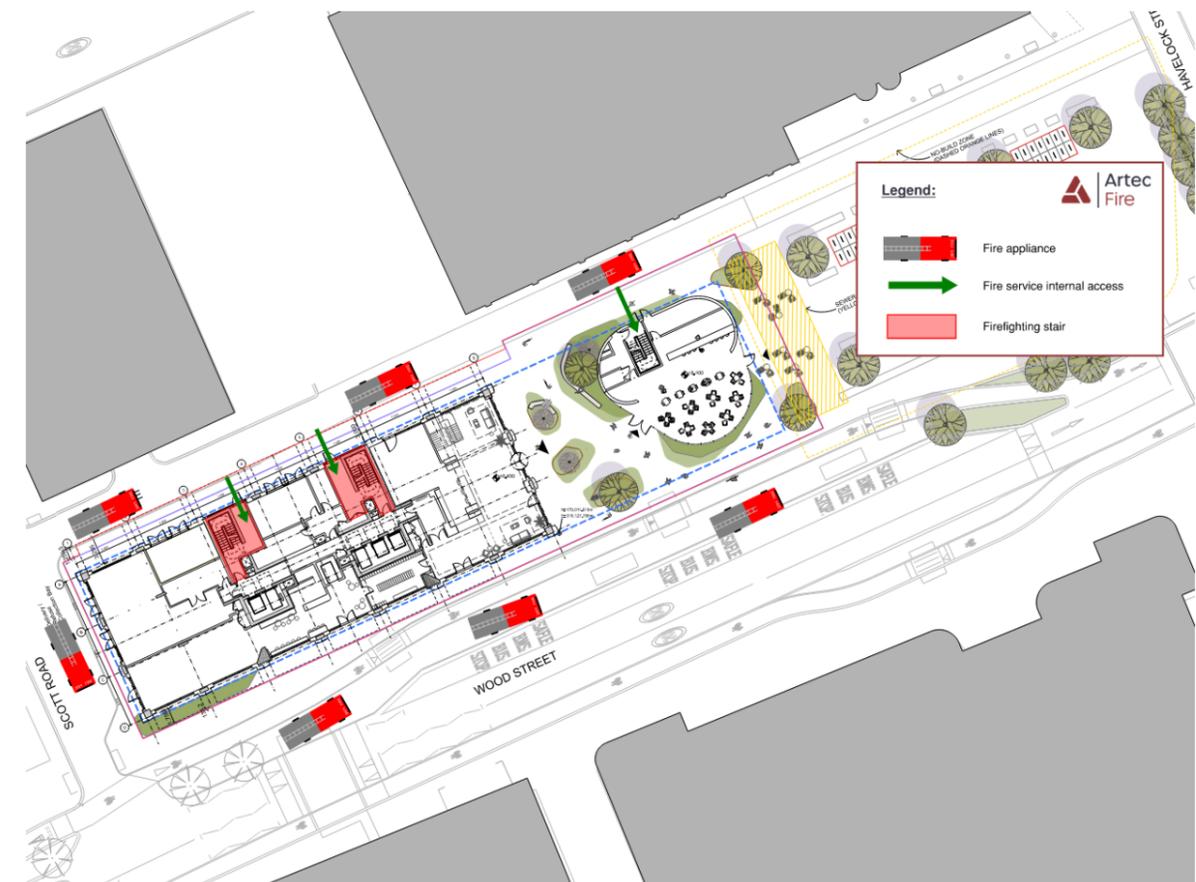


Figure 7 Fire tender access

## 10. Fire Protection Systems Overview

### 10.1 Fire Detection and Alarm Systems

#### 10.1.1 Main Building

The residential flats are to be provided with a Grade D, Category LD1 fire detection and alarm system designed in accordance with BS 5839-6:2019+A1:2020.

The common escape routes (stairs and protected lobbies/corridors) in upper levels are to be provided with an L5 fire detection and alarm system designed in accordance with BS 5839-1:2017 to activate the relevant smoke ventilation systems only (no sounders in these areas).

The residential ancillary areas are to be provided with a Category L2 fire detection and alarm system designed in accordance with BS 5839-1:2017. This also extends to the bike hub facilities.

#### Evacuation Alert System

The building has a top storey over 18m above ground level; therefore, an evacuation alert system is to be provided throughout. The design, installation and commission of the system is to be in accordance with BS 8629:2019.

#### 10.1.2 Pavilion

The pavilion building may be provided with a manual system (M) in accordance with BS 5839-1.

### 10.2 Smoke Ventilation Systems (Main Building)

The common corridors are to be provided with a means of smoke control to ensure that the evacuation lift lobbies and escape stair remain free from smoke ingress.

Due to travel distances within the common corridors being within limits set out by BS 9991:2024, there is no need to utilise the smoke control systems to maintain tenability conditions to aid in extended travel distances.

The current design of the smoke control system is not yet confirmed. However, allowance is made within the design to consider either a pressure differential system (PDS) or a mechanical smoke ventilation system (MSVS) throughout the building – both in accordance with BS 9991:2024.

Any smoke control system is to be determined at a later stage and will be validated by CFD modelling. Such CFD modelling will take into account the climatic effects such as stack effect and wind effect due to the height of the building.

#### 10.2.1 Basement Smoke Clearance System

As the basement of the main building exceeds 200m<sup>2</sup> in area, it is recommended to be provided with a suitable mechanical system achieving no less than 10 air changes per hour (note natural air inlet should be provided to the mechanical ventilation system as well).

The basement level of the Pavilion is less than 200m<sup>2</sup>. As such, no smoke clearance system is required. It should be noted that if there is access between the Pavilion basement and the main building basement, then the main building basement smoke/heat clearance system should also extend to the Pavilion basement.

### 10.3 Fire Suppression Systems (Main Building)

As building has a top storey more than 11m above ground level, it is to be provided with a life safety sprinkler system throughout (including common corridors, lobbies and stairs). The sprinkler system is to be designed and installed as a Category 4 system, in accordance with BS 9251:2021.

All non-residential and ancillary areas with a floor area less than 100m<sup>2</sup> are to be covered by the BS 9251:2021 residential sprinkler system.

Any non-residential and ancillary accommodation with a floor area over 100m<sup>2</sup> is to be provided with a sprinkler system designed and installed in accordance with BS EN 12845:2015+A1:2019. The category of the system is dependent on the use of the space, however, Category OH2 is typically appropriate for most standard commercial uses.

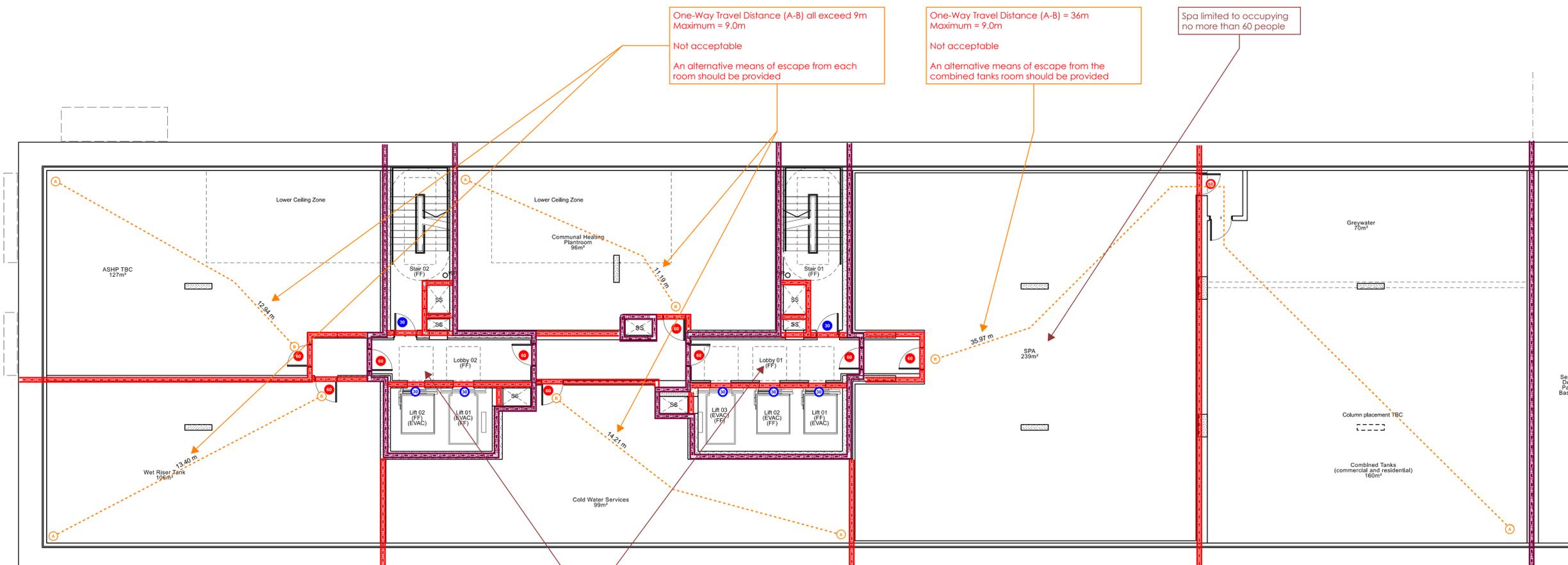
## Appendix A – Fire Strategy Drawings (Main Building)

Notes:

1. This drawing is to be read in conjunction with the Fire Safety Strategy Report. This drawing supports the Fire Safety Strategy Report and should never be separated from the Fire Safety Strategy Report.
2. This drawing illustrates notional fire resistance layouts to satisfy the requirements of the Fire Safety Strategy Report - refer to the Fire Safety Strategy Report for further details. Refer to the architectural design for the actual fire resistance design.

Legend:

- 30 minute fire rated construction
- 60 minute fire rated construction
- 120 minute fire rated construction
- FD30 fire door
- FD30S fire door
- FD60 fire door
- FD60S fire door
- FD120 fire door
- FD120S fire door



One-Way Travel Distance (A-B) all exceed 9m  
Maximum = 9.0m  
Not acceptable  
An alternative means of escape from each room should be provided

One-Way Travel Distance (A-B) = 36m  
Maximum = 9.0m  
Not acceptable  
An alternative means of escape from the combined tanks room should be provided

Spa limited to occupying no more than 60 people

The efficiency of the smoke control system in protecting the evacuation lift lobby and the fire fighting stairs from a basement fire are to be demonstrated by CFD modelling in the later stage of the design.

Rev	Description	By	Chd	Date
02	For information	RT	RS	31/07/2025
01	For information	RT	RS	25/07/2025

Status

STATUS

**Artec Fire**  
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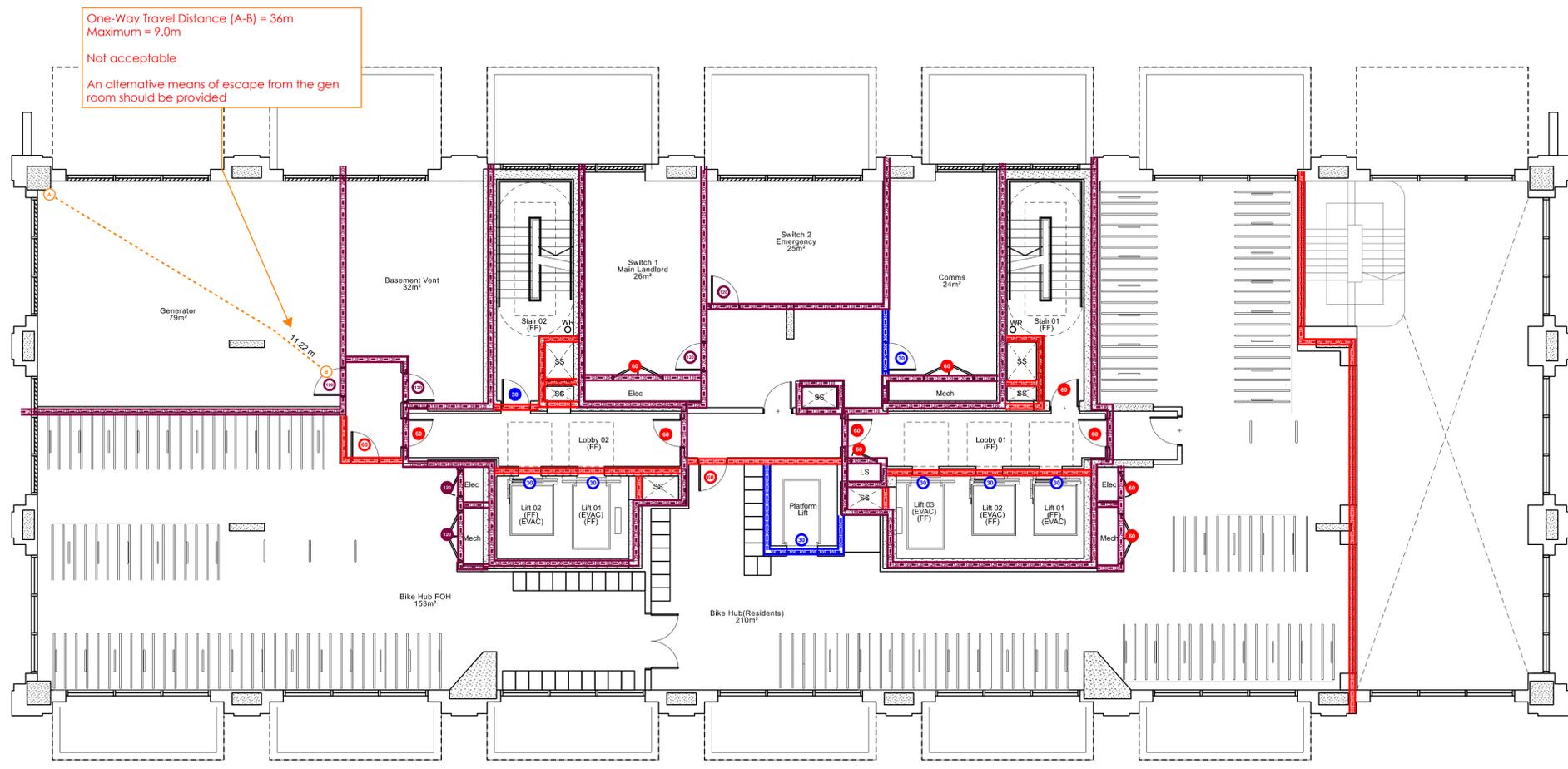
Client: REAP 3 Limited

Architect: 5Plus

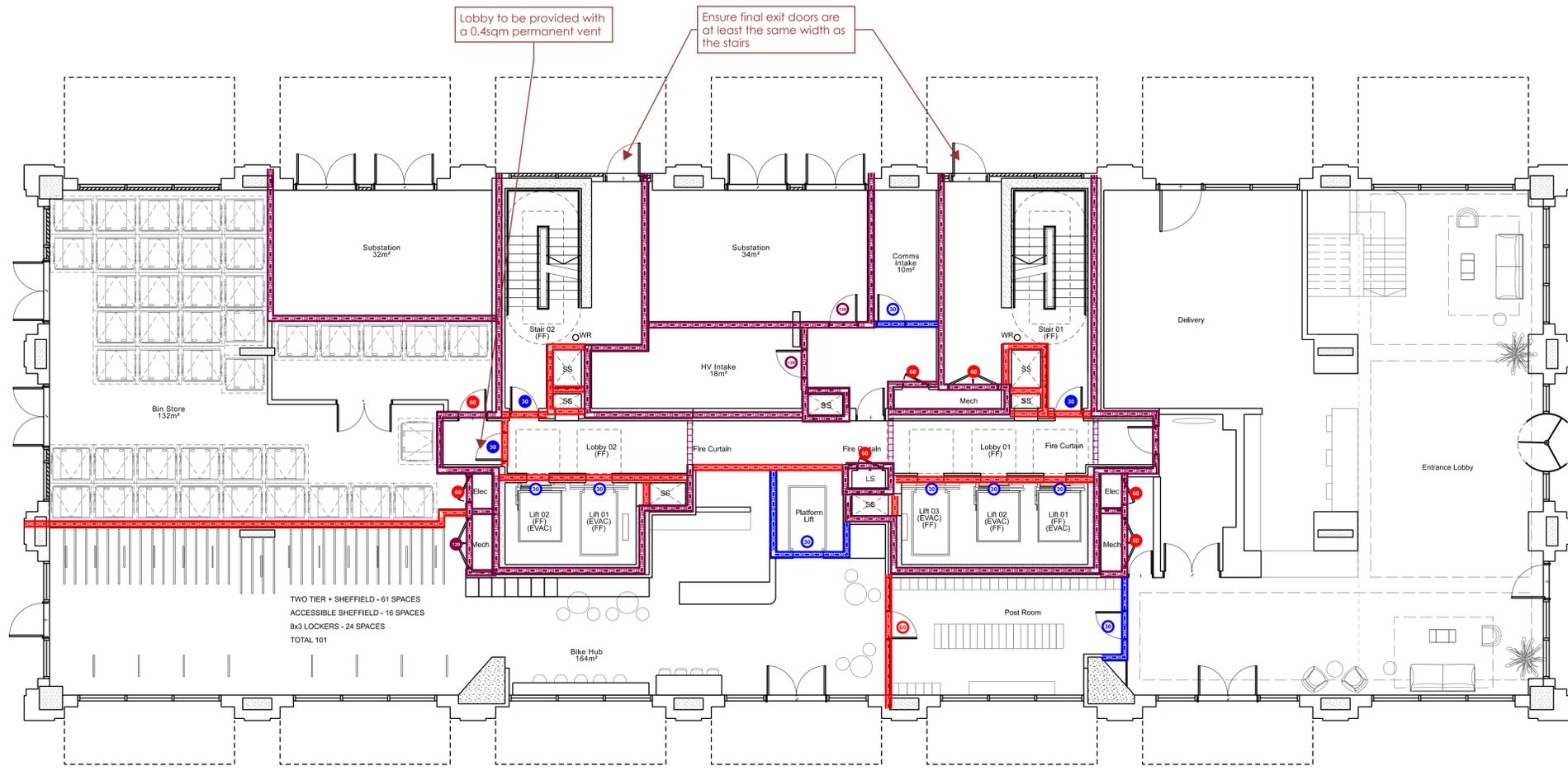
Project Title: Plots 04 and 05, Central Square, Cardiff

Drawing Title: Basement Fire Strategy Drawing

Project No.	Scale	Drawn	Checked
00556	1:100 @ A1	RT	RS
Revision	Drawing No.		
02	-		



MEZZANINE FLOOR



GROUND FLOOR

- Notes:
- This drawing is to be read in conjunction with the Fire Safety Strategy Report. This drawing supports the Fire Safety Strategy Report and should never be separated from the Fire Safety Strategy Report.
  - This drawing illustrates notional fire resistance layouts to satisfy the requirements of the Fire Safety Strategy Report - refer to the Fire Safety Strategy Report for further details. Refer to the architectural design for the actual fire resistance design.

- Legend:
- 30 minute fire rated construction
  - 60 minute fire rated construction
  - 120 minute fire rated construction
  - FD30 fire door
  - FD30S fire door
  - FD60 fire door
  - FD60S fire door
  - FD120 fire door
  - FD120S fire door
  - 120 minute fire curtain

Rev	Description	By	Chk	Date
02	For information	RT	RS	31/07/2025
01	For information	RT	RS	25/07/2025

Status

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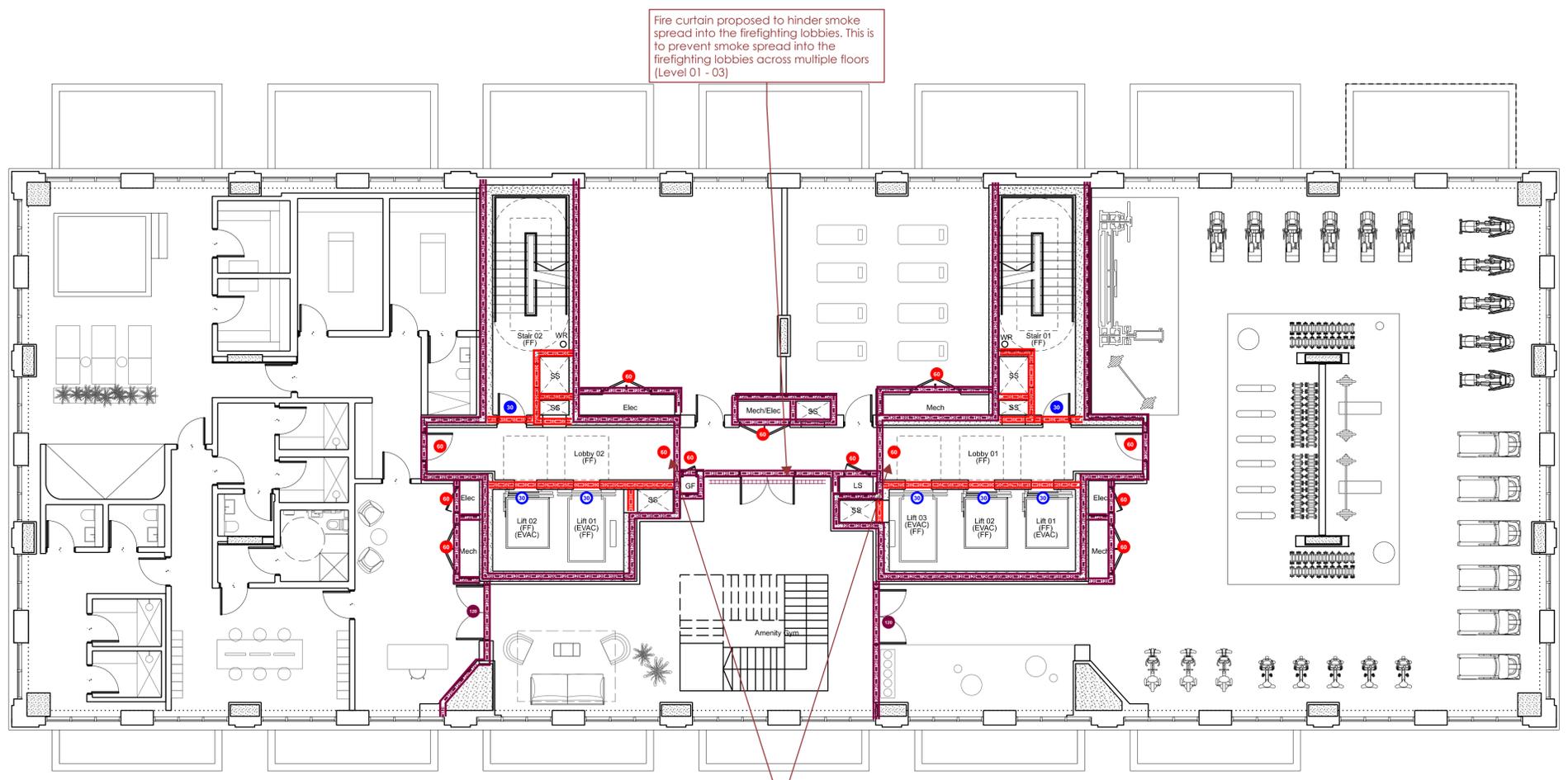
Client: REAP 3 Limited

Architect: 5Plus

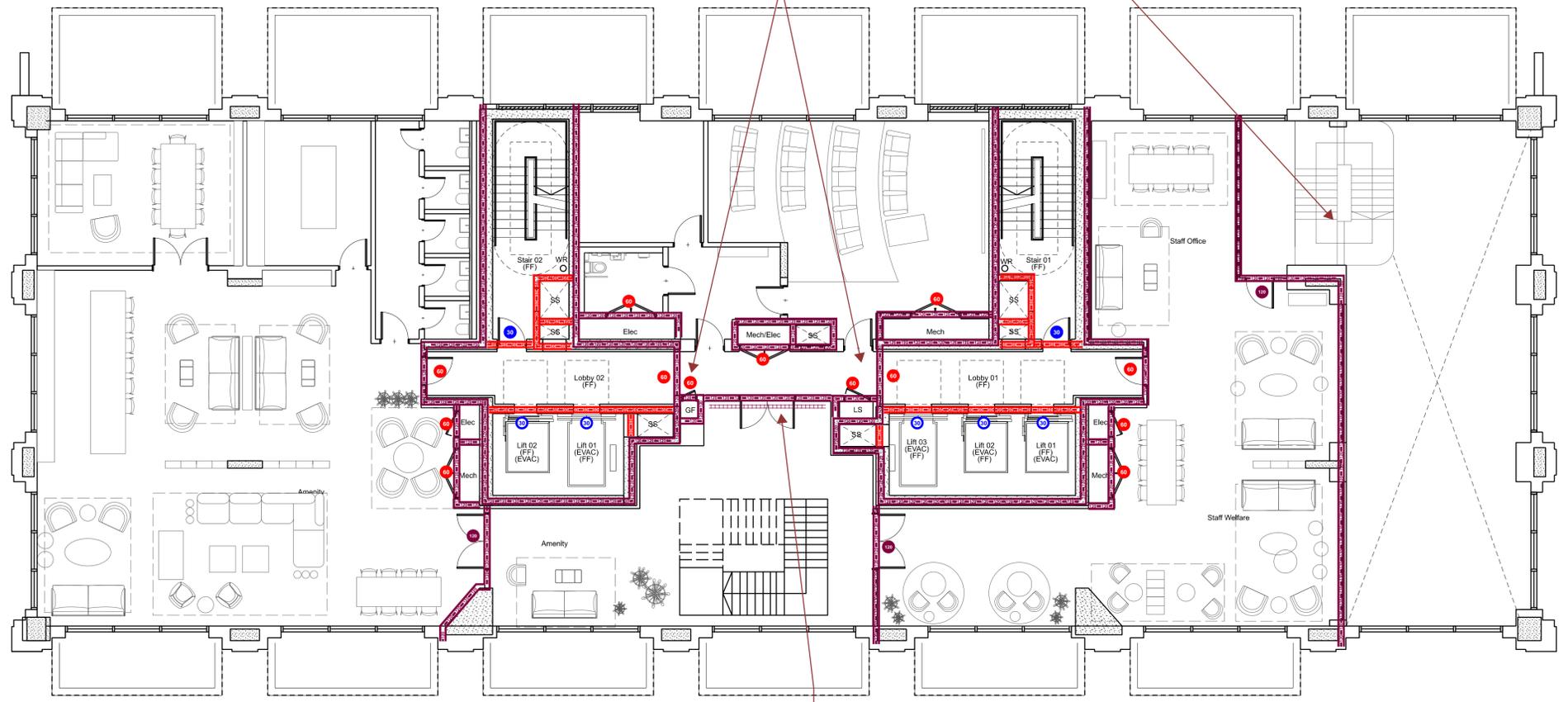
Project Title: Plots 04 and 05, Central Square, Cardiff

Drawing Title: Ground and Mezzanine Level Fire Strategy Drawing

Project No.	Scale	Drawn	Checked
00556	1:100 @ A1	RT	RS
Revision	Drawing No.		
02	-		



3RD FLOOR



1ST - 2ND FLOORS - INDICATIVE AMENITY LAYOUT

Notes:

1. This drawing is to be read in conjunction with the Fire Safety Strategy Report. This drawing supports the Fire Safety Strategy Report and should never be separated from the Fire Safety Strategy Report.
2. This drawing illustrates notional fire resistance layouts to satisfy the requirements of the Fire Safety Strategy Report - refer to the Fire Safety Strategy Report for further details. Refer to the architectural design for the actual fire resistance design.

Legend:

- ▬ 30 minute fire rated construction
- ▬ 60 minute fire rated construction
- ▬ 120 minute fire rated construction
- ⊙ FD30 fire door
- ⊙ FD30S fire door
- ⊙ FD60 fire door
- ⊙ FD60S fire door
- ⊙ FD120 fire door
- ⊙ FD120S fire door
- ▬ 120 minute fire curtain

Rev	Description	By	Chk	Date
02	For information	RT	RS	31/07/2025
01	For information	RT	RS	25/07/2025

Status

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Client: REAP 3 Limited

Architect: 5Plus

Project Title: Plots 04 and 05, Central Square, Cardiff

Drawing Title: Level 01 - 03 Fire Strategy Drawing

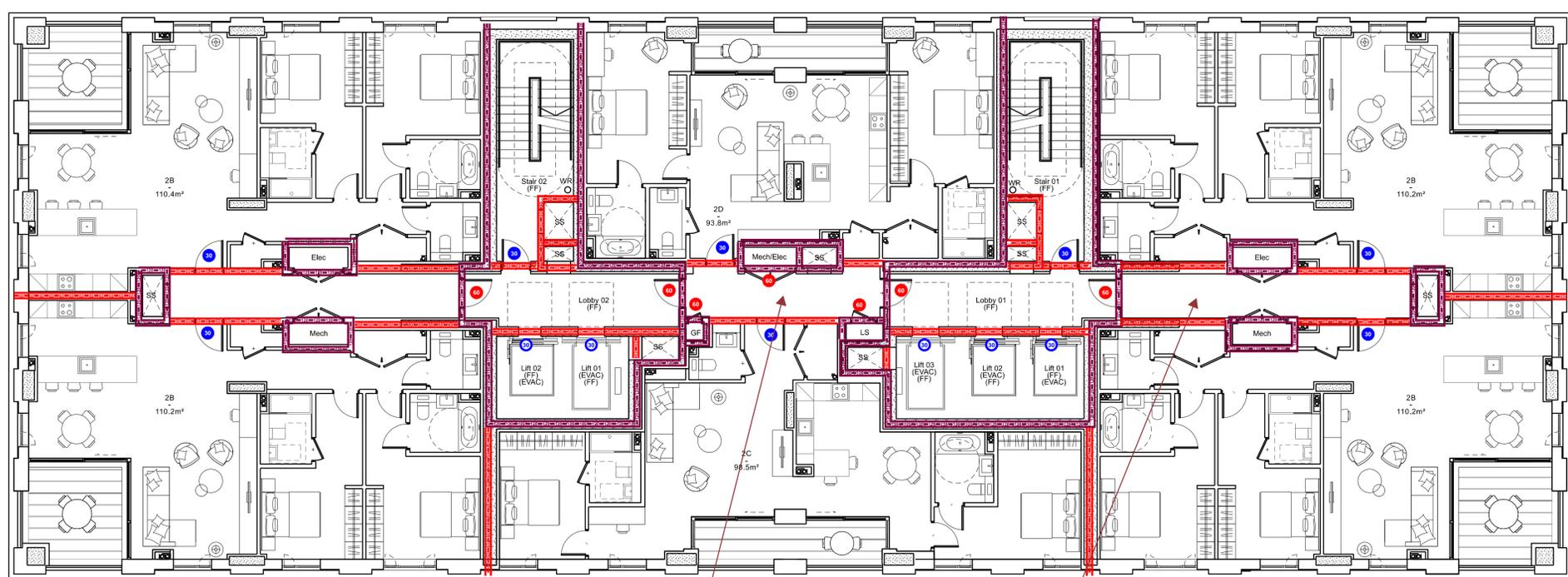
Project No.	Scale	Drawn	Checked
00556	1:100 @ A1	RT	RS
Revision	Drawing No.		
02	-		

Notes:

1. This drawing is to be read in conjunction with the Fire Safety Strategy Report. This drawing supports the Fire Safety Strategy Report and should never be separated from the Fire Safety Strategy Report.
2. This drawing illustrates notional fire resistance layouts to satisfy the requirements of the Fire Safety Strategy Report - refer to the Fire Safety Strategy Report for further details. Refer to the architectural design for the actual fire resistance design.

Legend:

-  30 minute fire rated construction
-  60 minute fire rated construction
-  120 minute fire rated construction
-  FD30 fire door
-  FD30S fire door
-  FD60 fire door
-  FD60S fire door
-  FD120 fire door
-  FD120S fire door

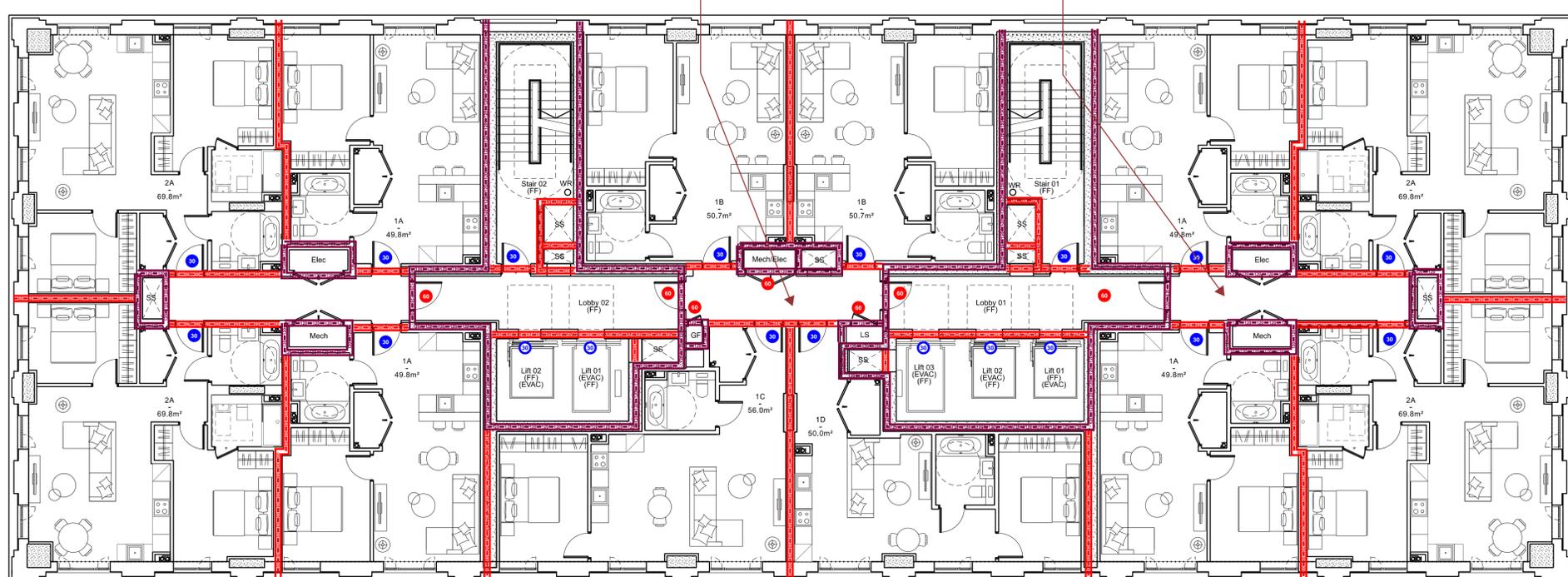


TYPICAL FLOORS 47TH-48TH

If a mechanical smoke ventilation system (MSVS) is provided to the building, then there should be a fire door to separate the two lift lobbies. As such, each side of the corridor would also need their own independent extraction system, including a smoke shaft.

**Relevant for all residential floors**

The efficiency of the smoke control system to protect the evacuation lift lobby and the fire fighting stairs are to be demonstrated by CFD modelling with the consideration of the climatic effects in the later stage of the design.



TYPICAL FLOORS 4TH-46TH

Rev	Description	By	Ckd	Date
02	For information	RT	RS	31/07/2025
01	For information	RT	RS	25/07/2025

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Client: REAP 3 Limited

Architect: 5Plus

Project Title: Plots 04 and 05, Central Square, Cardiff

Drawing Title: Level 04 - 48  
Fire Strategy Drawing

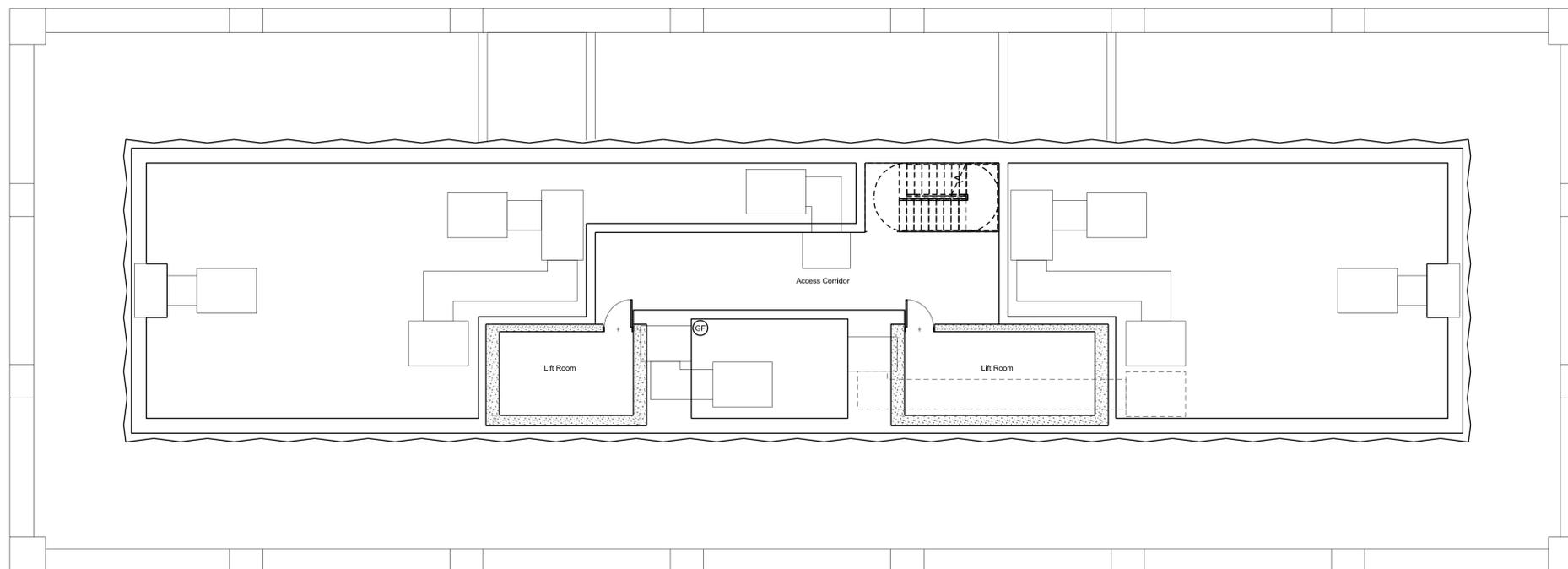
Project No.	Scale	Drawn	Checked
00556	1:100 @ A1	RT	RS
Revision	Drawing No.		
02	-		

Notes:

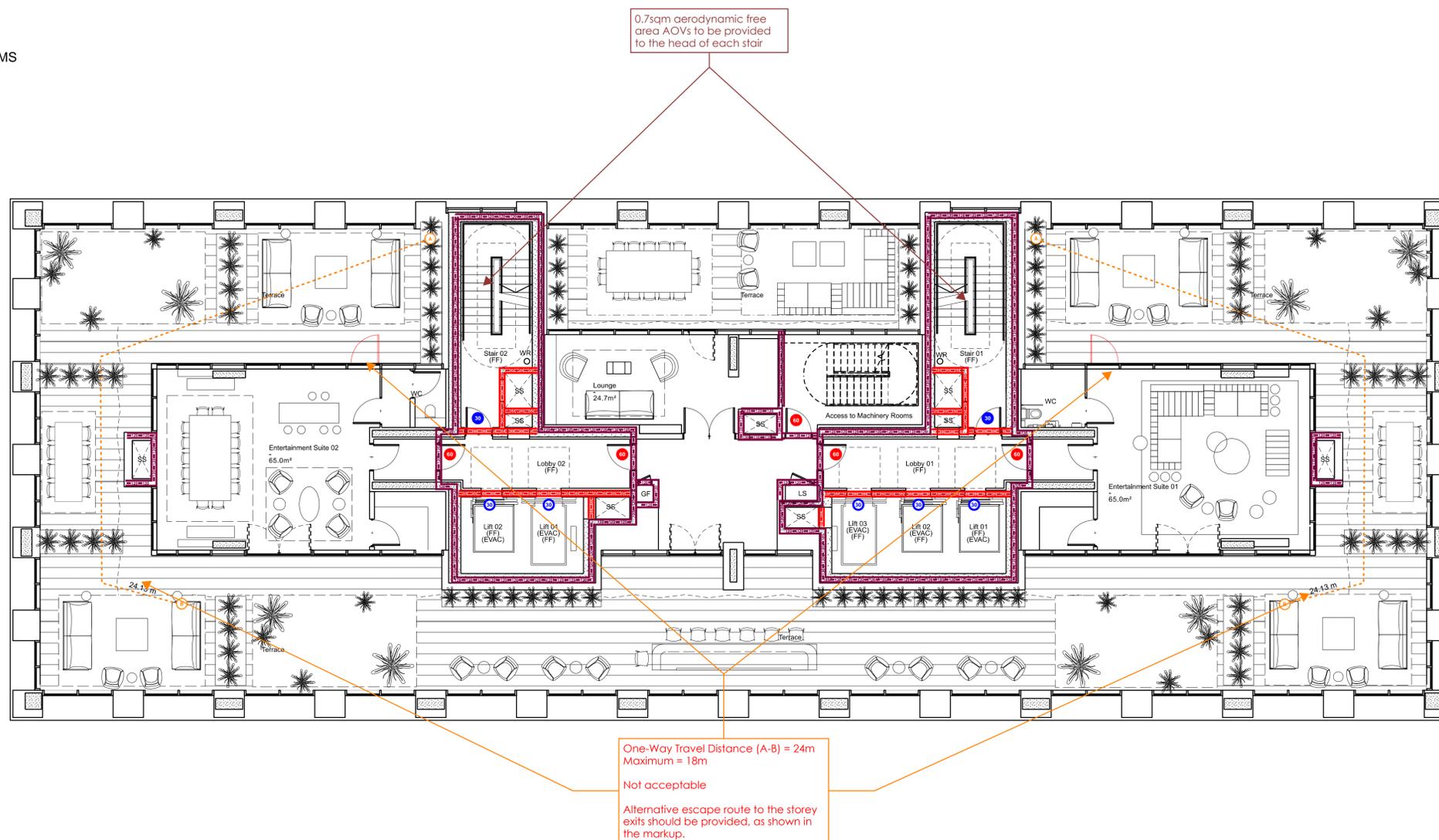
1. This drawing is to be read in conjunction with the Fire Safety Strategy Report. This drawing supports the Fire Safety Strategy Report and should never be separated from the Fire Safety Strategy Report.
2. This drawing illustrates notional fire resistance layouts to satisfy the requirements of the Fire Safety Strategy Report - refer to the Fire Safety Strategy Report for further details. Refer to the architectural design for the actual fire resistance design.

Legend:

-  30 minute fire rated construction
-  60 minute fire rated construction
-  120 minute fire rated construction
-  FD30 fire door
-  FD30S fire door
-  FD60 fire door
-  FD60S fire door
-  FD120 fire door
-  FD120S fire door



ROOF LEVEL 50TH - MACHINERY ROOMS



49TH ROOF TERRACE

Rev	Description	By	Ckd	Date
02	For information	RT	RS	31/07/2025
01	For information	RT	RS	25/07/2025

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Client  
REAP 3 Limited

Architect  
5Plus

Project Title  
Plots 04 and 05, Central Square, Cardiff

Drawing Title  
Level 04 - 48  
Fire Strategy Drawing

Project No.	Scale	Drawn	Checked
00556	1:100 @ A1	RT	RS
Revision	Drawing No.		
02	-		

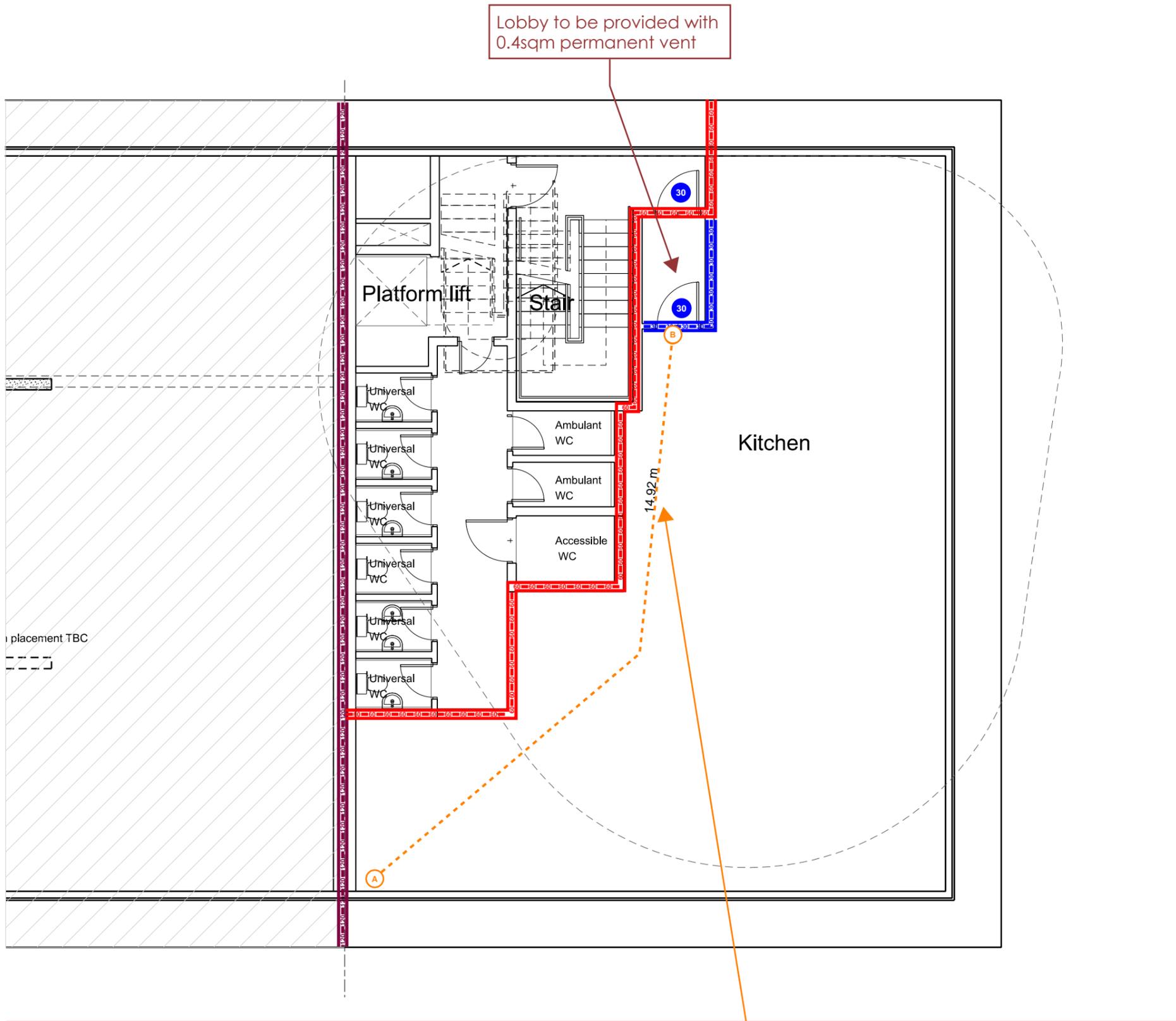
## Appendix B – Fire Strategy Drawings (Pavilion)

Notes

- This drawing is to be read in conjunction with the Fire Safety Strategy Report. This drawing supports the Fire Safety Strategy Report and should never be separated from the Fire Safety Strategy Report.
- This drawing illustrates notional fire resistance layouts to satisfy the requirements of the Fire Safety Strategy Report - refer to the Fire Safety Strategy Report for further details. Refer to the architectural design for the actual fire resistance design.

Legend

-  30 minute fire rated construction
-  60 minute fire rated construction
-  120 minute fire rated construction
-  FD30 fire door
-  FD30S fire door
-  FD60 fire door
-  FD60S fire door
-  FD120 fire door
-  FD120S fire door



Rev	Description	By	Clk	Date
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01	For information	RT	RS	25/07/25

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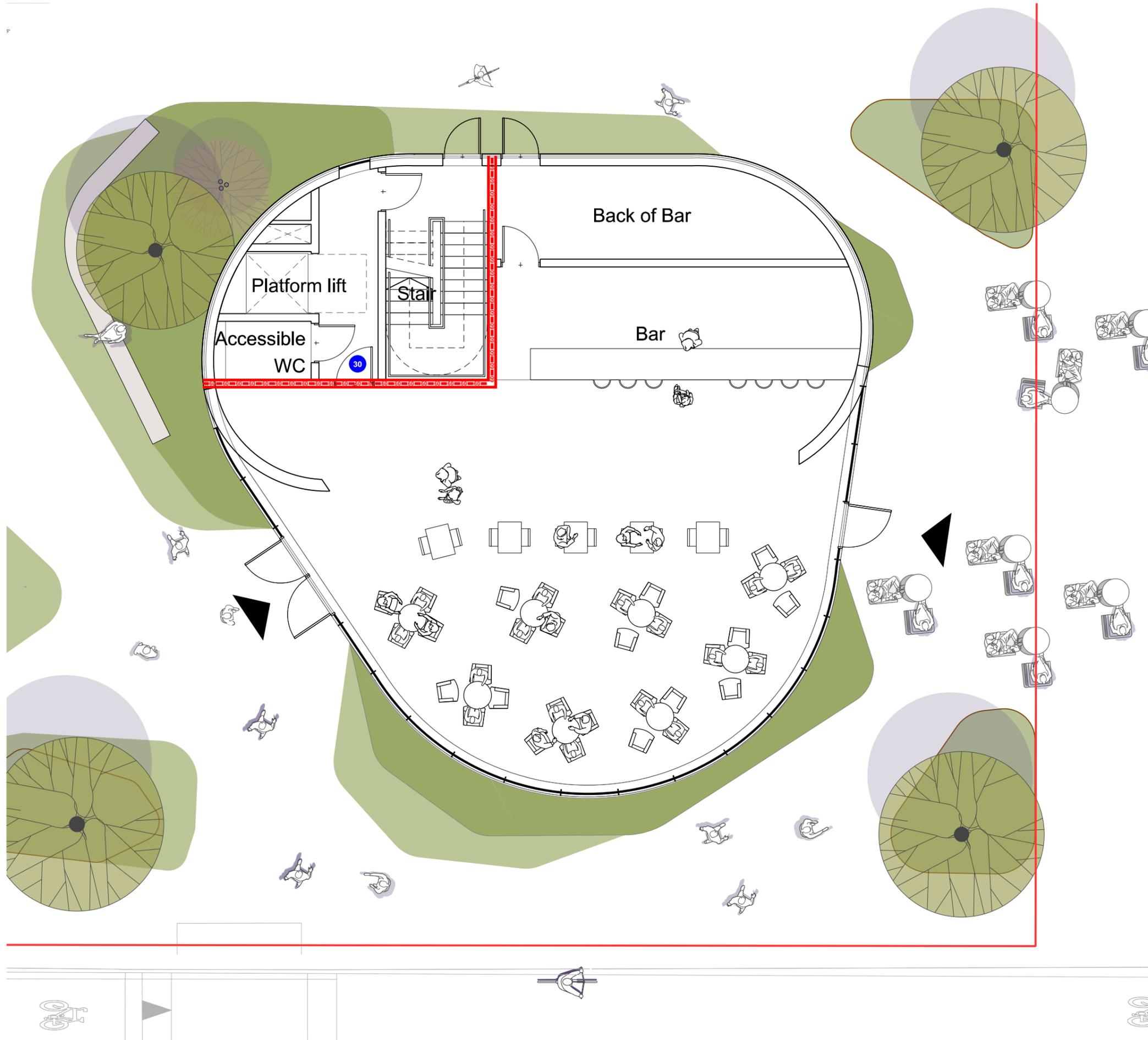
Client  
REAP 3 Limited

Architect  
5Plus

Project Title  
Plots 04 and 05, Central Square, Cardiff

Drawing Title  
Pavilion Basement  
Fire Strategy Drawing

Project No.	Scale	Drawn	Checked
00556	1:100 @ A3	RT	RS
Revision	Drawing No.		
02	-		



**Notes**

- This drawing is to be read in conjunction with the Fire Safety Strategy Report. This drawing supports the Fire Safety Strategy Report and should never be separated from the Fire Safety Strategy Report.
- This drawing illustrates notional fire resistance layouts to satisfy the requirements of the Fire Safety Strategy Report - refer to the Fire Safety Strategy Report for further details. Refer to the architectural design for the actual fire resistance design.

- Legend**
- 30 minute fire rated construction
  - 60 minute fire rated construction
  - 120 minute fire rated construction
  - ⊙ FD30 fire door
  - ⊙ FD60 fire door
  - ⊙ FD120 fire door

Rev	Description	By	Ckd	Date
02	For information	RT	RS	31/07/25
01	For information	RT	RS	25/07/25

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Client  
**REAP 3 Limited**

Architect  
**5Plus**

Project Title  
**Plots 04 and 05, Central Square, Cardiff**

Drawing Title  
**Pavilion Ground Level Fire Strategy Drawing**

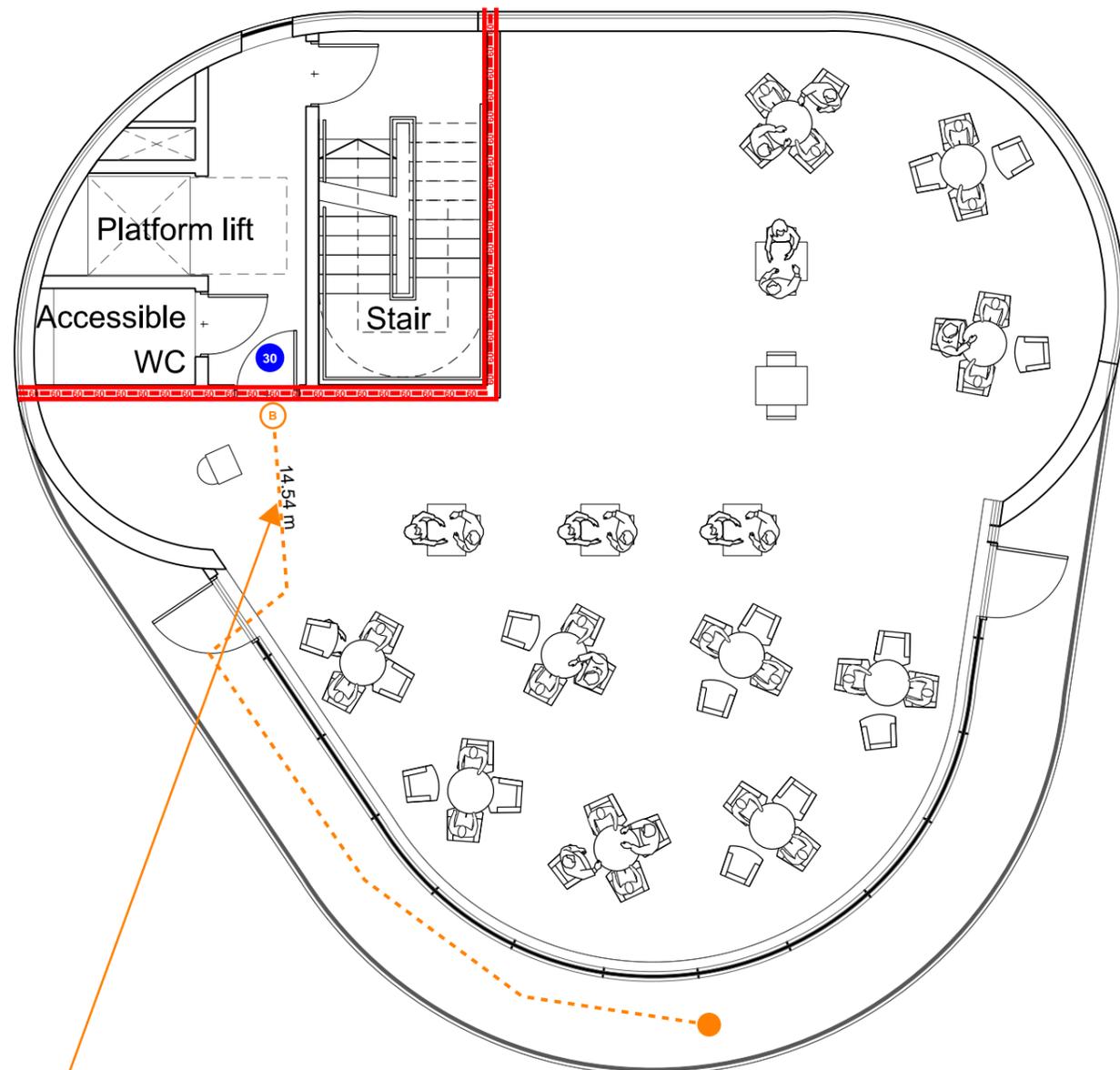
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Revision <b>02</b>	Drawing No. <b>-</b>		

Notes

- This drawing is to be read in conjunction with the Fire Safety Strategy Report. This drawing supports the Fire Safety Strategy Report and should never be separated from the Fire Safety Strategy Report.
- This drawing illustrates notional fire resistance layouts to satisfy the requirements of the Fire Safety Strategy Report - refer to the Fire Safety Strategy Report for further details. Refer to the architectural design for the actual fire resistance design.

Legend

-  30 minute fire rated construction
-  60 minute fire rated construction
-  120 minute fire rated construction
-  FD30 fire door
-  FD30S fire door
-  FD60 fire door
-  FD60S fire door
-  FD120 fire door
-  FD120S fire door



One-Way Travel Distance (A-B) = 14.5m  
 Maximum = 20.0m  
 Acceptable

Rev	Description	By	Clk	Date
02	For information	RT	RS	31/07/25
01	For information	RT	RS	25/07/25

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Architect  
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Project Title  
 Plots 04 and 05, Central Square, Cardiff

Drawing Title  
 Pavilion Level 01  
 Fire Strategy Drawing

Project No.	Scale	Drawn	Checked
00556	1:100 @ A3	RT	RS
Revision	Drawing No.		
02	-		