

# Clarendon Phase 4

## STAGE 2 FIRE STRATEGY

July 2023



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\* Note: all changes from the previous revision have been highlighted by a dash in the right-hand margin as shown here as an example

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# Table of Contents

|          |                                                    |           |
|----------|----------------------------------------------------|-----------|
| <b>1</b> | <b>Introduction .....</b>                          | <b>4</b>  |
| 1.1      | Scope.....                                         | 4         |
| 1.2      | Building Description.....                          | 4         |
| 1.3      | Fire Strategy Summary .....                        | 5         |
| 1.4      | Policy D12 Fire Safety Statement .....             | 6         |
| <b>2</b> | <b>Legislation .....</b>                           | <b>8</b>  |
| 2.1      | Building Regulations 2010.....                     | 8         |
| 2.2      | Approved Document B (ADB) .....                    | 8         |
| 2.3      | Regulatory Reform (Fire Safety) Order .....        | 8         |
| 2.4      | New London Plan .....                              | 9         |
| <b>3</b> | <b>Means of Warning &amp; Escape .....</b>         | <b>10</b> |
| 3.1      | Evacuation Strategy.....                           | 10        |
| 3.2      | Travel Distances.....                              | 10        |
| 3.3      | Escape within Residential Accommodations .....     | 11        |
| 3.4      | Escape within Ancillary Accommodations.....        | 16        |
| 3.5      | Escape within Car Park .....                       | 16        |
| 3.6      | Escape within Commercial Units and Workspaces..... | 17        |
| 3.7      | Disabled Evacuation.....                           | 20        |
| 3.8      | Fire Alarm & Detection System.....                 | 21        |
| 3.9      | Emergency lighting.....                            | 21        |
| 3.10     | Signage.....                                       | 21        |
| <b>4</b> | <b>Internal Fire Spread (Linings) .....</b>        | <b>22</b> |
| 4.1      | Surface Linings.....                               | 22        |
| <b>5</b> | <b>Internal Fire Spread (Structure).....</b>       | <b>23</b> |
| 5.1      | Fire Resistance of Elements of Structure .....     | 23        |
| 5.2      | Compartmentation.....                              | 24        |
| 5.3      | Fire Stopping .....                                | 25        |
| 5.4      | Cavity barriers.....                               | 25        |
| 5.5      | Sprinklers.....                                    | 25        |
| <b>6</b> | <b>External Fire Spread .....</b>                  | <b>27</b> |
| 6.1      | Unprotected Areas .....                            | 27        |
| 6.2      | External Wall Construction.....                    | 27        |
| 6.3      | Roofs .....                                        | 28        |

**7     Access & Facilities for the Fire Service .....29**

7.1   Vehicle Access ..... 29

7.2   Internal Fire Service Access..... 30

7.3   Wet Risers..... 30

7.4   Smoke Venting ..... 31

7.5   Hydrants ..... 31

7.6   Emergency Power Supplies..... 31

7.7   Evacuation Alert System ..... 31

7.8   Secure Information Boxes..... 31

**8     Fire Safety Management.....33**

8.1   General ..... 33

8.2   Key Management Issues..... 33

8.3   Regulation 38 ..... 34

**9     Conclusions and Recommendations .....35**

# 1 Introduction

Introba has been engaged by St William as a specialist fire and life safety consultant to develop and validate the Fire Strategy for the Clarendon Phase 4 development.

The following sections outline the key fire safety features that should be incorporated within the development. Some of the requirements may be negotiated down at a later date following discussion with the approving authorities.

## 1.1 Scope

The fire strategy is intended for discussion between the design team and to assist the design team in developing the layouts to ensure that once a Building Regulations application is made, all of the fire safety elements will be incorporated into the plans.

This report is based on the guidance in Approved Document B (ADB), 2019 edition incorporating the 2020 and 2022 amendments.

This guidance has been developed to ensure the highest standard of fire safety is designed into the building development at an early stage of design.

Consideration has also been given to the New London Plan dated March 2021. The London Plan is legally part of each of London's Local Planning Authorities' Development Plan and must be taken into account when planning decisions are taken in any part of Greater London. Planning applications should be determined in accordance with it, unless there are sound planning reasons (other material considerations) which indicate otherwise. Any sections within the report that are part of a recommendation from the New London Plan shall be highlighted in blue.

## 1.2 Building Description

The Clarendon Phase 4 development is a mixed used development that consists of three new residential blocks within the Clarendon Road wider scheme, which are Blocks H1, H2 and H3. They consist mainly of residential accommodation on the upper levels with mixed commercial, workplaces and ancillary spaces at ground and first floors. These blocks also provide access to a car park at basement level that shall also serves Phase 3B and 5.

The following table provides information of each block:

| Block | Description                                   | Number of Storeys              | Height to top occupied storey |
|-------|-----------------------------------------------|--------------------------------|-------------------------------|
| H1    | Ancillary / Commercial + Office / Residential | Basement + Ground + 26 Storeys | 81.8m                         |
| H2    | Ancillary / Commercial + Office / Residential | Basement + Ground + 16 Storeys | 51.2m                         |
| H3    | Ancillary / Commercial + Office / Residential | Basement + Ground + 19 Storeys | 59.7m                         |

Table 1 - Features of the Building



Figure 1 - Clarendon Phase 4 Site Plan

### 1.3 Fire Strategy Summary

The proposals outlined in this document demonstrate a level of fire safety equal to or greater than the general standard as required by compliance with the recommendations in ADB.

In general, the residential blocks have been designed using the guidance detailed within ADB. Elements of the fire strategy are summarised below:

- The residential accommodation will implement a stay-put policy, whilst the commercial units and workspaces shall undertake a simultaneous evacuation strategy.
- Structural fire protection will be provided in accordance with Table B4 of ADB. Each floor will be designed as a compartment floor.
- Sprinkler coverage shall be provided to all accommodations in all blocks.
- All Blocks are over 18m in height and will be provided with a firefighting shaft.
- All blocks are over 50m in height and therefore will be provided with a wet rising main within the firefighting stair.

## 1.4 Policy D12 Fire Safety Statement

### 1.4.1 Declaration of Compliance

In the interests of fire safety, the proposed technical design content produced for the planning application complies with all the relevant legislation and requirements of London Plan Policy D12 and D5(B5) as summarised in the following sections.

### 1.4.2 Competency and Qualifications of Assessors

The authors of this report comply with Section 3.12.9 of Policy D12 of the London Plan as outlined below.

#### Michel Wizenberg – Senior Principal, Head of Fire Engineering

Michel is a Senior Principal and Head of Fire Engineering at Introba.

He has 15 years' experience, with vast experience on a variety of high-rise residential developments for major housing clients across the UK. He is the lead author of fire strategies and responsible for all stages of the fire engineering design from the initial client contact through the tendering phase, across construction and the ongoing management and maintenance of fire safety systems and passive fire protection. Michel has a wealth of experience in working across various sectors (such as residential, commercial, etc.) as well as working in the design of active and passive fire protection systems, both in design and remedial schemes, specifically for buildings over 18m in height.

#### Dale McCubbin – Senior Fire Engineer

Dale is a Fire Engineer with 3 years' experience and is an Associate Member of the Institution of Fire Engineers (AIFireE).

He has detailed knowledge of Approved Document B (ADB) and BS9991 with a good understanding and experience of multi-storey residential developments including early stage and construction design stages. Dale has worked on many similar schemes in the past, incorporating elements such as mechanical smoke control and firefighting facilities into designs, as well as extensive experience working on buildings over 18m in height.

### 1.4.3 The Building's Construction Method and Products and Materials Used

Structural fire protection should be provided in accordance with Table B4 of ADB. Each floor should be designed as a compartment floor. Further information is provided in Sections 5.1 and 5.2.

As all blocks over 11m in height, all materials within the external wall should achieve European Classification in A2-s1,d0 or Class A1 in accordance with Regulation 7(2), as discussed in Section 6.2.

For the specific materials that shall be used, this will be outlined in the architect's specification at the later design stages.

### 1.4.4 Means of Escape for All Building Users and Evacuation Strategy

The residential apartments and ancillary accommodations will evacuate independently of one another. The residential apartments will implement a stay-put policy, whilst the ancillary and commercial accommodations on site will adopt independent simultaneous evacuation approaches.

To assist with the evacuation of disabled occupants as recommended in the London Plan dated March 2021, one evacuation lift will be provided in all cores alongside the firefighting lift to provide a dignified escape for disabled occupants within the building. This is discussed further in Section 3.7.

### 1.4.5 Passive and Active Fire Safety Measures

The apartments should be provided with an automatic fire alarm and detection system in accordance with BS5839 Part 6.

The residential common corridors at the upper levels should be provided with a smoke clearance system as discussed in Section 3.3.2.

The ancillary spaces, stores, plant and refuse rooms should be provided with an automatic fire alarm and detection system in accordance with BS5839 Part 1.

Sprinkler coverage is provided to all the residential apartments and shall be extended to cover the common corridor, ancillary spaces, stores, plant and refuse rooms. Where commercial spaces cannot be provided with residential sprinkler coverage given they exceed the maximum floor spaces allowable under BS9251 they will be provided with commercial sprinkler protection to BS12845.

The apartments shall all be enclosed in fire rated construction with fire doors, as well the staircases, lifts and risers. This is discussed in detail in Section 5.2.1. The ancillary accommodation shall also be enclosed in fire rated construction and are not accessed from the final escape route.

Any penetrations through the compartment walls shall be fire stopped.

#### **1.4.6 Access and Facilities for the Fire and Rescue Service**

All Blocks exceed 18m in height and hence will be provided with a firefighting shaft.

A wet riser will be provided in in all blocks. The inlets shall be located on the facade of each building and adjacent to the entrance. It should also be within 18m of the fire appliance parking location.

All parts of the floor plates should be covered within 60m when measured along a suitable route for laying a hose from a dry riser outlet or within 60m of the fire appliance parking location at the fire tender access level as discussed in Section 7.

Hydrants should be provided within 90m of the dry/wet riser inlet in accordance with ADB.

#### **1.4.7 Site Access for the Fire and Rescue Service**

Fire tender access should be provided in accordance with the ADB and LFB guidance as discussed in Section 7.

#### **1.4.8 Future Development of the Asset and the 'Golden Thread' of Information**

A Regulation 38 pack shall be submitted to the end users upon handover. This should contain all of the details of the building fire safety / protection measures. Any changes to the building following its construction will need to maintain the original design intent of this fire strategy and be assessed by a suitable competent person.

Further details are provided in Section 8.

## 2 Legislation

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### 2.1 Building Regulations 2010

The development will consist of new buildings, hence, will be undergoing building works as defined in Regulation 3 of The Building Regulations 2010. All buildings will therefore have to comply with the requirements of Schedule 1 of the Regulations.

The requirements of the Schedule relating to fire safety are:

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

The principle aim of the Building Regulations is to ensure the health and safety of people in and around a building.

The 'requirements' set out broad objectives or functions, which the individual aspects of the building design and construction must set out to achieve. They are therefore often referred to as 'functional requirements' and are expressed in terms of what is 'reasonable', 'adequate' or 'appropriate'.

### 2.2 Approved Document B (ADB)

The Department for Levelling Up, Housing and Communities (DLUHC) has produced a number of guidance documents to assist designers in meeting the relevant requirements of the Building Regulations. These 'Approved Documents' provide guidance on different aspects of the Regulations. Approved Document B – Fire safety (ADB) provides general design guidance on ways in which the functional fire safety requirements can be satisfied.

The Building Regulations 2010 require reasonable standards of health and safety for persons in or about the building to be provided.

However, as with many "deemed to satisfy" documents, the ADB is general in its approach and cannot contain sufficient detail for the multiplicity of building designs and varieties of building fire loads and occupancies encountered in practice.

The recommendations presented in the ADB provide guidance on how to satisfy the functional requirements of the Building Regulations. However, there is no obligation to adopt any particular solution contained in the document. The document recognises this and accepts that, if the requirement can be demonstrated to have been satisfied by alternative solutions, then this is equally acceptable.

This report considers the amendments to the Approved Documents in May 2020 and June 2022 and considers Regulation 7.

### 2.3 Regulatory Reform (Fire Safety) Order

Once the buildings are occupied, the Regulatory Reform (Fire Safety) Order (RRO) becomes the controlling fire safety legislation.

The Order came into force on 1st October 2006 and revoked the existing Fire Precautions Act and the Workplace Regulations. Under this order it will be necessary for the owner/ occupier of the building to carry out and maintain a fire safety risk assessment.

The building management team will also be responsible under this order to ensure that the buildings' fire safety provisions are appropriately managed, maintained and tested over the whole life of the building.

## 2.4 New London Plan

The New London Plan was published by the Mayor in March 2021. It forms the statutory spatial development strategy for Central London. This report addresses the recommendations in Policy D5 (Inclusive Design) and Policy D12 (Fire Safety).

## 3 Means of Warning & Escape

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B1, Means of Warning and Escape:

*“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.”*

The general principle to be followed when designing for means of escape is that any person confronted by a fire within a building can turn away from it and make a safe escape and therefore alternative means of escape should be available from most parts of the building.

### 3.1 Evacuation Strategy

Residential means of escape is somewhat different from many other types of buildings in that only the particular apartment that has a fire in it is immediately evacuated. The reasoning behind this is due to the level of compartmentation between each of the apartments and to reduce false alarms affecting all the people within the building. The Fire Service carries out evacuation of the other apartments if necessary.

The car park, ancillary accommodations, commercial units and workspaces on the site will be considered completely independent of the residential elements. It is proposed that these areas adopt independent simultaneous evacuation approaches. This is particularly important for areas that may have members of the public who are unfamiliar with the building and any evacuation procedures.

### 3.2 Travel Distances

The travel distances for the building should follow the recommendations of ADB, which is detailed in the table below.

| Purpose Group | Accommodation    | Travel within              | Maximum travel distance (m) |                         |
|---------------|------------------|----------------------------|-----------------------------|-------------------------|
|               |                  |                            | In one direction            | More than one direction |
| 1(a)          | Apartment        | Within Apartment / Hallway | 9m                          | N/A                     |
|               | Common Areas     | Within Common Corridor     | 7.5m                        | 30m                     |
| 3             | Office           | Workplaces                 | 18m                         | 45m                     |
| 4             | Commercial       | Commercial Unit            | 18m                         | 45m                     |
| 7             | Car Park/Storage | Car park or storage        | 25m                         | 45m                     |
|               | Plant Rooms      | Escape within room         | 9m                          | 35m                     |
|               |                  | Enclosed escape route      | 18m                         | 45m                     |
|               |                  | In open air                | 60m                         | 100m                    |

Table 2 – Travel Distance Requirements

### 3.3 Escape within Residential Accommodations

#### 3.3.1 Escape within Apartments

Apartments should have a maximum travel distance of 9m from the most remote area to the apartment entrance door. The entrance door must be a minimum FD30S self-closing fire door.

Where apartments are provided with protected entrance hallways, these hallways should have a maximum travel distance of 9m. The protected entrance hallway should be provided as a 30-minute enclosure with FD20 fire doors.

Where an apartment has an open living area and a bedroom provided as an inner room, these are classified as open plan apartments. Since ADB does not provide specific guidance on the design of open plan apartments, supplementary guidance can be taken from BS9991, which states that they are acceptable should they conform to the following:

- The size of the open plan flat should not exceed 16m x 12m.
- Open-plan flats should be situated on a single level only.
- The ceilings within the open plan flat should have a minimum height of 2.25m.
- The kitchen should be enclosed in open-plan flats having an area exceeding 8m x 4m. Cooking appliances in open-plan flats having an area smaller than 8m x 4m should not be adjacent to the entrance of the flat.
- In addition to the above, the open plan apartments should be provided with an LD1 fire alarm and detection system in accordance with BS5839 Part 6 as well as a sprinkler system in accordance with BS9251.

It should be noted that in the open plan apartments, occupants should not have to make their escape past a kitchen. Therefore, the kitchen shall be placed in a location remote from the means of escape route from the apartment. Where this is not possible an assessment will be made on the escape route and the proximity to the kitchen. This is to be developed at the next stage of design, however the minimum distance between the hob and the escape route should be 1.8m, with a minimum width of 750mm for the escape route.

#### 3.3.2 Escape within Common Corridors

All buildings contain floors over 11m in height therefore they require to be provided with automatic smoke ventilation to protect the staircases from smoke ingress. In this case, since the buildings are provided with two staircases, any dead ends should be limited to 7.5m with the section of the corridor that has two directions of escape limited to a maximum of 30m.

The buildings are provided with a sterile lobby approach to the firefighting stair and lifts with the travel distances in the corridors accessed from this stair / lift lobby limited to 7.5m. The corridors that are accessed from the second staircase are also limited to 7.5m from the furthest apartment to the staircase door. The travel distances and smoke venting strategy are shown within the figures below.

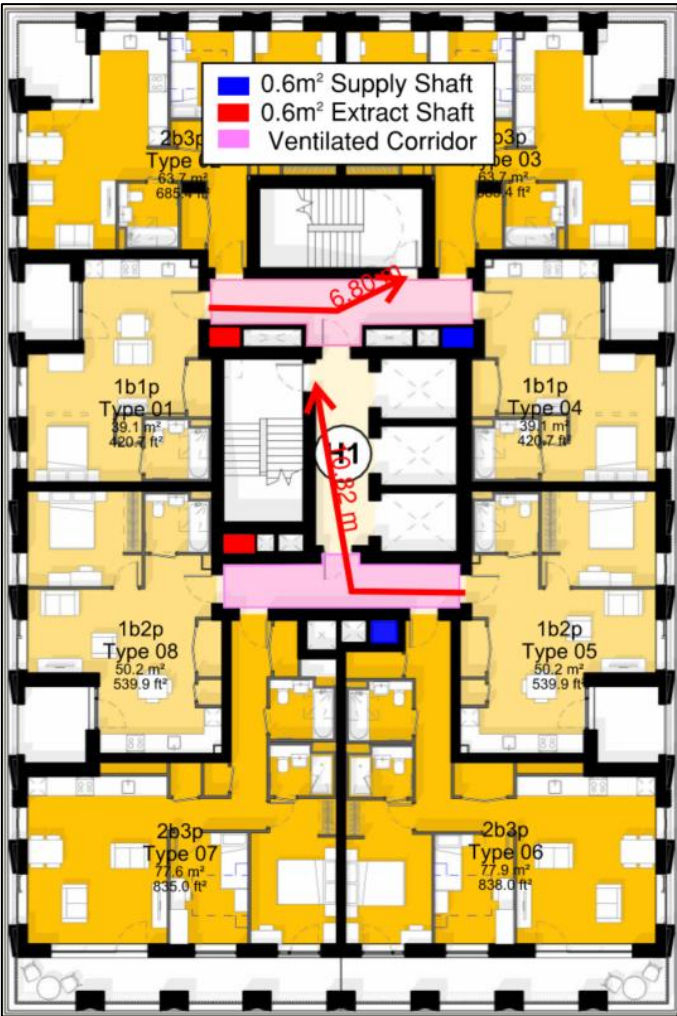


Figure 2 - Travel distances of Block H1 at typical floor

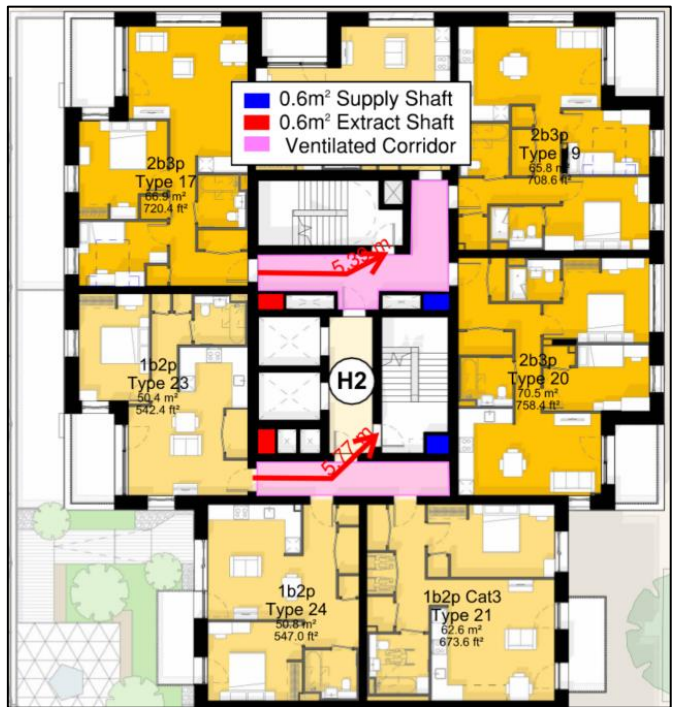


Figure 3 - Travel distances of Block H2 at typical floor

At the first level of Block H2 there is an apartment where the travel distance is extended beyond 7.5m in a single direction as recommended in ADB. In this case it is proposed fire rated ductwork will be extended from the H3 smoke shaft to the dead end of the H2 common corridor to provide smoke ventilation within this dead end as shown below.

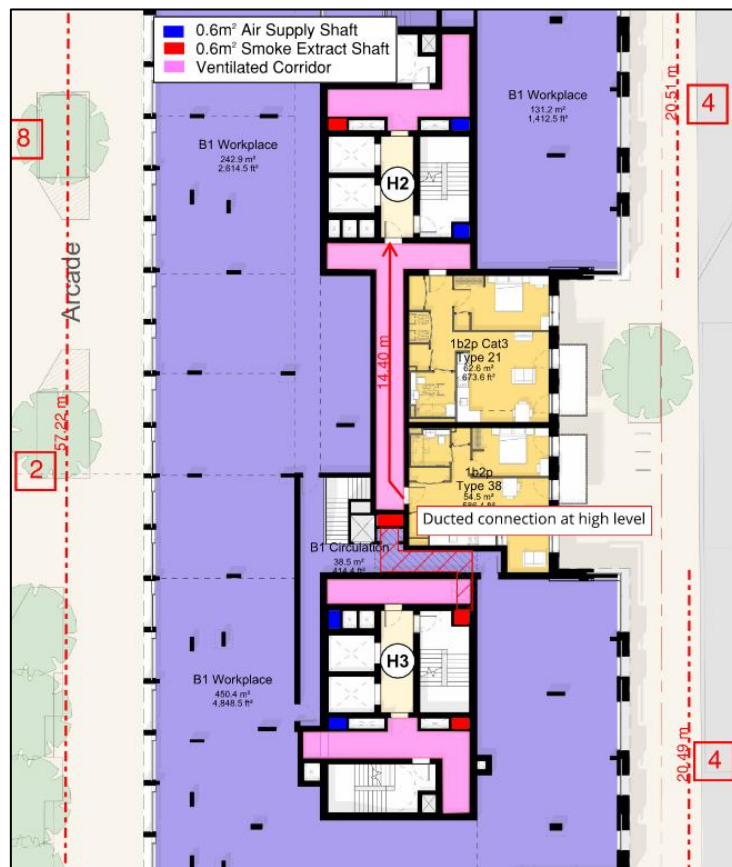


Figure 4 - Travel distance in dead-end Corridor at the first level – Blocks H2

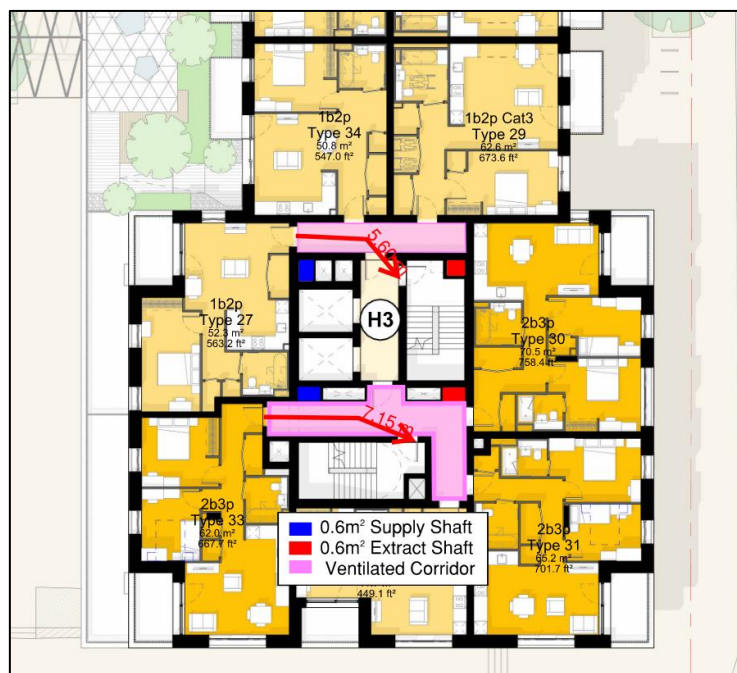


Figure 5 - Travel distances of Blocks H3 at typical floor

The mechanical smoke shaft should achieve a minimum of 0.6m<sup>2</sup> internal free area with a 0.6m<sup>2</sup> Automatically Opening Vent (AOV) opening into each smoke shaft from each common corridor. The mechanical smoke shaft should be located within 7.5m of the dead end of the corridor.

The primary source for replacement air will be via the air supply shafts which are located at the opposite ends of the corridor. However, as the design progresses additional air may also be provided from the 1.0m<sup>2</sup> AOV at the head of the firefighting stair, which shall also provide additional protection to the lift lobby from smoke ingress. At the later stages of design, a Computational Fluid Dynamics (CFD) assessment will be required to validate the smoke venting strategy for all the blocks.

### 3.3.3 Escape within Amenity Spaces

The communal terraces are open to the air therefore there are no constraints on travel distance limits.

### 3.3.4 Vertical Escape

Blocks H1, H2 and H3 exceed 18m in height and hence will be provided with a firefighting shaft. The firefighting staircase should be at least 1100mm wide. (assuming the handrails do not protrude more than 100mm into the stair). The storey exits leading into the staircase at each level are required to have a minimum clear width of 850mm. The final exit doors at ground level should have a minimum clear width at least as wide as the associated staircase, i.e. 1100mm.

Due to the fact that these staircases shall be designed for firefighting, no service risers should be accessed from the staircase, or the exit from the staircase at ground floor level. Where they are provided, the risers will be inaccessible at the ground floor level. The protected exits and lobbies will be kept sterile with no furniture present. Where post boxes cannot be located anywhere else, they will be provided as 120-minute fire rated post boxes.

As the secondary stair shall not be designed for firefighting, the minimum width (measured between the walls and / or balustrade) should not be less than 1000mm.

### 3.3.5 Final Exit Routes

Approved Document B requires that any discharge paths from the staircase must be along a protected route with any access into adjacent accommodation being by way of a protected lobby. Stores should not be directly accessed from the entrance lobby, and where risers are located in this area, they will be inaccessible at the ground floor level.

Any risers that open onto the fire service access route should also be enclosed in 120 minutes fire resistance with upgraded FD120S doors.

The staircases will be provided with a protected route directly to outside with the access to the ancillary accommodation via a lobby via a smoke vented lobby as shown in the figures below.

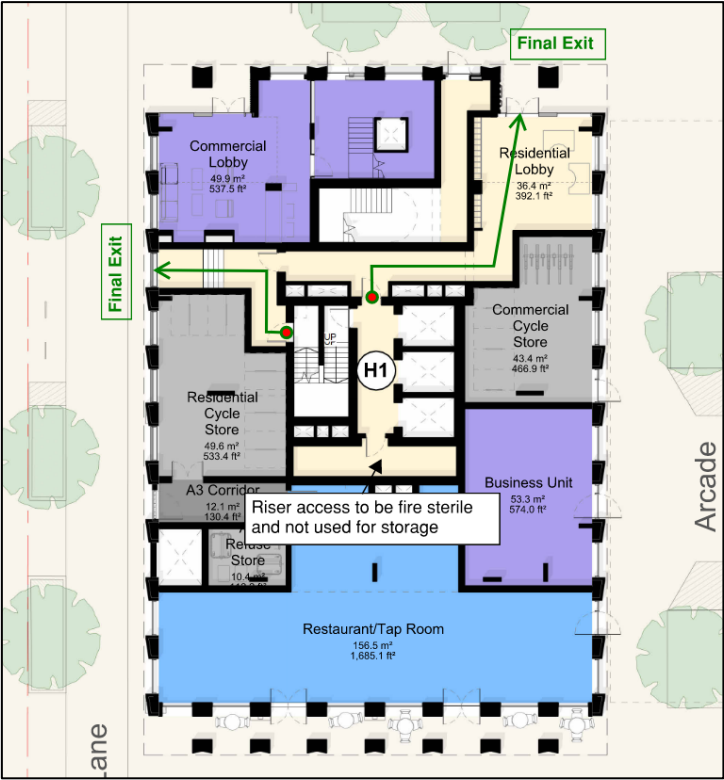


Figure 6 - Final exit route – Blocks H1



Figure 7 - Final exit route – Blocks H2

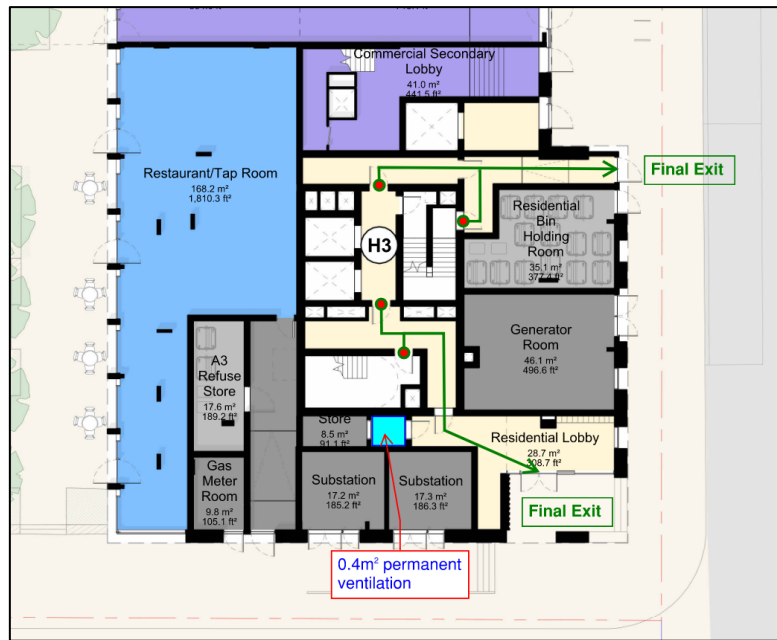


Figure 8 - Final exit route - Blocks H3

### 3.4 Escape within Ancillary Accommodations

Travel distances in the plant rooms should be limited to 9m where escape is in a single direction and 35m where escape is possible in more than one direction unless they are places of special fire hazard, in which case the travel distances where there are more than one direction of escape should be limited to 18m.

Travel distances within the cycle stores and bin stores should be limited to 25m where escape is in a single direction or 45m where there are two directions of escape.

Ancillary rooms do not tend to have many occupants at any one time due to their use therefore ADB recommends an occupancy load factor of 30m² per person in each room. Therefore, any ancillary room up to 1800m² in area can be served by a single exit door with a clear width of 750mm (subject to acceptable travel distances being achieved). Rooms larger than this requires two exits with a clear width of 850mm.

### 3.5 Escape within Car Park

Travel distances in the car park should be limited to 25m where escape is in a single direction and 45m where escape is possible in more than one direction. Due to the numerous exits provided from the car park, the recommended travel distances are achieved.

The Phase 4 car park shall only contain 19 parking spaces, but will be open to the Phase 3, which shall be provided with 39 parking spaces. The combined car park will require the following exit widths.

| Parking Spaces | Occupancy Load Factor | Occupancy | Minimum Required Exit Width |
|----------------|-----------------------|-----------|-----------------------------|
| 58             | 2 people per car      | 116       | 6 x 750mm                   |

Table 4 - Car Park Exit Widths



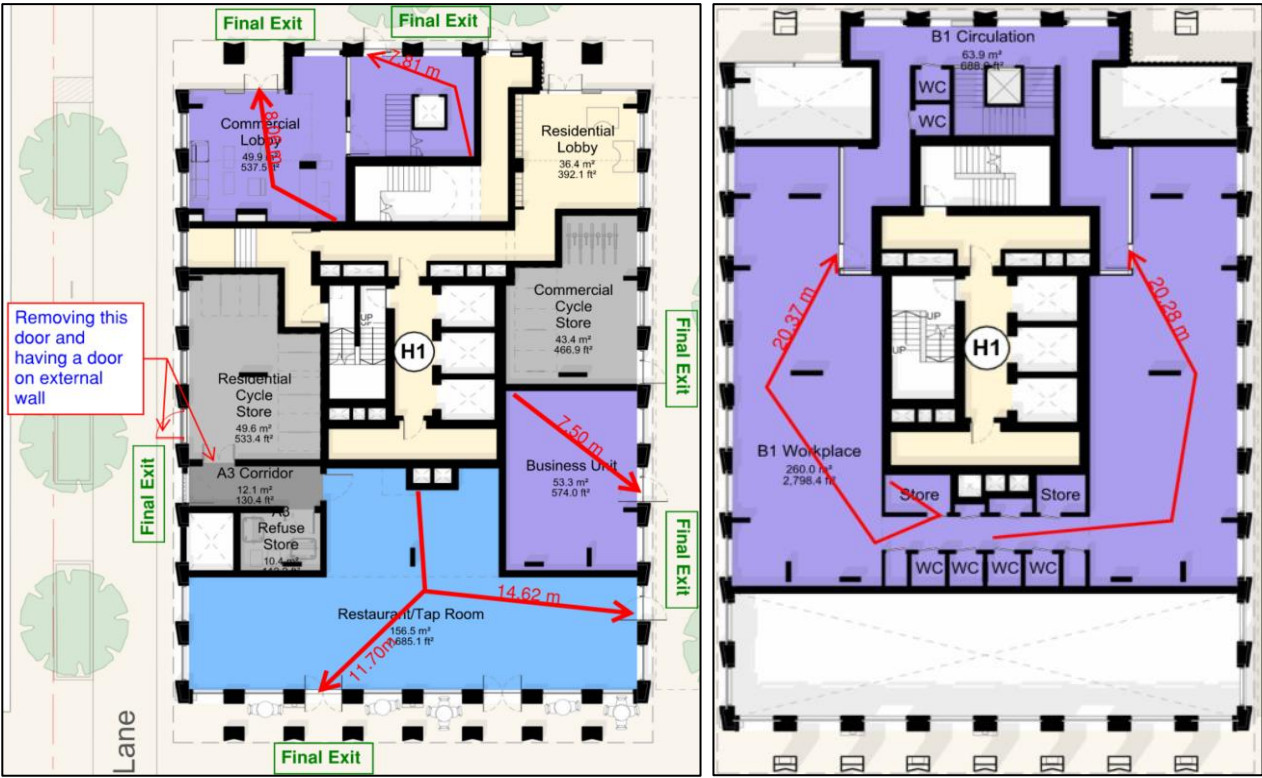


Figure 10 – Block H1 Means of escape for Commercial Units and Workspaces



Figure 11 – Block H2 and H3 Means of escape for Commercial Units and Workspaces

The occupancy loads in individual rooms will vary throughout a day however any room with a single exit must have a maximum occupancy of 60 people. The exit from such rooms can have a minimum clear width of 750mm and also open into the room (open against the direction of escape).

In the event that any room has an occupancy greater than 60 people then this room will be provided with at least two exits. Each exit will need to open in the direction of escape and have a minimum clear width as outlined in Table 3 below.

| Occupancy      | Exit Width (mm) |
|----------------|-----------------|
| <60 people     | 750mm           |
| 61-110 people  | 850mm           |
| 111-220 people | 1050mm          |
| 220+ people    | 5mm per person  |

Table 5 - General Exit Width Requirements

The occupancy load of each unit shall be calculated based on occupancy load factors as recommended in ADB. The resultant occupancy loads are shown in the table below.

| Unit                       | Area (m <sup>2</sup> ) | Load factor               | Occupancy Load | Exit Width Provided     |
|----------------------------|------------------------|---------------------------|----------------|-------------------------|
| <b>Block H1</b>            |                        |                           |                |                         |
| Commercial Lobby           | 49.9                   | 6m <sup>2</sup> /person   | 9              | 1 x 1500mm              |
| Business Unit              | 53.3                   | 6m <sup>2</sup> /person   | 9              | 1 x 850mm               |
| Restaurant                 | 156.5                  | 1.0m <sup>2</sup> /person | 157            | 2 x 1600mm<br>1 x 850mm |
| B1 Workplace first floor   | 260                    | 6m <sup>2</sup> /person   | 43             | 2 x 850mm               |
| <b>Blocks H2 &amp; H3</b>  |                        |                           |                |                         |
| Commercial Lobby           | 72.3                   | 6m <sup>2</sup> /person   | 13             | 1 x 1800mm              |
| Business Unit              | 342.3                  | 6m <sup>2</sup> /person   | 58             | 5 x 850mm               |
| Commercial Secondary Lobby | 41.0                   | 6m <sup>2</sup> /person   | 7              | 1 x 1050mm              |
| Restaurant                 | 168.2                  | 1.0m <sup>2</sup> /person | 169            | 3 x 850mm               |
| B1 Workplace first floor   | 824.5                  | 6m <sup>2</sup> /person   | 138            | 5 x 850mm               |

Table 6 – Available Exit Width for Commercial Units and Workplaces

### 3.7 Disabled Evacuation

The residential accommodations on the upper levels do not require disabled refuges to be provided.

Policy D5 Inclusive design of the New London Plan outlines that emergency carry down or carry up mechanical devices or similar interventions that rely on manual handling are not considered to be appropriate, for reasons of user dignity and independence. It suggests that the installation of lifts which can be used for evacuation purposes (accompanied by a management plan) provide a dignified and more independent solution.

Furthermore, Policy D12 Fire Safety recommends that in all developments where lifts are installed, Policy D5 Inclusive design requires as a minimum at least one lift per core (or more, subject to capacity assessments) to be a suitably sized fire evacuation lift suitable to be used to evacuate people who require level access from the building.

In each core, one lift that shall be suitable for evacuation purposes shall be provided, which would allow disabled occupants to descend to ground floor with level access. Furthermore, the stair / lift lobby have been designed as sterile spaces where occupants will be able to safely wait for the lift.

In the case of the workplace that operate on a level above the access level, a disabled refuge should be provided. In the case of the Personal Emergency Evacuation Plan (PEEP) of individual guests, this will include measures whereby the staff undertake active measures to support the MIP and include evacuation to a place of ultimate safety. There are also a workplace and a restaurant on the ground floor that contain stepped access, therefore consideration should be given as to how disabled occupants would be evacuated.

The refuges will comprise a notional area, 1400mm x 900mm located out of the escape route within the stair enclosure. In accordance with ADB, the refuges should contain a means for occupants to communicate to the building management that they are in need of assistance. This should be provided within the refuge with an indication at a suitable management area e.g. within a protected stair enclosure

at ground floor level (it is recommended that this is discussed with the building management team to determine the best location for the management communication point).

The building management forms an integral part of the design and on-going functionality of the building after occupation. The building will have a management team whose responsibilities will include ensuring the fire safety strategy is adopted and enforced. One of the responsibilities of this team will be to develop a management strategy for the building. This strategy will incorporate details of how the building satisfies the requirements of the Equality Act 2010. The management strategy should include information on staff training, how disabled occupants will be evacuated in the event of a fire and identify key roles in ensuring they are assisted in a fire situation.

## **3.8 Fire Alarm & Detection System**

### **3.8.1 Residential Accommodation**

The standard apartments should be provided with a minimum LD2 automatic fire detection and alarm system with a minimum grade D power supply, designed, installed and maintained in accordance with BS5839 Part 6.

Open plan apartments should be provided with an LD1 automatic fire detection and alarm system with a minimum Grade D power supply, designed, installed and maintained in accordance with BS5839 Part 6.

A smoke detection system should be provided in the common corridors on each floor. The sole purpose of the detection system is to activate the smoke ventilation system. No sounders or manual call points will be provided in the common areas.

### **3.8.2 Ancillary Accommodation**

The fire alarm and smoke detection within the cycle stores, refuse stores and plant rooms should be designed in accordance with BS5839 Part 1 and be of type L3.

### **3.8.3 Car Park**

The car park should be provided with an automatic fire detection and alarm system. This system should be designed and installed in accordance with BS5839 Part 1 and be a minimum of L5 standard.

### **3.8.4 Commercial Units and Workspaces**

The commercial units and workspaces that operate over two floors or have a shared escape route on the first floor should be provided with an automatic fire alarm and detection designed and installed in accordance with BS5839 Part 1 and be a minimum of L3 standard. Otherwise, the workspace can be provided with a minimum of a manual fire detection and alarm system designed, installed and maintained in accordance with BS5839 Part 1.

The fire alarm and smoke detection within the restaurants should be designed in accordance with BS5839 Part 1 and be a minimum of a manual type.

## **3.9 Emergency lighting**

Emergency lighting as backup lighting should meet the recommendations of BS5266 Parts 1 and 7.

Final locations and routes shall be agreed during the design development.

## **3.10 Signage**

Escape signage should follow the recommendations of BS5499. Further details will be provided during the design development.

Wayfinding signage will also be required for the fire service and will be detailed as the design develops.

## 4 Internal Fire Spread (Linings)

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B2, Internal fire spread (linings):

*“To inhibit the spread of fire within the building the internal linings shall:*

- a) adequately resist the spread of flame over their surfaces; and*
- b) have, if ignited, a rate of heat release which is reasonable in the circumstances.*

In this paragraph “internal linings” mean material lining any partition, wall, ceiling or other internal structure.”

### 4.1 Surface Linings

The interior wall and ceiling surfaces in buildings can have a significant influence on how fast a fire may develop. It is particularly important that in circulation spaces including staircases, where the rapid spread of fire is most likely to prevent occupants from escaping, surface linings are restricted by making provision for them to have low rates of heat release and surface spread of flame.

The wall and ceilings linings within the building should meet the recommendations outlined in the table below.

| Location                                                                                                                                                                                   | Class of Lining |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                                                                                                                                                                            | European Class* |
| Small Rooms of area less than: <ul style="list-style-type: none"> <li>• 4m<sup>2</sup> in residential accommodation</li> <li>• 30m<sup>2</sup> in non-residential accommodation</li> </ul> | D-s3,d2         |
| Other Rooms                                                                                                                                                                                | C-s3,d2         |
| Circulations spaces within dwellings                                                                                                                                                       | C-s3,d2         |
| Other circulation spaces including the common areas of block of flats, car park, commercial accommodations                                                                                 | B-s3,d2         |
| Note: * The European classifications are described in BS EN 13501-1.                                                                                                                       |                 |

Table 3 – Surface Lining Requirements

For the purpose of these requirements, a wall includes the internal surfaces of internal and external glazing as well as any part of a ceiling which slopes at an angle greater than 70 degrees to the horizontal. Doors, door frames, window frames and frames in which the glazing is fitted, architraves and skirting are also exempt from these limitations.

The class of linings can be downgraded (but not less than Class D-s3,d2) in walls of rooms providing the total area of those parts in any one room does not exceed one half of the floor area of the room and subject to a maximum of 20m<sup>2</sup> in residential accommodation and 60m<sup>2</sup> in non-residential accommodation.

## 5 Internal Fire Spread (Structure)

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of B3, Internal fire spread (structure):

1. *The building shall be designed and constructed so that, in event of fire, its stability will be maintained for a reasonable period.*
2. *A wall common to two or more buildings shall be designed and constructed so that it adequately resists the spread of fire between those buildings.*
3. *To inhibit the spread of fire within the building, it shall be sub-divided with fire resisting construction to an extent appropriate to the size and intended use of the building.*
4. *The building shall be designed and constructed so that the unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited.*

The requirements will be met;

- If the loadbearing elements of structure of the building are capable of withstanding the effects of fire for an appropriate period without loss of stability;
- If the building is sub-divided by elements of fire-resisting construction into compartments;
- If any openings in fire-separating elements are suitably protected in order to maintain the integrity of the element; and
- If any hidden voids in the construction are sealed and sub-divided to inhibit the unseen spread of fire and products of combustion, in order to reduce the risk of structural failure and the spread of fire, in so far as they pose a threat to the safety of people in and around the building.

The extent to which these measures are necessary is dependent on the use of the building, its size and on the location of the element of construction.

### 5.1 Fire Resistance of Elements of Structure

Premature failure of the structure can be prevented by provisions for loadbearing elements of structure to have a minimum standard of fire resistance, in terms of resistance to collapse or failure of load bearing capacity.

The period of fire resistance required in accordance with ADB is linked to the risk profile of the building taking into account the height of the top floor and whether the building is sprinklered or not. Where any element supports another the supporting element should possess at least the resistance of the other. Approved Document B defines an element of structure as:

- a member forming part of the structural frame of a building or any other beam or column;
- a loadbearing wall or loadbearing part of a wall;
- a floor;
- a galley
- an external wall; and
- a compartment wall.

The following are excluded from definition of an element of structure:

- Structure that supports only the roof, unless:
  - the roof performs the function of a floor, such as for parking vehicles, or as a means of escape, or
  - the structure is essential for the stability of an external wall which needs to have fire resistance.

| Block | Floor Levels        | Relevant Range | Elements of Structure |
|-------|---------------------|----------------|-----------------------|
| H1    | Ground + 26 Storeys | >30m           | 120mins               |
| H2    | Ground + 16 Storeys | >30m           | 120mins               |
| H3    | Ground +19 Storeys  | >30m           | 120mins               |

Table 4 – Fire resistance periods

Where elements of structure support a building above, they should be provided with the structural fire resistance to at least that required for the building they support.

Any elements which only support themselves and or a roof can be non-fire rated.

## 5.2 Compartmentation

### 5.2.1 Residential Accommodation

All apartments should have 60-minute fire resistant compartment walls with FD30S self-closing front doors. Where an internal corridor is provided it should be 30-minute fire resisting with FD20 doors.

All floors should be compartment floors with a fire resistance equal to the structure.

Each block shall be provided with a firefighting shaft. The firefighting staircases should be enclosed in 120 minutes fire resistance with FD60S self-closing doors. The firefighting lift shafts should have a fire resistance of 120 minutes with FD60 landing doors.

The secondary staircases should be enclosed in 120 minutes fire resistance with FD60S self-closing doors

The stair / lift lobby shall be compartmented from the corridors that serve the apartments by 30 minutes fire resistance with FD30S self-closing doors.

The non-firefighting lifts and risers should have fire ratings equal to the structure with FD60 doors. On the fire access level, the final exit route from the stairs / lifts to outside should achieve 120 minutes fire resistance. Any risers accessed from this route will need to be provided with the same fire resistance as the stair, with FD120S doors.

It should be noted that ADB requires that any discharge paths from the staircase must be along a protected route to outside.

Openings in compartment walls should be limited to the passage of service ducts and access doors fitted with smoke seals. Where service ducts pass through compartment walls these will be provided with a fire barrier. All openings will be provided with a similar period of fire resistance to the wall they are provided within and the fire doors are to be locked closed.

In order to protect the final exit routes from the building all wall construction within 1.8m of the final exit points will be fire rated to 30 minutes. In general, most final exits are acceptable providing there are two directions of discharge from the exit, however where escape is only possible in a single direction and the exit route in the open air is within 1.8m of the building then any glazing present should be fire rated glazing to 30 minutes (integrity only).

### 5.2.2 Ancillary Accommodation

Plant rooms, cleaner cupboards, stores and utility rooms shall achieve 30 minutes fire resistance with FD30 doors.

Refuse rooms should be enclosed in 60 minutes fire resistance with FD30 doors.

Any electrical sub-stations should be fully separated from the adjacent accommodation spaces by at least 30 minutes fire resisting construction, although these requirements are likely to be superseded by the electricity supplier's requirements, which are typical based on 4 hours fire separation.

Any rooms housing life safety equipment should be enclosed in 120 minutes fire resistance in accordance with BS8519.

### **5.2.3 Car Park**

The car park should be separated from the rest of the accommodations by a minimum of 120 minutes fire resistance (including walls and floors) with FD60S self-closing doors.

### **5.2.4 Commercial Units and Workspaces**

The commercial units and workplaces should be separated from the rest of the building by 120 minutes fire resistance. There should be no connection to the residential areas.

The staircases that serve the workplaces should be enclosed in 30 minutes fire resistance with FD30S self-closing doors. The lobbies that lead from these staircases to the workplace units should also be enclosed in 30 minutes fire resistance with FD30S self-closing doors.

## **5.3 Fire Stopping**

Fire stopping should be provided as per the guidance in ADB.

## **5.4 Cavity barriers**

Cavity barriers should be provided as per the guidance in ADB.

## **5.5 Sprinklers**

### **5.5.1 Residential Accommodation**

Sprinklers will be provided to all residential accommodation as per the May 2020 amendment to ADB, which requires sprinklers for all residential apartments over 11m in height. Additionally, since the buildings contain a floor over 18m in height, the residential sprinkler system should be designed to a Category 4 in accordance with BS9251:2021.

### **5.5.2 Ancillary Accommodation**

The stores and plant rooms that are ancillary to the residential accommodation could be served by the residential sprinkler as long as the rooms are not larger than outlined in Table 4 of BS9251:2021 as shown below. Rooms larger than this should be served by a commercial sprinkler system in accordance with BS EN 12845.

**Table 4** — Examples of classification of areas and design criteria for areas to be protected with BS EN 12259-1 sprinkler heads

| Occupancy                                                                                          | Minimum density<br>mm/min | Area of operation <sup>A)</sup> |
|----------------------------------------------------------------------------------------------------|---------------------------|---------------------------------|
| Car parking <sup>B)</sup> within or beneath a block of flats                                       | 5.00                      | 100 m <sup>2</sup>              |
| Bin store <sup>B), C)</sup> within or beneath the flats                                            |                           | 72 m <sup>2</sup>               |
| Limited office areas (e.g. concierge or site management) <sup>D)</sup>                             |                           | 72 m <sup>2</sup>               |
| Residents' storage sheds/tenant stores <sup>B)</sup>                                               |                           | 4 heads                         |
| PTSN/CCTV/electrical rooms                                                                         |                           | 72 m <sup>2</sup>               |
| Plant rooms                                                                                        |                           | 100 m <sup>2</sup>              |
| Laundry (with storage and processing of linen, e.g. institutional, care home)                      |                           | 100 m <sup>2</sup>              |
| Laundry (communal facility)                                                                        |                           | 72 m <sup>2</sup>               |
| Hairdressing room                                                                                  |                           | 72 m <sup>2</sup>               |
| Retail (e.g. shop)                                                                                 |                           | 100 m <sup>2</sup>              |
| Bar/restaurant/cafe                                                                                |                           | 72 m <sup>2</sup>               |
| Kitchens in student hub accommodation (e.g. self-catering)                                         |                           | 72 m <sup>2</sup>               |
| Kitchens <sup>E)</sup> in residential care or similar premises (e.g. care home) ≤50 m <sup>2</sup> |                           | 72 m <sup>2</sup>               |
| Kitchens <sup>E)</sup> in residential care or similar premises (e.g. care home) >50 m <sup>2</sup> |                           | 72 m <sup>2</sup>               |

<sup>A)</sup> If the compartment (fire) area is less than 50 m<sup>2</sup>, a maximum of four heads is required as the area of operation. Where greater than 50 m<sup>2</sup>, refer to area of operation or compartment (fire) area, whichever is the lesser.

<sup>B)</sup> Attention is drawn to the need to consider protection from frost damage.

<sup>C)</sup> On the basis of the bin store building or compartment (fire) being of at least a minimum of 1 h fire resisting construction from the rest of the buildings.

<sup>D)</sup> See also [Table 3](#). Conduct a hazard evaluation to determine which option is most appropriate.

<sup>E)</sup> Kitchens with deep oil cookers should be fitted with an appropriate local application system in addition to the sprinkler protection identified in this table (e.g. LPS1223, see [BS 5306-0](#)).

Figure 12 - Table 4 of BS9251:2021

### 5.5.3 Car Park

The car park should be served by a sprinkler system designed in accordance with BS EN 12845.

### 5.5.4 Commercial Units and Workspaces

All commercial units and workspaces will be provided with sprinklers in accordance with BS EN 12845.

## 6 External Fire Spread

Schedule 1 of the Building Regulations requires the following functional requirements to be met in respect of 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 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.*

The objective of this requirement is to ensure that there is sufficient separation between buildings to prevent fire spread and to ensure that fire does not spread up the building façade.

### 6.1 Unprotected Areas

The unprotected areas are the areas of the façade that are not fire rated (i.e. glazing, etc.), which should be sized so that fire spread is unlikely to occur to buildings on the adjacent site or to separate fire compartments on the same site.

The following calculations have followed the guidance provided in BRE Guide BR187 – ‘External fire spread: building separation and boundary distances. The following calculations have been carried out for the required boundary distance based on the height of each floor with their biggest elevation available.

Looking at the worst-case scenario for the residential accommodation, the largest residential apartment elevation (Type 18) is 13m long x 3m high (assumed height) in Block H3 at Level 12. Therefore, considering that the accommodation shall be provided with an automatic sprinkler system, which allows for the boundary distances can be halved, the required boundary distance is 2m. Since the boundary distances are over this distance, there are no limits to the area of unprotected openings.

For the workplaces, the elevation is 30m long x 3.5m high (assumed height) in Block H2 at L01. Therefore, considering that the accommodation shall be provided with an automatic sprinkler system, which allows for the boundary distances can be halved, the required boundary distance is 4.0m. Since the shortest distance from the boundary is 4.2m, there are no limits to the area of unprotected openings.

For the commercial units, the largest elevation is 21m long x 3.5m high (assumed height) in Block H1 at L00. Therefore, considering that the accommodation shall be provided with an automatic sprinkler system (as mentioned in Section 5.5), which allows for the boundary distances can be halved, the required boundary distance is 11m. Since the shortest distance from the boundary is 5.5m, there are no limits to the area of unprotected openings.

More detailed calculations of each elevation will be undertaken at the detailed design stage.

### 6.2 External Wall Construction

The external envelope of the building should not be a medium for fire spread.

Since all blocks are over 11m in height, all of the materials which become part of an external wall, should achieve European Classification A2-s1,d0 or Class A1, classified in accordance with BS EN 13501-1: 2018.

This does however not apply to the following

- cavity trays when used between two leaves of masonry;
- any part of a roof if that part is connected to an external wall;
- door frames and doors;
- electrical installations;
- insulation and water proofing materials used below ground level;

- intumescent and fire stopping materials where the inclusion of the materials is necessary to meet the requirements of Part B of Schedule 1;
- membranes;
- seals, gaskets, fixings, sealants and backer rods;
- thermal break materials where the inclusion of the materials is necessary to meet the thermal bridging requirements of Part L of Schedule 1; or
- window frames and glass.

Membranes above ground level, although exempt, should achieve a minimum of Class B-s3,d0.

In order to protect the staircases from a fire on the floor plate any wall construction perpendicular to the stair core within 1.8m of the staircase should be fire rated equal to that of the fire protection to the stairs.

## 6.3 Roofs

Roof coverings for all blocks should be designed in accordance with BS EN 13501-5 as highlighted in Table 12.1 of ADB as shown in the figure below.

| Table 12.1 Limitations on roof coverings                       |                                              |                     |                  |                     |
|----------------------------------------------------------------|----------------------------------------------|---------------------|------------------|---------------------|
| Designation <sup>(1)</sup> of covering of roof or part of roof | Distance from any point on relevant boundary |                     |                  |                     |
|                                                                | Less than 6m                                 | At least 6m         | At least 12m     | At least 20m        |
| B <sub>ROOF</sub> (t4)                                         | ●                                            | ●                   | ●                | ●                   |
| C <sub>ROOF</sub> (t4)                                         | ○                                            | ●                   | ●                | ●                   |
| D <sub>ROOF</sub> (t4)                                         | ○                                            | ● <sup>(2)(3)</sup> | ● <sup>(2)</sup> | ●                   |
| E <sub>ROOF</sub> (t4)                                         | ○                                            | ● <sup>(2)(3)</sup> | ● <sup>(2)</sup> | ● <sup>(2)</sup>    |
| F <sub>ROOF</sub> (t4)                                         | ○                                            | ○                   | ○                | ● <sup>(2)(3)</sup> |

● Acceptable.  
○ Not acceptable.

**NOTES:**

Separation distances do not apply to the boundary between roofs of a pair of semi-detached dwellinghouses and to enclosed/covered walkways. However, see Diagram 5.2 if the roof passes over the top of a compartment wall.

Polycarbonate and uPVC rooflights that achieve a class C-s3, d2 rating by test may be regarded as having a B<sub>ROOF</sub>(t4) designation.

- The designation of external roof surfaces is explained in Appendix B.
- Not acceptable on any of the following buildings.
  - Dwellinghouses in terraces of three or more dwellinghouses.
  - Any other buildings with a cubic capacity of more than 1500m<sup>3</sup>.
- Acceptable on buildings not listed in (1) if both of the following apply.
  - Part of the roof has a maximum area of 3m<sup>2</sup> and is a minimum of 1500mm from any similar part.
  - The roof between the parts is covered with a material rated class A2-s3, d2 or better.

Figure 13 - Limitations on Roof Coverings

## 7 Access & Facilities for the Fire Service

Schedule 1 of the Building Regulations requires the following functional requirement to be met in respect of B5, Access and facilities for the fire service:

1. *The building shall be designed and constructed so as to provide reasonable facilities to assist fire fighters in the protection of life.*
2. *Reasonable provisions shall be made within the site of the building to enable fire appliances to gain access to the building.*

The following discusses the implications of these requirements on the proposed design with regard to access and facilities for the Fire Service within and around the building.

### 7.1 Vehicle Access

Fire Service access is required to provide access for fire personnel and a water supply to within a reasonable distance of the building entrances. Due care should be given to ensure that the vehicle access route meets the requirements for a pump appliance as shown in the table and figure below.

| Appliance 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                     | 12.5t                     |

Table 5 – Vehicle Access Requirements



Figure 14 - Fire Tender Access Routes

Any access / security measures in and around the site (especially any bollards preventing vehicle access) should be bypass-able by the fire service. The details of the bypass arrangements should be developed and agreed with the fire service as applicable.

The commercial accommodations are less than 2000m<sup>2</sup> and therefore it should be ensured that there is vehicle access for a pump appliance to 15% of the perimeter.

## 7.2 Internal Fire Service Access

All blocks contain a top floor in excess of 18m in height from the access level and therefore each block shall be provided with a firefighting shaft. In this case, the firefighting shaft should serve every upper floor level and be designed in accordance with ADB as listed below.

- Be constructed within 120 minutes of fire resisting construction,
- Include firefighting staircase (at least 1100mm wide),
- Include firefighting lift (provided with dual power supply, water protection etc.),
- Ventilated firefighting lobby,
- Outlet from the fire main at each storey that the firefighting shaft serves (within the staircase),
- Protected access (at least 120 minutes) onto firefighting shaft at access level.
- A 1.0m<sup>2</sup> vent on the top of the staircase.

In the residential accommodation, where the common corridors are to be utilized as the firefighting lobby, the entrance to the stair and lift should not be separated by more than 7.5m. The separation between the common corridors and the apartments must provide a fire resistance of at least 60 minutes as shown in the figure below.

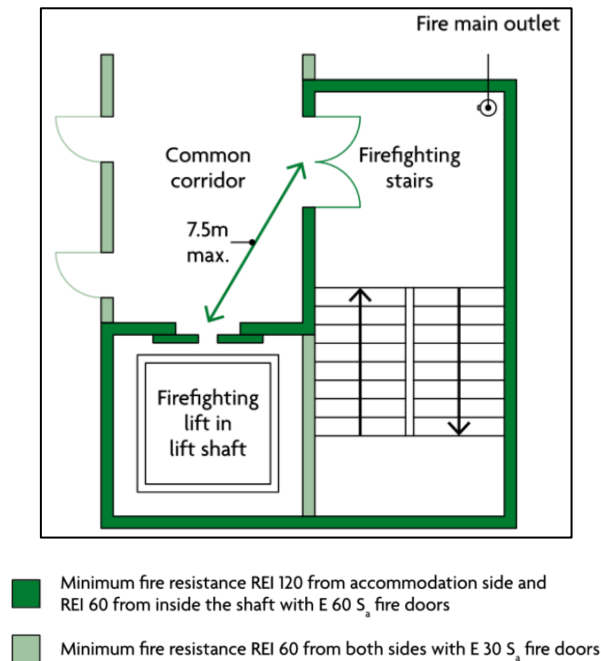


Figure 15 – Internal Firefighting Shaft

The firefighting stair will be provided with a level of lighting recommended in BS5266 Part 1 and will have a backup power supply capable of maintaining the lighting and other operations in the firefighting shaft for at least 3 hours.

## 7.3 Wet Risers

All blocks in Clarendon Phase 4 are over 50m in height which are required to be provided with a wet riser fire protection system.

The wet riser inlets will be located adjacent to the building entrances and be visible from the fire appliance (plus accessible within 18m of the fire appliance parking location).

All parts of the floor plates should be covered within 60m (when measured along a route suitable for laying hose) from a wet riser outlet provided within the firefighting staircase.

## 7.4 Smoke Venting

### 7.4.1 Residential Accommodations

The smoke venting requirements for the residential areas are discussed in detail as part of the common areas means of escape section earlier. No further provisions beyond this are needed for firefighting.

At the later stages of design, a CFD study will be undertaken to validate the system.

### 7.4.2 Car Park

Ventilation will be provided within the car park for two purposes. The first purpose is to provide a suitable environment for the daily use of the car park. The second is to provide protection to the building and the fire fighters in the event of a fire. It is normal practice for both purposes to be satisfied by a single unified system operating in two modes.

The car park shall be provided with a smoke clearance system designed in accordance with BS7346 Part 7 consisting of a mechanical extraction system that will be designed to provide 6 air changes per hour that will ramp up to 10 air changes per hour under fire condition. Additionally, impulse fans shall also be provided to assist with the distribution of air in the car park to prevent any dead spots.

### 7.4.3 Commercial Units and Workspaces

Due to the fact that a simultaneous evacuation strategy shall be adopted for the commercial units and workplaces, and they do not require to be provided with firefighting shafts, it is not deemed necessary to provide any smoke venting.

## 7.5 Hydrants

ADB requires that buildings with dry/wet fire mains should be within 100m from an existing fire hydrant. Where the existing hydrants cannot achieve this, then a private hydrant will be provided within 90m to the wet riser inlet.

The coverage of the existing hydrants is acceptable as proposed and the pressure and flow in the water main will need to be assessed by the water supplier.

## 7.6 Emergency Power Supplies

Each life safety system provided within the building will have an independent power supply which would operate in the event of a failure of the main supply.

Secondary power supply should be provided to the following life safety systems:

- Automatic opening vents,
- Mechanical Smoke Venting system,
- Fire Alarm System,
- Emergency lights and signs,
- Residential sprinkler system,
- Commercial Sprinkler system
- Firefighting lifts
- Wet riser

## 7.7 Evacuation Alert System

As all blocks contain a floor over 18m in height, they will be provided with an evacuation alert system to allow the fire service to undertake the evacuation of part or the whole building if necessary.

It is recommended that the evacuation alert control and indicating equipment (EACIE) should be designed and installed in accordance with BS8629.

## 7.8 Secure Information Boxes

Since all blocks are over 11m in height, they are required to be provided with a secure facility to store information about the building for use by the fire service during an incident.

The box should meet all the conditions listed below.

- Sized to accommodate all necessary information
- Easily located and identified by firefighters
- Secured to resist unauthorised access but readily accessible by firefighters,
- Protected from the weather.

Best practice guidance can be found in Sections 2 to 4 of the *Code of Practice for the Provision of Premises Information Boxes in Residential Buildings* published by the Fire Industry Association (FIA).

## 8 Fire Safety Management

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### 8.1 General

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

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

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

A full Fire Risk Assessment should be carried out by the occupier of the building nearer to the development completion and be in place on occupation to meet the Regulatory Reform Order (RRO). The assessment should be maintained and act as a record of the provision and measures, passive and active, used to minimize fire risk within and around the building.

### 8.2 Key Management Issues

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

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

#### 8.2.1 Control of Evacuation and Fire Safety Planning / Implementation

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

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

- The procedures to be adopted in the event of a fire signal being given
- Procedures for evacuation of occupants (including disabled occupants)
- Procedures for equipment maintenance
- Frequency and nature of fire drills
- Staff training
- Procedures for recording and monitoring equipment maintenance and any fire incidents

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

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

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

### 8.3 Regulation 38

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

- The fire strategy report
- Any management information proposed in addition to that contained in this strategy
- Details of all passive fire safety measures (including compartmentation, cavity barriers, fire doors, self-closers and duct dampers)
- Details of the fire alarm and detection systems, emergency lighting, emergency signage, access controls, door hold open devices
- Details of all active fire safety measures including sprinkler systems design, including isolating valves and control equipment; and smoke control systems design, including mode of operation and control systems.
- Details of the dry / wet risers, fire hydrants
- Any high risk rooms and equipment present
- As built plans for the building
- O&M Manuals for the building systems, including commissioning information and certification
- Any provision incorporated into the building to facilitate the evacuation of disabled people

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

## 9 Conclusions and Recommendations

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This report outlines the fire safety strategy proposals for Clarendon Phase 4 and seeks to demonstrate compliance with the Building Regulations (generally in the form of the recommendations of Approved Document B).

The design of the residential blocks, such as travel distances etc., are in accordance with the recommendations of ADB.

All blocks will be provided with a lift that will be suitable for disabled evacuation purposes.

All blocks will have elements of structure achieving 120 minutes fire resistance since they are over 30m.

All blocks are over 11m in height, so will be sprinklered in accordance with BS9251. The car park and commercial accommodations will also be provided with a sprinkler system, which would be designed in accordance with BS EN 12845. The ancillary accommodation shall either be sprinklered with the residential or commercial sprinkler system depending on the size of the rooms.

All blocks are over 18m and will be provided with a firefighting shaft. Each shaft will incorporate a firefighting stair, smoke clearance and a dry / wet riser.

Based upon the above proposals it is considered that adequate measures are provided to meet the functional requirements of the Building Regulations.

