# Report

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| **Project** | Crown Trading Centre |
| **Report Title** | Fire Statement (London Plan) |
| **Our Ref** | GL8257/R2 Issue 2 |

# Issue Record

| REV | DATE | AUTHOR | REVIEW | APPROVED | SECTION | AMENDMENTS |
|---|---|---|---|---|---|---|
| 1 | 11/08/2022 | BY | NH | NH | - | - |
| 2 | 12/08/2022 | BY | BT | BY | 1.1<br><br>1.3 | The building's height has been increased to 30.3m.<br><br>Iceni comments have been included |

## CONTENTS

# 1.0 INTRODUCTION

## 1.1 Description of Development

The development involves the construction of six new residential blocks in Hayes, London.

The proposed development is set across two separate buildings, 'the Perimeter building' and 'the Linear building.'

The Linear building comprising two residential blocks (Blocks A and D) rising above a shared car park at ground floor and podium landscape at First Floor.

The Perimeter building will comprise four residential cores (Block B, C, E and F, with shared car parking at Ground and Mezzanine Level, with a podium landscaped area at First Floor.

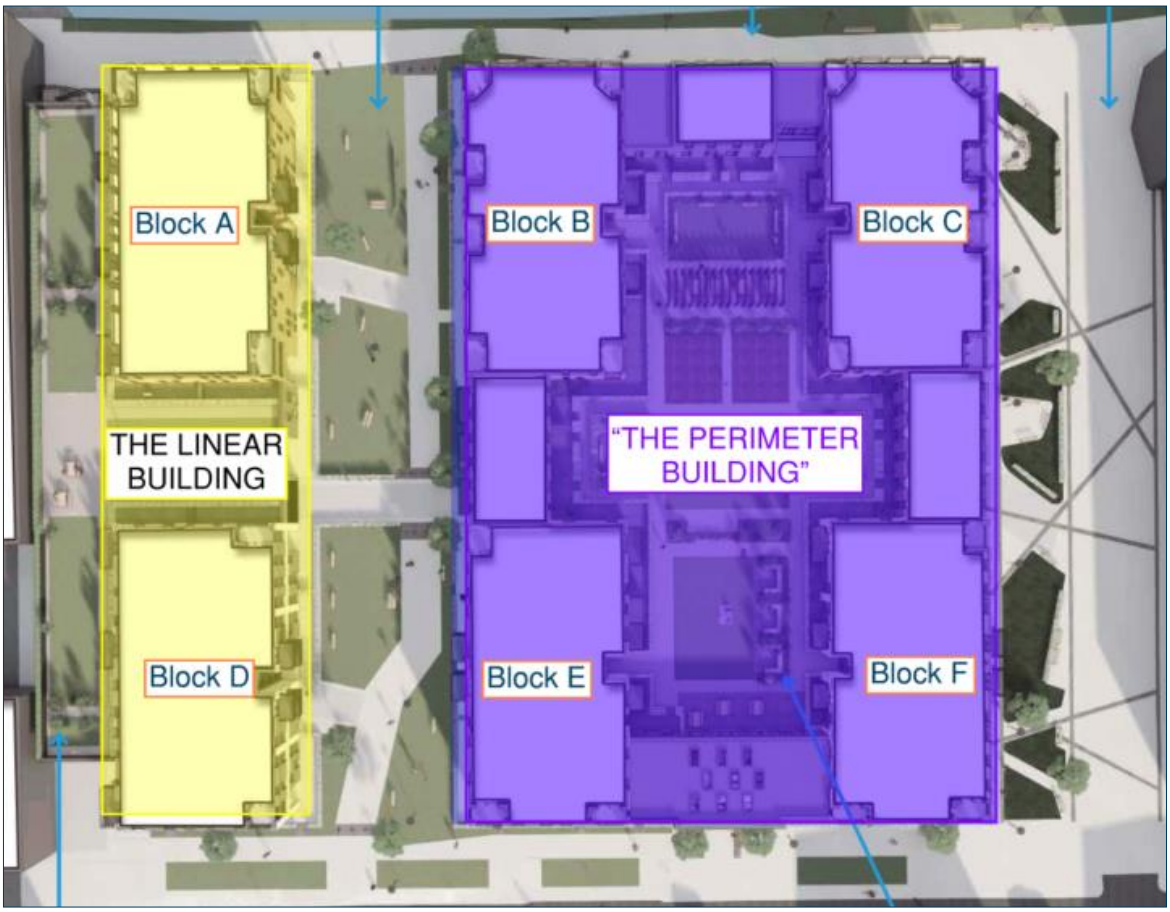


*Figure 1: Crown Trading Estate*

Each residential block will be served by two stairs, with flats which are accessed via an enclosed common corridor.

The premises will also contain ancillary accommodation such as car parking and residential amenity spaces at Ground and Mezzanine Levels. Other uses will include refuse stores, cycle stores and plant rooms which will be accessed at ground.

A number of commercial units with accommodation at Ground and Mezzanine levels will be provided in the main block.

There will be connection between the Ground ancillary areas/car park and the internal common parts of the residential building.

The number of floors (including mezzanine levels) and approximate top floor height above ground of each residential Block is as follows:

| Block | NUMBER OF STOREYS | Top Floor Height |
|---|---|---|
| A | GF + mezzanine +9 floors above | 30.3m |
| B | GF + mezzanine +9 floors above | 30.3m |
| C | GF + mezzanine +9 floors above | 30.3m |
| D | GF + mezzanine +7 floors above | 23.8m |
| E | GF + mezzanine +7 floors above | 23.8m |
| F | GF + mezzanine +7 floors above | 23.8m |

*Table 1: Site Overview*


*Figure 2: Height of the Blocks*


*Figure 3: Typical Floor plan for Crown Trading Estate*

## 1.2 Building Regulations

In order to comply with the requirements of Policy D12 and the functional requirements of the Building Regulations 2010 (incorporating the building (Amendment) Regulations 2018), the design has primarily followed the guidance available within BS 9991: 2015.

By definition the building is classified as a “relevant building” and so the additional prescriptive requirements of Regulation 7(2) will apply. Therefore, the building design and this fire statement also considers the relevant guidance in Approved Document B 2019 (incorporating the 2020 updates) to reflect recent changes to Building Regulations guidance in relation to external walls.

## 1.3 Aim of Fire Statement

This report has been prepared in support of the planning application being submitted by GS Hayes Venture Ltd (‘the Applicant’) to the London Borough of Hillingdon (‘the Council’) for a minor material amendment to planning permission 73955/APP/2021/3362 at the Crown Trading Centre, Clayton Road, Hayes, UB3 1DU (‘the Site’).

This document describes how the proposed design will meet with the requirements detailed above. The Fire Statement is based on the drawings and information provided to Jensen Hughes by Frank Reynolds Architects.

# 2.0 LEGISLATION AND GUIDANCE NOTES

## 2.1 London Plan 2021

Policy D12 of the London Plan requires that all development proposals must achieve the highest standards of fire safety and all major development shall be supported by a Fire Statement as per the excerpt below.

**Policy D12 Fire safety**

A In the interests of fire safety and to ensure the safety of all building users, all development proposals must achieve the highest standards of fire safety and ensure that they:

1) identify suitably positioned unobstructed outside space:

   a) for fire appliances to be positioned on

   b) appropriate for use as an evacuation assembly point

2) are designed to incorporate appropriate features which reduce the risk to life and the risk of serious injury in the event of a fire; including appropriate fire alarm systems and passive and active fire safety measures

3) are constructed in an appropriate way to minimise the risk of fire spread

4) provide suitable and convenient means of escape, and associated evacuation strategy for all building users

5) develop a robust strategy for evacuation which can be periodically updated and published, and which all building users can have confidence in

6) provide suitable access and equipment for firefighting which is appropriate for the size and use of the development.

B All major development proposals should be submitted with a Fire Statement, which is an independent fire strategy, produced by a third party, suitably qualified assessor.

The statement should detail how the development proposal will function in terms of:

1) the building's construction: methods, products and materials used, including manufacturers' details

2) the means of escape for all building users: suitably designed stair cores, escape for building users who are disabled or require level access, and associated evacuation strategy approach

3) features which reduce the risk to life: fire alarm systems, passive and active fire safety measures and associated management and maintenance plans

4) access for fire service personnel and equipment: how this will be achieved in an evacuation situation, water supplies, provision and positioning of equipment, firefighting lifts, stairs and lobbies, any fire suppression and smoke ventilation systems proposed, and the ongoing maintenance and monitoring of these

5) how provision will be made within the curtilage of the site to enable fire appliances to gain access to the building

6) ensuring that any potential future modifications to the building will take into account and not compromise the base build fire safety/protection measures.

*Figure 3: Extract from London Plan (March 2021) Excerpt Policy D12 Fire safety*

## 2.2 Building Regulations

In order to comply with the requirements of Policy D12 and the functional requirements of the Building Regulations 2010 (incorporating the building (Amendment) Regulations 2018), the design has primarily followed the guidance available within current BS 9991:2015.

However, there have been various developments within the fire safety industry since 2017, particularly in relation to the fire safety design of external walls. The design, therefore, also adopts the most relevant recommendations of Approved Document B Volume 1 amended version (2019 edition incorporating 2020 amendments) regarding the external wall system requirements, even though the building will be below the

threshold height at which these requirements are mandatory. Therefore, the prescriptive provisions of Regulation 7(2) will be applied to this scheme.

## 2.3 The Authors of This Statement

In accordance with the London Plan, the statement has been prepared and reviewed by fire engineers who are suitably qualified and competent professionals with the demonstrable experience to address the complexity of the design being proposed.

Jensen Hughes are a highly experienced team of specialist fire engineers that have been operating in the UK and Ireland for nearly 28 years (predominantly under the name JGA). The qualifications of the author of this report are given below:

Report written by **Basheer Youssef**, Associate of Jensen Hughes, England.

Basheer has 12 years' international experience in high-level fire engineering. He is a member of the Institution of Fire Engineers (MIFireE). As a Fire Engineer he possesses wide-ranging experiences in many aspects of fire safety, detection and protection systems and present realistic solutions in line with current national or international regulations and standards such as BS, NFPA and UAE fire code. He has experience with both UK codes and guidance, e.g. Approved Document B, BS 9999, BS 9991, HTM 05-02, PD 7974, BS 5839 part 1 & 6 , BS EN 12845, BS 9251and also overseas and international codes, e.g. NFPA and UAE Code.

Report approved by **Nick Harvey**, Managing Director of Jensen Hughes, England.

Nick Harvey is a Chartered Engineer through the Institution of Fire Engineers. Nick has over 19 years of experience in developing building Fire Strategies. He has extensive experience in fire strategies for residential buildings ranging from Private residential, Private Rented Sector, co-living, and Student Residential buildings. He has extensive experience in developing fire engineering solutions including fire and smoke and evacuation modelling for all range of building types, including extensively in residential buildings. As part of Jensen Hughes, Nick can draw from the experience of other fire engineers in the UK and around the world, which will ensure the quality and the robustness of the fire strategy developed for the project. Nick is a Chartered Engineer through the Institution of Fire Engineers. Qualifications are BEng (Hons) CEng MIFireE. Membership number 33950.

# 3.0 CONSTRUCTION, PRODUCTS AND MATERIALS

## 3.1 Construction

The buildings are of RC frame construction. The uppermost storey of buildings D, E,F will have a rain screen cladding external with a non-combustible Fibre cement cladding on helping hand brackets.

Balconies are a combination of RC slab and steel framed construction. All balcony balustrades will be PPC metal flat bars.

The Building Regulations (Regulation 7) require that building work must be carried out in a workmanlike manner using adequate materials.

Any materials, products or systems are to be appropriate for the circumstances in which they are used using tested and certified products that are installed in accordance with the manufacturers design details and instructions.

Building materials will be required to achieve the minimum standard for fire resistance as outlined in Section 5.0.

## 3.2 External Walls

The external walls are a masonry cavity wall construction with brickwork outer leaf, non-combustible insulation, calcium silicate sheathing board and a SFS & dry lined inner wall.

The materials used in the external wall construction will achieve Class A1 or A2-s1,d0 with the exception of the materials listed in Regulation 7(3).

There will be no limitations on the amount of glazing on the elevations due to the high standard of compartmentation in all blocks and the setback nature of all blocks from the middle of the surrounding roads.

The extent of unprotected area to the elevations will be determined using guidance and methods given in BR 187 taking into consideration the provision of sprinklers and the building’s proximity to the site boundary / surrounding roads.

## 3.3 Roof Covering

The roofs will generally be inverted flat roofs with green/brown roofs and PV panels. Building C roof will have a screened plant area for Air source heat pumps. The louvres will be of PPC aluminium construction.

Roof coverings will be in accordance with current BS9991:2015.

# 4.0 MEANS OF ESCAPE FOR ALL BUILDING USERS

## 4.1 Evacuation strategy

The residential part of the building will follow a stay put strategy, where only the apartment on fire evacuates.

Allowance will be made for an evacuation alert system. Evacuation alert systems are a facility that will enable the fire brigade to initiate a full building evacuation at their discretion.

Ancillary accommodation and commercial units will be evacuated immediately in the event of an alarm signal from these spaces.

A fire alarm in the commercial units will not result in a full evacuation of the rest of the building and vice versa. However, the residential building management will be notified of a fire alarm activation in the commercial unit.

## 4.2 Apartments Layouts

The development comprises a mixture of open-plan apartments and duplex accommodation. The duplex units are all located between Ground and Mezzanine Level and between first and second floors. The single storey open plan apartments begin at First Floor and are then located at every floor above. All will comply with the BS9991 recommendations.

## 4.3 Travel Distances

The travel distances will be within the limits of BS9991 and ADB V2 in both non-residential and residential areas.

The residential levels of all 6 blocks will in general be arranged so that escape distances in the common corridors are no more than 7.5m, measured from the door to the furthest apartment to the door into a separate smoke vented lift lobby. The lift lobby will not provide access to any apartments, storage space, or any other space containing a potential fire hazard.

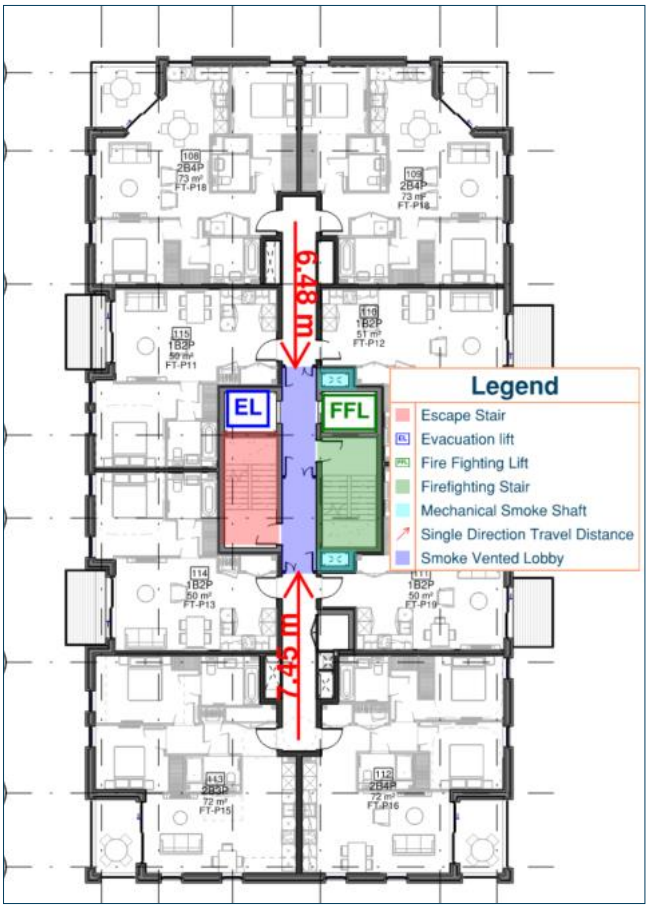


*Figure 4: Typical Floor Layout for each residential level above second Floor*

Exceptions to this are at First and Second Floors, where there is a section of corridor linking Blocks B to E and C to F. Escape in these corridors is in two directions, and escape distances are well within the maximum 60m recommended in BS9991.

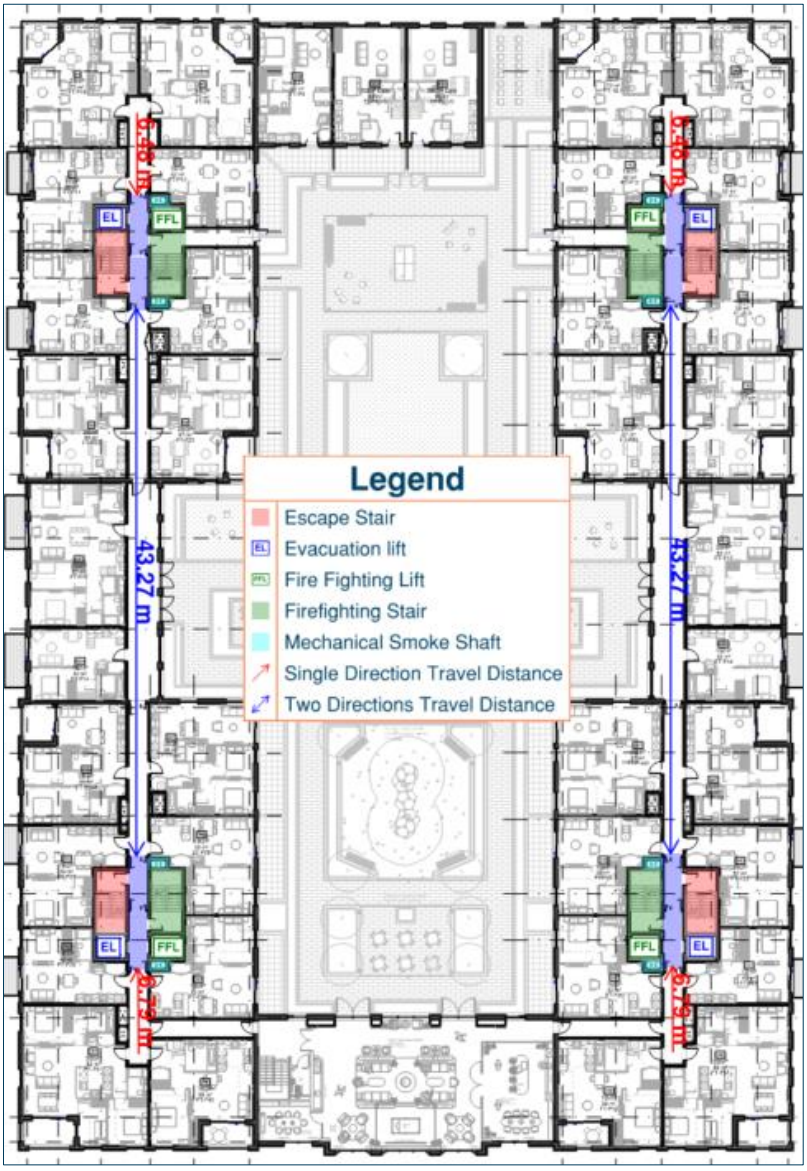


*Figure 4: First Floor Layout*

## 4.4 Horizontal exits

The horizontal exit widths and the number of storeys exits will be within the limits of BS9991 and ADB V2 in both non-residential and residential areas.

## 4.5 Stairs

Each residential block will be provided with two escape stairs which each serve every level.

Each stair will have a clear width of at least 1.1mm.

## 4.6 Final Exits

All proposed protected stairs serving the upper floors currently discharge directly to outside via protected corridor at Ground Floor. Any adjoining areas will be adequately separated from the final escape route by a protected lobby.

## 4.7 Fire Safety Provisions for Disabled Occupants

Provision will be made for the means of escape of disabled occupants by the inclusion of a lift suitable for evacuation in the main stair core, which serves every level. This will be in accordance with London Plan Policy D5 (B5). A suitable management procedure will be developed as the project progresses.

The evacuation lift will open into a protected smoke vented stair lobby which will remain free of any other fire risks (e.g. apartments, service risers etc). Corridors either side of the lift lobbies will also be smoke vented.

## 4.8 Assembly points

A suitable location for assembly will be confirmed as the design develops.

# 5.0 PASSIVE FIRE SAFETY MEASURES

## 5.1 Structural Fire Resistance

All the loadbearing elements of the structure will provide at least 2-hour fire-resistance.

## 5.2 Fire Compartments

All floors will be compartment floors achieving equal fire resistance as the structure of the building they are in.

Any shafts penetrating floors (service risers, passenger lifts etc.) will be designed as protected shafts achieving the same fire resistance as the structure of the building.

The following will be constructed as compartment walls achieving 2 hours fire resistance:

- Firefighting route from outside to firefighting core at Ground of each Block.
- Walls enclosing the firefighting stair and lift.
- Walls enclosing plant rooms containing life safety equipment.
- Walls enclosing the commercial units.

The following will be constructed as compartment walls achieving 1-hour fire resistance:

- Walls between apartments and the common corridor.
- Walls enclosing all apartments.
- Walls enclosing refuse stores.
- Walls enclosing plant rooms containing high risk equipment.
- Walls separating the car park from the rest of the building.

The following will be constructed as compartment walls achieving 30 minutes fire resistance:

- Walls enclosing protected stairways within the duplex units.
- Walls enclosing plant rooms containing low risk equipment.

Any substations will be enclosed within 4-hour fire resisting construction.

## 5.3 Cavity Barriers

Cavity barriers will be provided in concealed ceiling voids, floor voids and external walls in accordance with the recommendations of current BS9991:2015.

## 5.4 Fire Stopping

Fire stopping will be provided to maintain the integrity of the fire separating elements in accordance with the recommendations of current BS9991:2015.

## 5.5 Internal linings

Wall and ceiling linings will achieve the following surface spread of flame classifications according to current BS EN 13501-1, in line with standard guidance:

| LOCATION | TESTED TO BS EN 13501-1 |
|---|---|
| Small rooms of maximum internal floor area of 4m$^2$ or 30m$^2$ in non-residential accommodation | Class D-s3, d2 |
| Circulation spaces within a dwelling | Class C-s3, d2 |
| Other circulation spaces (including the common areas of blocks of flats) | Class B-s3, d2 |

*Table 3: Classification of Linings*

# 6.0 ACTIVE FIRE SAFETY SYSTEMS

## 6.1 Fire Detection and Alarm System

The level of detection that will be provided to each part of the site is described in the following table.

| AREA | CATEGORY | GUIDANCE TO BE IN ACCORDANCE WITH |
|---|---|---|
| Open Plan Apartments / Duplex units | LD1 | BS 5839-6 |
| Common areas including corridors | L5 | BS 5839-1 |
| Commercial units<br>Ancillary areas | L2 | BS 5839-1 |

*Table 2: Automatic Fire Detection Provisions*

## 6.2 Fire Sprinkler System

The top floor of the building is more than 11m above ground. Therefore, the residential areas will be sprinklered throughout in accordance with the recommendations of BS9251.

The non-residential areas such as the car park, commercial, and other residential ancillary accommodation which is outside the scope of BS 9251 will be provided with a commercial sprinkler system conforming to BS EN 12845.

## 6.3 Emergency Lighting

Emergency lighting will be provided in accordance with current BS 5266-1

## 6.4 Escape Signage

Escape signage will be provided in accordance with current BS ISO 3864-1

## 6.5 Emergency Power Supply

Life safety systems will be provided with a secondary back-up power supply.

## 6.6 Smoke Ventilation and Control System

The lobbies adjacent to the stairs in each Block will be smoke vented. This will be achieved via a mechanically assisted smoke shaft. This is to protect occupants who may be waiting for the evacuation lift and exceeds the minimum recommendations of Building Regulations guidance.

Both stairs on each Block will have a 1m² AOV at the head of the stair.

Smoke venting from car parks will be provided via a mechanical smoke extract system achieving 10 air changes per hour.

## 6.7 Routine Inspection and maintenance of fire safety installations

Fire safety installations shall be maintained in accordance with the relevant British or European standards. An Inspection, maintenance and repair manual shall be part of the fire safety manual and incorporated in the building management plan.

# 7.0 ACCESS AND FACILITIES FOR THE FIRE SERVICE

## 7.1 Fire Service Access

The fire service access route, which allow access to the site, is indicated in the figure below.

The access road will be suitable for a fire service pump appliance with a 3.7m clear width and 3.7m vertical clearance height. The load-bearing capacity to the access roads will be a minimum of 14 tonnes.

Fire appliances will be able to park within 18m and in sight of the inlet to the dry fire main in all stair cores.

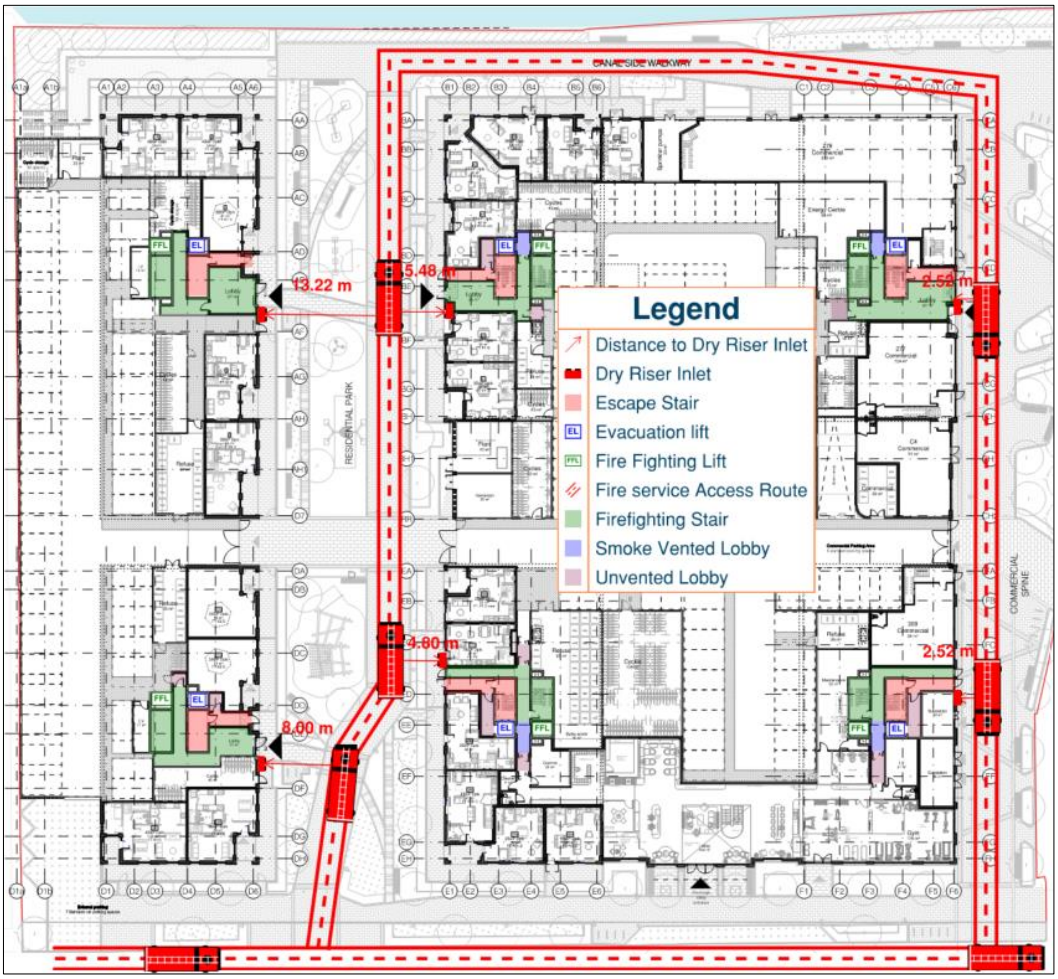


*Figure 4: Fire Service Access*

## 7.2 Fire Service Facilities

All six blocks will have a top floor greater than 18m above ground level and will therefore be provided with firefighting shafts.

The firefighting shaft in each building will include the following:

- A firefighting stair at least 1.1m wide.
- A 1m$^2$ AOV at the head of the stair.
- A firefighting lift located no more than 7.5m from the door to the firefighting stair.
- A dry fire main with an outlet in the firefighting stair enclosure at every level.
- 2 hours fire resisting enclosure around the firefighting stair, firefighting lift and access route to the firefighting shaft at ground floor.

Smoke venting provisions within the common corridors will also be sufficient for firefighting.

## 7.3 Fire Hydrants

A water supply will be provided either from a public fire hydrant system or from a private fire hydrant ring main system designed to meet BS 9990. There will be an existing fire hydrant within 100m to Blocks A,B D E and F entrances.

However, because the existing fire hydrant will be more than 100 metres away from the block C entrance, a new fire hydrant will be installed within 90 metres of the dry riser inlet.


*Figure 4: Existing Fire Hydrant*

## 7.1 Wayfinding Signage

Wayfinding signage will be provided in line with the recommendations of the amended guidance to comply with Building Regulations in accordance with clauses 15.13 to 15.16 of the ADB Volume 1:2019 (incorporating 2020 amendments).

## 7.2 Premises Information Box

A premises information box will be provided near the entrance to the fire service entrance to the building in line with clauses 15.18-15.21 of Amendments to the Approved Documents (June 2022).

## 8.0 FUTURE PROOFING – GOLDEN THREAD OF INFORMATION

In line with the recommendations for providing a 'golden thread' of information, digital records of core fire safety components during the design and construction phases will be provided. Records will be initiated by the relevant duty holders during the design and construction phase, on completion of work the records will be handed over to the building owners to maintain for the life of the building.

A Fire and Emergency File (FEF) will be established for this development to record relevant information throughout the design, construction and life of the building. This will be an ongoing process as the scheme is developed and built and will include this fire statement and subsequent fire strategies as outlines of the key fire safety design provisions of the building, including assumptions of fire loads, occupant characteristics, evacuation strategies, passive fire safety measures, active fire safety systems, fire safety equipment, key fire properties of building materials, access for fire and rescue services. As the design develops relevant documents shall be recorded including technical specifications and product datasheets, detailing specific information on the building materials, safety systems and equipment. On completion of construction the commissioning documents and the operation and maintenance manuals shall be recorded. Throughout the life of the building regular inspections and maintenance are required to ensure the fire strategy is upheld and fire safety systems are operational. Records of inspections, fire risk assessments and maintenance work shall be recorded.

The details of the information retention systems will be determined by the client.

Modification of the following elements of the building may adversely affect the original fire safety strategy:

- Fire detection and alarm systems
- Fire suppression systems
- Smoke clearance and control systems
- Increasing population, e.g. if further flats were provided in the future
- Changing the use of the areas
- Escape routes
- Number and dimension of escape stairs
- Refuge areas
- Wall and ceiling linings
- Fire protection of the building structures
- Changing fire and smoke doors
- Changing, penetrating fire compartments, cavity barriers
- Increasing fire load in certain areas
- Creating, changing openings on the external envelope
- Changes in the external envelope of the building
- Changes in the environment of the building related to the fire service access points and parking.

# 9.0 INFORMATION, LIMITATIONS AND ASSUMPTIONS

The information limitations and assumptions used in the preparation of this report are noted below: -

## 9.1 Drawings

This report is based on drawings issued to us. Dimensions have been taken from these drawings. The following drawings were used: -

| LOCATION | DRAWING |
|---|---|
| Stage 3B - Ground Floor | 1140CTC-FRA-ZZ-00-DR-A-010101 |
| Stage 3B - Mezzanine Floor | 1140CTC-FRA-ZZ-01-DR-A-010102 |
| Stage 3B - First Floor | 1140CTC-FRA-ZZ-01-DR-A-010103 |
| Stage 3B - Second Floor | 1140CTC-FRA-ZZ-01-DR-A-010104 |
| Stage 3B - Third Floor | 1140CTC-FRA-ZZ-01-DR-A-010105 |
| Stage 3B - Fourth Floor | 1140CTC-FRA-ZZ-01-DR-A-010106 |
| Stage 3B - Fifth Floor | 1140CTC-FRA-ZZ-01-DR-A-010107 |
| Stage 3B - Sixth Floor | 1140CTC-FRA-ZZ-01-DR-A-010108 |
| Stage 3B - Seventh Floor | 1140CTC-FRA-ZZ-01-DR-A-010109 |
| Stage 3B - Eighth Floor | 1140CTC-FRA-ZZ-01-DR-A-010110 |
| Stage 3B - Ninth Floor | 1140CTC-FRA-ZZ-01-DR-A-010111 |

## 9.2 Building Regulations

This report considers building regulations, which deal with life safety. Property protection and insurance issues are not addressed in this report. Guidance on property protection and insurance requirements can be found in the document *Approved Document B: Fire Safety (Volume 2) – Buildings other than dwellinghouses Incorporating Insurers' Requirements for Property Protection,* RIBA Publishing 2015.

## 9.3 Other Limitations

Complying with the recommendations of this report will not guarantee that a fire will not occur.

Unless otherwise described in this report, the fire strategy assumes that the building design, the mechanical and electrical systems, construction methods and materials specifications will comply with current Building Regulations guidance, and relevant British Standards and Codes of Practice. The design of mechanical and electrical systems such as fire alarm and sprinklers are a specialist area. Fire Strategy recommendations are given in this report; however, the design and specifications need to be developed at the appropriate stage in consultation with the specialist designers of these systems.

This report has been prepared for the sole benefit, use and information of Greystar and the liability of Jeremy Gardner Associates Limited, its directors and employees in respect of the information contained in the report will not extend to any third party.

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