

21-57 Willow Way (Site A), Lewisham, London. SE26

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**Planning Stage Fire Safety Report**

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12/12/2022  
Project Reference: 65208259  
Revision: 2  
Prepared For: Kitewood Estates Ltd

## Status / Revisions

<b>Rev.</b>	<b>Date</b>	<b>Reason for issue</b>	<b>Prepared</b>	<b>Approved</b>
0	12.12.22	Initial	RJones	DKirby
1	14.12.22	For Issue	RJones	DKirby
2	19.12.22	Amended	RJones	DKirby

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## 1 Executive Summary

Sweco Fire Safety have been appointed by Kitewood Estates Ltd to provide a planning stage fire safety report to enable compliance with section D12 of the London Plan. The description of works relates to **Demolition of existing buildings and redevelopment to provide employment floorspace (Use classes E(g)(i)(ii)(iii)) and residential dwellings including affordable housing and amenity space.**

This statement should be used for planning permission purposes only and is not a detailed fire strategy document. A further detailed Fire Strategy should be undertaken within RIBA design stages 3 and 4 along with a RRO fire risk assessment for the common areas before the building is occupied.

The project relates to a proposed mixed use development on land at 21-57 Willow Way (Site A), Lewisham, SE26.

The block is 5 storeys in height consisting of three commercial units at ground floor with mezzanines/open spatial floors. Floors 1-4 are split into two blocks of residential studios and flats.

## 2 London Policy D12 (A) Compliance Statement

To demonstrate developments have met the highest standards of fire safety, proportionate to the development, the following information should be addressed:

- A. Identify suitably positioned unobstructed outside space for:**
  - i. fire appliances to be positioned on.**  
*Sweco see section B5 of this report.*
  - ii. appropriate for use as an evacuation assembly point**  
*Sweco see section B5 of this report.*
  
- B. 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.**  
*Sweco - Yes. See Section 6.2 – 6.4 B1 to B3 Fire Safety Comments below.*
  
- C. Are constructed in an appropriate way to minimise the risk of fire spread.**  
*Sweco - Yes. See Section 6.5 – B4 Fire Safety Comments*
  
- D. Provide suitable and convenient means of escape, and associated evacuation strategy for all building users**  
*Sweco - Yes. See Section 6.2 – B1 Fire Safety Comments*
  
- E. Develop a robust strategy for evacuation which can be periodically updated and published, and which all building users can have confidence in.**  
*Sweco - Yes. See Section 6.2 – B1 Fire Safety Comments*
  
- F. Provide suitable access and equipment for firefighting which is appropriate for the size and use of the development**  
*Sweco – Yes. See Section 6.6 - B5 Fire Safety Comments*

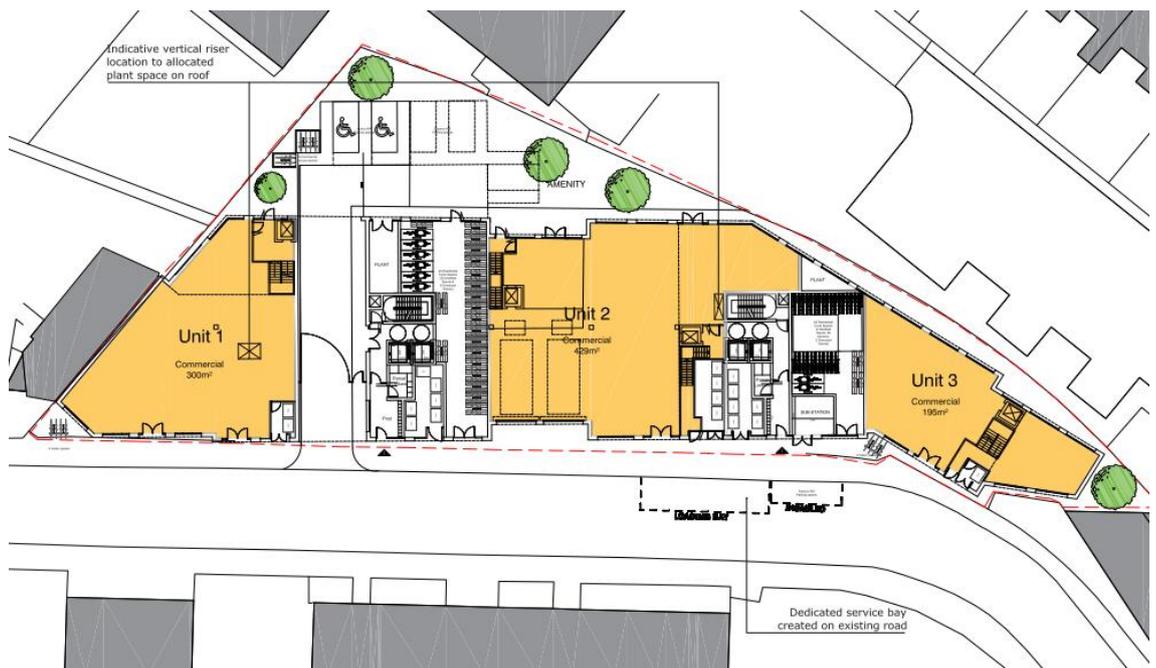
### 3 Name of Person Completing the Statement

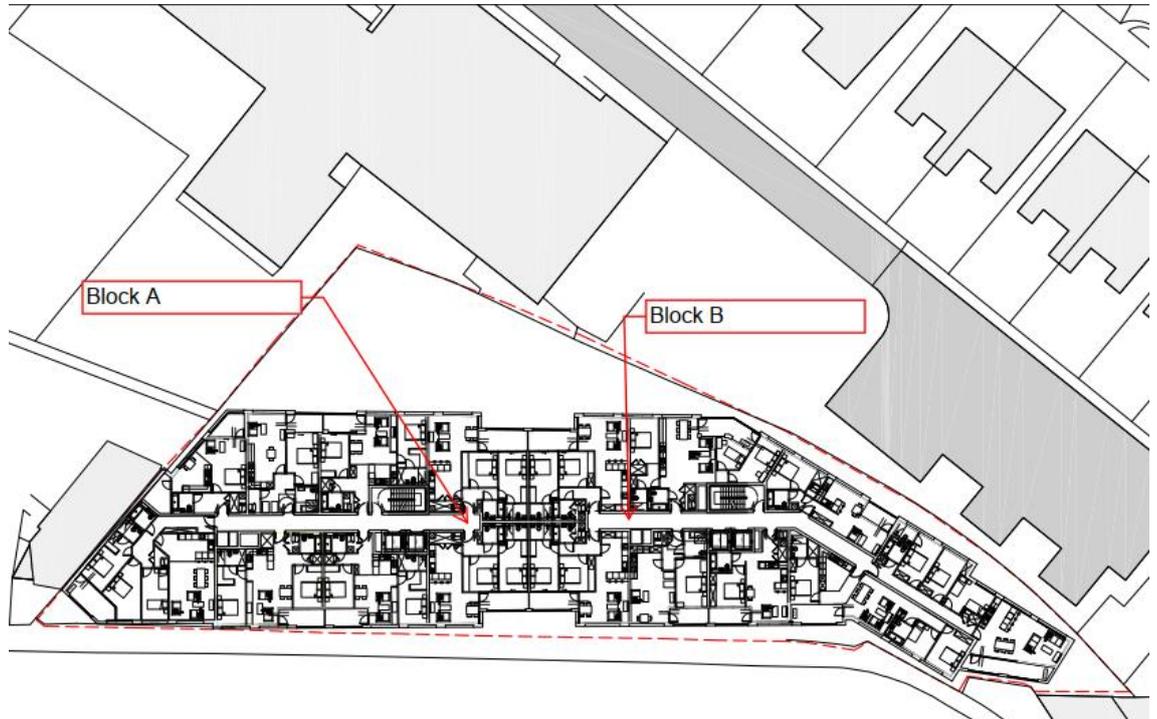
Richard Jones MCIQB/AIFireE, 15+ years of relevant experience within the building control and fire safety sector. Principal Consultant at Sweco – Building Safety Unit. Experienced in Building Control and Fire Safety in all building types including mixed use commercial/residential developments.

### 4 The Site

The project relates to an employment led mixed use development on land at 21-57 Willow Way in Lewisham. The existing site comprises three businesses currently operating, including a vehicle repair/garage, storage/warehouse catering business and a drinks machine repair/servicing business. The sites contain a mix of single storey and double storey buildings with areas of hardstanding, parking, yard areas and shipping containers interspersed between buildings.

The proposed building is a 5-storey building containing three commercial units with mezzanine/open spatial planning floors at ground floor and four floors of residential studios and flats above split into two blocks A and B. The top storey height being approximately 15.75m above the lowest external ground level.





## 5 Consultations Undertaken at this Stage

None

## 6 Fire Safety Comments

### 6.1 Fire Safety Design Codes and Standards

BS 9991:2015 'Fire safety in the design, management and use of residential buildings – Code of practice', will be the primary design. *(The current version of BS 9991 is 2015 but it is noted that a new version is due to be published in 2023. The version applicable will depend on the stage of design or construction applicable to the scheme at that time).*

As the building has residential flats over 11m in height they will require a sprinkler system which will be designed, installed, and commissioned by specialists, and will be certified to confirm compliance with BS 9251: 2021 for the residential areas. As the commercial units are over 100m<sup>2</sup> they will need a sprinkler system conforming to BS EN 12845.

The fire detection and alarm system within each of the individual flats will be designed, installed, and commissioned in accordance with BS 5839-6:2019+A1:2020 'Code of practice for the design, installation, commissioning, and maintenance of fire detection and fire alarm systems in domestic properties'.

The fire detection system within the residential common areas would be required to activate the smoke control system, such as automatic opening vents to the common corridors and stair. This will be designed, installed, and commissioned in accordance with BS 5839-1:2017 'Code of practice for the design, installation, commissioning, and maintenance of systems in non-domestic properties'.

The fire detection and alarm system within the commercial units will be designed, installed, and commissioned in accordance with BS 5839-1:2017 'Code of practice for the design, installation, commissioning, and maintenance of fire detection and fire alarm systems in non-domestic properties'.

Fire mains will be provided to blocks where the hose length distances from the fire and rescue service pump appliance parking position to the furthest reaches of all flats exceeds the guidance in BS 9991. As the distance to the furthest point within a flat is over 45m dry risers will be required. Dry risers will be designed, installed, and commissioned in accordance with BS 9990:2015 'Non-automatic fire-fighting systems in buildings – Code of practice'.

An emergency lighting system will be provided within common corridors and stairs and also to the commercial units. This will be designed, installed, and commissioned in accordance with BS 5266-1:2016 'Emergency lighting. Code of practice for emergency lighting of premises'.

As from 1<sup>st</sup> December 2022, Approved Document B volume 1 guidance has been updated to provide more robust fire safety guidance. Where this new guidance is more onerous than that contained in BS 9991 guidance for a particular building height, this will be followed within the design through RIBA Stages 3 and 4. This will include the materials used in the external wall build-ups and wayfinding signage for the fire service.

## 6.2 B1 - Means of Warning and Escape

- The following purposes groups are applicable to this development:
  - Residential (dwellings) (*Purpose Group 1a - Flats*)
  - Offices (*Purpose Group 3*)
  - Industrial (*Purpose Group 6*)

### Flats

- The detailed design of the means of escape from the flats and maisonettes will ensure that they comply with the guidance within section 7 of BS 9991. This will generally include for protected common lobbies between the flats and the common stair.
- Open plan apartments do not have protected hallways but have bedrooms that are inner rooms without an alternative means of escape. They will have AWFSS and a Grade D LD1 alarm system however they do not meet all of the recommendations of section 9.7 below from the current BS9991:2015 as the cooking facilities are not enclosed. There is a new BS9991 due in 2023 and requirement d. below is currently due to be replaced with new guidance that requires escape to be made 1.8m away from a cooking appliance via a 900mm escape route. Each of the flat layouts has been reviewed and they have been shown to comply with the proposed guidance.

- a. The size of the open plan flat should not exceed 16m x 12m.
  - b. Open plan flats should be situated on a single level only.
  - c. The ceilings within open plan flats should have a minimum height of 2.25m.
  - d. 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.
- Smoke control systems will be included wherever necessary to meet the guidance in BS 9991. The smoke control systems will be designed, installed, and commissioned in accordance with Section 14 of BS 9991:2015 or the proposed updated version of BS 9991 if released at the time. Automatic opening vents: Typically vents to common corridors or lobbies will need to provide a minimum of at least 1.5m<sup>2</sup> free area of ventilation, and the vents at the head of the stair will provide a free area of at least 1m<sup>2</sup>. Rooflight automatic opening vents will be provided above each of the common stairs.
  - The ground floor layouts will meet the requirements of Section 34 of BS 9991:2015 'Discharge from common stairs and final exits'. This will require the protected common stairways to discharge either:
    - a. Directly to a final exit; or
    - b. Into a protected common corridor leading to a final exit which is itself lobbied from any accommodation.

Stairs are considered to meet the above requirement. The only ancillary accommodation accessed off the stairs is the refuge stores which will be by way of ventilated lobbies.

- In Block A, the proposed layout of the cycle store includes two means of escape so travel distances are acceptable.
- The travel distances from flat entrance doors via ventilated corridors or the common stairs will be in accordance with BS 9991 guidance. The worst case travel distance is 14.9m however as a sprinkler system conforming to BS9251:2021 is proposed the travel distance within the corridor can be extended from 7.5m to 15m so it is within acceptable limits.
- Both blocks have a top storey height greater than 11m but below 18m above external ground level and they will rely on single stairs for escape purposes. The guidance in BS 9991 will be followed to ensure safe escape.
- There are studio apartments with a travel distance from the furthest point of the flat to the entrance door greater than 9m however as per clause 9.4.2(a) of BS9991 where an AWFSS and an LD1 fire alarm are provided this can be extended to 20m. All studio apartments will meet this requirement and are therefore considered acceptable.
- Protected entrance halls will be provided wherever necessary to meet BS 9991 guidance. The internal arrangement of the flats will be such as to ensure that the maximum distance from the door to any room to the flat entrance door, does not exceed 9m.
- Private terraces or balconies are provided to a number of flats. BS 9991:2015 provides guidance within Annex D that will be followed. This includes the

following requirements where the balconies are more than 4.5m above ground level:

- a. The escape route from the balcony will not pass through more than one access room.
- b. The interior of the access room is to be clearly visible from all parts of the balcony unless provided by a fire detection and alarm system in accordance with BS 5839-6:2013.
- c. Any cooking risk in the access room will be enclosed with fire-resisting construction except where:
  - i. The open cooking risk is remote from the balcony and positioned in such a way that it does not prejudice the escape route through the access room; and
  - ii. A fire detection and alarm system in accordance with BS 5839-6 is provided to the access room with an alarm system on the balcony.
- d. Where the travel distance from the balcony access door to the furthest point on the balcony exceeds 7.5m, it will be provided with an alternative escape route without going via the same access room, or the access room will be provided with automatic smoke detection.

Cooking facilities have been checked to each apartment type and the private terraces meet the above requirement.

- A fire alarm designed in accordance with BS5839-6 will be fitted to the residential units. The common areas serving the flats will have a BS5839-1 system of smoke detection where required to activate automatic opening vents to common corridors and stairs.
- Emergency lighting complying with the requirements of BS 5266-1 will be provided. This will include emergency lighting within:
  - a. Ancillary accommodation normally accessible to the occupants
  - b. Common stairs.
  - c. Common escape routes.
- In order for the fire service to identify each floor in a block of flats with a top storey more than 11m above ground wayfinding signage needs to be provided by way of floor identification signs and flat indicator signs as per sections 15.13 – 15.16 of Approved Document B V1.

#### **Office & Industrial**

- The commercial units will have a fire alarm system installed in accordance with BS5839-1:2017. The design will be based on the end use and fit out requirements of each unit.
- Emergency lighting complying with the requirements of BS 5266-1 will be provided.
- The commercial units will replace existing units on the site which will have different use classes. Under Approved Document B V2 these will be classed as Industrial (normal hazard) uses at ground floor with ancillary offices at first floor.

- Travel distances are within acceptable limits at both ground and first floor levels with the industrial areas having a single travel of less than 25m and two way less than 45m and the first-floor office spaces single travel within 18m. Where internal layouts\* are not known 2/3rds of the travel distance should be applied and for both use types travel distances are still considered to be acceptable. \*Please note internal layouts refers to rooms post fit out when additional walls and furniture are in place.
- Current final exits from the ground floor units open inwards limiting capacity to 60 people for units 1 and 3; however both of these units have had their proposed occupancy numbers checked for various planning classes and will be below 60 people so the final exits will be acceptable. Unit 2 would currently achieve a greater occupancy as one set of external opening doors could be used for escape if the other set of outward opening doors were compromised in a fire. Occupancies and width requirements can be looked at during detailed design.

**Table 2.2 Minimum number of escape routes and exits from a room, tier or storey**

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

- All three units have additional mezzanine floors which are proposed to be used as office spaces. If the first floors to units 1 and 3 can be shown to be under 1/5<sup>th</sup> of the ground floor area they can be classed as ancillary. The two first floors to unit 2 total over 280m<sup>2</sup> and over 1/5<sup>th</sup> so additional compartmentation will be required, and the offices will form part of their own purpose group.
- Single stairs are proposed to each first-floor level which will limit the first floor occupancies to 60 people. Working on an occupancy of 6m<sup>2</sup> per person each floor will have less than 60 people. Each escape door into the stair will need to have a minimum width of 750mm (Part M will require a greater width). The stairs should be a minimum of 1000mm for escape purposes (Part M will require a greater width) and final exit doors from stairs will need to be as wide as the stair. Unit 1 will also require a merging flow calculation to be carried out once the occupancy is known as the stair shares a final exit with the ground floor.

**Table 2.3 Widths of escape routes and exits**

Maximum number of people	Minimum width (mm) <sup>(1)(2)(3)</sup>
60	750 <sup>(4)</sup>
110	850
220	1050
More than 220	5 per person <sup>(5)</sup>

**NOTES:**

1. See Appendix D for methods of measurement.
2. Widths may need to be increased to meet guidance in Approved Document M.
3. Widths less than 1050mm should not be interpolated.
4. May be reduced to 530mm for gangways between fixed storage racking, other than in public areas of 'shop and commercial' (purpose group 4) buildings.
5. 5mm/person does not apply to an opening serving fewer than 220 people.



- The uppermost floor heights are approximately 15.75m above the external ground level for the building. Therefore, in accordance with BS 9991 guidance, all elements of structure are required to be provided with a minimum of 60-minutes fire resistance. Elements of structure will include:
  - Frame, Beams or Columns,
  - Loadbearing walls,
  - Floors,
  - Roofs which form part of any escape route, or provide essential stability to the external wall construction,
  - External walls, if structural (from the inside of the building).
- Each floor within the residential buildings will be a 60-minute compartment floor, other than the internal floor of the maisonette. The floors within the commercial units may need to be compartment floors depending on the use but this can be looked at during the next design stage.
- 60-minute compartment walls will be provided in the following areas:
  - Separating wall around residential apartments and other parts of the building, bin stores, etc
  - Separating residential and commercial purpose groups.
  - Places of special fire hazard.
  - Around protected stairs/common stairs forming protected shafts.
  - Around any service or ventilation risers forming protected shafts.
- As the building has a top storey height over 11m from external ground level, there is an automatic requirement under the building regulations to provide them with sprinkler systems. A compliant system to BS9251:2021 will be provided to the residential parts of the building and a commercial sprinkler system to BS EN 12845:2015 will be provided to the three commercial units as they are over 100m<sup>2</sup>. A risk category of OH3 has been identified for the workshops using the guidance within BS EN 12845. Under section 9.3.2.2 Pre-calculated systems an OH3 system for a building under 15m will require a 135m<sup>3</sup> tank. This could be reduced subject to specialist advice, but the design currently proposes space for a tank for a worst-case scenario of 135m<sup>3</sup>.
- Cavity barriers and fire-stopping will have to be provided fully in accordance with BS9991 requirements and depending on the form of construction adopted.

## **6.5 B4 – External Fire Spread**

- The external fire spread and building separation provisions for the flats will, as a minimum, be in accordance with the BS 9991 guidance within Section 18, and the building regulations. In addition, the latest guidance within Approved Document B, Volume 1, including the 1<sup>st</sup> of December 2022 amendments, will be complied with, where more onerous than BS 9991: 2015 guidance.
- The external fire spread and building separation provisions for the commercial units will, as a minimum, be in accordance with the requirements of Approved Document B V2 including the 1<sup>st</sup> of December 2022 amendments.
- The unprotected areas within the external walls of all commercial units and flats in relation to the boundary distances will be assessed during the detailed design stages of the project, and where necessary the external walls and any unprotected glazed areas, where in excess of those permitted by BRE publication BR 187 'External Fire Spread – Building separation and boundary distances', will be specified to be 60-minute fire-resisting.
- An initial unprotected area calculation was carried out to flat A1-15-3B-6P which had the largest enclosing rectangle of the flats and was as approx. 1.5m to the boundary. Using an enclosing rectangle of 3m x 21m and a measured unprotected area of 33m<sup>2</sup> which is approx. 50% of the elevation. As sprinklers are being provided the boundary distance can be halved giving a distance of 1.25m to the boundary. All of the flats will be subject to a full review during the detailed design stage.
- Initial unprotected area calculations were carried out to the rear elevation of commercial units 2 and 3 as these units had large unprotected areas or were close to the adjacent boundary. Due to the amount of unprotected area there will be a requirement to provide additional fire resistance in the future although this can be covered during detailed design it will be possible for the units to comply with the requirements for external fire spread and unprotected areas.
- Where the building height, measured in accordance with Approved Document B volume 1, Diagram D4, exceeds 11m, the reaction to fire performance of external surfaces of walls will be Class A2-s1, d0 or better irrespective of boundary distance. The external wall surfaces will therefore be designed to meet this requirement.
- As all blocks in this development have top storey heights below 18m the guidance in regulation 7(2) for 'relevant buildings' is not applicable.
- In relation to buildings of any height or use, consideration will be given to the choice of materials (including their extent and arrangement) used for external walls, or attachments to the wall (e.g. balconies, etc), to reduce the risk of fire spread over the wall. The materials within the external wall build-up will be determined through RIBA stages 3 and 4 but will take account of the latest Approved Document B requirements, including the June 2022 amendments that will become effective from 1<sup>st</sup> December 2022.
- The latest amendments to the Approved Document B guidance, that came into effect on the 1<sup>st</sup> December 2022, require that, in residential buildings with

a storey 11m or more in height, any insulation product, filler material (such as core materials of metal composite panels, sandwich panels, and window spandrel panels, but not including gaskets, sealants, and similar) etc. used in the construction of an external wall should be class A2-s1, d0 or better. This restriction does not apply to masonry cavity wall construction which complies with Diagram 8.2 in Section 8 of ADBv1.

- Consideration will be given to the materials used in the construction of the balconies. The latest amendments to the Approved Document B guidance, effective 1<sup>st</sup> December 2022 recommends that in residential buildings with a storey height above 11m, balconies should only contain materials achieving class A1 or A2-s1, d0, except for the exclusions listed in ADBv1 10.10(a). In addition, the guidance requires balconies to meet both of the following conditions.
  - (i) Have an imperforate soffit which extends to the full area of the balcony, achieves a minimum REI 30 rating and is constructed of materials achieving class A2-s1, d0 or better.
  - (ii) Materials achieving class B-s1, d0 or worse extending beyond the boundary of a single compartment should include a band of material rated class A2-s1, d0 or better, a minimum of 300mm in width centred on the boundary line.
- Relevant metal composite materials, prohibited by Regulation 7(1A), will not be used in this residential development.
- The external wall design must not compromise the compartment lines and therefore firestop barriers will be provided at compartment lines and cavity closers should be provided at window openings.
- The new blocks are within 6m of a relevant boundary, and therefore the roof coverings will need to achieve a fire performance of B<sub>ROOF</sub> (t4) in order to resist fire spread. The guidance in the DCLG publication 'Fire performance of green roofs and walls', will be taken into account within the design at RIBA Stage 3 and 4.

## 6.6 B5 – Access and Facilities for the Fire Service

- The guidance in BS 9991 requires the residential apartments to have fire tender access to within 45m of all parts of each unit. Where this is not possible, fire mains will be provided, i.e., dry risers.
- Based on the Architects floor plans it appears that blocks A and B will both have a hose length distance exceeding 45m from the fire service pump appliance parking area to the front of the building. On this basis, fire mains (dry risers) will be provided to Blocks A and B, in accordance with BS 9991 guidance.
- Blocks A and B will have access for a fire appliance to within 18m of each fire main inlet connection point, which will be on the face of the building close to the entrance point leading to the stairs, with the inlet visible from the fire appliance. Outlets will be provided at each storey level within the common stair enclosure. Design, installation, and commissioning is to be in accordance with BS 9990 – Non automatic fire-fighting systems in buildings. Code of practice (2015).

- Commercial units 1, 2 and 3 can be considered separate buildings (a building can reference to part of a building) and are under 2000m<sup>2</sup> each. On this basis in accordance with Approved Document B V2 vehicle access for a pump appliance should be provided to whichever is the less onerous of:

- a) 15% of the perimeter;
- b) within 45m of every point of the footprint of the building.

Both of the above can be applied to the commercial units.

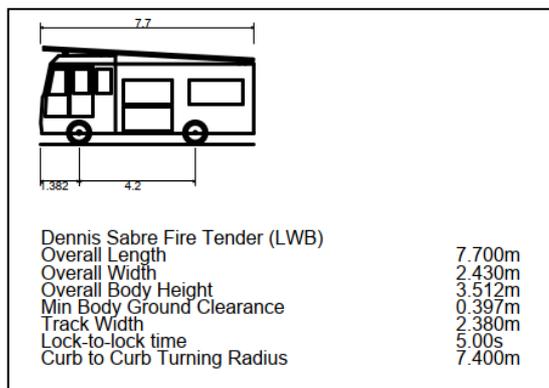
- None of the buildings have a storey above 18m from fire service access level and therefore there is no requirement for fire-fighting shafts.
- To achieve the required fire service access the vehicular route leading to the building will be in accordance with the guidance outlined below.

Appliance type	Minimum width of road between kerbs (m)	Minimum width of gateways (m)	Minimum turning circle between kerbs (m)	Minimum turning circle between walls (m)	Minimum clearance height (m)	Minimum carrying capacity (tonnes)
Pump	3.7	3.1	16.8	19.2	3.7	12.5
High reach	3.7	3.1	26.0	29.0	4.0	17.0

**NOTES:**

1. Fire appliances are not standardised. The building control body may, in consultation with the local fire and rescue service, use other dimensions.
2. The roadbase can be designed to 12.5 tonne capacity. Structures such as bridges should have the full 17-tonne capacity. The weight of high reach appliances is distributed over a number of axles, so infrequent use of a route designed to accommodate 12.5 tonnes should not cause damage.

Willow Way access to existing units.



- The commercial units have compartment sizes greater than 280m<sup>2</sup> in floor area and therefore there will be a requirement to provide additional fire hydrants, if there are no pre-existing fire hydrants within 100m of the buildings, as per below from Approved Document B V2:

**169** If additional hydrants are required, these should be provided in accordance with the following.

- a. For buildings provided with fire mains – within 90m of dry fire main inlets.
  - b. For buildings not provided with fire mains – hydrants should be both of the following.
    - i. Within 90m of an entrance to the building.
    - ii. A maximum of 90m apart.
- As the top floors of each block are more than 11m above external ground level, there is a requirement for wayfinding for the fire service.
  - **Possible Evacuation Assembly Points:**
  - Although evacuation assembly points are not a requirement for residential buildings under the Building Regulations guidance, there are two access routes from the development onto Willow Way, which will permit the occupants to reach a place of safety, remote from the buildings.
  - During construction of the development, the contractor will determine the position of the assembly points based on their site set-up. There is adequate space along the access routes on site, and on Willow Road to accommodate the construction site workers, and where necessary for use by the residents when the buildings are occupied. The assembly points are clear of the fire service access route.

## 7 Summary

Further detailed design will be required to ensure building regulations compliance within RIBA's stage 3 and 4. However at this planning stage, and on the basis that the comments made within this report are to be taken into account within the detailed design, Sweco UK are of the opinion that the proposals will be capable of meeting the requirements of the Building Regulations, London Plan Fire Safety Policy, and Policy D5(B5).