Fire Statement v.01 (Revision.D)
4-storey Residential Care Home.

14-18 Pield Heath Road and 2 Pield Heath Avenue, Uxbridge, UB8 3NF.
(4th November 2024 – Richard Walker, BEng (Hons), PhD, MIFireE).

1.0 Introduction

1.1 Fire Statement

London Plan 2021 Policy D12 requires that development proposals achieve the highest standards of fire safety and that these are embedded at the earliest possible stage. This Fire Statement identifies the fire safety objectives and performance requirements for this development.

1.2 Author Qualifications

Richard Walker is an experienced Fire Engineer and director of 3-FE Ltd. Richard worked for West Midlands Fire Service (WMFS) for seventeen years in roles including Operational Firefighter, Crew Commander, Fire Safety Officer, and Fire Engineer. He completed the BEng(Hons) Fire Engineering degree and his PhD at the University of Central Lancashire (UCLAN), attaining first class honours in the former.

Richard is a Member of the Institution of Fire Engineers (MIFireE), with membership number 00044182. This can be checked on the IFE Member Directory at the following link: - MyIFE > Resources > IFE Member and Engineering Council Registrant Directory. He has worked on major projects throughout the UK, including complex buildings for Jaguar Land Rover and Nationwide Building Society, as well as a number of high-rise residential projects.

1.3 Declaration of Compliance

I confirm that the information in this Fire Statement satisfies the requirements of the London Plan 2021 Policy D12B (major development proposals) for this development.

1.4 General Description and Layout

This development consists of the demolition of existing buildings on site and the construction of a new 3-storey care home incorporating 4 levels internally, including a basement. The ground and first floor levels provide space for residential bedrooms and for ancillary areas for residents, such as dining rooms, a bar and lounge area, day spaces and staff areas. The basement and second floor are reduced in size, with the basement offering space for storage, a kitchen, a cinema room, laundry and team room etc., and plant spaces. The second floor provides space for more residential bedrooms and for ancillary areas for residents, such as a day space and an external roof terrace. The building will provide space for a total of 81 bedrooms.

There will be four staircases within this new building, each of which connects to the common corridors, and which also give access to the central bank of lifts. The four stair enclosures give direct access to the outside of the building at ground floor level. At ground level there will be pedestrian access from the south of the site onto Pield Heath Road and from the main entrance on the west elevation onto Pield Heath Avenue.

This building is approximately 49 m wide and a maximum of 43 m deep when viewed from its front elevation on Pield Heath Avenue. Finished floor level of the 2nd floor is approximately 6.5 m above that of the surrounding gardens and this is the measurement taken for determining the requirements for fire and rescue service access.

The site is shown below in Figure 1 and is bordered by Pield Heath Road and Pield Heath Avenue to the south and west and sits within a residential area with housing to the north and east of its boundary.

The drawings listed in Section 1.5 below provide the proposed plan details for each floor within this building.

Figure 1 – Site location

The principal document used for this report was Approved Document B Vol. 2 (ADB) [i], which is considered the most appropriate code of practice for this type of development.

1.5 Plans

This Fire Statement should be read in association with the following plans that show the layouts of the development and the access routes: -

Plan Reference	Comment
SDU-104-201 (Rev.D)	Proposed Site Plan
SDU-104-300 (Rev.F)	Proposed Floor Plans (-01 to 02)
SDU-104-400 (Rev.F)	Elevations and Site Sections

Table 1 – Plan references

2.0 Policy D12 Fire Safety Requirements

The following 6 areas of requirements are taken from the London Plan 2021 as part of Policy D12 Fire Safety for major developments.

2.1 Construction Methods

Construction Method

This new building will be constructed using a light gauge steel frame (LGSF) technology, with all walls and intermediate composite concrete floors being fire resisting. The roof will feature a standard timber truss design with tiles. The underside of the trusses will form a fire rated ceiling (60 minutes) and the roof void will be separated using cavity barriers at centres not exceeding 20 m in any direction, in compliance with ADB [ii].

External Cladding

The external cavity walls will consist of mineral wool insulation and brickwork. These walls will incorporate cavity closers around all window and door openings and openings for ventilation ductwork. Cavity barriers will also be provided within the external wall cavity aligned to internal compartment walls and floors and other fire rated walls.

2.2 Means of Escape and Evacuation Strategy

The means of escape strategy for the residential areas of this care home are based on a progressive horizontal evacuation policy, where residents are evacuated into neighbouring fire compartments and remain within the building in preference to being evacuated to outside. In support of this approach each residential storey will be divided into a series of protected areas by compartment walls. Each of the four floors will be separated from one another by a compartment floor. Members of staff will be trained and provided in adequate numbers to conduct an evacuation at any time. This approach will be supported by the design of the fire protection measures within this building.

Travel distances throughout this building will be designed in accordance with the relevant design guide. For the bedrooms and the bedroom corridors, where escape is available in more than one direction the maximum travel distance will be no more than 18 and 35 m respectively and for dead-end travel the distance will be no more than 9 m. Elsewhere within the building, where escape is available in more than one direction the maximum travel distance will be no more than 35 m and for dead-end travel the distance will be no more than 18 m.

The second-floor roof terrace will provide space for residential occupants and for plant space associated with the air source heat pump compound. The single direction travel distance from this area is approximately 15 m in total to the stair, 11 m or which occurs outside of the building. These single direction travel distances are acceptable for both purpose groups with a maximum of 18 m allowed for both residents and for people maintaining roof top plant. It is noted that single direction escape routes from plant spaces in open air can be increased to 60 m.

The building will be provided with a fire detection and alarm system to an L1 standard and fire suppression will be provided to minimise the impact of a fire and to support the occupants during the escape phase.

All doors along the escape routes should have a minimum clear exit width of 850 mm, to provide access for wheelchair users as per the requirements of Approved Document M.

Each residential protected area should have a minimum of two exits to an adjoining protected area and this can be achieved as escape routes lead either to an adjacent compartment, a storey exit, or a final exit. Each protected area may contain more than 10 beds as a result of the provision of a sprinkler system [iii]. Escape routes from bedrooms will also be provided such that it is not necessary to travel through an area of ancillary accommodation to reach a protected area.

The four stairs should all be designed so that they have a minimum stair width of 1,000 mm and the final exit from the stair should be at least 1,000 mm in width.

As part of Policy D5 Inclusive Design of the London Plan 2021 the development should aim to achieve the highest standards of accessible and inclusive design. Part of this is to ensure that safe and dignified evacuation is provided in all residential buildings with at least one lift core. Within this building there will be one evacuation lift provided close to the centre of the building. Whilst the evacuation strategy aims to protect people as they remain within the building, the addition of an evacuation lift will support a dignified evacuation if this becomes a requirement.

The evacuation lift will be approached at all levels by a protected lift lobby which can act as a temporary refuge whilst people are waiting for the lift car to arrive. Alternative fire separated escape routes are provided from the lift lobby to the stair enclosures. Refuges will also be provided in Stairs A and C with evacuation chairs to further support the vertical evacuation of occupants who may require assistance.

The evacuation strategy for this building is for a progressive horizontal evacuation and this type of strategy is designed to provide protection to occupants of the building whilst they stay inside rather than a full evacuation to outside. It is also anticipated that some occupants are able to make a vertical escape from the building via the staircases. If we assume that 50% of the occupants would need to escape via an evacuation lift, then this would equate to 15 people on the first floor and 10 people on the second floor, assuming that everyone is on the same floor level as their bedroom.

With a progressive horizontal evacuation, it would not be expected that both upper levels would need to evacuate simultaneously. It would therefore be a recommendation to the end user of this building that people with mobility issues who might be unable to escape via the staircases should ideally be provided with a room at ground floor level. Where people with mobility issues are provided with a room above ground floor level then it would be a recommendation that they are moved to the ground floor via the evacuation lift in the first instance rather than moving them to a neighbouring compartment above ground floor. In the event that a full evacuation of the building was then necessary all non-ambulant occupants would be able to evacuate horizontally direct to outside.

Given that there could be as many as 25 people who would need to evacuate via the evacuation lift, then the fire affected floor should be evacuated of non-ambulant people first and then the non-affected floor above ground level should be evacuated second. The action of the sprinkler system to suppress the fire, the compartmentation in the building, and the provision of a 60-minute fire protected lift lobby should support this approach.

2.3 Fire Alarm System, Passive and Active Measures

The minimum standard of automatic fire detection and alarm system recommended within a care home is specified in ADB as a system designed and installed to an L1 standard in accordance with BS 5839-1 [iv]. This type of system will be installed within this building. The fire alarm system will be designed to provide an immediate call to an alarm receiving centre (ARC) in the event of an actuation. Visual beacons and sounders will be provided on the external terrace on the second floor.

The four protected stairs will each be ventilated via an openable vent with a minimum area of 1.0 m^2. This vent will be provided at the uppermost level of each of these stair enclosures.

Fire protection to the elements of structure is dependent on the height of this development. From ADB, the minimum period of fire resistance for a care home between 5 and 18 m in height is 60 minutes [v]. The basis of these figures is to ensure structural integrity to support both the means of escape and firefighting phases.

All walls that separate bedrooms from one another, or a bedroom from the protected corridor should have a fire resistance of not less than 30 minutes [vi]. Compartment floors will provide 60 minutes fire resistance and the enclosure of escape stairs, lift shafts and service risers will also provide 60 minutes fire resistance. Compartment walls used to separate protected areas as part of a progressive horizontal evacuation will also provide 60 minutes fire resistance.

A sprinkler system will be provided within this building, and it will be designed as a Category 3 system in accordance with the requirements of BS 9251 [vii]. The sprinkler system should include coverage throughout the building and be designed with a minimum of 30 minutes stored water supply [viii].

It will also be necessary to provide ventilation to the basement floor and it is understood that this will be achieved using a mechanical smoke extract system which provides a minimum of 10 air changes per hour.

As there is ancillary accommodation at basement level, the design includes a lightwell around the edge of the resident's garden. The lightwell will be weather tight to prevent rainwater from gathering within the base of the lightwell. To ensure that smoke and heat from a fire at basement level does not spread readily via the open lightwell to other areas at this level, it will be necessary to provide two automatic opening vents (AOVs), each with a 0.4 m^2 minimum area. These will be located one at either end of the lightwell and will operate automatically on the detection of smoke within this area to provide the necessary ventilation.

2.4 Access and Facilities for Firefighting

Fire Service access to this building will be via staircases A and C, which can be accessed directly on the ground floor from the south and the west of the building. As the building has a total floor area of 3,861 m^2 it is necessary to provide fire service vehicle access to at least 15% of the perimeter of the building for a pumping appliance. Measurements show that 91.1 m of the total 250.0 m perimeter will have fire service vehicle access and therefore 36.4% is achieved.

An internal roadway can be accessed from Pield Heath Avenue, and this runs alongside the building with an exit onto Pield Heath Road.

Figure 2 below shows the analysis for a fire service vehicle and demonstrates that the minimum perimeter access can be achieved, with the accessible perimeter shown in red. Access to Stairs A and C are located within this perimeter.

Figure 2 – Fire service vehicle access to this building

Fire service vehicle access should conform to Table 15.2 of ADB: -

Table 15.2 Typical fire and rescue service vehicle access route specification

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.

Figure 3 - Access route specifications

The specific requirements for fire service vehicles should be followed and these are detailed in LFB Fire Safety Guidance Note GN29 [ix]. This requires that access routes for vehicles are provided as follows: -

Appliance Type	Min. width of road between kerbs(m)	Min. width of gateways (m)	Min. turning circle between kerbs (m)	Min. turning circle between walls (m)	Min. clearance height (m)	Min. carrying capacity (tonnes)
Pump	3.7	3.1	16.8	19.2	3.7	14.0
Aerial	3.7	3.1	26.0	29.0	4.27	32.0
Special Appliance	6.1	3.1	27.5	32.0	4.27	32.0

Table 2 - Typical LFB vehicle access route specification

2.5 Fire Appliance Position and Assembly Point

Hydrants should be provided to within 90 m of an entry point to the building and be no more than 90 m apart. Hydrants and water mains should be capable of delivering sufficient flow of water to enable effective firefighting. The nearest hydrant appears to be located on the corner of Pield Heath Road and Pield Heath Avenue, immediately outside this new building and a further hydrant is located in nearby Newlyn Close. The nearest hydrant sits within 90 m of the building, and it is therefore proposed that the current provision is acceptable.

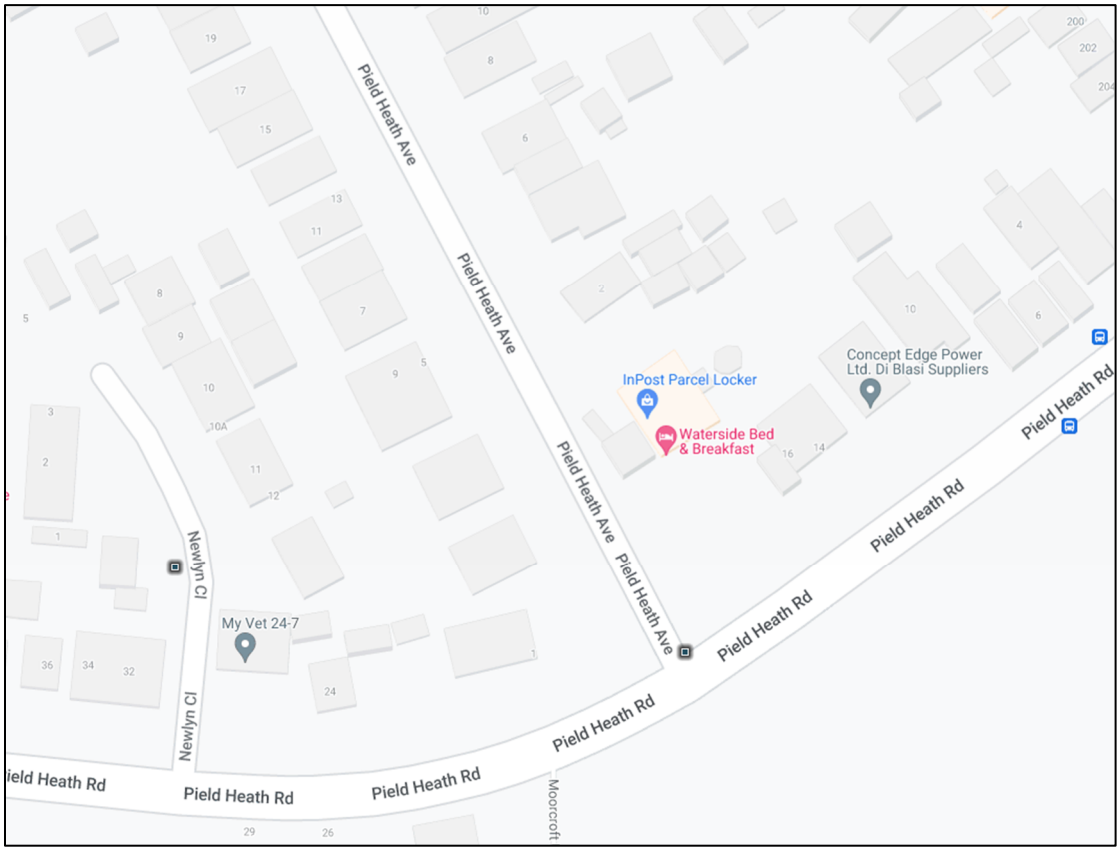

Figure 4 - Site plan showing hydrant locations

Figure 4 above shows the locations of public fire hydrants located on and around the site as shown by the black squares.

2.6 Future Development and the "Golden Thread"

Management procedures always have a pivotal role to play in fire prevention, control and evacuation of occupants should a fire incident occur. The Regulatory Reform (Fire Safety) Order 2005 (FSO) places legal obligations on the management of buildings such as this, once they are occupied. Management of fire safety must be integrated with all other management systems to ensure there is no doubt who is responsible. To facilitate consistency of approach it is important that the building's owners appoint designated fire safety representatives who will report to the nominated Building Manager.

The Building Manager should have the necessary authority and powers of sanction to ensure that standards of fire safety are maintained. It is also expected that designers will review, with the client, building manager and/or other relevant organisations, any other management requirements, especially with regard to occupant evacuation.

Further advice and recommendations will be detailed within subsequent fire strategy reports in line with the FSO and the new Building Safety Bill.

3.0 Conclusion

This document assesses the proposed fire safety provisions required for the design and construction of this new building. It is considered that this Fire Statement satisfies the requirements of the London Plan 2021 Policy D12B for this development.

4.0 References

[i] HM GOVERNMENT. APPROVED DOCUMENT B 2019 EDITION INCORPORATING 2020 AND 2022 AMENDMENTS. *Volume 2 –Buildings other than dwellings.* London: RIBA Books, 2024.

[ii] *Ibid*., Clauses 6.7 and 9.9 and Table 9.1, p.56 and p.79.

[iii] *Ibid*., Clause 2.46(b), p.27.

[iv] *Ibid*., Clause 2.41, p.26.

[v] *Ibid*., Table B4, p.146.

[vi] *Ibid.,* Clause 2.42, p.26.

[vii] BRITISH STANDARDS INSTITUTION. BS 9251:2021, *Fire sprinkler systems for domestic and residential occupancies – Code of* practice. London: BSI, 2021.

[viii] *Ibid*., Table 2, p.13.

[ix] LONDON FIRE BRIGADE. *Fire Safety Guidance Note GN29. Access for Fire Appliances Rev.13.* London: LFB, 2020. Table 1, p.2.