

Fire Statement

Project Name: Barnes Hospital Site Residential Development Author: Kamil Podeszwa
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02	27.07.2021	Update based on revised drawings	KP 27.07.21	RH 10.08.21	RH 10.08.21
03	19.08.2021	Planning submission update	KP 19.08.21	RH 19.08.21	RH 19.08.21
04	17.11.2021	Update based on revised site boundary	KP 17.11.21	RH 17.11.21	RH 17.11.21
05	11.04.2022	Update based on architect comments	KP 11.04.22	FA 12.04.22	FA 12.04.22

1 Introduction

The proposed development is subject to London Plan 2021. The London Plan 2021 is the statutory spatial development strategy for the Greater London area in the United Kingdom, written by the Mayor of London and published by the Greater London Authority. At its core, the London Plan aims to ensure the highest levels of fire safety are provided to new and refurbished buildings and to maximise building resilience in line with best practice.

Policy D12 (Fire Safety) notes that developments should achieve the highest standards of fire safety and ensure that Part B of Building Regulations (Part B1-B5) is satisfied. To demonstrate this, a Fire Statement has been produced, setting out:

- The qualifications and experience of the authors
- Information to address the headings of the policy requirements
- Fire safety information specific to the development
- That mobility impairment refuge points are provided for the commercial use in accordance with Policy D5
- The fire safety design standards adopted, and the additional measures provided

In order to satisfy Policy D12, SWECO Fire Engineering has been appointed to review the proposed design from early stages of the design and develop a robust fire safety strategy for each block. This is a continuous liaison with the design team and during construction. The principles of fire safety design for each block, guidance documents followed, and the proposed design approach included in the above sections.

In order to satisfy Policy D5, in addition to the provisions for safe means of escape for the occupants, it is proposed to provide refuge points to ensure a safety evacuation for the occupants with impaired mobility.

2 Basis of design

With respect to addressing the functional requirements of Parts B1-B5, the design draws on the framework from BS 7974 to establish a disciplined approach to the fire safety

design. BS 7974 provides the framework for a flexible but formalised methodology that can be readily assessed by the statutory authorities. To this end, the design will draw on prescriptive standards, best practice, and engineering judgement to deliver a safe and functional solution in accordance with Part B of the Building Regulations and Policy D12 of the London Plan as well as Policy D5.

3 Competency

The fire strategy for the building has been prepared by Sweco, one of Europe's largest engineering consultancies with an extensive track record of providing fire safety consultancy services for large-scale residential, commercial and mixed-use developments across the UK and internationally.

The statement has been prepared by Kamil Podeszwa who holds a degree (BSc) in Fire and Leadership Studies from University of Central Lancashire and is an associate of the IFE (Institute of Fire Engineers).

The fire statement was approved by Farrokh Asad. Farrokh is responsible for delivering fire safety consultancy on some of the most technically demanding and high-profile construction projects in the UK and Europe. Farrokh has gained extensive design and management experience across dozens of challenging and complex high-rise projects with 15 years of experience in the Fire Safety industry.

The assessment below has been provided in line with London Plan Policy D12(B).

4 Building construction methods/materials

Superstructure of each block will consist of concrete construction. Timber will be used for the construction of the roof. The roof will be protected by the fire rated dry lining to achieve appropriate levels of fire protection.

Construction materials will be selected to meet the relevant regulations.

5 Development Proposal

The site comprises three residential blocks over a basement level. Two blocks will be three storeys high (9m) and one block will be two storeys high (6m). Two additional small buildings are also located on the site (Barnes cottages containing two duplex apartments and Entrance Lodge containing one apartment and residential amenity). The basement is approximately 1700m² in area comprising of plant, cycle storage and carparking spanning under two of the residential blocks (A and B).

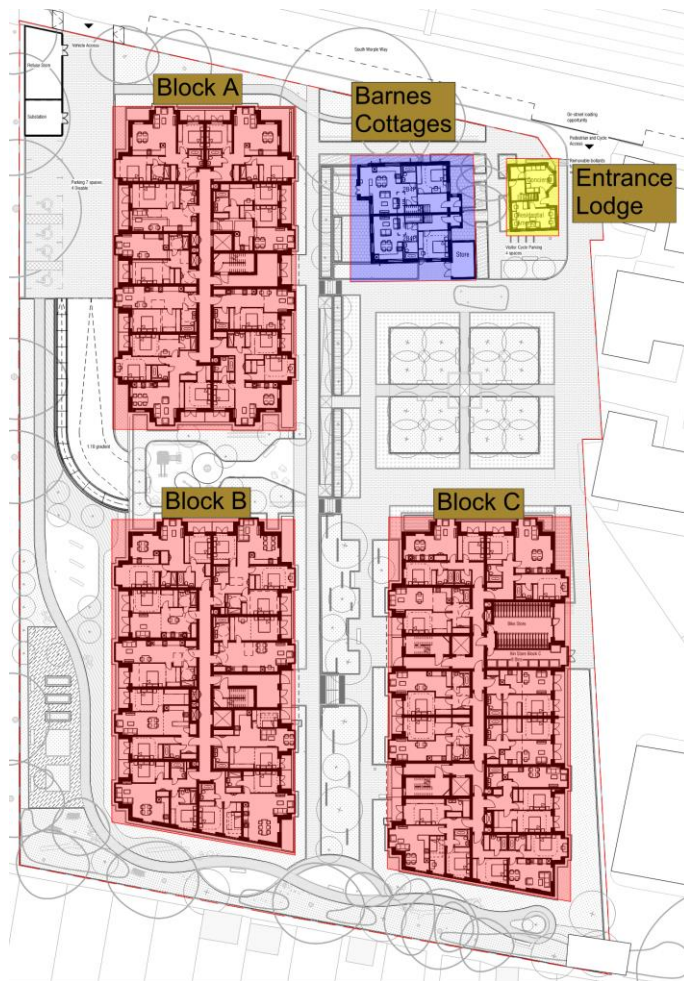


Figure 1: Site plan with the labelled proposed buildings.

6 Package of fire protection measures

The following fire protection measures will be provided:

- Automatic fire detection (BS 5839-6 category LD1 in apartments and BS 5839-1 category L2 in non-residential areas)
- Automatic sprinkler protection (EN 12845 Ordinary Hazard 3 in non-residential and BS 9251 category 2 in the residential blocks A and B)
- Emergency lighting (BS 5266)
- Emergency power supplies to critical life safety plant and evacuation lifts
- Mechanical smoke control measures (BS EN 12101-6)
- Basement will be ventilated by a mixed system:

- Majority of the basement will be naturally ventilated. The smoke outlets will be not less than 2.5% of the whole basement floor area. The vents will be evenly distributed around the perimeter of the building with no less than half of the total vent area being provided on two opposing walls.
- Mechanical ventilation will be utilized to ventilate the storage located at the southern side of the basement. The system will achieve 10 air changes/hour from the largest compartment served. The mechanical smoke ventilation system will be designed to maintain operation at 300°C for a period of one hour.

The items above will be subject to regular inspection and maintenance in line with the suppliers' recommendations and overseen by the responsible person as defined under the Regulatory Reform (Fire Safety) Order.

As part of the management procedures all fire protection measures will be regularly maintained throughout the lifetime of the buildings.

7 Means of escape

Residential areas will adopt a 'stay put' evacuation strategy. This is founded upon the fire protection measures and a high degree of compartmentation. Communal areas and non-residential areas will evacuate independently and simultaneously on fire detection within the respective building.

The flats are provided with protected internal corridors with the means of escape from within the corridor not exceeding 9m.

Open plan apartments are provided in the scheme within blocks A and B. Travel distance within the apartments will be limited to 20m. The design will be validated through CFD analyses and will be provided with sprinkler protection and category LD1 fire alarm and detection.

Common residential travel distances will not exceed single travel distance of 7.5 and two-way travel of 30m in Block C, and single travel distance of 15 and two-way travel of 60m in Block A and B.



Figure 2: Ventilation provisions

The above figure shows the ventilation provisions for Barnes Hospital. Blue being the mechanical smoke ventilation shafts, blue arrows showing indicative air flow and red highlighting the ventilated portions of the corridors. The left image illustrates Blocks A and B in line with figure 6b of BS 9991 and the right images shows Block C in line with the arrangements of figure 6a of BS 9991.

8 Inclusive Design

A combined passenger / evacuation lift will be provided by each stair core which will be used to augment the evacuation strategy. This is in addition to the normal escape stairs provided and is primarily to assist with disabled evacuation as part of a managed strategy. The lift will generally comply with the recommendations of BS 9999, and BS EN 81-20, BS EN 81-70.

The evacuation lifts will be utilised following “driver assisted evacuation” regime.

9 Internal fire spread

Under BS 9991, the minimum period of fire resistance for elements of structural based on the height of the building and risk profile is **60 minutes**.

Residential levels will be designed with compartment floors therefore escape stairs, lift shafts and risers will be designed as protected shafts.

In addition, each residential unit will be designed as a separate compartment minimising the potential for fire spread.

General risks of fire spread are mitigated by the passive and active fire measures. Other risks are considered in the design of the building such as protection of the single stairs and the basement car park (with electronic vehicle parking) which is addressed through the separation of basement and upper ground level stairs, as well as ventilation (via natural means) and sprinkler protection of the basement.

10 External Fire spread

There is no restriction on external wall build up considering none of the buildings are 'relative buildings' and there is no relevant boundary less than 1m; however, Class B-s3, d2 is recommended to be used for cladding by SWECO as an enhancement.

SWECO recommends the provisions for all insulation within the cladding system being Class A1/A2, s1, d0 or better under BS EN 13501-1 as an enhancement (similar to the provisions within a 'relevant building').

The main roof and terraces will be designed to achieve a B_{ROOF}(t4) classification under BS EN 13501-5.

External fire spread to the relevant and relative boundaries has been assessed using the enclosing rectangle method in accordance with BRE 187. As a result, none of the buildings will require additional fire rated façade besides the eastern side of Block C. However, if sprinkler protection is provided to Block C the additional fire rating of the façade may not be required.

11 Access and facilities for fire fighting

Access will be provided for a pumping / high reach appliance within 18m of dry riser inlets at ground floor. Firefighting operations will be facilitated via escape stairs.



Figure 3: Site plan illustrating fire service vehicle access routes in green. Escape stairs are indicated in red, and firefighting access in blue.

Some of the firefighting access points are more than 18m from the stair entrance. The stair entrance to Block B is c.28m away and the south stair of Block C is c.35m away from the vehicle parking. In both cases the dry rising main inlet will be extended horizontally to be within 18m of the fire service vehicle parking. This is considered acceptable given the site limitations, close proximity of stair to the firefighter building entrance, sprinkler protection provided within Block B, and Block C having a secondary stair as well as sufficient floor hose coverage from within the closest (northern) stair to the entirety of Block C on the basis of which the southern dry riser is purely an enhancement for the utility of firefighting operations.

12 Future development of the asset

Any future development should consider the complete package of fire protection measures. The fire strategy needs to be considered holistically and alterations to any aspect of the design requires careful validation by a suitably qualified fire engineer.

13 Conclusion

The proposed development has been reviewed with regards to requirements of fire safety within Building Regulations (B1-B5) and London Plan policy (D15 and B5) and as outlined above a high level of fire safety (life safety) is provided. On this basis, the proposed design is considered satisfactory to the requirements of the Building Regulations and London Plan.