



Royal Free Hospital, Hybrid Theatre Extension

London Plan Fire Statement
City of London

Revision: R01

Date: 18/09/2024

Project Number: LO24008

Fire Statement: Hybrid Theatre Extension, Royal Free Hospital



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1 Introduction

This fire statement has been prepared by OFR Consultants and is submitted in support of a detailed planning application for the following proposals at the Royal Free London, Pond Street, London ('the Site'):

Proposed extension to hospital at second and third storey level (above ground) with under-croft area beneath to deliver extension to hybrid theatres alongside roof-level plant and enclosure and associated works.

The Hybrid Theatre Extension will provide two new fully sized operating theatres with six additional recovery beds and a total of 1,602sqm (GIA) of new hospital floorspace.

The purpose of the fire statement is to assess how the proposal for the Hybrid Theatre Extension of the Royal Free Hospital responds to the requirements of part B of London Plan Policy D5 and D12 Fire Safety[1].

2 Site Location

The Site comprises an area to the west of the main hospital building at the Royal Free Hospital, fronting on to Pond Street, it should be noted that this fire statement covers the Hybrid Theatre Extension only. The extent of the application site this report covers is shown in Figure 2.

3 Background And Document Purpose

OFR Consultants have been appointed by Royal Free Hospital NHS Foundation Trust to produce a Fire Statement in support of the Planning Application for the Hybrid Theatre Extension of the Royal Free hospital.

The extension of The Royal Free Hospital is located in London and therefore is subject to the London Plan 2021[1]; that is the statutory Spatial Development Strategy for Greater London prepared by the Mayor of London ("the Mayor") in accordance with the Greater London Authority Act 1999 (as amended) ("the GLA Act") and associated regulations.

The London Plan 2021 was published in March 2021. The Plan is part of the statutory development plan for London, meaning that the policies in the plan should inform decisions on planning applications across London.

In support of the London Plan 2021, the GLA released a consolidated guidance document 'London Plan Guidance – Fire Safety' for public consultation in February 2022 to outline the detailed required to adhere to Policies D5 and D12. The final, formal guidance document is yet to be released, with the public consultation closed and responses currently being considered by the GLA at the time of issuing this Fire Statement. However, the Fire Statement structure largely follows Appendix 3 Template Form contained within this consolidated guidance.

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The exhaustiveness and definitiveness of the statement is commensurate with the nature of the planning application submitted and the modest scale of the proposed development. The aim of this document is to exemplify how the development plans to meet the fire safety requirements set out in the London Plan 2021 – specifically Policies D5 and D12.

This document does not constitute the detailed fire strategy developed under the Building Regulations 2010 (as amended), which has been submitted separately within the design process commensurate to a RIBA Stage 2 level of design detail. However, this fire statement evidences the provisions made for the safety of occupants as well as the provision of suitable access and provisions for firefighting in light of the London Plan's fire safety policy requirements and the rationale for these measures.

This fire statement documents the main fire safety design principles for the purpose of the planning submission. The proposals herein will be subject to further specification and changes as the design progresses. As the design progresses, a detailed fire strategy will be produced with a level of information suitable for Building Regulations approval and Gateway 2 submission. At the relevant stage, the detailed fire strategy will also form part of the information pack handed over to the building operator(s) under Regulation 38 to assist the responsible person to carry out the necessary fire safety risk assessment(s) and implement other relevant duties in accordance with the Regulatory Reform (Fire Safety) Order 2005[4].

4 Description of Building

The Hybrid Theatre Extension, is over 12 m in height (when measured to the finished floor height of the top storey) and is made up of two-storeys, with an additional level of rooftop plant, a section plan indicating the extensions height is shown in Figure 1 .

The Hybrid Theatre Extension will have interconnection to the main Royal Free Hospital building. The existing main building of the Royal Free Hospital has 13 storeys above ground floor level and is considered a high risk building with floors over 30 m in height. The footprint of the main building in relation to the Hybrid Theatre Extension is shown in Figure 2.

Access to the Hybrid Theatre extension will be via an access road from Pond Street to the North of the site. The extent of the Hybrid Theatre Extension is highlighted in Figure 2.

The extension will be served via an existing stair accessed externally at ground floor level. The under-croft area below the extension will remain as existing with the access road serving the MRI scanner rooms, Radiography & Cardiology department and the entrance to the car park in the neighbouring building.

Level 03 of the extension will consist of two new fully sized Hybrid Theatres and space for additional recovery beds. Level 02 will provide 671 m² (GIA) of clinical space with the internal layouts still to be developed. Level 04 will contain mechanical and electrical plant adjoining the existing main building plant rooms. The use of the building per floor has been summarised in Table 1.

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Figure 1: Extension height

Table 1: Building use

Level		Description
02	Second Floor	Clinical space
03	Third Floor	2 Hybrid Theatres, 6 recovery beds
04	Fourth floor	Mechanical and Electrical plant

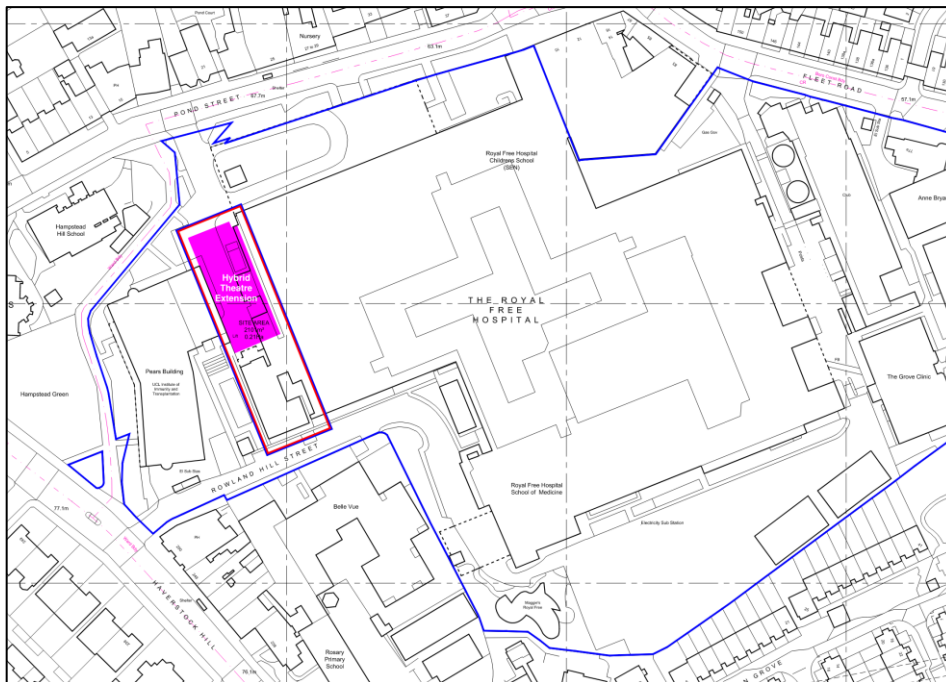


Figure 2: Site Layout



5 Name, Qualifications, Professional Memberships and Experience of Authors

The London Plan Policy D12B[1] notes that the fire statement should be produced by someone who is third-party independent and suitably qualified. This should be a qualified engineer with relevant experience in fire safety, such as a Chartered Engineer registered with the Engineering Council by the Institution of Fire Engineers or equivalent.

In line with Policy D12 of the London Plan, a suitably qualified Chartered Engineer has been involved in the production of this document. Where the relevant below approver is a Chartered Engineer with the Engineering Council UK and have the post-nominals CEng (Chartered Engineer) after their name.

Author	Reviewed By	Approved By
K. Dumetz BEng (Hons) AIFireE	M. Stallwood BSc Eng AIFireE	A. Passingham BEng (Hons) MSt CEng MCIBSE MIFireE

6 Is a Gateway One Statement required

It is understood that a Gateway One fire statement would not be required for the Hybrid Theatre Extension Under the Town and Country Planning Development Management Procedure and Section 62A Applications) (England) (Amendment) Order 2021 ("the 2021 Order") [2], as the extension does not include for any residential dwellings and / or is not a 'relevant building' under Planning Gateway One.

7 Design Approach and Methodology

The design and construction of the building will seek to satisfy the functional requirements of Part B of Schedule 1 to the Building Regulations 2010 (as amended) [3], the operational fire safety requirements of the Regulatory Reform (Fire Safety) Order 2005 (RRO) [4] and the NHS Health Technical Memoranda suite of documents and in particular, HTM 05-02 [5] Guidance in support of functional provisions (Fire safety in the design of healthcare premises) 2015.

7.1 Relevant Stakeholders

Relevant stakeholders in the building and preparation of fire safety information are:

- Client – Royal Free London NHS Foundation Trust
- Architect and Lead Designer – HazleMcCormackYoung LLP (HMY)
- MEP Engineer – The Richard Stephens Partnership Limited
- Structural Engineer – Wareham & Associates Ltd
- Planning Consultant – Montagu Evans
- Approving Authority – London Borough of Camden
- Local Fire & Rescue Service – London Fire Brigade (LFB)

7.2 Basis of Design

It is noted that a fire engineering approach may have been applied to ensure a practical, robust fire strategy, in accordance with Sections 1.20 and 1.21 of HTM 05-02 [5], under Alternative Solutions.

It is acknowledged within the guidance that HTM 05-02 [5] may not be appropriate for all types of building and that judgement should be exercised based on a full understanding of the problem taking into account such issues as:

- The type of care being provided;
- The mobility of the patients;
- The planned staffing levels;
- The age of the patients; and
- The size of the premises.

8 The Building's Construction

The building structure will not be of combustible materials and will be constructed from a combination of steel and concrete.

The existing main Royal Free Hospital building is more than 18 m in height and therefore the proposed Hybrid Theatre extension falls under the category of a 'relevant building' as defined in Regulation 7(4), and falls within the scope of Regulation 7(2) (of the Building Regulations) i.e. a building with a storey (not including roof-top plant areas or any storey consisting exclusively of plant rooms) at least 18 m above ground level and which:

- (i) contains one or more dwellings;
- (ii) contains an institution (i.e. Hospital); or
- (iii) contains a room for residential purposes.

It is therefore required that the external walls are constructed of materials achieving a European Class A2-s1, d0 classification in accordance with BS EN 13501-1[6].

Furthermore, any insulation product, filler materials (such as the 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 the external wall will achieve Class A2-s1, d0 or better in accordance with BS EN 13501-1:2018 [6].

Walls on the on the notional boundary to the west where the neighbouring Pears building abuts the Hybrid Theatre Extension should be afforded fire resistance to the same level as the elements of structure (90-minutes).

The external wall details are to be progressed throughout the remaining design stage, however in any case will adhere as to the recommendations above.

Compartment walls should be taken up to the underside of the roof covering or deck, and fire-stopped to maintain the fire resistance of the wall and reduce the risk of fire spreading over the roof. Either one of the following recommendations should be adopted:

- A 1.5 m wide zone of the roof on either side of a compartment wall should have a covering of designation as $B_{ROOF}(t4)$ on a substrate or deck of a material rated Class A2-s3, d2 or better; or
- The compartment wall extends through the roof for a height of at least 375mm above the top surface of the adjoining roof covering.

Due to the boundary distances being less than 6 m, all roof coverings shall achieve $B_{ROOF}(t4)$ in accordance with BS EN 13501-5

It is the responsibility of the Principle Designer and Contractor to ensure that the materials used are compliant with the relevant regulations and the fire strategy. Where required an expert, such as a fire engineer will be consulted to assess its compliance.

9 Means of Escape for All Building Users and the Evacuation Strategy

As part of the Fire Strategy there is a more detailed assessment of the means of escape provisions, which will be updated as the design progresses and in cognisance with the Regulatory Approvals process. Presented below is a high-level summary of these provisions at the current stage of the design.

9.1 Patient Dependency

To ensure that suitable fire safety provisions are specified for the building, patient dependency for differing areas of the building should be defined. HTM 05-02[5] has three classifications for patient dependency as follows:

Independent – Patients are considered to be independent if:

- Their mobility is not impaired in any way, and they are able to physically leave the premises without staff assistance; or
- They experience some mobility impairment and rely on another person to offer minimal assistance. This would include being sufficiently able to negotiate stairs unaided or with minimal assistance, as well as being able to comprehend the emergency wayfinding signage around the facility.

Dependent – All patients except those classified as “independent” or “very high dependency”

Very High Dependency – Those whose clinical treatment and/or condition creates a high dependency on staff. This will include those in intensive care areas, operating theatres, coronary care etc and those for whom evacuation would prove potentially life-threatening.

The hybrid theatre section is considered an area of Very High Dependency. As such the HVAC systems in the hybrid theatres will be designed to provide a pressure differential slightly above the surrounding compartments. In a fire emergency, the continuing operation of these systems will assist in preventing smoke and other products of combustion entering the intensive care area. Additionally protected lobbies are to be provided at each door opening where a compartment contains operating theatres.

9.2 Evacuation Strategy

In healthcare buildings, intermediate or total evacuation of the building in the event of fire may not be practical nor desirable from a patient safety perspective due to their medical condition. HTM 05-02[5] Clause 2.8 states that there are three fire conditions when evacuation is necessary or should be considered:

- **Precautionary** – No immediate threat to life or safety, but there is a fire on an adjoining floor or in an adjacent building.

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- **Emergency** – No immediate threat, but fire likely to spread from an adjoining area.
- **Extreme emergency** – Where there is an immediate threat to safety from fire or smoke.

The Hybrid Theatre Expansion contains staff and ambulant/semi-ambulant patients. As such, the evacuation strategy is based on the concept of Progressive Horizontal Evacuation (PHE) throughout the building.

The principle of PHE is to move occupants from any area affected by fire and smoke to an adjacent area on the same level which is separated by a fire-resistant barrier (such as a compartment or sub-compartment wall) to protect occupants from fire and smoke.

9.3 Horizontal Escape

Progressive Horizontal Evacuation will be implemented within the Royal Free Hospital, in line with the guidance of HTM 05-02[5].

Where the Hybrid Theatre extension connects to the main building of the Royal Free Hospital, the existing compartmentation of the existing main building has been assessed to ensure the requirements for the implementation of Progressive Horizontal Evacuation, as discussed in section 10.4, are adhered to.

Exits from compartments follow the guidance of Clause 3.16 within HTM 05-02[5]. Level 02 will be provided with two exits into the adjoining compartment and level 03 will be provided with Four exits, with two into the adjoining compartments and two into the firefighting stair lobby.

Level 2 (above ground) of the Hybrid Theatre extension includes for two operating theatres and therefore the compartment will be considered as a very high dependency area. In accordance with clause 3.65 of HTM 05-02[5] the compartment will be entered/exited via a protected lobby.

The travel distances in all areas of the building will be limited in accordance with the recommendations in HTM 05-02[5].

9.4 Vertical Escape

As part of the proposed works the existing external stair will be adapted to serve the Hybrid Theatre extension, and serve as a firefighting stair in line with the guidance within HTM 05-02[5].

The Firefighting stair will be protected with a firefighting lobby as shown in Figure 3. Due to the constraints of the existing building the firefighting lobby on Level 03 forms a route through the protected corridor. Although the firefighting lobby can be considered part of a route through the protected corridor, it is not the primary route for staff. This is noted as a deviation from the guidance of HTM 05-02 5.35 which recommends that a protected lobby is not to be located so that it forms part of a through route.

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Where the patients require assistance in their evacuation, the firefighting stair serving the Hybrid Theatre extension is sized suitably to allow for assisted patient evacuation and restricted ambulant patient passing.

Table 2 presents the travel distance limits for the different areas in the building.

Table 2: Maximum travel distances as per HTM 05-02

Building Area	Single direction (m)	Multi-direction (m)
In-patient accommodation	15	60 ^(a)
Elsewhere	18	60 ^(a)
Plant Rooms	12	25

a) Maximum travel distance from any point within a compartment to:

- i) each of two adjoining compartments; or
- ii) an adjoining compartment and to a stairway or final exit

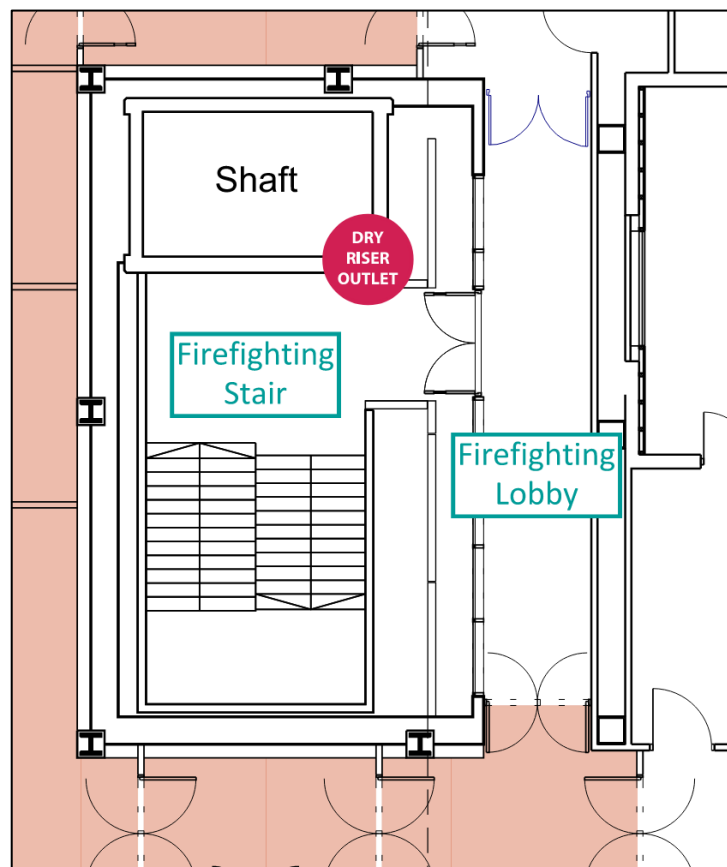


Figure 3: Hybrid Theatre extension firefighting shaft arrangement.

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9.4.1 Provisions for Mobility Impaired Persons (MIPs)

The fire strategy for the Hybrid Theatre extension aims to assess the potential for the proposed building to demonstrate that the functional requirements of the Building Regulations 2010 (as amended) and to meet the intent of Policy D5, specifically D5(B5)[1] which states:

Development proposals should “be designed to incorporate safe and dignified emergency evacuation for all building users. In all developments where lifts are installed, as a minimum at least one lift per core (or more subject to capacity assessments) should be a suitably sized fire evacuation lift suitable to be used to evacuate people who require level access from the building”.

It should be noted that under the Regulatory Reform (Fire Safety) Order 2005, it is the duty of the responsible person along with their appointed safety assistants to assist everyone to a place of ultimate safety outside the building in the event of an emergency.

The emergency plan details the fire safety provisions to each patient area and the dependency of the patients within the area being considered. This information will enable the fire safety management procedures to detail the appropriate staffing levels required to undertake the evacuation of the area in the event of a fire; this information is intended to be reflective of patient evacuation can be realised by the available trained staff.

Following the guidance of HTM 05-02[5] each compartment or sub-compartment of the hospital can be classed as a place of refuge for occupants when evacuating via progressive horizontal evacuation. Each refuge point is large enough to accommodate the number of patients who at any one time could reasonably be expected to be receiving or recovering from minor or major invasive investigations or procedures.

The provision of evacuation lifts within a healthcare facility such as the Hybrid Theatre extension are seen as an aid to PHE but are not expected to be capable of evacuating all occupants from upper floors. Where occupants may be classed as very high dependency, evacuation lifts would be recommended.

There is no lift core associated with the existing stair serving the Hybrid Theatre Extension, therefore following the guidance of the London Plan an evacuation lift is not required at the stair within the Hybrid Theatre Extension. The extension will be served by the evacuation lifts provided within the existing main building highlighted in Figure 4.

All evacuation lifts should be designed to comply with the guidance in Health Technical Memorandum 05-03: Part E – ‘Escape lifts’ and BS 5588-8 – ‘Fire precautions in the design, construction and use of buildings: Code of practice for means of escape for disabled people’ and Health Technical Memorandum 08-02 – ‘Lifts’

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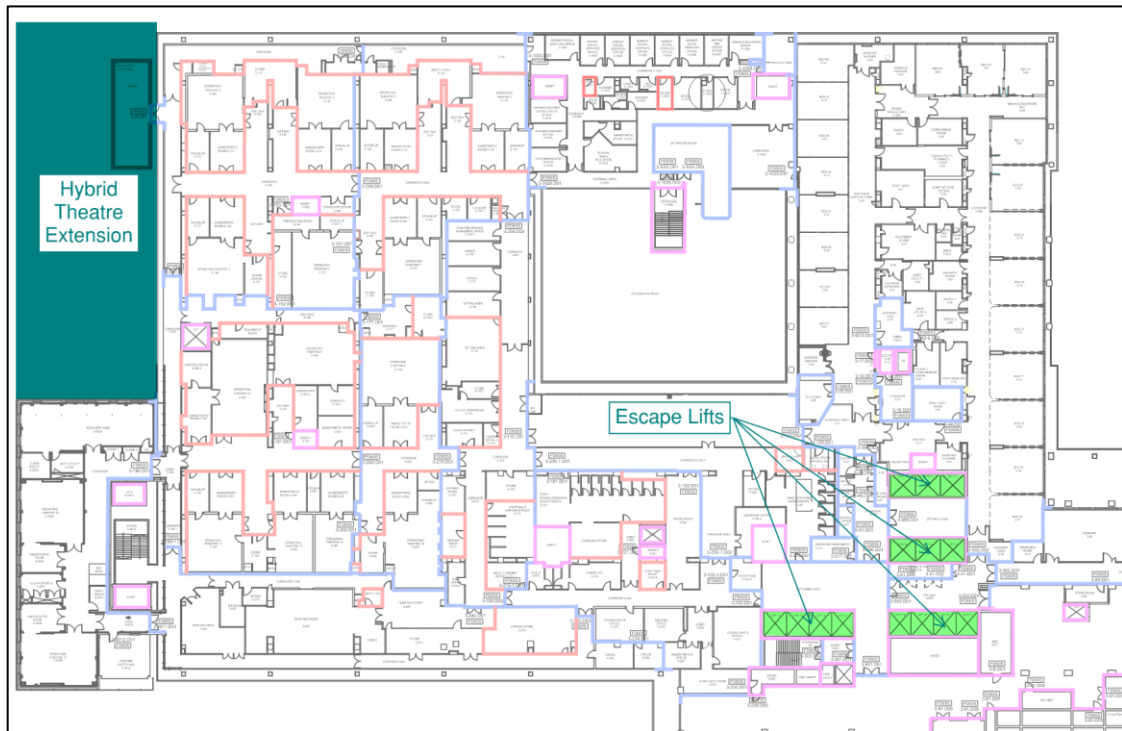


Figure 4: Location of escape lifts in existing building

10 Passive and Active Fire Safety Measures

Within the building, passive and active fire safety systems will be provided to support and enable the life safety objectives required by the Building Regulations 2010 (as amended).

10.1 Means of Detection and Warning

In accordance with BS 5839-1:2017[7] and HTM 05-03: Part B[8], a Category L1 system incorporating manual call points is proposed. This will include the provision of detection in ceiling voids.

It should be noted that the Hybrid Theatre extension will be connected to the main Royal Free Hospital building. The fire alarms in the extension should link to the fire panel within the main building.

10.2 Automatic Fire Suppression System

It is considered reasonable that the Hybrid Theatre Extension is not provided with sprinkler protection throughout in line with the provisions in the existing building.

The existing main Royal Free Hospital building is only provided with sprinkler coverage in specific hazard areas and not throughout as recommended in the guidance of HTM 05-02 for a building with floors over 30m, which would extend to coverage within the Hybrid Theatre Extension.

The possibility of retrofitting a sprinkler system throughout the main building has been explored by the Trust to bring the building in line with the current guidance however due to the constraints of the buildings ongoing operation as a hospital, these works have been deemed too disruptive as they would affect the capacity and level of care the hospital would be able to provide.

10.3 Structural Fire Resistance

Structural fire resistance periods for elements of structure when following HTM 05-02[5] are based on a risk assessment that considers the height of the building, and the provision of sprinkler protection. The topmost occupied storey of the Hybrid Theatre extension approximately 12.1 m above ground level, and as outlined in section 10.2 above the extension is not proposed to be provided with sprinkler protection. Therefore, in accordance with Table 5 of HTM 05-02[5], elements of structure of the extension should be afforded at least a period of 90 minutes fire resistance in terms of load-bearing capacity (i.e., R90).

10.4 Compartmentation

The spread of fire within the building can be restricted by subdividing the building into compartments, separated from one another by walls and / or floors of fire-resisting

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construction. Compartmentation, horizontal or vertical, can also be used as part of an escape strategy to create areas of relative safety.

In line with HTM 05-02[5], the Phased Horizontal Evacuation within the Hybrid Theatre extension and the Royal free Hospital main building, requires each compartment to be limited to a maximum floor area of 2000 m² and be provided with sub-compartments where the floor area exceeds 750 m². Floors over 12 m above ground level which contain patient access areas are required to be divided into a minimum of four compartments, each to have a minimum floor area of 500 m².

The Hybrid Theatre extension is to be considered as a single compartment of approximately 609 m² with sub-compartments provided on Level 03 to the theatres. In conjunction with the existing main building the entire Level 03 floor plate will be divided into more than 4 compartments. The Compartments and sub-compartments within the Hybrid Theatre extension and associated areas of the main building are in line with the guidance of HTM 05-02[5].

Compartment lines are to be of 60-minute fire rated construction where sub-compartment lines are of 30-minute fire rated construction.

As the Hybrid Theatre extension is more than one storey in height, compartment floors are provided at all levels. Each compartment floor is to be considered as an element of structure as noted within Clause 5.13 within HTM 05-02[5].

Risers which pass through compartment floors are protected shafts and should achieve the same period of fire resistance as the floor through which they pass.

An exercise will be conducted to understand the structural properties of the existing building. Any areas not meeting the above requirements will be appropriately rectified to ensure compliance.

10.5 External Fire Spread – Space Separation

In line with the recommendations of Clause 6.6 of HTM 05-02[5], healthcare buildings over 12 m in height, the maximum percentage of unprotected area on an external wall, in relation to the distance to adjacent compartments, buildings or boundaries, should be determined from the methods set out in the BRE Report 187[9] – “External fire spread: building separation and boundary distances”.

The amount of unprotected area (i.e. the area of a compartment offering no fire resistance) of the external walls less than 1 m from the relevant boundary, should provide a minimum of 90-minutes fire resistance with only permitted small openings (less than 1 m²). For external walls more than 1 m from the relevant boundary, the amount of unprotected area is determined based upon the dimensions of the compartment and the distance from the façade to the boundary.

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For the Hybrid Theatre extension, the relevant boundaries are as follows (as indicated in Figure 5);

- Mid-point of Pond Street to the North;
- Party walls to the South and East where the Hybrid extension abuts the existing main building.
- Notional boundary to the West, where the Hybrid extension abuts the Pears Building.

From the results of the external fire spread assessment there are no limitations on the maximum unprotected area of the external walls more than 1 m from the relevant boundaries.

The external walls of the Hybrid Theatre extension should provide a minimum of 90-minute fire resistance, in accordance with clause 6.4 of HTM 05-02, to provide the protected area required.

Table 3: Summary of maximum unprotected area for each façade

Elevation	Notional boundary (m)	Height of enclosing rectangle (m)	Width of enclosing rectangle (m)	Maximum unprotected area	Unprotected area provided in design
				%	
North	42.3	5.5	14.9	100	0
West	13	5.5	8.1	100	0

10.6 Emergency Power Supplies

Emergency back-up power supplies are required for all active fire safety systems. These systems comply with their relevant standard guidance in terms of power supply, including the following:

- Fire detection and alarm system;
- Emergency and escape lighting;
- Fire safety devices such as fire dampers and fire and smoke dampers; and
- Emergency escape lighting.
- Fire-fighting shafts (lighting, lifts, communication and other associated equipment);
- Evacuation lifts

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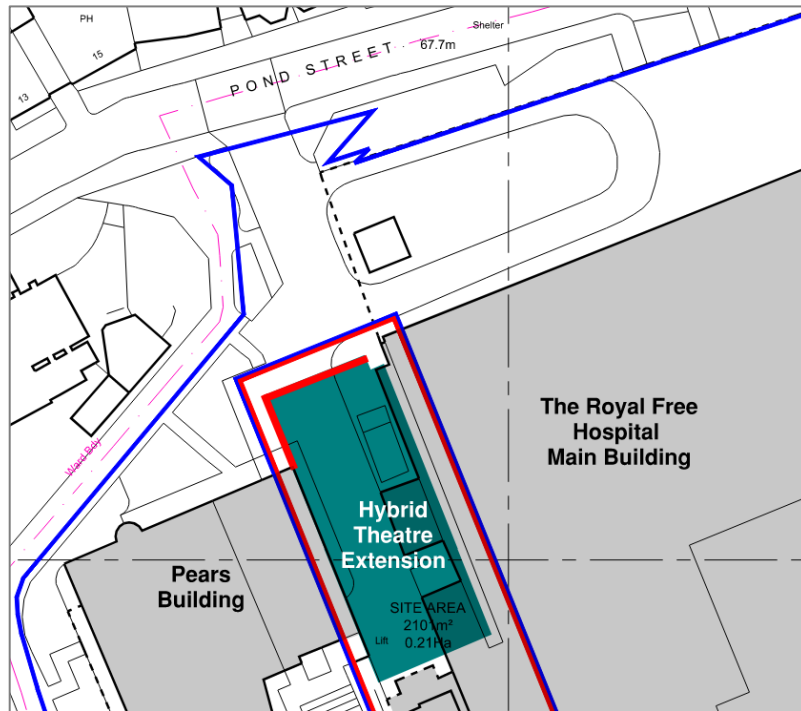


Figure 5: External wall separation from Site Boundary

11 Access And Facilities for Firefighting

11.1 Vehicle Access

Multiple access points are available to the Royal Free Hospital site, in accordance with the guidance of Clause 7.3 of HTM 05-02[5]. The Fire and Rescue Service access to the Hybrid Theatre extension will be via the access road from Pond Street shown Figure 6. The scope of the proposed works will not extend to the existing access routes.

As the development is in London, the dimensions of access roads should be sufficient to support the appliances as per the London Fire Brigade Guidance Note 29 (LFB GN29)[10, p. 29] (Table 4). A dry riser will serve the Hybrid Theatre Extension therefore only a pump appliance would be required.

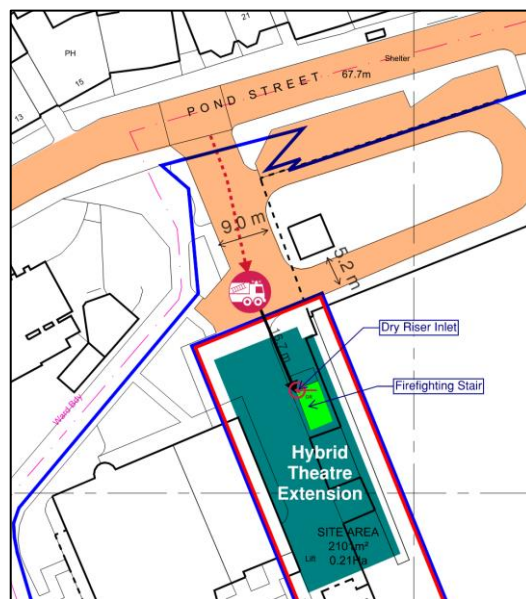


Figure 6: Fire Service Vehicle Access

Table 4: Fire service vehicle access route specification, as per LFB GN29

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 (t)(A)
Pump	3.7 m	3.2 m	16.0 m	17.0 m	3.5 m	16 tonnes

Note (A) – This includes inspection covers and public utility services pits, and as per GN 29 this is the gross vehicle weight (which exceeds the capacity, gross laden weight).

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11.2 Fire-fighting Provisions

Due to the height of the building the existing stair that is to serve the Hybrid Theatre extension is to function as a firefighting shaft to comply with HTM 05-02[5] thus a dry riser is to be added. The firefighting shaft will be accessed directly from the exterior. All parts of the Hybrid Theatre extension are within 45 m of the dry riser outlet along a path suitable for laying hose.

The shaft is considered to be naturally ventilated as the existing stair will remain open at the head of the stair with a clear air gap between the stair and the firefighting lobby. The air gap will act as a source of natural ventilation to the firefighting lobby.

A firefighting lift is not proposed within the Hybrid Theatre Extension however the fire strategy will rely on the firefighting lifts within the existing firefighting shaft which serves the main building.

11.3 Water Supplies

In accordance with clause 7.24 of HTM 05-02[5] where the proposed extension is proposed more than 100 m from an existing fire hydrant, additional hydrants are required to be provided within 90 m of the dry riser inlet. It has been confirmed with the London Fire Brigade water team that existing private fire hydrants are provided to the site. An existing hydrant is provided adjacent to the fire tender parking position which is within 100 m of the building entry point of the Hybrid Theatre Extension as shown in Figure 7 below. As such, there is no requirement for an additional hydrant to be provided for the extension, as the existing provisions are sufficient. Works may be done to adjust the location such that the hydrant does not lie below the extension. In doing so the above parameters will be met.

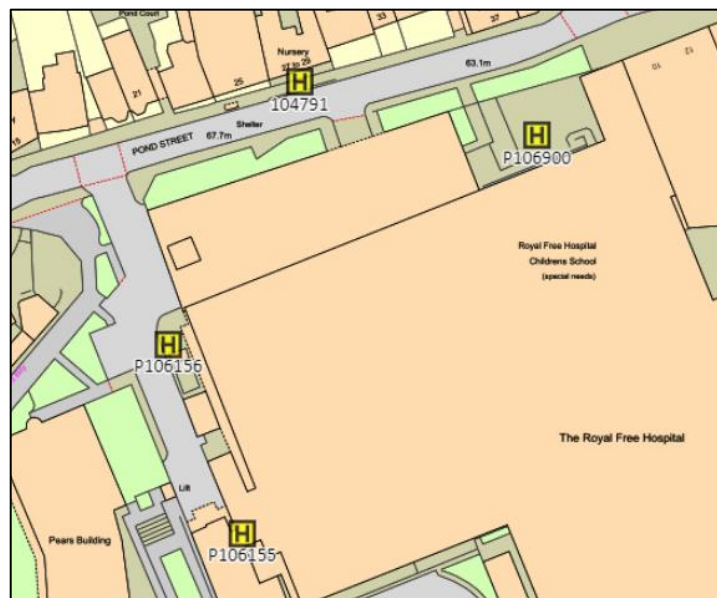


Figure 7: Existing Hydrant Locations



12 Future Modifications

The fire safety provisions for the development, as per the principles documented in this Fire Statement has been developed for the fire strategy of the Hybrid Theatre Extension with the end use of level 02 to be confirmed. Reasonable endeavours have been made in the development of the fire strategy to ensure that the future use of this space can be made within the framework set by the fire strategy.

13 Concluding Statement

To conclude this fire statement, the current proposals provide a design which is suitable for the purposes outlined in this document. It provides adequacies in line with Policy D12, whilst taking a pragmatic approach to Policy D5 of the London Plan 2021[1] and provides a design which has the potential to comply with the functional requirements of Part B of the Building Regulations as required.

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