Appendix 9: Planning Fire Safety Strategy / Jensen Hughes

Report

Project	University of London Townhouses
Report Title	Planning Fire Safety Strategy
Our Ref	HL9044/R1 Issue 1

Issue Record

REV	DATE	AUTHOR	REVIEW	APPROVED	SECTION	AMENDMENTS
Issue 1	28/06/2024	NS	BY	BA		

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1.0 INTRODUCTION

1.1 Site Location and Description

The proposed scheme is for the renovation and the addition of one floor to the University of London townhouses located at 89-92 Guilford Street and 1-4 Lansdowne Terrace.

The townhouses will remain student accommodation for the University of London and share a courtyard with International Hall, a student accommodation block.

The renovation will achieve current residential standards to enable potential change of use to private residential in the future.

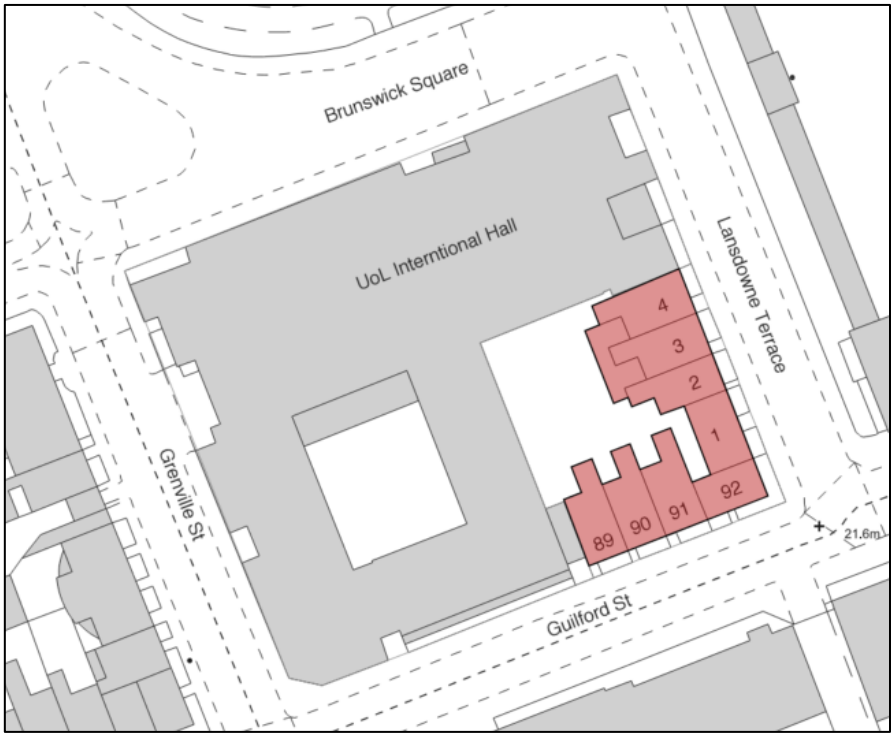

Figure 1: Site Plan

The details of the buildings are summarised in the table below.

LEVEL	89-91 GUILDFORD ROAD	92 GUILDFORD ROAD	1 LANSDOWNE TERRACE	2-4 LANSDOWNE TERRACE
Basement	1-Bed Flat	8-Bed Shared Student House	2-Bed Flat	1-Bed Flat
Ground Floor	1-Bed Flat		2x Studio	1-Bed Flat
First Floor	1-Bed Flat		2-Bed Flat	1-Bed Flat
Second Floor	1-Bed Flat		2-Bed Flat	1-Bed Flat
Third Floor	4-Bed Duplex		4-Bed Duplex	4-Bed Duplex
Fourth floor (new floor)				

Table 1: Buildings Overview

The topmost storey height of the buildings will be 15.28m.

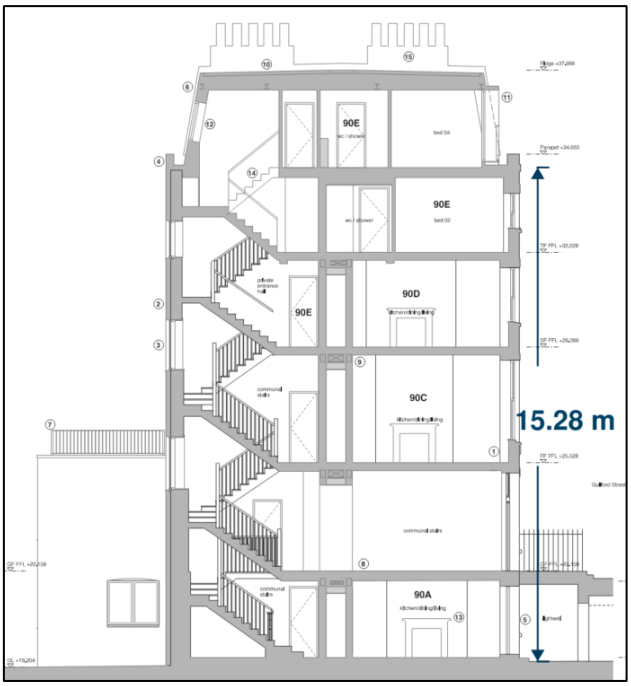

Figure 2: Top Floor Height (90 Guildford Road)

1.2 Aim of Report

This Fire Safety Strategy (PFSS) aims to demonstrate that development proposals can achieve the highest standards of fire safety for non-major applications.

This document describes how the proposed design will meet with the requirements detailed in section 2.0.

This report was based on the drawings and information provided to Jensen Hughes to date by Burd Haward Architects.

The purpose of this report is to demonstrate that fire safety has been considered at the earliest opportunity and that the requirements of Chapter 3, Policies D5 and D12(A) as detailed in the London Plan 2021 have been addressed.

1.3 Relevant Guidance

The design has been primarily based on the guidance within:

- Approved Document B (fire safety) volume 1: *Dwellings, 2019 edition incorporating 2020 and 2022 amendments (ADB: V1).* (for residential areas and ancillary accommodation).

1.4 Declaration

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

Jensen Hughes are a highly experienced team of specialist fire engineers that have been operating in the UK and Ireland for 30 years (predominantly under the name JGA). The qualifications of the author of this report are given below:

Report by	Nefise Sarsri, MEng,
Checked by	Basheer Youssef, BEng, MIFireE
Approved by	Ben Atkinson, BSc, MSc, CPhys, MIFireE

2.0 LONDON PLAN 2021 – FIRE SAFETY STATEMENT

The purpose of a Fire Statement is to show how the requirements of the London Plan have been considered and addressed. In additional to the London Plan itself, development of the design and the Fire Statement has considered the guidance in the GLA document, London Plan Guidance, Fire Safety, February 2022.

The tables below illustrates where the requirements of the relevant London Plan policies are specifically addressed:

DESCRIPTION	RELEVANT SECTION IN THE REPORT
Identifies suitably positioned unobstructed outside space for fire appliances to be positioned on	3.0
Identifies suitably positioned unobstructed outside space appropriate for use as an evacuation assembly point	4.0
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	**Error! Reference source not found.**6.0
Constructed in an appropriate way to minimise the risk of fire spread	7.0
Provides suitable and convenient means of escape, and associated evacuation strategy for all building users	8.0
A robust strategy for evacuation which can be periodically updated and published, and which all building users can have confidence in	**Error! Reference source not found.**
Suitable access and equipment for firefighting which is appropriate for the size and use of the development	3.0
Where a lift core is provided, at least one lift is an evacuation lift	4.0

Table 2: Policy D12 Subsection A Requirements

3.0 ACCESS AND FACILITIES FOR THE FIRE SERVICE

3.1 Fire Vehicle Access

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

Vehicle access will be provided within 45m hose cover of all points within each flat, measured along hose laying route. This is compliant with ADB vol.1 guidance.

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

Figure 3: Fire and Rescue Service Access

3.2 Firefighting Facilities

The building has a top floor height less than 18m, therefore there is no guidance requirement to provide a firefighting shaft. Firefighting shafts will not be provided.

3.3 Hose Coverage

Hose cover from the fire vehicle parking position to any point inside the flats is within the recommended limit of 45m, as follows:

- Nos.89 - 91 Guilford Street**:** 40m
- No. 92 Guilford Street: 34m
- No. 1 Lansdowne Terrace**:** 45m
- No.2 - 4 Lansdowne Terrace**:** 44m

4.0 EVACUATION STRATEGY

4.1 Residential Areas

The residential flats will operate with a “defend in place” evacuation strategy. This means only the flat where the alarm originated will evacuate initially, however, subsequent evacuation may occur through fire service notification if necessary.

4.2 Disabled Occupants

The buildings do not include passenger lifts as existing, have small flooplates with limited space and the provision of lifts is not proposed.

On this basis, it is not proposed to provide evacuation lifts as part of the refurbishment.

4.3 Evacuation Assembly Point

A suitable place of assembly will be provided as part of the development. The location of the evacuation assembly points will be confirmed as the design develops but is shown nationally in the figure below.

Figure 2: Proposed Assembly Point

5.0 ACTIVE FIRE SAFETY SYSTEMS

5.1 Automatic Sprinkler System

The top floor height of the building is greater than 11m above ground floor therefore sprinklers will be provided to meet the Building Regulations guidance.

A residential sprinkler system will be provided and will be designed and installed in accordance with BS 9251.

5.2 Fire Detection and Alarm System

A summary of the fire alarm and detection system(s) are shown in Table below.

AREA	CATEGORY	APPLICABLE GUIDANCE
Residential Flats	LD1	BS 5839-6
Residential Stairs	L5	BS 5839-1

Table 3: Automatic Fire Detection Provisions

5.1 Emergency Lighting and Signage

Emergency lighting will be provided in accordance with relevant code guidance, including the BS9991 and BS 5266-1.

Signage will be provided throughout the building and in accordance with the recommendations of relevant code guidance, including the BS 9991 and BS ISO 3864-1.

5.2 Secondary Power Supplies

A secondary source of power will be provided for all life safety systems in line with the BS 9991 guidance.

5.3 Smoke Control System

The common stairs will be provided with an AOVs at the top of each stair.

5.4 Routine Inspection and maintenance of fire safety installations

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

6.0 PASSIVE FIRE SAFETY MEASURES

6.1 Structural Fire Resistance

All the load bearing elements of construction will provide 1 hours of fire resistance to comply with the current ADB vol.1 guidance for sprinklered buildings above 11m but below 18m.

6.2 Compartmentation and Fire Doors

New fire-resisting walls and floors will be provided in accordance with the following table:

AREA	FIRE RESISTANCE	FIRE DOOR
Compartment Floors	1 hour	N/A
Communal Protected Stair	1 hour	FD30S
Risers	1 hour	FD30S
Protected internal entrance hall/stair	30 minutes	FD30

Table 4: Fire Compartmentation and Fire Doors Requirements

6.3 Cavity Barriers

Cavity barriers will be provided within any external wall cavities or floor voids in accordance with the guidance in Clause 19 of BS 9991.

6.4 Fire Stopping

Fire stopping will be provided to maintain the integrity of the fire separating elements in accordance with the recommendations of Section 24.4 of BS: 9991.

6.5 Internal Wall & Ceiling Linings

Any internal surface finishes (walls or ceilings) will be provided in line with the table below.

ROOM	PERFORMANCE (EUROPEAN CLASS)
Within circulation spaces	B-s3,d2
Rooms smaller than 4m^2 (residential areas)	D-s3,d2
Other rooms	C-s3,d2

Table 5: Wall & Ceiling Linings

7.0 EXTERNAL WALL

7.1 External Wall Construction

Each block is building include a 'residential' with a storey 11m. Therefore, in accordance with Approved document B: Volume 1, any insulation product, filler material (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 an external wall will be class A2-s1, d0 or better.

The external surfaces (i.e. outermost external material) of external walls will be class A2-s1, d0 or better.

7.2 External Fire Spread

The proposed works on the existing buildings will not impact the distance between the external walls and the boundary distance. The additional floor will be designed with consideration to fire safety of the neighbouring building and adjacent areas.

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

7.3 Roof Coverings

Roof materials, including the terraces, will achieve B_{roof} (t4) classification where parts of the roof are located within 6m of the relevant boundary to each block. This is in line with the ADB vol.1 recommendation.

8.0 MEANS OF ESCAPE

8.1 Internal Layout

8.1.1 Single Storey Flats

All single-storey flats will be provided with an internal protected hallway, enclosed in 30-minute fire resisting construction, which will give access to all habitable rooms within the flat. The maximum travel distance between the entrance point of the flat and any door off of the internal protected hallway should be 9m. This is achieved in all flats.

Figure 4: Typical single storey flat layout

8.1.2 Studios

1 Lansdowne Terrace contains 2 studios at ground floor which should be provided with an LD1 category alarm system. The maximum travel distance from the studio entrance to the furthest point within the studio should be 9m. This is achieved in both studios. Cooking facilities should be located as remote as possible to the studio entrance and from the escape room within the studio. This is achieved in the current layout.

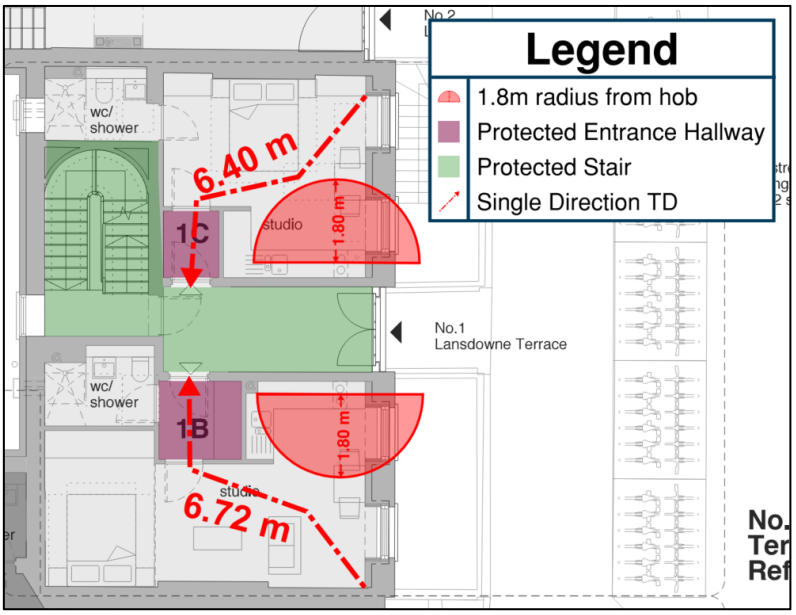

Figure 5: Typical studio layout

8.1.3 Duplex Flats

All multistorey flats will be provided with a sprinkler system in accordance with BS 9251 and an internal protected stairway.

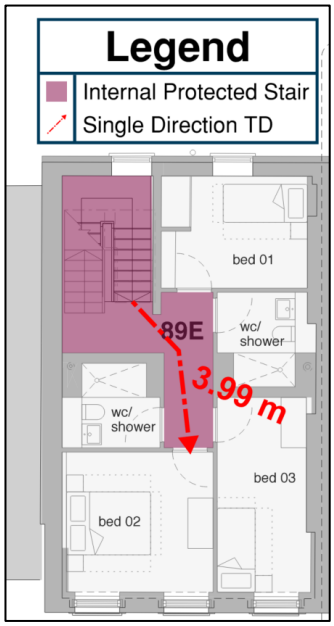

Figure 6: Duplex Level 1- Third Floor

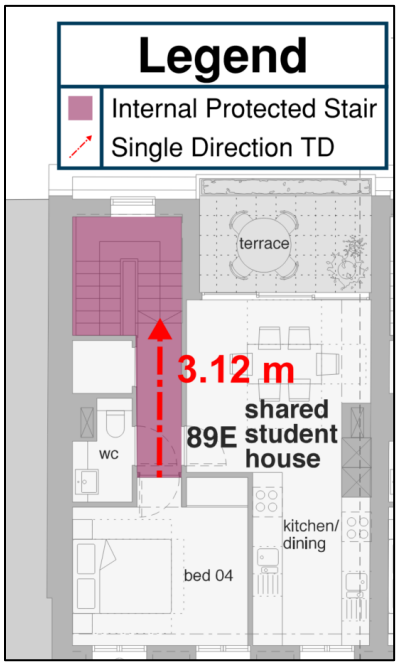

Figure 7: Duplex Level 2- Fourth Floor

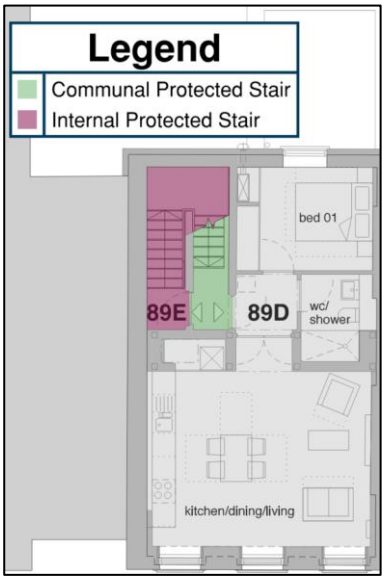

Figure 8: Access to Duplex – Second Floor

8.1.4 Shared House

The shared house at 92 Guildford Street is a dwellinghouse with more than two storeys that are more than 4.5m above ground level and will be provided with a sprinkler system in accordance with BS 9251.

8.2 Single Stair Buildings

All flats are provided with a single escape route, and the common stair opens directly onto the flat entrance. Due to the size of the building, it is understood that providing a lobby between the stair and flat entrance would be impossible.

The current top storey height measured to the rear of the buildings is in excess of 11m due to the lower ground floor being the lowest accessible floor level. This is the correct method of measurement of the top storey height of the building in line with Building Regulations guidance. However, the top storey height measured to the front of the building is less than 11m (excluding the mansard level which is discussed further in this section

of the report). As this is the point to which escape is made and from which the fire brigade will gain access, this is the 'relevant height' for these aspects of the Building Regulations (B1 and B5).

On this basis it is proposed to design the majority of the development as 'small single stair buildings' as described in Approved Document B (ADB) Vol 1 Section 3.28. It is also proposed to omit any lobbies between the flats and stairs given that each flat is provided with a protected entrance hall, as per Diagram 3.9 b) in that section. This is the most practical design basis in view of the fact the buildings are existing and have small floorplates.

Further to the above it is proposed that the additional mansard storeys (which will be more than 11m above ground at the front of the building) will be the upper level of duplex flats only. Therefore, the exit point and fire brigade access point to the flats concerned will be below the 11m threshold. This approach is further supported by the following:

- There is only one flat per storey and 4 total per building accessed from the single stair. This is less than half the number which might be accessed from a single stair following the ADB guidance referred to above i.e. 2 per storey and a total of 8. This will reduce the likelihood of an incident in which smoke affects the stair.
- The flats will be sprinklered which should control any fire and reduce the quantity of smoke produced and the hazard it represents. A small single stair building designed in accordance with the ADB guidance referred to above would not normally need sprinklers and sprinklers can therefore be considered a significant enhancement.
- Each flat will be provided with protected hallways, which offer a safe escape route in case of fire. These hallways are designed to resist fire and smoke for a specified period, allowing residents to evacuate safely. The protected hallways will also act as a barrier between individual flats and common areas, minimising the spread of smoke to the common stairs.
- Each stairwell will have a 1 square meter AOV (Automatic Opening Vent) at the top, which allows smoke and heat to escape, keeping the stairwell clear for evacuation. Additionally, it helps firefighters access the building more safely by venting smoke and heat.

8.3 Communal Stair

The communal stair should be enclosed in at least 30 minutes fire resisting construction. An automatically openable vent with a free area of at least 1m^2 will be provided to the head of the stair.

9.0 MANAGEMENT

Management procedures have not been developed at this stage of the project. However, any areas requiring a level of management and a management strategy will be provided as necessary. This will be developed at a later stage.

The building fire strategy document will form part of the building regulations application. This will also be used to inform any future alterations to the building to ensure that the fire safety measures, and strategy is not compromised.

The building owners will be responsible for implementing a management plan for the ongoing maintenance of the wet fire mains and provision of safe access routes to and within the buildings. These plans shall be in line with the requirements of the Regulatory Reform (Fire Safety) Order and relevant British Standards for the fire safety equipment.

10.0 FUTURE DEVELOPMENT AND THE 'GOLDEN THREAD' OF INFORMATION

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

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

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

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

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

11.0 INFORMATION, LIMITATIONS AND ASSUMPTIONS

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

11.1 Drawings

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

DRAWING NUMBER	REVISION	DRAWING DESCRIPTION
2327_P101_E	E	Ground Floor Proposed Plan
2327_P102_E	E	First Floor Proposed Plan
2327_P103_E	E	Second Floor Proposed Plan
2327_P104_E	E	Third Floor Proposed Plan
2327_P105_D	D	Fourth Floor Proposed Plan
2327_P320_C	C	No.90 Guilford Street Proposed Sections

11.2 Building Regulations

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

11.3 Other Limitations

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

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

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

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