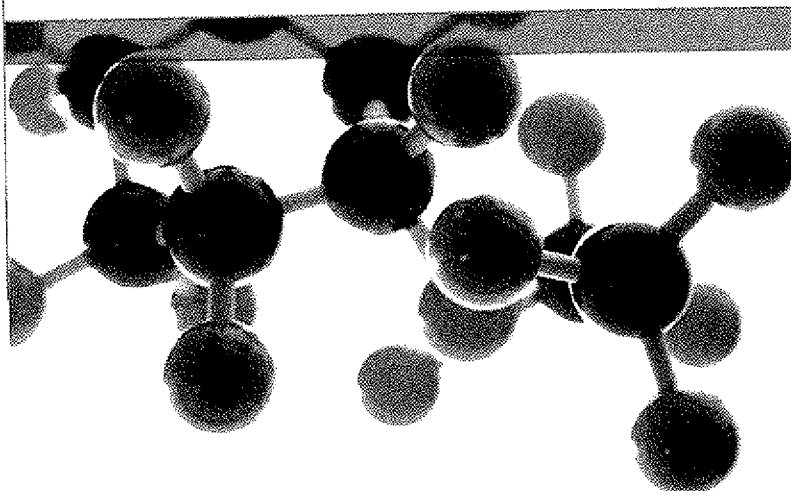


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# Grenfell Tower Outline Fire Safety Strategy



**A Report to:** Studio E LLP  
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**Page:** 1

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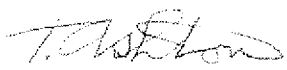
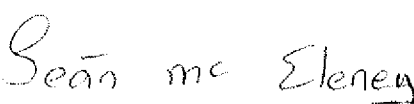
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## Revision History

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Prepared by:	 Terry Ashton Associate (For and on behalf of Exova Warringtonfire)
Reviewed by:	 Sean McEleney Graduate Engineer (For and on behalf of Exova Warringtonfire)

### Validity

This report is formulated on the basis of the information and experience available at the time of preparation. It is applicable to the above-mentioned project only in accordance with the client's instructions. It is only valid provided no other modifications are made other than those for which a formal opinion has been sought and given by Exova Warringtonfire.

Document No.: MT13779R

Page No.: 2 of 9

Project No: 301922

Issue Date: 31/10/12

Client: Studio E LLP

Issue No.: 01

E-E-QU-FT-CS-WR-F-1007 (Iss 04)

# Contents

<b>1</b>	<b>INTRODUCTION .....</b>	<b>4</b>
<b>2</b>	<b>STATUTORY CONSIDERATIONS .....</b>	<b>5</b>
2.1	The Building Regulations 2010 .....	5
2.2	The Regulatory Reform (Fire Safety) Order 2005.....	5
2.3	London Building Acts (Amendment) Act 1939 .....	5
<b>3</b>	<b>PROPOSED OUTLINE FIRE SAFETY STRATEGY .....</b>	<b>6</b>
3.1	Compliance with The Building Regulations 2010 .....	6
3.1.1	Compliance with B1 .....	6
3.1.2	Compliance with B2 .....	7
3.1.3	Compliance with B3 .....	7
3.1.4	Compliance with B4 .....	8
3.1.5	Compliance with B5 .....	8
3.2	Compliance with the Regulatory Reform (Fire Safety) Order 2005 .....	8
3.3	Compliance with Section 20 .....	8
<b>4</b>	<b>REFERENCES .....</b>	<b>9</b>

## 1 Introduction

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The proposed development is the refurbishment of Grenfell Tower, a 24 storey residential block incorporating a boxing club at ground storey level, a nursery at mezzanine level (between the ground storey and walkway level) and office accommodation in the mezzanine level between walkway level and first storey level.

The refurbishment comprises:

- The creation of a new reception area and office at ground storey level;
- The re-siting of the nursery to ground storey level;
- The creation of new residential apartments in the mezzanine over the ground storey;
- The re-siting of the boxing club to walkway level;
- The creation of a community office at walkway level;
- The creation of new residential apartments in the mezzanine over walkway level; and
- Improvements to the building services.

This report details the applicable statutory controls in respect of fire safety and contains an outline fire safety strategy for compliance with these statutory controls.

The report is based upon discussions held with the design team and on drawings (numbers 1279 RE 110 05, 1279 RE112 04, 1279 RE113 04 and 1279 RE114 03) produced by Studio E LLP.

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Document No.: MT13779R  
Project No: 301922  
Client: Studio E LLP

Page No.: 4 of 9  
Issue Date: 31/10/12  
Issue No.: 01

E-E-QU-FY-CS-WR-F-1007 (Iss 04)

## 2 Statutory Considerations

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### 2.1 The Building Regulations 2010

The building work will have to be carried out in conformity with the requirements of Schedule 1 of the Regulations. To satisfy Regulation 4, it will be necessary to ensure that, where a building is altered, it is no more unsatisfactory in relation to the requirements of Schedule 1 than it was before the works were carried out.

The requirements of Schedule 1 relating to fire safety are:

- a) B1 (means of warning and escape);
- b) B2 (internal fire spread (linings));
- c) B3 (internal fire spread (structure));
- d) B4 (external fire spread); and
- e) B5 (access and facilities for the fire service).

Compliance with these requirements is normally achieved by meeting the standards contained in Approved Document B (ADB)<sup>(1)</sup> and/or BS 9991<sup>(2)</sup>.

### 2.2 The Regulatory Reform (Fire Safety) Order 2005

The Regulatory Reform (Fire Safety) Order came into effect on 1 October 2006. One effect of this Order is that the owner (or the "responsible person" as defined in the Order) will have to carry out a fire risk assessment (or have a fire risk assessment carried out on his/her behalf). Compliance with the Regulatory Reform Order is normally achieved by following the guidance given in the DCLG Guide<sup>(3)</sup>.

### 2.3 London Building Acts (Amendment) Act 1939

The building is subject to the requirements of Section 20 of the London Building Acts (Amendment) Act 1939. Under the provisions of Section 20, the Council (the Royal Borough of Kensington & Chelsea) may make requirements for the provision of the following:

- a) fire extinguishing appliances and installations;
- b) effective means of removing smoke in case of fire; and
- c) adequate means of access to the site of the building for fire brigade personnel and appliances.

The Council may also make requirements in respect of defined "special fire risk" areas in the building (such as transformer rooms, generators and boiler rooms).

Compliance with the requirements of Section 20 is normally achieved by meeting the standards contained in the LDSA Section 20 Guide<sup>(4)</sup>.

### **3 Proposed Outline Fire Safety Strategy**

#### **3.1 Compliance with The Building Regulations 2010**

##### **3.1.1 Compliance with B1 (means of warning and escape)**

###### **FIRE DETECTION/ALARM SYSTEM**

The nursery, the boxing club and the ground and walkway offices will all be provided with at least a Type "M" system as defined in BS 5839-1<sup>(5)</sup>. Each system in these three elements will be "stand alone" but interlinked so that an outbreak of fire in one of them will be enunciated on all fire alarm control panels.

New apartments will be provided with "LD3" systems of detection and sounders as defined in BS 5839-6<sup>(6)</sup>.

###### **MEANS OF ESCAPE**

###### **NURSERY**

The nursery will have at least two exits direct to the exterior.

###### **BOXING CLUB**

The boxing club will have two exits: one direct to the walkway; and the other to the lift lobby of the residential tower from where access will be available to the exterior via the new stair from walkway level to ground storey level.

###### **APARTMENTS**

The new apartments in the mezzanine over walkway level will have access to the existing escape stair serving the residential tower.

The new apartments in the mezzanine over the ground storey will have access to the new stair serving the residential tower.

###### **OFFICES**

The new office at ground storey level and community room in the mezzanine over the ground storey will have exits direct to the new stair linking the existing stair serving the residential tower with the exit at ground storey level.

###### **NEW STAIR**

The new stair will be separated from the remainder of the accommodation at each level by construction having a standard of fire resistance to satisfy B5 (see below). The exits to this new stair from the new office at ground storey level, the community room on the mezzanine above the ground storey and from the boxing club at walkway level will be via lobbies enclosed to a standard of fire resistance to satisfy B5 (see below) incorporating self closing inner and outer doors to at least a "FD30S" standard.

Each of these lobbies will be ventilated to the exterior by an opening at least 0.4m<sup>2</sup> in area which will either be direct to the exterior or via suitably protected ducts. The vents will be automatic in operation and activated by smoke detectors sited within each of the areas. As an alternative to this arrangement, the community room on the mezzanine above ground storey level will be vented direct to the exterior by an automatic opening vent 0.4m<sup>2</sup> in area.

###### **APARTMENTS**

The new apartments will have protected entrance halls (i.e. entrance halls enclosed by construction having a 30 minute standard of fire resistance with the doorways therein fitted with "FD20" doors). Bathrooms and WCs will not be enclosed by fire resisting construction but, where they abut other rooms, they will be separated from the latter by walls having a 30 minute standard of fire resistance.

Document No.: MT13779R

Page No.: 6 of 9

Project No.: 301922

Issue Date: 31/10/12

Client: Studio E LLP

Issue No.: 01

E-E-QU-FT-CS-WR-F-1007 (iss 04)



The travel distance from the apartment entrance door to the door to the furthest habitable room will not exceed 9m.

An exception to these arrangements will be the apartments on the mezzanine above the ground storey. Here, the habitable rooms will be provided with escape windows (windows with an unobstructed area of 0.33m<sup>2</sup> and at least 450mm high and 450mm wide with the bottom of the openable area not more than 1100mm above floor level).

#### SMOKE VENTILATION OF COMMON LOBBIES

The existing smoke extract arrangements within the common lobbies in the residential tower will be overhauled and the fresh air inlet/smoke extract shafts extended to serve the new common lobby in the mezzanine above walkway level.

#### EMERGENCY LIGHTING

Where necessary, emergency lighting will be provided in the escape routes from the building designed in accordance with the recommendations of BS 5266<sup>(7)</sup>.

### 3.1.2 Compliance with B2 (internal fire spread (linings))

All new wall and ceiling linings will be the equivalent of the following:

- a) in circulation spaces and escape routes other than circulation spaces within the apartments – Class 0 (using the UK testing methods) or Class B-s3, d2 (using the European testing methods); and
- b) elsewhere – Class 1 (using the UK testing methods) or Class C-s3, d2 (using the European testing methods) although a Class 3 standard or Class D-s3, d2 could be used within rooms not exceeding 30m<sup>2</sup> in non residential accommodation or 4m<sup>2</sup> in area within the apartments.

(NOTE: the European testing methods referred to above are the new methods developed as part of a harmonisation program for fire testing within Europe as detailed in BS EN 13501-1: 2002<sup>(8)</sup>. Materials achieving the classifications to either the new European test method or the UK test methods are considered to be acceptable).

### 3.1.3 Compliance with B3 (internal fire spread (structure))

#### FIRE RESISTANCE OF ELEMENTS OF STRUCTURE

All new elements of structure will be constructed to have the same standard of fire resistance as that of the existing elements. This is assumed to be 120 minutes for the structural frame and 60 minutes for floors.

#### COMPARTMENTATION

Compartment walls and/or floors will be provided:

- a) Between apartments and other apartments;
- b) Between apartments and common areas;
- c) Between the nursery and the remainder of the building;
- d) Between the boxing club and the remainder of the building; and
- e) Between the offices and the remainder of the building.

Document No.:	MT13779R	Page No.:	7 of 9
Project No:	301922	Issue Date:	31/10/12
Client:	Studio E LLP	Issue No.:	01
		E-E-QU-FT-CS-WR-F-1007 (iss 04)	

Compartment walls and floors will have a 60 minute standard of fire resistance unless they form part of the structural frame of the building (where they will have a 120 minute standard of fire resistance). Doorways within compartment walls will be fitted with self closing doors having a 60 minute standard of fire resistance except where a different standard will be necessary to satisfy B5 (see below).

#### 3.1.4 Compliance with B4 (external fire spread)

It is considered that the proposed changes will have no adverse effect on the building in relation to external fire spread but this will be confirmed by an analysis in a future issue of this report.

#### 3.1.5 Compliance with B5 (access and facilities for the fire service)

A new inlet to the existing dry rising main will be provided in a location where it will be within 18m (and in sight of) where a pumping appliance could pull up.

Access to the building for fire service personnel will either be at ground storey level or walkway level. If access is obtained at ground storey level, fire service personnel will have to proceed up the internal stair to either the mezzanine above the ground storey or to walkway level. Outlets from the dry rising main will be provided in the common lobbies at both these levels and in the mezzanine over walkway level.

The entrance hall containing the stair will be separated from all the accommodation by construction having a 120 minute standard of fire resistance. All connections to the accommodation in this enclosure (except the connections to the common lobbies) will be via lobbies enclosed to the same standard of fire resistance with the openings fitted with self closing doors of the following standard:

- To the accommodation – “FD60S”; and
- To the stair – “FD30S”.

As stated above, these lobbies will be ventilated.

### 3.2 Compliance with the Regulatory Reform (Fire Safety) Order 2005

It is considered that the fire safety measures described above will satisfy the requirements of the Regulatory Reform (Fire Safety) Order.

Portable fire-fighting equipment (fire extinguishers) will be provided in the nursery, boxing club and office accommodation in accordance with the recommendations of BS 5306-8<sup>(9)</sup>.

### 3.3 Compliance with Section 20

It is considered that the fire safety measures described above will meet most of the objectives of Section 20.

Openable windows equal to 2.5% of the area of each of the altered storeys will be provided. These will, where practicable, be sited on opposing faces of the building to provide cross ventilation.



## 4 References

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1. Approved Document B. Fire safety. Volume 2 – Buildings other than Dwellinghouses. Department for Communities and Local Government - TSO 2006
2. BS 9991: 2011. Fire safety in the design, management and use of residential buildings
3. Fire Safety Risk Assessment – sleeping accommodation. Department for Communities and Local Government 2006
4. London District Surveyors Association Fire Safety Guide No. 1. Fire Safety in Section 20 Buildings – LDSA Publications 1998
5. BS 5839-1: 2002. Fire detection and alarm systems for buildings: Part 1: Code of practice for system design, installation, commissioning and servicing
6. BS 5839-6: 2004. Fire detection and alarm systems for buildings - Part 6: Code of practice for the design, installation and maintenance of fire detection and fire alarm systems in dwellings
7. BS 5266: Part 1: 1999 Emergency lighting. Code of practice for emergency lighting of premises other than cinemas and certain other specified premises used for entertainment
8. BS EN 13501-1: 2002. Fire classification of construction products and building elements. Classification using data from reaction to fire tests
9. BS 5306-8: 2000. Fire extinguishing installations and equipment on premises. Part 8: Selection, and installation of portable fire extinguishers – Code of practice

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Document No.:	MT13779R	Page No.:	9 of 9
Project No:	301922	Issue Date:	31/10/12
Client:	Studio E LLP	Issue No.:	01

E-E-QU-FT-CS-WR-F-1007 (iss 04)