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RESIDENTIAL DEVELOPMENT AT GLYTOWN, GLANMIRE, CORK

FIRE SAFETY ASSESSMENT

DATE 20/06/2022

REVISION 1

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Contents

1	Introduction	1
2	Fire Safety Assessment	1
2.1	Design Criteria	1
2.2	Assessment Summary	2
	Building Classification.....	2
	Outline Description of the Building	2
	BS 5588-1:1990 - Fire Precautions in the Design, Construction and use of Buildings Part 1: Code of practice for residential buildings	2
	Section 2 Single-family dwelling houses	2
4	Means of escape and provision for rescue.....	2
	Section 3 Flats & Maisonettes.....	3
7	Escape from fire	3
9	Internal planning of flats.....	3
12	Escape routes from dwellings with corridor or lobby approach.	3
14	Stairs and final exits.....	3
36	Smoke control for means of escape.	3
37	Smoke control for firefighting	4
	Technical Guidance Document 'B' 2006	4
	SECTION B1 – MEANS OF ESCAPE IN CASE OF FIRE	4
	Evacuation Considerations.....	4
	Compartmentation.....	4
	Section B5 – Access & Facilities for the Fire Services	4
	Fire Main	4
	Vehicle access.....	4
	Personnel access to building for fire fighting	5

1 Introduction

Denis O'Sullivan & Associates have been engaged as Consulting Engineers for the proposed development at Glyntown, Glanmire, Cork. The proposed development consists of the construction of 80 residential units and is accessed from the East Cliff Road in Glyntown, Glanmire. The site is located on the outskirts of Cork City and is in close proximity to the town of Glanmire. The overall development shall provide a mixture of duplex units and apartments of varying sizes. There is an existing protected structure on the site, the Coach House, which is to be restored and converted as part of the scheme.

2 Fire Safety Assessment

A Fire Safety Compliance report shall be developed setting out the means by which compliance with Part B (Fire Safety) of the second schedule to the Building Regulations 1997 to 2006 is to be achieved for the proposed construction of the development.

2.1 Design Criteria

This specification and calculations are based on the following design guides:

- Technical Guidance Document B- Fire (TGD 'B'), published by The Minister for the Environment under Article 7, of the Building Regulations reprinted edition 2020
- BS 5588-1:1990 - Fire Precautions in the Design, Construction and use of Buildings Part 1: Code of practice for residential buildings
- BS 5588-8:1999 - Fire Precautions in the Design, Construction and use of Buildings Part 8: Code of practice for means of escape for disabled people
- BRE 187:2014 - External Fire Spread: Building Separation and Boundary Distances
- I.S. 3218: 2013 + A1:2019 Code of Practice for Fire Detection and Alarm Systems.
- I.S. 3217: 2013 + A1:2017 Code of Practice for Emergency Lighting.
- BS 7346-8: 2013 Components for smoke control systems. Code of practice for planning, design, installation, commissioning and maintenance
- BS 5306: Part 1: 2006 Code of practice for fire extinguishing installations and equipment on premises. Hose reels and foam inlets.
- BS 9999:2017 - Fire safety in the design, management and use of buildings. Code of practice

2.2 Assessment Summary

Building Classification

The main use of the building is classified as Purpose Group 1(c), Flat or Maisonette, as per Table 0.1 TGD 'B', Classification of Buildings by purpose group. Therefore, the design for horizontal and vertical escape is assessed under BS 5588-1:1990 - Fire Precautions in the Design, Construction and use of Buildings Part 1: Code of practice for residential buildings

Outline Description of the Building

The proposed apartments are 4-storey buildings and shall be constructed with double leaf masonry walls with concrete floors. The duplex units are 3 storey with own door access. The second floor within the duplex apartments may be constructed with either timber or concrete. The 4-storey apartment buildings will be served by a central stair core while the duplex apartments will each be serviced by a single access stair.

BS 5588-1:1990 - Fire Precautions in the Design, Construction and use of Buildings

Part 1: Code of practice for residential buildings

The building will be assessed under the following sections of BS 5588-1:1990 - Fire Precautions in the Design, Construction and use of Buildings Part 1: Code of practice for residential buildings:

- Section 2 Single Family Dwelling Houses
 - Clause 4 Means of Escape and provision for rescue.
- Section 3: Flats and Maisonettes
 - Clause 7 Escape from fire,
 - Clause 9 Internal planning of flats
 - Clause 10 Internal escape from maisonettes,
 - Clause 11 Alternative exits from dwellings and doors and windows for escape or rescue purposes.
 - Clause 12 Escape routes from dwellings with corridor or lobby approach
 - Clause 14 Stairs and final exits
- Section 7; Fire Protection for facilities for buildings containing flats or maisonettes
 - Clause 36 Smoke control for means of escape.
 - Clause 37 Smoke control for firefighting

Section 2 Single-family dwelling houses

4 Means of escape and provision for rescue

Maisonettes shall have independent access from the exterior of the building and can be treated as a dwelling house. There shall be no habitable rooms within these units that will be an inner rooms and the internal stairway shall be constructed as a protected escape stairway.

Section 3 Flats & Maisonettes

7 Escape from fire

All the units within the building are approached by way of a single protected stairwell and corridor.

The internal planning of the flats shall be in accordance with clauses 9 and 12 of BS 5588-1:1990 - Fire Precautions in the Design, Construction and use of Buildings Part 1: Code of practice for residential buildings.

9 Internal planning of flats

All flats shall comply with the following;

- a) There are no inner rooms in the flats that will be habitable rooms.
- b) All habitable rooms shall be entered directly from a protected entrance hall and the travel distance from the flat entrance door to the door of any habitable room shall not exceed 9m as per figure 4 of BS 5588-1:1990 - Fire Precautions in the Design, Construction and use of Buildings Part 1: Code of practice for residential buildings.

12 Escape routes from dwellings with corridor or lobby approach.

To ensure adequate safety to escaping occupants, the limitation of travel in one direction shall be adhered to along with the provision of cross corridor fire doors and ventilation. The building shall comply with section 12.2 and figure 12 of BS 5588-1:1990 - Fire Precautions in the Design, Construction and use of Buildings Part 1: Code of practice for residential building.

14 Stairs and final exits

There shall be one common protected escape stairs from the upper floors of the buildings. The protected escape stairs shall be within the limits of escape in one direction.

It is proposed to provide a ventilated protected corridor and a protected lobby to the stairway at all levels of the building. The building shall have a ground floor and three stories above this. All stories shall have flats only with no other uses or ancillary accommodation within the building

The common escape stairway shall have direct discharge to the exterior of the building through a final exit from the stairway. The final exit shall be immediately apparent to anyone using the stairway. The final exit shall be sited so as to be clear of any risk from fire or smoke.

Section 7 Fire protection facilities for buildings containing flats or maisonettes

36 Smoke control for means of escape.

It is proposed to provide smoke control in the protected corridor on all floors and at the head of the stairway.

The design of the common stairs shall be in accordance with the principles of figure 12 (a). Both wings of the buildings shall be isolated from each other by fire doors to the stairway lobby and smoke ventilations shall be provided to the corridors. The design of the system shall be such that, on detection of the fire detection and alarm system, the ventilator on the fire floor, the ventilator

at the top of the smoke shaft and the ventilator at the head of the stairway shall open simultaneously.

37 Smoke control for firefighting

There shall be an AOV with a minimum of 1m² clear opening provided for at the top of the protected stairs. The design of the system shall be such that, on detection of the fire detection and alarm system, the ventilator on the fire floor, the ventilator at the top of the smoke shaft and the ventilator at the head of the stairway shall open simultaneously. There shall also be a fireman switch located on the wall inside the main entrance door which can be activated by the fire fighters on entering the building.

Technical Guidance Document 'B' 2006

SECTION B1 – MEANS OF ESCAPE IN CASE OF FIRE

Evacuation Considerations

Normal "self-help" evacuation procedures shall be used in these building. For people with disabilities a refuge area shall be provided in the escape stairs from which further evacuation can be made under less pressure of time as per BS 5588-8:1999.

Compartmentation

The building shall be constructed so that each unit is constructed as a compartment. All floors between units shall be constructed as compartment floors. Each compartment shall be separated from each other by 60-minute compartment walls and floors.

Section B5 – Access & Facilities for the Fire Services

Fire Main

The Development shall receive fire-fighting water from the public mains. It is proposed to install Fire hydrants as indicated on the drawings accompanying this report.

Fire hydrants shall be provided within the development as indicated on the site layout drawing. The fire hydrants are required so that the location of the hydrants shall be in accordance with Diagram 30 of TGD 'B'.

Vehicle access

Fire brigade vehicle access to the exterior of the building will be in accordance with TGD 'B'.

Fire appliances have access to the buildings from East Cliff Road via the development road. Fire appliances will have access to the front elevations of all building from the internal estate roads which will comply with either 'Recommendations for Site Development Works for Housing Areas' (Department of the Environment and Local Government, October 1998) or The 'Design Manual for Urban Roads and Street' (Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Government) or Making Places : a design guide for residential estate development (by Melville Dunbar Associates and Cork County Council).

The required minimum clear widths as shown in Diagram 32 of TGD 'B' can all be achieved for pumping appliances as the street's widths are adequate. Turning facilities for appliances shall be provided in any dead-end access routes that are more than 20m long in accordance with Table 5.2 TGD 'B'.

Personnel access to building for fire fighting

Access to the buildings for firefighting purposes are by way of the normal exit / entrance doors.