



RESIDENTIAL DEVELOPMENT AT  
SCAIRT CROSS,  
CASTLETREASURE, DOUGLAS,  
CORK

FIRE SAFETY ASSESSMENT

DATE 29/06/2022

REVISION 1

JOB NO. 6415

# DOCUMENT CONTROL

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## 1 Introduction

Denis O'Sullivan & Associates have been engaged as Consulting Engineers for the proposed development at Scairt Cross, Castletreasure, Douglas, Cork. The proposed development consists of the construction of 52 no apartments in 2 blocks and 8 no residential dwellings and is accessed from Scairt Cross, Castletreasure, Douglas, Cork. The site is located on the outskirts of Cork City and is in close proximity to the town of Douglas. The overall development shall provide a mixture of apartments and dwelling units of varying sizes.

## 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
- Technical Guidance Document B Volume 2 Dwelling Houses- Fire (TGD 'B'), published by The Minister for the Environment under Article 7, of the Building Regulations
- 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 and 1(a), Dwelling house with no storey with a level which is more than 4.5m above ground level, as per Table 0.1 TGD 'B', Classification of Buildings by purpose group. Therefore, the design for horizontal and vertical escape for the apartments shall be assessed under BS 5588-1:1990 - Fire Precautions in the Design, Construction and use of Buildings Part 1: Code of practice for residential buildings.

## **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 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 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 1m<sup>2</sup> 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

#### Purpose Group

The dwellings shall be classified as Purpose Group 1(a), Dwelling house with no storey with a level which is more than 4.5m above ground level, as per Table 0.1 TGD 'B', Classification of Buildings by purpose group.

#### Dwelling Houses

The dwellings shall fall under purpose group 1(a) and shall comply with the following:

- a) Any habitable room which is an inner room will be provided with a window for escape or rescue in accordance with 1.5.6 of TGD'B'
- b) The stairway serving upper stories shall be enclosed with storey height construction and shall discharge directly to the open air.
- c) A fire detection and alarm system type Grade D, LD2 will be installed in the units in accordance with section 1.3.6 of TGD'B'.
- d) The provisions of section 1.3.7 of TGDB shall be complied with
- e) The provisions of section 1.3.9 of TGD'B' shall be complied with.

An automatic fire detection & alarm system type LD2 is proposed for the individual dwellings. The fire alarm shall be designed and installed in accordance with I.S. 3218: 2013 + A1:2019 Code of Practice for Fire Detection and Alarm Systems. The system shall consist of mains powered smoke and heat detectors with battery backup located in the escape routes and all high-risk areas e.g. kitchen/living room and all bedrooms. These alarms shall be interconnected so that detection of a fire of one of the detectors shall provide an audible alarm from each detector.

Where windows are required for escape or rescue, they will comply with the following:

- (a) The window will have an openable section which will provide an unobstructed clear open area of at least 0.33 m<sup>2</sup> with a minimum width and height of 450mm.
- (b) The bottom of the window opening will be not more than 1100mm and not less than 800mm above the floor immediately inside the window.
- (c) There are no dormer windows or rooflights proposed so this section will not apply.
- (d) The area beneath the window externally will be such to make escape or rescue practicable. The ground below the windows will be suitable to support a ladder safely and will be accessible to the fire service.
- (e) The opening section will be secured by means of fastenings which are readily openable from the inside and will be fitted with safety restrictors. No lockable handles or restrictors will be fitted to escape windows.

Heating to the dwellings shall be provided by way of heat pumps located at ground floor level in the rear gardens. Refrigerant gas pipes shall be ducted to the internal heat pump unit which will supply hot water to radiators, underfloor heating and hot water storage cylinders.

Proposed Electrical installations shall comply with I.S. 10101:2020 "National Rules for Electrical Installations".

## **Compartmentation**

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

## **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.

## **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 Scairt Cross 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.