DOSA

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CONSULTING ENGINEERS

RESIDENTIAL DEVELOPMENT IN BALLINCOLLIG, CORK

RESPONSE TO B.3.4

DATE 03/09/2024

REVISION 0

JOB NO. 6767

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DOCUMENT CONTROL

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Contents

1 Introduction

Denis O'Sullivan & Associates have been engaged as Consulting Engineers for the proposed development in Ballincollig, Cork.

This response is to the requirements issued by Cork City Council in relation to the provision of Social Housing. The following paragraphs specifically address subsection B3.4, technical proposals to deal with how the current Building Regulations and NZEB requirements will be complied with. Include a report from a Fire Safety Consultant demonstrating how the proposed scheme complies with any relevant requirements in relation to fire safety, for example, access for fire appliances.

2 Proposed Development

The proposed development consists of the construction of 56 residential units within the vacant green field site at Ballincollig Cork The overall development consists of 1no. 4 bed townhouse, 17no. 3 bed townhouses, 7no. 3 bed DUPLEX units, 12no. 2 bed DUPLEX units, 7no. 2 bed apartment units and 12no. 1 bed apartment units.

Access to the site will be from the north and east from the existing Innishmore Lawn Road.

3 Building Regulations

The Irish Building Regulations will apply in full to the proposed development as listed in the table below:

Building Control Regulations 1997-2018
Part A –Structure - 2012
Part B – Fire Safety 2006 (reprint 2020) Part B – Fire Safety - Volume 2 – Dwelling Houses - 2017
Part C – Site preparation and resistance to moisture – 1997 (amended 2020)
Part D – Materials and workmanship - 2013
Part E – Sound - 2014
Part F –Ventilation - 2019
Part G – Hygiene - 2008
Part H – Drainage and wastewater disposal - 2010
Part J – Heat producing appliances - 2014
Part K – Stairways, ladders, ramps and guards -2014
Part L – Conservation of Fuel and Energy – Dwellings - 2021
Part M – Access and Use - 2010

For products or systems that do not fall within the scope of existing standards, or deviate from established norms, third party certification should be used to demonstrate compliance with the Irish Building Regulations.

The Contractor shall comply with all relevant & applicable EN Standards & Codes of Practice. Irish Standards and British Standards (or equivalent) are applicable where no equivalent EN standard exists.

All Local Authority Codes of Practice are applicable, along with all statutory regulations appropriate to the provision of Housing shall apply.

All Codes of practice, standards, and requirements of the statutory service providers (ESB, GBN, Irish Water, Cork City Council, Eir, etc.) are applicable in full to the development

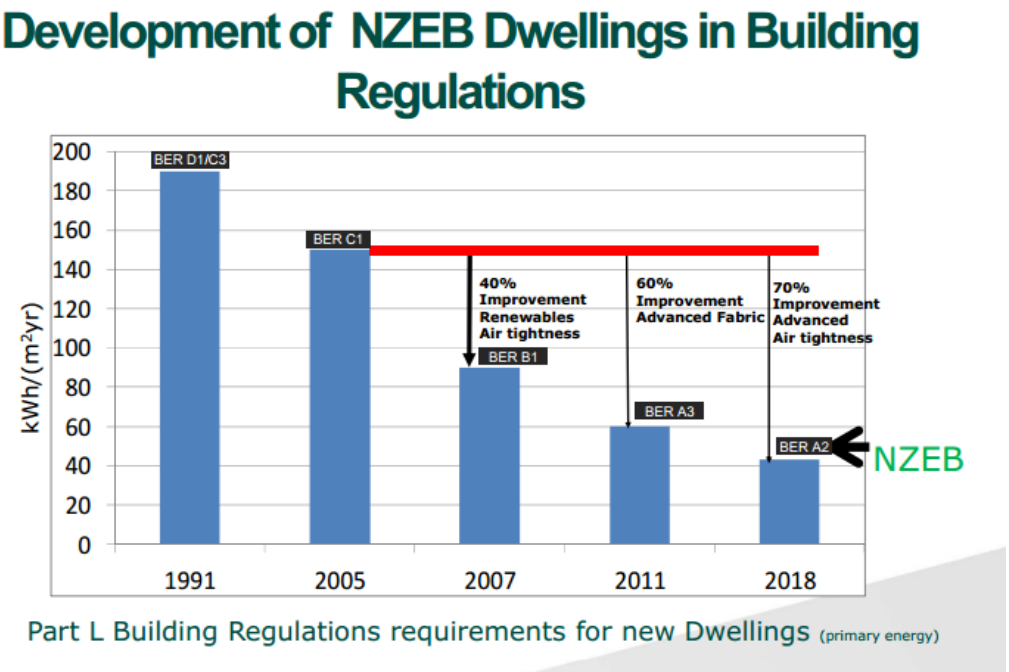
4 Conservation of Fuel & Energy

4.1 NZEB Definition

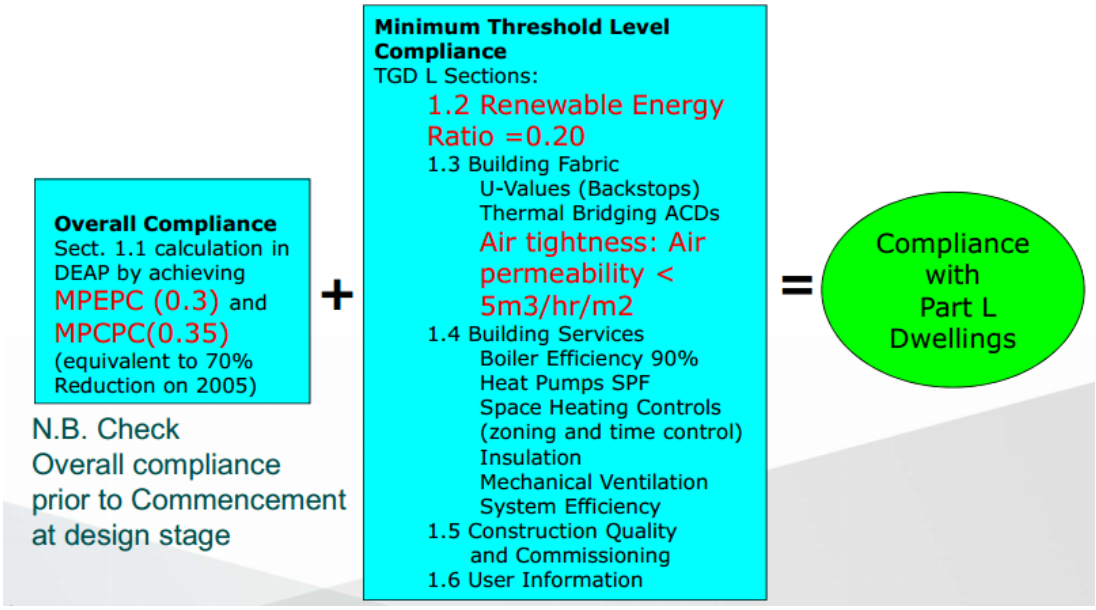
The definition for Nearly Zero Energy Buildings in the Energy performance in Buildings Directive (EPBD) is "a very high energy performance, as determined in accordance with Annex 1, The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby".

Ireland carried out a cost optimal analysis in 2013 to define NZEB requirements. Part L of the Building Regulations defines the requirements in legislation.

For all new builds, its proposed that NZEB will be equivalent to a 25% improvement in energy performance on the 2011 Building Regulations. The key determination for NZEB compliance in Technical Guidance Document L requires a Maximum Energy Performance Coefficient of 0.3, a Maximum Carbon Performance of 0.35 and a renewable Energy Ratio of 20%.



4.2 Achieving Compliance with TDG L Dwellings 2019



4.3 DEAP Analysis

The Building Energy Rating has been calculated by Denis O'Sullivan & Associates (DOSA) and a summary of same is included in Appendix A. All unit types shall meet NZEB Compliance.

4.4 Dwelling Specification

The detailed specification is contained on the DEAP output for the various unit types in Appendix A. The typical insulation specification affecting BER rating incorporated into the various unit types is as follows

Element	Specification
Ground Floor	120mm Insulation with a minimum Thermal Conductivity of 0.022W/mK
Walls	72.5mm Insulated plasterboard (60mm insulation) with a minimum Thermal Conductivity of 0.022W/mK & 110mm full fill cavity insulation with a minimum Thermal Conductivity of 0.035W/mK
Flat Roof	150mm Insulation with a minimum Thermal Conductivity of 0.022W/mK
Pitched Roof	150mm Insulation between the joists and 150mm Insulation above with a minimum Thermal Conductivity of 0.044W/mK

All other elements of design are contained within the individual unit reports in Appendix A

5 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.

5.1 Design Criteria

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

- → 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
- → 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 5306: Part 1: 2006 Code of practice for fire extinguishing installations and equipment on premises. Hose reels and foam inlets.

5.2 Assessment Summary

Building Classification

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.

The Apartments / duplexs will all have direct access from the ground floor via protected corridors and stairwells where required. All habitable rooms will have windows considered to be sized for escape purposes.

Technical Guidance Document 'B' 2006

SECTION B1 – MEANS OF ESCAPE IN CASE OF FIRE

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 is to 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^2 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.

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 buildings shall be in accordance with TGD 'B'.

Fire appliances have access to the development from Innishmore Road via the existing road. Fire appliances shall 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.