Residential Development

Courtstown, Little Island LRD

Energy Statement (Apartments | Creche | Commercial)

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1. SUMMARY

This energy statement outlines the proposed energy conservation strategy for the proposed residential development at Courtstown, Little Island for Ruden Homes Ltd.
This statement is in relation to Multi Unit Developments only (Apartment Block)

A review of the current Irish Building Regulations for Conservation of Fuel and Energy for Dwellings, (Part L 2019) has been undertaken.

By adopting a sustainable approach in design, construction and operation, the proposed new development at Courtstown aims to satisfy the requirements of the current national regulations and local planning policy.

The energy statement focuses on energy conservation and energy efficiency, to maximise the overall energy performance of the proposed development.

Passive and active design measures are proposed including high insulation and air tightness standards for the building envelope, and energy-efficient mechanical, electrical and plumbing systems.

2. INTRODUCTION

The proposed development at Courtstown aims to satisfy the local planning requirements and national building regulations.

The proposed passive and active deign measures as outlined below, tackle the key environmental issues: energy conservation and CO2 emissions reduction.

3. ENERGY PERFORMANCE OBJECTIVES

The development has the following energy performance objectives:

- To achieve full compliance with TGD Part L for Dwellings (2019)
- The BER rating achieved will be a minimum of A3 dependent on NZEB.
- To achieve compliance with NZEB.

The objectives for will be met by implementing the energy strategy summarised below.

4. ENERGY STRATEGY FOR THE DEVELOPMENT

4.1. LIMITING OF HEAT LOSS

Best practice fabric U-values and air tightness standards will be implemented to minimise heat flow/loss through the building envelope. Detailed calculations will be undertaken to assist in determining the appropriate envelope build-up, including the type, thickness and location of thermal insulation. The amount, type and location of glazing will be optimised to achieve an optimal balance between daylight quality and heat gains and losses.

4.2. PASSIVE SOLAR SHADING

To ensure that the building does not overheat, particularly in areas where there are higher levels of glazing and internal gains, adequate means of limiting summertime temperatures will be implemented. External shading in the form of window reveals and overhangs, and solar performance glazing will be incorporated into the façade design to assist in the reduction of overheating.

4.3. DIRECT AND PASSIVE SOLAR HEAT GAIN

Sunlight will be used where possible to reduce the need for heating on cold days, such as in winter when the sun cast is lower. This resource will be harnessed by allowing sunlight to enter the buildings to areas with high thermal mass such as exposed concrete.

4.4. NATURAL DAYLIGHT

The design will seek to maximise the use of natural daylight through the development to reduce energy consumption from artificial lighting. This will be achieved through an integrated approach utilising a combination of building form, light wells, glazing systems and day-light responsive control systems.

4.5. SPACE HEATING

Space heating to each apartment will be provided by Exhaust Air (Air Sourced) Heat Pumps and an extent of PV panels (if required) to meet the NZEB requirements.

4.6. MECHANICAL VENTILATION

Mechanical ventilation to each apartment will be provided by Exhaust Air Heat Pumps.

4.7. ARTIFICIAL LIGHTING (INTERIOR & EXTERIOR)

Energy-efficient lighting will be implemented throughout the development to achieve the appropriate light levels, as recommended by CIBSE. The design of lighting systems shall ensure that lighting is only used when required, and that only the specific area where lighting is needed.

4.8. DOMESTIC HOT WATER

Domestic hot water to each apartment will be provided by Exhaust Air Heat Pumps.

4.9. UTILITY METERING SYSTEM

Water and electricity will be metered.

4.10. BUILDING MODELLING AND DYNAMIC SIMULATIONS

Detailed modelling and dynamic simulations will be carried out during the development to inform, optimise, and validate the proposed building designs.

Simulations will be used to perform a detailed analysis on the areas listed below, to determine the suitability and effectiveness of appropriate systems:

- Natural ventilation and overheating risk
- Natural daylight distribution
- Regulatory Compliance Assessments for Part L
- Building energy use
- MEP Plant and Equipment Selections

4.11. RENEWABLE ENERGY REQUIREMENTS

We have considered all the available LZC technologies, as listed below:

- Photo voltaic system for on-site electricity use
- Solar thermal for domestic hot water and/or space heating
- Combined heat and power (CHP) for thermal and electricity generation
- Biomass for space heating and domestic hot water production
- Wind turbines for electricity generation.
- Air Sourced Heat Pumps.

The energy balance for this high-density residential scheme means that Exhaust Air Heat Pumps and PV panels (if required) to meet the NZEB requirements would be the most practical option for meeting compliance with the regulations.