SUSTAINABILITY / ENERGY STATEMENT
FOR
DEVELOPMENT AT
BARRYS FIELD
DOUGLAS
CORK

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1.0 INTRODUCTION

This Energy statement aims to demonstrate how the proposed development at Barrys Field, Douglas, Cork will meet and exceed the current building regulations in relation to Energy consumption, Heating & Ventilation systems.

The relevant Building Regulations are as follows:

TGD Part L 2022 Conservation of Fuel and Energy – Dwellings
TGD Part F 2019 Ventilation

In order to comply with these regulations, a combination of high efficiency building fabric, Heat Pump Heating & Hot water systems, Low energy Lighting and Ventilation systems will be employed.

For the purposes of this report a provisional BER rating was undertaken for a Typical 2 Bed Apartment in order to demonstrate compliance with Part L 2022 and NZEB.

Definition of NZEB:

NEARLY ZERO ENERGY BUILDINGS (NZEBs):

“Nearly Zero – Energy Buildings’ means a building that has a very high energy performance, Annex 1 of the Directive and in which “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“

In order to achieve the acceptable primary energy consumption rate for a nearly zero energy dwelling, the calculated energy performance coefficient (EPC) of the dwelling being assessed should be no greater than the Maximum Permitted Energy Performance Coefficient (MPEPC). The MPEPC for a nearly zero energy dwelling is 0.30.

To demonstrate that an acceptable CO2 emission rate has been achieved for a nearly zero energy dwelling, the calculated carbon performance coefficient (CPC) of the dwelling being assessed should be no greater than the Maximum Permitted Carbon Performance Coefficient (MPCPC). The MPCPC for a nearly zero energy dwelling is 0.35.

Climate Resilience:
By designing, implementing and complying with the building regulations and standards outlined above, the project will deliver a sustainable development which will be capable of providing long term low energy accommodation.

2.0 BUILDING FABRIC

In order to limit heat loss through the building fabric, the Insulation for each plane element in the proposed development will meet or exceed all of the Part L 2022 Maximum elemental U-Values as per Table 1 Column 2 below:

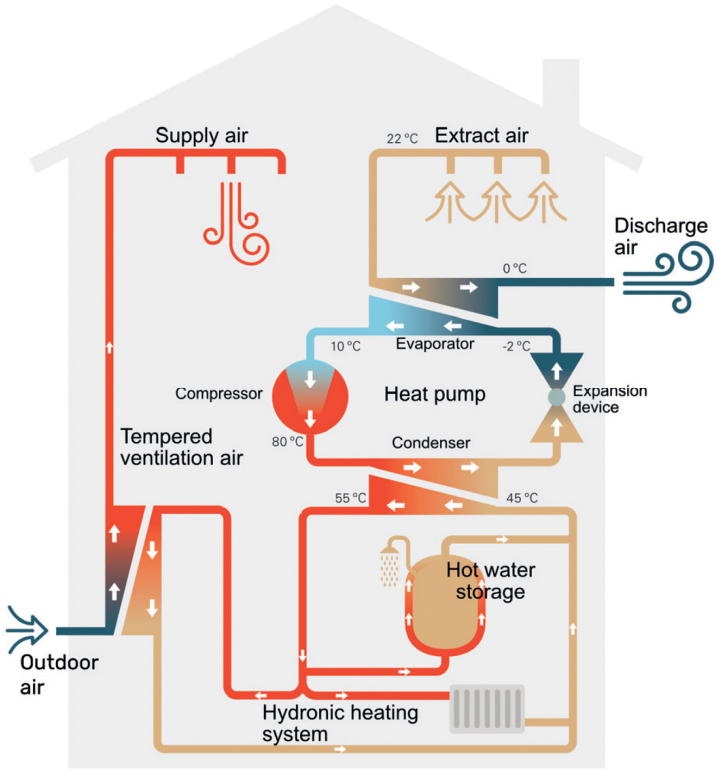
Table 1	**Maximum elemental U-value (W/m^2K)[1, 2]**	
Column 1 Fabric Elements	**Column 2 Area-weighted Average Elemental U-value (Um)**	
Roofs Pitched roof - Insulation at ceiling - Insulation on slope Flat roof	 0.16 0.16 0.20	
Walls	0.18	
Ground floors[3]	0.18	
Other exposed floors	0.18	
External doors, windows and rooflights	1.4[4,5]	

Part L 2022 outlines an upper limit for air permeability of 5 m3/(h.m2) @50pa. The proposed development will perform pressure testing of the units and will target a result of 3 m3/(h.m2) @50pa or less.

3.0 HEATING, HOT WATER & VENTILATION SYSTEMS

Various types of renewable and sustainable heating & ventilation systems have been considered and the feasibility of each has been explored. The systems outlined below represent the most suitable and feasible solution for this project:

The proposed Heating & Hot water system incorporates an Exhaust Air Heat Pump with integrated heat recovery ventilation unit.
Heat Pumps are considered a renewable form of energy and as can be seen in the provisional BER they can account for all of the required renewable contribution for Part L compliance.
The proposed Heat emitters are radiators.
An integrated heat recovery ventilation system system is proposed in each apartment. This system uses a high efficiency heat exchanger to recover energy from extracted air before discharging to atmosphere.



Typical Heating Schematic

4.0 LIGHTING

Low energy LED lighting will be used throughout the development with a minimum of 66.9 Lm/W Lamp efficiency required. Occupancy sensors will be used in all landlord spaces to minimize energy consumption.

5.0 OVERHEATING

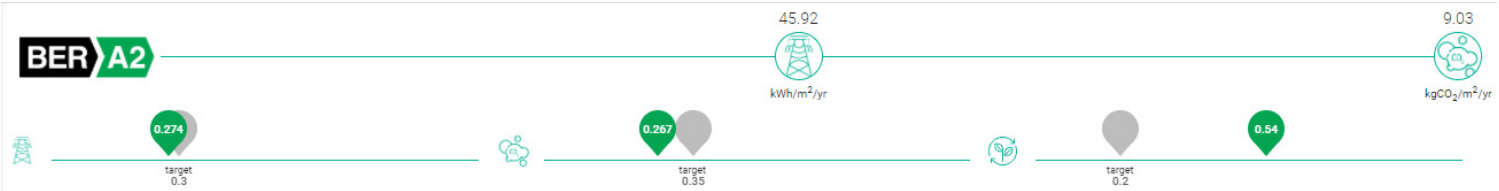
TGD L outlines guidance on the limiting of heat gains to dwellings. This has become an important factor for occupants comfort.
Through the use of DEAP and TM 59 analysis if necessary, dwellings can be assessed for compliance with current and future weather data. This will ensure that the dwellings will remain comfortable for occupants for a long term period.

6.0 BER & PART L COMPLIANCE

In order to assess compliance with Part L 2022 and get the predicted BER rating, a Provisional BER was undertaken for a typical mid floor 2 BED apartment using the input data of the systems outlined above.

The results below show compliance with:

EPC (Energy Performance Coefficient)
CPC (Carbon Performance Coefficient)
RER (Renewable Energy Ratio)



Dwelling Dimensions	Area (m^2)	Average Height (m)
Storey 1	77.33	2.85
Storey 2		
Storey 3		
Other Storeys		
Room In Roof		
Total Dwelling Area	**77.33**	
Living Room Area	31.62	
Living Room %	40.89	

Building Elements	Area (m^2)
Floors	0.00
Roofs	77.30
Walls	33.57
Doors	0.00
Windows	18.45
Total Element Area	**129.32**

Results	Heat Loss (W/K)
Windows	24.460
Plane Elements	44.417
Fabric	63.815
Total Heat Loss	**100.179**
HLI (W/K/m2)	**1.295**
Adjusted Infiltration Rate (ac/h)	**0.227**

7.0 RUNNING COSTS

SEAI Table 2 below outlines the annual running cost of space heating and water heating for various dwelling types relevant to the development. The data used is based on **2014** fuel factors.

In order to get a more current representation the SEAI fuel cost archive was referenced.
Based on 2014 vs 2023 fuel rates an increase of 59% was noted.

Table 2: Indicative annual CO_2 emissions and running costs for different rating bands for space and water heating

Rating	2 Bed Apartment		3 Bed Semi-D		4 Bed Semi-D		Detached House		Large house	
	Area (m^2)	75	Area (m^2)	100	Area (m^2)	150	Area (m^2)	200	Area (m^2)	300
	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)
A1	0.4	€140	0.5	€190	0.8	€280	1.1	€400	1.6	€600
A2	0.8	€280	1.1	€380	1.6	€560	2.2	€800	3.2	€1,100
A3	1	€350	1.4	€470	2	€700	2.7	€900	4.1	€1,400

This table gives estimated annual fuel cost and CO_2 emissions on the basis of typical occupancy and heating the entire dwelling to a comfortable level.

The Tables above are based on fuel and electricity factors from February 2014.

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Ireland's EU Structural Funds Programmes 2007 - 2013
Co-funded by the Irish Government and the European Union

EUROPEAN UNION STRUCTURAL FUNDS

The Sustainable Energy Authority of Ireland is partly financed by Ireland's EU Structural Funds Programme funded by the Irish Government and the European Union.

Table 3 below outlines the Indicative annual running cost of space heating and water heating for an A2 rated dwelling adjusted for October **2023** fuel rates.
An A2 BER is representative of the proposed development dwelling energy ratings.

Rating	2 Bed Apt (75M2)	
	2014 Cost	59% Increase 2023 Cost
A2	€280	€445.2

8.0 ELECTRIC VEHICLES

Electric Vehicles are now providing a low cost and low emission alternative to traditional fossil fuel vehicles.
Electric vehicle charging infrastructure will be installed to all spaces in this development as per section 1.4.6 for TGD L 2022.
In addition to this, Electric Bike charging facilities will be provided in dedicated areas.

9.0 CONCLUSION

In conclusion, the systems proposed above will provide compliance with the building regulations and have a low CO2 emissions impact. They will provide a comfortable environment and low running costs for the occupants.