

**MAYESTON S179A**

**FOR: FINGAL COUNTY COUNCIL**

**CLIMATE ACTION ENERGY STATEMENT**

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<b>Approved:</b>	SHANE BELTON C.Eng MIEI DIRECTOR
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**PROJECT NO.:** 2302

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## 1. INTRODUCTION

This climate action energy statement has been prepared in support of the planning application for the proposed Residential development with creche facility located at Mayeston, Poppintree, Dublin 11. The report outlines how the proposed development will meet or exceed the legislative and planning requirements for energy conservation and sustainability, in accordance with:

- Technical Guidance Document Part L – Conservation of Fuel and Energy for Dwellings
- Fingal Development Plan 2023-2029, Climate Action policy
  - CAP11 Climate Adaptation Actions in the Built Environment (Policy requirements are covered in the Infrastructure Design Report by Downes Associates Ltd.)
  - CAP12 Climate Action Energy Statements
  - CAP13 Energy from Renewable Sources

Our approach to the task of energy conservation for the development is based upon the design philosophy “Be Lean, Be Clean, Be Green” philosophy, which aims to lower the demand for energy, to maximise the efficiency of energy transfer, and to use low-energy technologies.

Key design features for energy and sustainability includes enhanced building fabric insulation and air tightness levels, decentralised exhaust air to water heat pumps providing heating, hot water and ventilation, low energy lighting with occupancy and daylight control where appropriate and supplementary photovoltaics to landlord areas.

The proposed development will comply with the national building regulations for energy conservation and renewable energy requirements. All dwellings will achieve a minimum energy performance rating, (i.e. BER) A2.

The report is structured as follows:

- Legislative and planning requirements
- Energy Strategy Approach
- Energy and carbon reduction measures

## 2. DEVELOPMENT DESCRIPTION

The proposed development relates to a site of c.1.35ha. located within existing residential development referred to as Mayeston, Poppintree, Dublin 11. The site is located north of St Margaret’s Road and is bound by the M50 motorway to the north, Mayeston Green and Silloge Green to the east, Mayeston Downs to the south, and to the west by public open space.

The proposed development will include for the provision of 119 no. apartment units consisting of 39 one-bedroom apartments, 68 no. two-bedroom apartments and 12 no. 3-bedroom apartments ranging from 3-6 no. storeys and will also include for car parking, cycle parking, pedestrian and cycle links, storage, services and plant areas. Landscaping will include for high quality private open space, communal amenity areas and public open space provision.

## 3. LEGISLATIVE AND PLANNING REQUIREMENTS

The proposed scheme is subject to the requirements of national and local planning policy and the strategy is dictated and developed in accordance with these policies.

### 3.1. EU ENERGY POLICY: ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE (EPBD)

The EPBD requires countries to gradually increase energy efficiency requirements for buildings, leading to requirements for near zero energy buildings in 2020. These requirements are introduced in national building codes in the EU countries including Ireland. The Directive was adopted in 2010 and was revised in 2018.

The main elements of the EPBD, Directive 2010/31/EU, are as follows:

- Energy efficiency requirements should be set to cost-optimal levels.
- Energy efficiency requirements shall be gradually increased to reach "near zero energy houses" for all new buildings in 2020 and for public buildings in 2018.
- Countries shall set energy efficiency requirements for technical building systems, such as heating systems, ventilation, windows, and other building envelope parts, condensing boilers, high-efficiency heat pumps, low-energy windows, and energy efficient ventilation.
- With major renovations of buildings, the renovated parts of the building shall be energy efficient, also when renovating small buildings.
- Renewable energy and district heating shall be used when it is cost-effective.
- Buildings shall be certified regarding energy efficiency when sold, and for larger buildings at regular intervals.

### **3.2. IMPLEMENTATION OF THE REVISED EPBD (2018/844/EU)**

Amendments to Part L of the Building Regulations (relating to the conservation of fuel and energy in dwellings) give effect to the *European Union (Energy Performance of Buildings) Regulations 2019*, published on 03 May 2019 (S.I. 183 of 2019). The regulations came into effect on 01 November 2019. The regulations transpose Directive 2010/31/EU of the European Parliament and of the Council on the energy performance of buildings (recast) as amended by Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018.

The Directive sets requirements for Member States to improve the energy performance of buildings and make an important contribution to the reduction of greenhouse gas emissions. A revised Technical Guidance Document, L (Conservation of Fuel and Energy) Dwellings has been published to accompany the Regulations.

The Directive defines a Nearly Zero Energy Building (NZEB) as a building that has a very high energy performance. It states that 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.

Article 9(1) of the Directive requires Member States to ensure that by 31 December 2020, all new buildings are nearly zero energy buildings. Under the previous 2011 regulations, a typical new dwelling is built to an A3 Building Energy Rating (BER). The NZEB requirements will equate to an A2 BER. This represents a 70% improvement in energy efficiency and a 70% reduction in CO<sub>2</sub> emissions compared to 2005. It also introduces 20% renewables as a percentage of the total building energy use.

### **3.3. CURRENT BUILDING REGULATIONS**

The Building Regulations set out requirements for specific aspects of building design and construction. The requirements concerning conservation of fuel and energy are laid out in Technical Guidance Document Part L.

### **3.4. TECHNICAL GUIDANCE DOCUMENT PART L 2022 (DWELLINGS)**

The aim of Part L is to limit the use of fossil fuel energy and related CO<sub>2</sub> emissions arising from the operation of buildings, while ensuring that occupants can achieve adequate levels of lighting and thermal comfort. The key issues to be addressed to ensure compliance are as follows.

1. Limitation of primary energy use and CO<sub>2</sub> emissions
2. Building fabric standards
3. Building services standards
4. The use of renewable energy sources

### 3.4.1. LIMITATION OF PRIMARY ENERGY USE AND CO<sub>2</sub> EMISSIONS

Primary energy use and the associated carbon dioxide emissions are calculated using the Dwelling Energy Assessment Procedure (DEAP) and these parameters must not exceed specified target values.

To achieve compliance with primary energy use rate for NZEB the energy performance coefficient (EPC) of a dwelling must be no greater than the Maximum Permitted Energy Performance Coefficient (MPEPC), which is 0.30.

An acceptable carbon dioxide emissions rate for NZEB is achieved if the calculated carbon performance coefficient (CPC) is no greater than the Maximum Permitted Carbon Performance Coefficient (MPCPC), which is 0.35.

Where a building contains more than one dwelling, every individual dwelling or alternative, the average of the dwellings within the development's Energy and Carbon performance coefficients should not exceed the maximum permitted coefficients.

### 3.4.2. BUILDING FABRIC STANDARDS

Building Regulations Part L outlines the acceptable levels of provisions necessary to ensure that heat loss through the fabric of a building is minimised. The technical document discusses various aspects, including:

- Insulation levels to be achieved by the plane fabric elements.
- Thermal bridging.
- Limitations of air permeability.

The maximum permitted area-weighted U-values in Part L 2022 are as follows:

• Pitched Roof	0.16
• Flat Roof	0.20
• Walls	0.18
• Ground Floors	0.18
• Other Exposed Floors	0.18
• External Personnel Doors, Windows and Rooflights	1.4

The maximum area-weighted U-Values may be relaxed for individual elements where necessary for design or construction reasons, (e.g., dormer cheek) but the maximum elemental U-Values still applies. Additional insulation will be required in the same elements to ensure that the maximum area-weighted averages are met. Heat losses due to thermal bridging are considered in the DEAP calculation and thus in the calculation of the EPC, CPC and RER.

Part L requires an air permeability level no greater than 5m<sup>3</sup>/h/m<sup>2</sup> at 50 Pascals.

### 3.4.3. BUILDING SERVICES STANDARDS

Part L sets out minimum requirements for space heating, water heating, and ventilation services and associated controls in new dwellings.

## 3.5. RENEWABLE ENERGY TECHNOLOGIES

New dwellings are required to install renewable energy systems to comply with the Renewable Energy Provision. Renewable energy technologies are solar thermal systems, solar photovoltaic systems, biomass systems, biofuel systems, heat pumps, wind power generators and other similar small-scale systems.

Where the EPC ≤ 0.30 and the CPC ≤ 0.35 the ratio of primary energy from renewable energy technologies to total primary energy use (known as the Renewable Energy Ratio, or RER) should be at least 0.20. An RER of 0.2 represents a 'significant level of energy provision from renewable energy technologies' in NZEB.

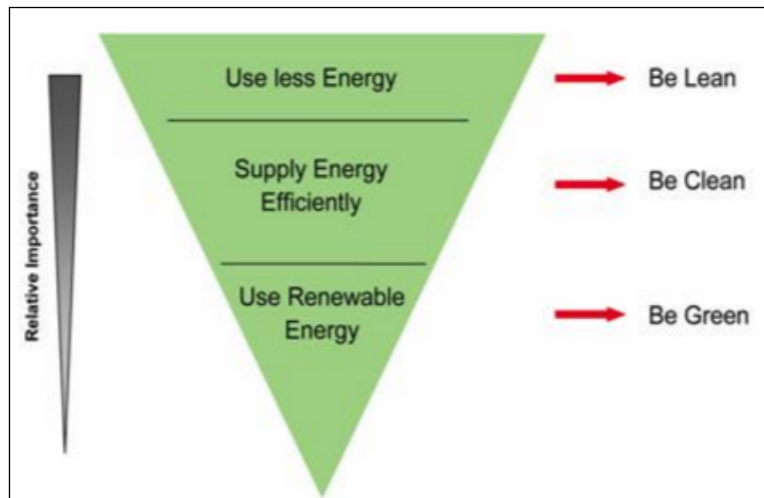
#### 4. ENERGY STRATEGY APPROACH

The energy strategy for the development has been established by using the hierarchy of design considerations for reducing energy use.

The first step in the energy hierarchy is 'Be Lean', which looks to achieve high levels of energy performance through the design of the building fabric.

The second stage is 'Be Clean', which involves investigation of alternative energy supply and energy efficient building services systems.

The third stage is 'Be Green', which looks at the integration of low and zero carbon technologies as a means of further reducing emissions associated with the development. This approach is illustrated in the following diagram:



## 5. ENERGY AND CARBON REDUCTION MEASURES

### 5.1. CAP11 COMPLIANCE

The following NZEB technologies have been considered for this development, as listed below and which can be referenced to the requirements of CAP11:

- Decentralized Exhaust Air to Water heat pumps for space heating, domestic hot water and extract ventilation as per CAP11 parts b + e.
- Decentralized split air to water heat pump providing heating and domestic hot water with a separate ventilation system as per CAP11 parts b + e.
- Decentralized mono-bloc air to water heat pump providing heating and domestic hot water with a separate ventilation system as per CAP11 parts b + e.
- Photo voltaic system for on-site electricity use as per CAP11 e.
- Solar thermal for domestic hot water and/or space heating as per CAP11 part b + e.
- Mechanical ventilation with heat recovery as per CAP11 parts b + e.
- Continuous mechanical extract ventilation as per CAP11 part b.
- Natural ventilation with intermittent extract as per CAP11 parts b, d + e.

The energy balance for this mixed-use scheme means that a decentralised heat pump scheme with supplementary photovoltaic would be the most practical option for meeting the renewable energy requirements.

### 5.2. TGD PART L SPECIFICATION

The Part L and BER specification was detailed and developed in the Energy Analysis Report for both the domestic units and non-domestic landlord area. An excerpt of the TGD Part L specification is outlined below in table 1. (following page)

**Table 1: TDG Part L Specification**

Requirements	Domestic		Non-Domestic	
	Proposed development	Part L 2022 Reference	Proposed development	Part L 2022 Reference
<b>Building Envelope U-values (W/m<sup>2</sup>K)</b>				
Flat Roof	0.15	0.20	0.15	0.20
Above-Grade Wall	0.15	0.18	0.15	0.21
Ground-Contact Floor	0.15	0.18	0.15	0.21
Exposed Floor (where applicable)	0.15	0.18	0.15	0.21
Window/Curtainwall (glazing + frame)	1.2	1.4	1.4	1.6
Rooflight (glazing + frame)	-	1.4	-	1.6
External Door	1.2	1.4	1.4	1.6
<b>Air Leakage</b>				
Air-Leakage Rate (m <sup>3</sup> /hr. m <sup>2</sup> @ 50 Pa)	3	5	3	5
<b>Thermal Bridging</b>				
Y Value Target (ACDs)	<b>ACDs 2022 Part L</b>			
<b>Electrical</b>				
Lamp Type	LED	-	LED	-
<b>Mechanical</b>				
Space Heating System	EAHP	-	Elec Radiators	-
Space Cooling System	NA	-	NA	-
Domestic Hot Water System	From space heating source	-	-	-
<b>Renewables</b>				
Solar PV	No requirement	-	Solar PV to meet Part L compliance	-
<b>Part L NZEB Compliance/Building Energy Rating</b>				
EPC	Compliant	-	Compliant	-
CPC	Compliant	-	Compliant	-
RER	Compliant (met by EAHP)	-	Compliant	-
Part L Compliance	Yes	-	Yes	-
BER	A2	-	A3	-



### 5.3. PROPOSED PERFORMANCE

DEAP calculation for the domestic units based on the latest architectural, mechanical and electrical information for the residential units will be carried out at the next stage of the design.

NEAP calculation for the non-domestic areas based on the latest architectural, mechanical and electrical information for the landlord areas will be carried out at the next stage of the design.

The headings are specified as follows:

- EPC: Energy Performance Coefficient
- CPC: Carbon Performance Coefficient
- RER: Renewable Energy Ratio
- BER: Building Energy Rating

#### Domestic Apartment Units

Unit Type	Floor	Need to Comply with Part L 2022 (NZEB)			Need to Comply with Part L (Y/N)	BER to Achieve
		EPC	CPC	RER		
1 Bedroom Residential Unit	Ground Floor Unit	Y	Y	Y	Y	A2
	Middle Floor Unit	Y	Y	Y	Y	A2
	Top Floor Unit	Y	Y	Y	Y	A2
2 Bedroom Residential Unit	Ground Floor Unit	Y	Y	Y	Y	A2
	Middle Floor Unit	Y	Y	Y	Y	A2
	Top Floor Unit	Y	Y	Y	Y	A2
3 Bedroom Residential Unit	Ground Floor Unit	Y	Y	Y	Y	A2
	Middle Floor Unit	Y	Y	Y	Y	A2
	Top Floor Unit	Y	Y	Y	Y	A2

#### Non-domestic Landlord Area

Assessed Area	Need to Comply with Part L 2022 (NZEB)			Need to Comply with Part L (Y/N)
	EPC	CPC	RER	
Landlord Area	Y	Y	Y	Y

The proposed Mayeston Residential development will achieve TGD Part L 2022 compliance and A2 BER for residential units and achieved TGD Part L 2022 compliance for the landlord area. DEAP and NEAP calculations will be carried out at the next stage of the design.