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Residential Development Phase 1D, Athlumney, Navan, Co. Meath Energy Efficiency and Climate Change Adaptation Design Statement





**Residential Development Phase 1D, Athlumney, Navan, Co. Meath
Energy Efficiency and Climate Change Adaptation Design Statement**

Document Control Sheet

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Table of Contents

Introduction	2
1 Energy Efficiency and Climate Change Adaption Strategy	4
2 Implementation of Strategy	6
2.1 Building Elements-Dwellings	6
2.1.1 Building Fabric	6
2.1.2 Thermal Bridging	6
2.2 Building Services Strategy	6
2.2.1 Space Heating System	7
2.2.2 Hot Water System	7
2.2.3 Ventilation Strategy	7
2.2.4 Artificial Lighting	7
2.2.5 Building Operation & Control	7
2.2.6 Electric Vehicle Recharging Infrastructure	7
2.2.7 Renewable Energy Strategy	7
3 Disclaimer	8

Introduction

ORS has been appointed by Albert Developments Ltd to prepare an Energy Efficiency and Climate Change Adaptation Design Statement as part of the planning application for a proposed Residential Development at the Athlumney site in Navan, Co. Meath. This report provides comments on the main aspects of sustainability and energy which the developer plans to achieve within the development.

The proposed development consists of:

- Construction of a residential development of 83 no. residential units comprising 22 no. 3-bedroom, 2-storey semi-detached houses, 21 no. 3-bedroom, 2-storey terraced houses, 20 no. 3-bedroom, 3-storey terraced houses, 6 no. 2-bedroom, 2-storey semi-detached houses and 14 no. 2-bedroom, 2-storey houses on a site of c.6.14 hectares.
- Vehicle access via the roundabout on the Boyne Village Business Park Road, internal access road, and 166 no. vehicular parking spaces.
- A proposed 0.02 hectares of public open space (10% of residential zoned lands) along with additional F zoned lands.

The strategy to sustainable design at the Athlumney development will be to use robust, passive, cost effective measures to create a more efficient and healthier environment within the planned units. The development provides an opportunity to create environmentally sound and energy efficient homes by using an integrated approach to design, planning, construction and operation.

The development is being designed to achieve compliance with Technical Guidance Document-Part L and an 'A Rating' BER (Building Energy Rating) for the units on the development.



Figure 1: Proposed Site Plan, Athlumney Development.
Source: Cunnane Stratton Reynold Land Planning and Design

1 Energy Efficiency and Climate Change Adaption Strategy

Incorporating the vision for the 'Energy Efficiency and Climate Change Adaptation' and sustainable solutions into the project deliverables has pushed the Client and Design Team to commit to sustainable design at an early stage, ensuring a 'best in class' development.

This approach aims to ensure that the development adheres to the principles of the Government's 'National Climate Change Policy' and that it exceeds the requirements of Building Regulations Part L, maximising the reduction in Carbon Dioxide (CO₂) emissions and demonstrating the Client's commitment to Climate Change and displaying this at the proposed site.

At the core of the design strategies three key elements have been incorporated into the design namely;

- The dwelling units will be designed to be compliant with the Part L/NZEB standard in relation to new dwellings with due regard to the Department of the Environment, Climate and Communications 'Towards nearly Zero Energy Building in Ireland - Planning for 2020 and Beyond' document.
- The requirements of the current Building Regulations Part L –Conservation of Fuel and Energy-Dwellings (2022) in relation to new dwellings, and any other supplementary or superseding Regulations or guidance documents.
- The achievement of 'A Rated' BER's for the dwelling units.

The sustainable strategy will seek to incorporate appropriate and effective economic and environmental measures. In this respect, consideration will be given to the following:

- Using the principles of Energy Efficient Design (EED) to reduce energy consumption during the building's operational phase. The use of EED principles in the selection of equipment, including the use of 'Triple E' registered products from the SEAI database.

The design will incorporate energy efficiency across all elements of the project from;

- Construction – Use of the principles of considerate construction to monitor and control energy, water, etc. use on site during the project.
- Commissioning - Baseline the energy and water consumption to set the appropriate targets for the operational phase using the extensive metering/ controls equipment designed to meet the principals of CIBSE TM 39.
- Building Energy Metering. Use of a Commissioning Manager to co-ordinate and ensure that all the energy related systems are installed and operate as per design.
- Operation – Confirmation that the principles of EED have been met.
- Maximising the use of passive design measures such as the building façade to take advantage of the site constraints/orientation, use of enhanced fabric u-values in excess of

TGD Part L 2022 where possible.

- Ensuring natural daylight characteristics that fulfil BRE and CIBSE recommendations are being targeted. Good natural daylight creates a positive living environment and contributes to the well-being of the occupants. The provision of good glazing on the elevations will maximize the use of natural daylight that will enhance the visual comfort of the building occupants. The installation of high-performance glazing will ensure that the buildings' thermal efficiency is not compromised, while allowing the building occupants to benefit from the glazed views.
- Extend the sustainable approach from the buildings to the site throughout the construction and handover process.
- Reduce Reuse and Recycle throughout the design, construction, and operational phases of the development to ensure that the project maximises the recycling and reuse of materials while reducing the quantum of waste diverted to landfill.
- Use of energy efficient M&E systems and plant- HVAC, LED Lighting, Triple E registered products, etc. that minimises the consumption of energy.
- Use of renewable technologies such as PV Panels or Heat Pumps based on optimum technical and economic considerations which will off-set Primary Energy consumption and reduce the carbon footprint of the buildings during operation stage.
- An integrated Water Management and Conservation Plan that incorporates the use of low water consumption equipment to ensure the minimal use of potable water, efficient sanitary appliances (e.g., low water WC cisterns & taps).
- Installation of ducting infrastructure (consisting of conduits for electric cables) for every car parking space within the curtilage of each building to enable the subsequent installation of recharging points for electric vehicles.
- Whole life cycle approach to the selection of materials used in the building with specific regard to the impact on the carbon footprint.
- During design and construction phases, using the environmental assessment methodologies principles to ensure that the building is developed holistically.

2 Implementation of Strategy

2.1 Building Elements-Dwellings

Below is the implementation strategy being proposed for the dwellings in the proposed development. No design works have been completed at this stage of the project and the below is subject to variations in order to achieve compliance with TGD Part L 2022-Dwellings.

2.1.1 Building Fabric

In order to limit the heat loss through the building fabric of the proposed dwellings, the thermal insulation for each of the plane elements of the development will meet or better the area weighted average elemental U-values (U_m) as specified in Table 1 Column 2 of TGD Part L 2022.

Table 1 below from TGD Part L 2022 lists the maximum element U-values for each of the fabric elements in relation to the proposed dwellings in the Athlumney Development.

Maximum Elemental U-value (W/m ² K)		
Fabric Elements	Area Weighted Average Elemental U-Value	Average Elemental U-Value Individual Element or Section of Element
Pitched roof-Insulation at ceiling/slope	0.16	0.3
Flat roof	0.20	0.3
Walls	0.18	0.6
Ground floor	0.18	0.6
Other exposed floors	0.18	0.6
External personnel doors	1.4	3.0
Windows and rooflights	1.4	3.0

Table 1: Part L-Dwellings 2022-Maximum Elemental U-value (W/m²K)

2.1.2 Thermal Bridging

To avoid excessive heat losses and local condensation problems, reasonable care will be taken to ensure continuity of insulation and to limit local thermal bridging at key junctions within the building elements (e.g. windows and door openings). Acceptable Construction Details or other certified details for all key junctions will be followed.

2.2 Building Services Strategy

The following section of this report provides an outline of the building services strategy for the proposed dwelling units relative to achieving and exceeding TGD Part L 2022/NZEB requirements.

2.2.1 Space Heating System

The proposed space heating system will be decided by the design team. Any system will have high efficiency emitters throughout the building and have adequate time & temperature controls in place to reduce heating requirements.

2.2.2 Hot Water System

The proposed hot water system will be decided by the design team. Any system proposed will be high efficiency and have adequate time & temperature controls in place. Any hot water storage within the units will be stored in highly insulated cylinders to reduce heat loss and in turn heating requirements.

Water conservation methods such flow restrictors on taps and shower heads will be used to limit water consumption by the occupants and create awareness of water conservation.

2.2.3 Ventilation Strategy

The proposed ventilation strategy will be decided by the design team. Any systems proposed will be highly energy efficient to reduce energy consumption during operational stage.

2.2.4 Artificial Lighting

High efficiency LED lighting fixtures will be installed throughout ensuring minimum energy consumption during operational stage.

2.2.5 Building Operation & Control

As part of the handover of the project, the occupants will be provided with sufficient information about the building, the fixed building services and how they work so that the building can be operated in such a manner as to use no more energy than is reasonable in the circumstances.

This shall be achieved by providing a suitable set of operating instructions and controls aimed at achieving conservation in the use of energy in a way that the building occupants can easily understand, and management can monitor.

2.2.6 Electric Vehicle Recharging Infrastructure

The installation of ducting infrastructure (consisting of conduits for electric cables) will be provided for every car parking space within the curtilage of each house site (1 per house) to enable the subsequent installation of recharging points for electric vehicles.

2.2.7 Renewable Energy Strategy

Under TGD Part L 2022, for new dwellings there is a requirement for a proportion of onsite energy demand to be met by renewable energy technology. This has to be a minimum of 20% of the operational energy produced by the dwelling. It is proposed to achieve this using technology such as a solar photovoltaic (PV) system on the roof of the proposed dwellings or install a high efficiency heat pump system during construction stage. The objective of this proposal is to offset the maximum amount of operational energy requirements for the building using renewable energy generated onsite.

Photovoltaics generate electricity using solar energy from the sun, providing a completely renewable, clean source of electrical energy. While a heat pump system provides high efficiency hot water and space heating to the dwelling using a lower amount of electricity.

3 Disclaimer

The intent of this energy statement is to accurately describe the requirements the development needs in order to meet Building Regulations Technical Guidance Document- Part L 2022 and establish solutions for minimising the buildings energy consumption impact.

However, this report is not intended to serve as a detailed engineering design document, as the description of the works is diagrammatic in nature only to document the basis of energy savings. It should be noted that detailed design efforts will be required to implement several of the works evaluated as part of this energy statement.

While the recommendations in this report have been reviewed for technical accuracy and are believed to be reasonable and accurate, the findings are estimates and actual results may vary. As a result, ORS are not liable if projected estimated savings or economics are not actually achieved. All savings and cost estimates in the report are for information purposes and are not to be construed as a design document or as guarantees.

In no event, will ORS be liable for the failure of the customer to achieve a specified amount of energy savings, the operation of customer's facilities, or any incidental or consequential damages of any kind in connection with this report of the installation of recommended measures.



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