

Sustainability Report - Planning Stage

For

Development at 1448 McAuley Place 2 ,

at

Beaufort, Sallins Road, Naas.

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1. Executive Summary for Development of 1448 McAuley Place 2

Sustainability and Energy Efficiency Considerations:

From the outset of the design process, an integrated approach has been adopted involving all members of the design team with a strong focus and a holistic approach to sustainable design. Our goal has been to deliver a building that is designed in an environmentally sensitive manner while meeting the required comfort conditions of the occupiers. It is the intention of the team that this approach will be continued through the detailed design process to ensure the targets identified in this report are achieved.

Our aim is to provide an NZEB development in full compliance with Building Regulations Part L 2022 by utilizing the following:

1. Superior U values to be achieved for glazing and facades for enhanced insulating and solar performance.
2. Superior U values to be achieved on all building fabric aspects.
3. Air tightness of construction will be in compliance with CIBSE TM23 to achieve the required standard or better.
4. Use of renewable resources will be utilized.
5. Air source heat pumps will be used to provide both domestic hot water and space heating.
6. Mechanical Heat recovery Ventilation will be used in dwellings.
7. Energy will be controlled, metered, and monitored by use of intelligent controls.
8. Low energy lighting with presence detection will be utilized in Landlord areas.
9. Motors will include variable speed drive arrangements.

2. Introduction:

The development comprises the construction of a residential development for older persons located at 13 & 18 Sallins Road, Beaufort Cottage and Beaufort, Sallins Road, Naas West, Naas, Co. Kildare.

Beaufort (house) is proposed to be retained and repurposed to facilitate a community room for the proposed residents and the demolition of the non-original fabric alterations and additions is proposed. Demolition of the three existing terraced cottages fronting Sallins Road is proposed.

The residential development will provide 44 no. 1 and 2-bedroom units across 3 interconnecting 4 storey blocks on a 0.48ha site. The development will also include a single storey rear garden pavilion, a single storey plant room, associated communal and public open spaces and 4 surface car parking spaces. Additional car parking (20 spaces) will be made available within the existing town centre car park located opposite the site. A pedestrian crossing is proposed at the front of the site, across Sallins Road.

Vehicular access is proposed from Sallins Road via a right of way from Father Murphy's Terrace along the southern boundary. A bridge is proposed across the Mill Lane stream connecting the rear of the site with the Luisne Gardens public open space.



Building Regulations Part L 2022 (Nearly Zero Energy Buildings)

The Building Regulations Part L 2022, Conservation of Fuel & Energy for buildings – Dwellings, will set out the parameters for residential building design and related energy performance and will be applied or improved upon for the McAuley Place development.

The 2022 Part L Regulations set energy performance requirements to achieve Nearly Zero Energy Buildings (NZEB) performance as required by Article 4 (1) of the Directive for new buildings, as follows:

We are targeting to achieve an **A2 BER** result for the development.

“A building shall be designed and constructed so as to ensure that the energy performance of the building is such as to limit the amount of energy required for the operation of the building and the amount of Carbon Dioxide (CO₂) emissions associated with this energy use insofar as is reasonably practicable”.

The primary requirements of Part L 2022 are stated as follows:

- Application of a methodology for the calculation of the energy performance of buildings on the basis of a general framework set out in Annex I to the EPBD (recast).
- Setting of minimum energy performance requirements for buildings and the application of these requirements to new buildings to achieve Nearly Zero Energy Buildings;
- Ensuring where buildings undergo major renovation that the renovated systems- and components meet minimum thermal performance requirements in so far as this is technically, functionally and economically feasible.
- Ensuring that when a building element that forms part of the building envelope and has a significant impact on the energy performance of the building envelope, is retrofitted or replaced the energy performance of the building element meets minimum energy performance requirements in so far as this is technically, functionally, and economically feasible.

In order to comply with Part L 2022, the development must meet the following requirements (Regulation 8).

For new dwellings, the nearly zero energy performance requirements of this regulation shall be met by the following requirements and this sustainability report is a summary of how compliance will be achieved.

- a) providing that the energy performance of the building is such as to limit the calculated primary energy consumption and related Carbon Dioxide (CO₂) emissions to a Nearly Zero Energy Building level insofar as is reasonably practicable, when both energy consumption and Carbon Dioxide emissions are calculated using the Domestic Energy Assessment Procedure (DEAP) published by Sustainable Energy Authority of Ireland.
- b) providing that, the nearly zero or very low amount of energy required is covered to a very significant extent by energy from renewable sources produced on-site or nearby.
- c) limiting the heat loss and, where appropriate, availing of the heat gains through the

fabric of the building.

- d) providing and commissioning energy efficient and water heating systems with efficient heat sources and effective controls
- e) providing that all oil and gas fired boilers shall meet a minimum seasonal efficiency of 90%.
- f) providing to the dwelling owner sufficient information about the building, the fixed building services, controls, and their maintenance requirements so that the building can be operated in such a manner as to use no more fuel and energy than is reasonable.

Items (a), (b), and (c) above relate to the performance of the building form and fabric while items (d), (e) and (f), relate to the services provided within the building and their efficient operation.

This report sets out sustainable technologies which are proposed to be incorporated into the building specification of the proposed development in keeping with the Kildare County Council County Development Plan and to comply with the new Part L 2022 regulations.

The Dwelling Energy Assessment Procedure (DEAP) published by Sustainable Energy Authority of Ireland will be used to demonstrate compliance with the requirements in relation to primary energy consumption and CO₂ emissions. This is found on the SEAI website and describes the DEAP methodology. The calculation is based on the energy balance taking into account a range of factors that contribute to annual energy usage and associated CO₂ emissions for the provision of space heating, water heating, ventilation and lighting of dwellings.

The DEAP framework takes account of: Whole dwelling performance.

2.1 Application of the Regulations

General

The aim of Part L of the Second Schedule to the Building Regulations is to limit the use of fossil fuel energy and related carbon dioxide (CO₂) emissions arising from the operation of buildings, while ensuring that occupants can achieve adequate levels of lighting and thermal comfort. Buildings should be designed and constructed to achieve this aim as far as is practicable.

The guidance in this document applies to works to dwellings only. Guidance for buildings other than dwellings can be found in a separate Technical Guidance Document L - Buildings other than dwellings

New dwellings

For new dwellings, the key issues to be addressed in order to ensure compliance are: -

Whole dwelling performance

- a) Primary energy consumption and related CO₂ emissions: providing that the calculated primary energy consumption associated with the operation of the dwelling and the related CO₂ emissions when calculated using the Dwelling Energy Assessment Procedure (DEAP) published by the Sustainable Energy Authority of Ireland, as described in Section 1.1, do not exceed a target value specified in this document;

Individual minimum performance levels

The performance levels specified for items (b) to (i) below are in the nature of backstop minimum performance levels so as to ensure reasonable levels of performance for all factors affecting energy use, irrespective of the measures incorporated to achieve compliance with Regulation 8 (a).

Meeting the performance levels specified for items (b) to (j) will not necessarily mean that the level specified for primary energy consumption and related CO₂ emissions [item (a)] will be met. One or more of the performance levels specified, for items (b) to (i), will need to be exceeded to achieve this.

- a) Use of renewable energy sources: providing that the contribution of low or zero carbon energy sources to the calculated primary energy requirement meets the target for such contribution as set down in Section 1.2;
- b) Fabric insulation: providing for fabric insulation, including the limitation of thermal bridging, which satisfies the guidance in this regard as set out in Section 1.3 (sub-sections 1.3.2 to 1.3.3);
- c) Air tightness: limiting air infiltration as set out in sub-section 1.3.4;
- d) Heat generator: providing an efficient heat generator as set out in sub-section 1.4.2;
- e) Building Services Controls: controlling, as appropriate, the demand for, and output of, space heating and hot water services provided, as set out in sub-section 1.4.3;

- f) Insulation of pipes, ducts and vessels: limiting the heat loss from pipes, ducts and vessels used for the transport or storage of heated water or air, as set out in sub-section 1.4.4;
- g) Mechanical Ventilation Systems: providing that, where a mechanical ventilation system is installed, the system meets reasonable performance levels, as set out in sub-section 1.4.5;
- h) Performance of completed dwelling: ensure design and construction process are such that the completed building satisfies compliance targets and design intent. Guidance is given in Section 1.5;
- i) Performance of completed dwelling: ensuring that the design and construction processes are such that the completed building satisfies compliance targets and design intent. Guidance is given in Section 1.5.

Renewable Energy Ratio:

Renewable Energy Ratio (RER) is the ratio of the primary energy from renewable energy technologies to total primary energy as defined and calculated in DEAP.

For the purposes of this Section, “renewable energy technologies” means technology, products or equipment that supply energy derived from renewable energy sources, e.g. solar thermal systems, solar photovoltaic systems, biomass systems, systems using biofuels, heat pumps, aerogenerators and other small scale renewable systems.

To demonstrate that an acceptable primary energy consumption rate has been achieved, 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 is 0.3.**

To demonstrate that an acceptable CO₂ emission rate has been achieved, 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 is 0.35.

For the purposes of this Section, “renewable energy technologies” means technology, products or equipment that supply energy derived from renewable energy sources, e.g. solar thermal systems, solar photovoltaic systems, biomass systems, systems using biofuels, heat pumps, aerogenerators and other small scale renewable systems

In addition, a Renewable Energy Ratio (RER) of at least 0.20 is required under Part L 2022.

A RER of 0.2 represents 20 % of the primary energy from renewable energy technologies to total primary energy as defined and calculated in DEAP.

Building Operation and Design Criteria:

Fabric Design

Thermal Bridging:

All construction details to be in compliance with Acceptable Construction Details as set out in "Limiting Thermal Bridging & Air Infiltration - Acceptable Construction Details".

A default value of 0.15 will be assumed for all Provisional BERs.

All non ACD's will be thermally modelled by an accredited SEAI approved thermal modeller.

Target U- value	Thermal Properties
External wall	0.18 W/m ² k
Roof	0.16 W/m ² k
Ground	0.16 W/m ² k
Windows	1.4 W/m ² k (1.4 for roof lights)

G Values

General glazing	0.73
Solar Transmittance (G-value)	0.73
Light Transmittance	0.81

Air tightness test according to CIBSE TM 23 best practice standards to achieve **3m³/m²/hr at 50 Pa** or better.

2.2 Mechanical & Electrical Services Overview Active Design (Apartments):

The building services strategy for the apartment block is focused on delivering a high-performance, low-energy solution that supports long-term sustainability goals, occupant comfort, and regulatory compliance. The integration of efficient mechanical and electrical systems ensures a coordinated approach to reducing carbon emissions and optimizing energy use.

Mechanical Services

Heating & Hot water

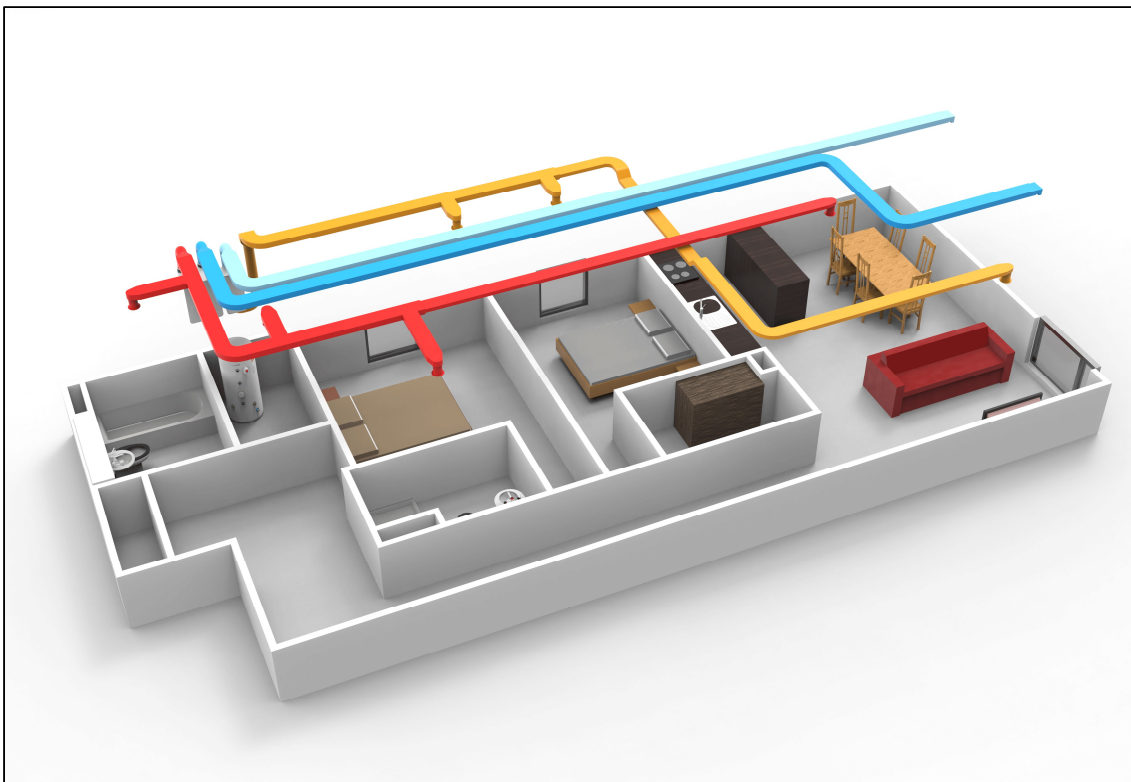
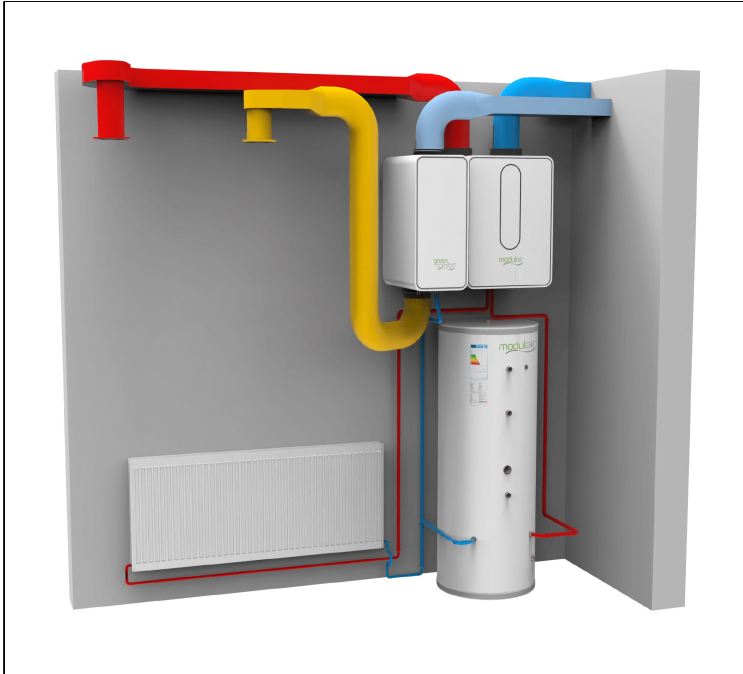
A high-efficiency air source heat pump is provided for each apartment, delivering both space heating and domestic hot water (DHW). The heat pump extracts thermal energy from the external air and distributes it via a low-temperature wet heating system. This approach significantly reduces fossil fuel use and supports compliance with NZEB requirements.

Mechanical Ventilation with Heat Recovery (MVHR)

- Each apartment is equipped with a mechanical ventilation with heat recovery (MVHR) unit, supplying continuous, balanced ventilation. The MVHR extracts warm, stale air from wet rooms (kitchens and bathrooms) and supplies fresh, filtered air to habitable rooms. Heat is recovered from the extract air via an internal heat exchanger and used to preheat the incoming fresh air. The heat recovery system achieves 70% efficiency or greater.
- Not exceeding Fan power 0.28 [W/(l/s)].

Integrated Efficiency Gains

- In addition to improving indoor air quality and reducing ventilation heat losses, the MVHR system contributes to the efficiency of the heating system. Where possible, the preheated air from the MVHR unit supports the operation of the heat pump by reducing the heating load, particularly during cold weather. This integrated approach helps optimize the overall system performance and further reduces energy consumption.



Indicative Heat pump, MVHR and radiator design

Controls and Zoning

The mechanical systems are managed via smart, user-friendly controls that enable precise temperature and ventilation control. Each apartment includes time and temperature zoning, allowing occupants to independently manage heating schedules in different rooms. The controls interface with the heat pump and MVHR to optimize performance based on occupancy and external weather conditions. This ensures high comfort levels while maximizing energy efficiency and minimizing waste.

Electrical Installation

Energy-Efficient Lighting:

All internal and external lighting is provided via LED fittings, selected for high efficacy, long life, and low power demand. Occupancy sensors are installed in common areas to minimize energy wastage, while external lighting is controlled via time clocks and photo sensors.

Support for Low Carbon Mechanical Systems:

The electrical infrastructure has been designed to efficiently support the operation of the heat pump and MVHR systems in each apartment. Careful load balancing ensures optimal performance and minimizes peak electricity demand.

Motor Specification

Electric Motors

Motors and Variable Speed Drives (VSD's) used in this development will be specified as high efficiency type. Pumps for the distribution of water and for use in heating circuits, as well as fans for the distribution of air, can use a significant amount of energy. Therefore, specifying suitably sized, high efficiency motors and VSD's can result in significant cost savings.

High Efficiency Motors: These motors use more copper, iron, and steel in their construction to reduce inherent losses of energy and save 3% – 4% on energy usage compared to standard motors.

Variable Speed Drives: These allow pumps or fans to ramp up and down by varying the motor speed to meet the momentary requirement. This is the most efficient control system available.

Commissioning and Operation

All building services systems will be fully commissioned to ensure they perform to design intent. Occupants will be provided with clear guidance on how to operate heating, ventilation, and lighting controls efficiently, supporting the long-term energy performance of the development.

Water and Waste Strategy

Water-efficient sanitary fittings such as low-flow taps and dual-flush WCs will be installed to reduce potable water consumption. The development will incorporate water-efficient sanitary fittings and leak detection measures. Construction waste will be minimised through

segregation and recycling, and preference will be given to materials with low embodied carbon and local sourcing wherever feasible.

2.3 Public Lighting

All external public lighting, including pathways, communal entrances, and landscaped areas, is provided using energy-efficient LED luminaires. The design ensures adequate illumination levels for safety and accessibility while minimizing energy use and light pollution. Lighting is controlled via a combination of photocells and time clocks to ensure operation only during necessary hours. Luminaires are selected with appropriate beam angles and colour temperatures to reduce upward light spill, in line with best practice for dark sky compliance and environmental protection.

Site lighting has been designed to provide adequate lighting at site entrances and within the development. The lighting has been designed to provide safe movement for the following road users:

- Vehicular
- Pedestrian
- Cyclist

It is proposed to use a mix of lighting throughout the site to achieve the desired lighting and landscaping plan.

All light fittings will be installed with a photo electric cell unit (PECU).

The design of the lighting shall be in accordance with the following standards and guidelines:

- I.S. EN 13201-2:2015 Road Lighting – Part 2: Performance requirements
- BS 5498-1:2013 Code of Practice for the Design of Road Lighting
- S.I. No. 291 of 2013 Safety, Health and Welfare at Work (Construction) Regulations 2013
- Kildare County Council guidelines for public lighting.
- IS10101: National Rules for Electrical Installations

Lighting around the building shall be directional lighting to mitigate light spill. This will be achieved by the following:

- Use directional lighting through use of cowled fittings throughout the Proposed Development site, where luminaires are mounted with no upward tilt, and with an upward light ratio of 0% with good optical control
- Use of specialist downward directional luminaires having regard for research indicating light-sensitive bat species are equally active in such light, as in darkness

- Install luminaires with warm white spectrum LEDs (ideally <2700 Kelvin), featuring peak wavelengths higher than 550 nm to avoid the component of light most disturbing to bats

Please refer to the site lighting drawing which accompany this report.

2.4 Electric Vehicle (EV) Car Charging

To support the transition to low-carbon transport and future-proof the development, dedicated electric vehicle (EV) charging infrastructure is incorporated into the design of the Surface car park.

Active and Passive Provision:

Active EV charging points are installed at selected parking spaces, allowing immediate use by residents with electric vehicles. Passive infrastructure (containment and power supply capacity) is provided to all remaining spaces to enable simple future installation of chargers as demand increases.

Smart Charging Capability:

The system is compatible with smart charging technology, enabling features such as scheduled charging during off-peak hours, load balancing to prevent grid overload, and remote monitoring via mobile applications. This enhances convenience for residents and supports efficient energy use across the site.

Scalable and Future-Proofed Design:

The electrical infrastructure is designed to allow scalable expansion of EV charging capacity, with centralized control panels and load management systems that can accommodate growing EV adoption without significant retrofit works.

This EV charging strategy aligns with national and EU-level sustainability targets and promotes cleaner, quieter, and more sustainable transport options for residents.

2.5 PV panels

A roof-mounted Solar Photovoltaic (PV) system will be incorporated into the development to contribute to the renewable energy requirement and support compliance with the Building Regulations Part L 2022 and the targeted BER rating for the development. The PV system will generate renewable electricity to offset a portion of the building's electrical energy demand, thereby reducing primary energy consumption and associated carbon emissions.

The final PV system capacity, panel quantity, and roof arrangement will be determined during the detailed design stage following completion of the final energy assessment (DEAP) calculations and coordination with the architectural roof layout. The system will be designed to ensure the development achieves the required Renewable Energy Ratio (RER) and the targeted A2 BER rating.

2.6 Conclusion

The McAuley Place residential development has been designed with a strong emphasis on long-term sustainability, energy efficiency, and occupant comfort. Through the use of high-performance building fabric, low-carbon electrified heating and ventilation systems, smart controls, and energy-efficient lighting, the scheme exceeds the minimum requirements of the Building Regulations Part L 2022 and achieves compliance with Nearly Zero Energy Building (NZEB) standards.

Renewable energy technologies will form an integral part of the overall energy strategy. This includes the use of air source heat pumps for space heating and domestic hot water, together with the integration of roof-mounted solar photovoltaic (PV) panels to contribute to the development's renewable energy generation.

In addition, the provision of EV charging infrastructure, smart controls, and energy monitoring systems will further support the project's sustainability objectives and reduce long-term operational carbon emissions.

Overall, the McAuley Place development represents a future-proofed, low-energy residential scheme that aligns with local and national sustainability policies and is expected to achieve the targeted A2 BER rating while meeting the required Renewable Energy Ratio (RER) under Part L 2022.