

Residential Development
Mayeston, Poppintree, Dublin

Building Lifecycle Report



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1.0 INTRODUCTION

This Building Lifecycle Report has been prepared by O'Briain Beary Architects on behalf of Fingal County Council, to accompany a planning application for construction of 121 residential units at Mayeston, Poppintree. Co Dublin.

This document has been prepared with reference to the requirements of the 'Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities), published in December 2020. These Guidelines direct that detail on the management and maintenance of apartment schemes be included in all planning applications where construction of apartments is proposed. This is set out in Sections 6.11 to 6.14 of the Apartment Guidelines, under "Operation & Management of Apartment Developments". Specifically, Section 6.13 requires that applications for apartment developments shall include:

"a building lifecycle report which in turn includes an assessment of long-term running and maintenance costs as they would apply on a per residential unit basis at the time of application, as well as demonstrating what measures have been specifically considered by the proposer to effectively manage and reduce costs for the benefit of residents".

Considered scheme design and choice of building materials, together with the effective management by the FCC Housing Maintenance Department and each resident playing their part, will help contribute towards a desirable, vibrant community into the future. The document reviews the outline building specification for the proposed development and includes detail of measures proposed to manage and reduce costs for the benefit of future residents.

The report considers the use of durable materials and finishes for external elevations to reduce the need for regular maintenance and/or replacement, outside of general maintenance and housekeeping works. The choice of high quality and long-lasting materials will minimise maintenance costs for residents into the future. A similar approach is proposed in the choice of building material for internal finishes, for electrical and plumbing installations, and for landscaping of public and private open space areas.

As the building design develops and material choices are confirmed, this document is to be updated to help inform the FCC Housing Maintenance Department of expected running and maintenance costs for the development, and to aid more accurate scheduling of works and service charge budgets.

2.0 DESCRIPTION OF PROPOSED DEVELOPMENT

The proposal is for a residential development of 121 no. residential apartment units and creche, arranged in 5 buildings varying in height from 3 storeys to 6 storeys (Block A – 16 no. 1-bedroom units, 12 no. 2-bedroom units, 6 no. 3-bedroom units; Block B – 9 no. 1 bed units, 30 no. 2 bed units; Block C – 6 no. 3 bed units and creche; Block D – 8 no. 1 bed units, 15 no. 2 bed units; Block E – 3 no. 1 bed units, 16 no. 2 bed units), all associated carparking and bicycle parking including an external covered bike store, hard and soft landscaping, an acoustic fence to the northern boundary and acoustic screens between Blocks D, A and B, connections to existing services and all ancillary/enabling site development works.

3.0 SITE PLAN



4.0 MEASURES SPECIFICALLY CONSIDERED BY THE PROPOSER TO EFFECTIVELY MANAGE AND REDUCE COSTS FOR THE BENEFIT OF RESIDENTS

Units in this proposed project are designed and will be constructed using quality materials and the skills of highly competent tradespeople. The Applicant and Design Team have many years of experience to rely upon and the design has been informed from initial stages through discussion with the relevant Local Authority Departments and the DoHLGH, and published guidance including the Sustainable Urban Housing: Design Standards for New Apartments.

Careful consideration of long-term running and maintenance costs for the end-user have been accounted for from the outset of this project, and this conscious thought-process is essential in providing an end-product which will require minimal maintenance into the future.

Units proposed in this development will achieve a minimum A2 Building Energy Rating and will meet the standard required to be nearly Zero Energy Buildings (nZEB) as directed under the European Energy Performance of Buildings Directive Recast 2010 (EPBD). The tables below provide a summary of measures proposed to assist with the effective management and reduction of costs associated with the completed development for the end-user/occupant.

4.1 Building Design

MEASURE	DESCRIPTION	BENEFIT
Building Aspect/ Daylight	ADF (average daylight factors) will be tested for habitable rooms to ensure compliance with BRE requirements.	Reduces reliance on artificial lighting, thereby reducing costs
Accessibility	All units will comply with the requirements of Building Regs and Technical Guidance Documents Parts K and M.	Reduces the level of future adaptation and associated costs for residents.
Ventilation	All areas to be served with natural & or mechanical ventilation where required as per Building Regulation TGD Part F requirements.	Reduce energy usage costs of ventilation systems and associated maintenance/upgrade costs.
Security	The scheme is designed to incorporate principals of passive surveillance to deter antisocial behaviour. Allowance made for inclusion of CCTV monitoring details and secure bicycle stands for apartment blocks.	Helps to reduce potential security/management cost
Amenity Space	Provision of large communal open space with acoustic screens	Encourages community and social interaction among residents in a

		calm environment sheltered from M50 noise
Private Open Space	Provision of balconies and openable windows, provides access to the outdoors and allows individuals to clean windows themselves.	Facilitates interaction with outdoors. Reduces the cost and reliance on 3rd party contractors for cleaning & maintenance.

4.2 Building Construction Materials

MEASURE	DESCRIPTION	BENEFIT
Design & Material Selection	Materials selected and chosen with due consideration to their durability, design life and maintenance requirements. Consideration given to Buildings Regulations and other relevant guidance eg BS 7543:2015 'Guide to Durability of Buildings and Building Elements, Products and Components'	Longevity, durability. Minimises ongoing maintenance and replacements requirement.
Building Envelope	Use of pigmented render systems to building envelope	Requires little or no maintenance aside from regular house-keeping
Roofs	Single ply roofing membranes to flat roofs	Requires little or no maintenance aside from regular house-keeping
External Windows & Doors	Use of aluminium windows and doors is being considered	Reduce energy usage costs of ventilation systems and associated maintenance/upgrade costs.

4.3 Energy & Carbon Emissions

The proposed development will comply with Part L (NZEB). As part of the development's efforts to further reduce energy consumption, the project is targeting a minimum A2 BER (Building Energy Rating) throughout. Extensive work has been carried out to develop a balanced design approach to achieve these onerous targets with several sustainable features being incorporated into the design from the early stages.

4.4 NZEB

Technical Guidance Document Part L – Conservation of Fuel and Energy – Dwellings sets out the requirements for the minimum fabric and air permeability requirements, maximum primary energy use and carbon dioxide (CO₂) emissions as well as the minimum amount of energy derived from renewable sources.

In line with building regulations requirements an energy assessment procedure will be performed for each building to ensure compliance is achieved. A dwelling energy assessment procedure will be performed for each dwelling in the development. A non-domestic energy assessment procedure will be performed for the landlord internal common

areas in the development. Provisional assessments will be carried out prior to commencement of the development on site to ensure full compliance is achieved for each building type.

The exact specification, including technologies used, will be determined at detailed design stage, to achieve an A2 BER rating for each apartment. To demonstrate that an acceptable primary energy consumption rate has been achieved, the calculated Energy Performance Coefficient (EPC) of a building should be no greater than the Maximum Permitted Energy Performance Coefficient (MPEPC). To demonstrate that an acceptable CO₂ emission rate has been achieved, the calculated Carbon Performance Coefficient (CPC) should be no greater than the Maximum Permitted Carbon Performance Coefficient (MPCPC).

4.5 Detailed Design

The dwellings shall include several energy conservation measures to achieve a high energy rating for each property, including

- High-performance thermal envelope with low U-values for the fabric
- Airtight construction
- Ventilation system
- Heat Pump (HP) Technology
- Energy efficient lighting to be provided where appropriate

The sustainable design of the proposed development ensures that each unit in the development performs efficiently and complies with NZEB criteria. The sections below outline the elements (based on passive and active measures) that aid in the reduction of energy consumption, carbon emissions and cost throughout the building lifecycle. The table also provides information to be used in the DEAP assessment for each specific unit in the development:

4.6 High Performance Construction Fabric

The construction U-values for each dwelling within the development is outlined in the Building Regulations Technical Guidance Document – Part L (2021). Target U-Values for elements of construction, based on other recent housing schemes for FCC, are as follows:

Building Fabric Element	U-value (W/m ² K)
Flat Roof	0.2
External Walls	0.18
Ground Floor / Exposed Floor	0.18
Windows, Door, Rooflights	1.4

High-performance building fabric elements are being considered and selected to minimise unnecessary heat loss from the internal spaces.

In addition to the reduction in energy consumption and associated carbon emissions for space heating and ventilation through a high performance fabric, high efficiency heating systems are being proposed for use throughout the development, minimising heat losses through the buildings fabric as well as a lower than required

air permeability rate, helps to ensure lower energy consumption rates and associated carbon emissions are achieved throughout the year thus reduces the overall cost of heating for the end user.

4.7 Noise Mitigation

A detailed internal noise impact assessment was undertaken, and a report accompanies this application. The study takes into account the M50 current and projected noise levels. Interior noise levels for the whole development are predicted to comply with interior noise level criteria (including both LAeq and LAFMax) from BS 8233 and ProPG, and noise mitigation measures are outlined which will ensure compliance. Sleep disturbance due to the predicted internal noise levels is unlikely to occur. The main external amenity area and private balconies/terraces are predicted to comply with the desirable external amenity noise level criteria.

4.8 Airtightness

The building will be designed to ensure it will achieve compliance with the air tightness requirements outlined in the Part L (2021) TGD document. The current proposal for air tightness in the Part L document is set to a maximum value of 5.0 m³/hr/m² @50Pa. A reasonable target value for these buildings, based on other recently completed housing schemes, would be 3.0m³/hr/m² @ 50Pa.

4.9 Thermal Bridging

The limitation of thermal bridging will be achieved in accordance with guidance under outlined in the Technical Guidance Document Part L (2021) regulations. To account for thermal bridging performance from TGD Part L, this should be achieved by adherence to the Building Regulations Part L Acceptable Construction Details and monitoring during the construction.

4.10 Ventilation

To maintain indoor air quality and minimize the risk of condensation or mould growth, a mechanical ventilation system shall be provided for each apartment/house/unit to help achieve this.

The following mechanical ventilation technologies shall be considered for the development

- Whole-house mechanical ventilation with heat recovery
- A centralized mechanical extract system that continuously extracts

Whole-house mechanical ventilation with heat recovery would minimize the heat demand for air while maximize the quality of the indoor environment in terms of fresh air and CO₂ levels.

A centralized mechanical extract system continuously extracts moist, stale, and polluted air from the wet rooms of a dwelling such as bathrooms, utility rooms and kitchens. This air is exhausted directly to external via a centralized extract fan. Fresh supply air is provided via wall vents into habitable rooms such as bedrooms and living rooms. These mechanical ventilation technologies will be analyzed in the detailed design phase and with the preferred choice will be designed in compliance with TGD Part F.

Natural ventilation is being considered for use in the internal landlord common areas of the proposed development to provide sufficient controlled ventilation. Appropriate background & purge ventilation facilities will be provided as per TGD Part L & F.

4.11 Heating Systems

Space heating will be provided by decentralised system with air to water heat pumps or exhaust air heat pumps within each dwelling. The dwelling shall be heated by means of steel panel radiators. In addition, electrical radiant panel heaters shall be considered for use within the landlord areas. To meet compliance with the renewable energy requirements set out in Part L, a heat pump with the appropriate seasonal efficiency for space and water heating will be selected for all dwellings. For compliance for the landlord areas Photo voltaic, PV system for on-site electricity use will be considered as part of the detailed design.

Modern heat pumps will typically provide 4 to 5 times more heat energy to the dwelling than the electrical energy they consume. They have a lower consumption of energy and therefore lower carbon emissions.

4.12 Renewable Technologies

To comply with building regulations, 20% of the primary energy delivered to a dwelling must be achieved using renewable energy technologies. The following Low Zero Carbon (LZC) technologies shall be considered for the development

- Individual Air to Water heat pumps.
- Individual Exhaust Air Heat Pumps
- Photo voltaic, PV system for on-site electricity use

Air Source Heat Pumps, Exhaust Air Heat Pumps and PV panels systems are classified as renewable technologies under Part L. These LZC technologies will be analyzed in the detailed design phase to ensure that the required renewable energy targets can be achieved within the proposed development.

4.13 Lighting

Provision for natural daylight in modern buildings helps to create a better internal environment for occupants and helping to assist in the well-being of the inhabitants. The design of the building façades will allow greater levels of natural daylight to enter occupied zones.

Each building will be fitted with high performance energy efficient light fittings, such as LEDs. LED lighting consumes the least amount of power while providing the highest light output, and is therefore the most efficient source of artificial light. Combined with a long lifespan this minimises whole life costs and reduces the carbon footprint of each home. LED technology results in 30-35% reduction in electrical energy usage over the CFL equivalent Intelligent lighting controls in the form of presence detectors shall be used common areas to ensure that lighting is not in operation when areas are not in use.

Street Lighting and Amenity Lighting shall be as per the proposed FCC designs or a similar design that must be approved by FCC. Street Lights shall be chosen to match existing Street Lights in the area so as to maximise the service levels that can be provided by FCC, and Public Lighting Reports have been undertaken to demonstrate the levels achieved. Columns will likely be tubular steel for Public Lighting and 4.5m Conical Tubular steel for the Amenity Area. To conserve energy the lights shall be photocell controlled and shall be dimmed to 75% between midnight and 6 a.m.

4.14 Water Conservation Measures

The requirements for Low flow sanitary ware (circa 6 ltrs/min) in each dwelling shall be considered in the detailed design. This is a water conservation initiative and reduces waste by restricting water flowrates to a shower within the dwelling. The shower head fittings could be provided with a reduced flow to allow for the conservation of water use as well as reducing energy used to heat hot water. Dual flush toilets will be provided which reduces overall water use.

4.15 Landscaping

MEASURE	DESCRIPTION	BENEFIT
Natural Amenity	Landscaped areas to be created as part of landscaping design, with existing trees and hedgerows retained where practicable.	Facilitates community interaction, socialising and play resulting in improved well-being of residents
Landscaping	Detailed landscape design included as part of this application. Planting proposals intended to complement the local setting as well as being fit for purpose in respect of private and public realm uses. Planting with pollinator friendly native trees and shrubs planted in prepared beds.	Reduction in frequency and associated maintenance costs.
Paving & Decking Materials	Sustainable, robust materials, with high slip resistance to be used. Design to incorporate principals of SUDs to aid on site attenuation. Tree pits and swales to reinforce SUDs objectives.	Robust materials and elements reduce the frequency of required repair and maintenance
Maintenance & Management	Maintenance and management requirements have been considered through the design process. Complex planting arrangements have been omitted to avoid onerous maintenance and management requirements	Maintenance costs reduced

4.16 Waste Management

MEASURE	DESCRIPTION	BENEFIT
Storage of Non-Recyclable Waste and Recyclable Household Waste	Domestic waste management strategy will include: - Centralised bin storage and collection area -	Helps reduce potential waste charges

	Separate grey, brown and green bin. Regular competitive tender for waste management collection.	
Composting	Organic waste bins will be available throughout.	Promote reuse of organic waste material and reduction of potential waste charges.

4.17 Estate Management

Fingal County Council owns and manages many properties throughout various areas of the county. The Council recognises that it has a duty of care to promote the peaceful occupation of all dwellings. In this regard, the Council aims to achieve its role as Landlord by ensuring tenants abide by the Tenancy Agreement which they sign, and by exercising its statutory powers to deal with any instances of Anti-Social Behaviour.

Estate Management is primarily about making local authority estates better places to live in. The Council employs Housing Liaison Officers (HLO's) who each deal with their own designated area of the county, and carry out a range of services, including;

- Advice to Tenants on all details of their tenancy and house management
- Development of Residents Associations
- Assist in problems which may occur in estates
- Investigate complaints of anti-social behaviour

The Council encourages and facilitates the formation of Residents Associations, and where problems in estates are reported through the Residents Association or otherwise, the Council will also utilise all legislative means available, and a multi-agency approach with the Gardai Siochana and HSE, to combat any instances of anti-social behaviour. All reported incidents are dealt in confidence and investigated in a fair, impartial and objective manner.

Fingal County Council recognises the importance of resident and tenant participation in estate management and is committed to working in partnership with residents and tenants to promote estate management in their estates.

MEASURE	DESCRIPTION	BENEFIT
Housing Liaison Officer and Residents Associations	Provides advice to Tenants on all details of their tenancy and house management. Assists in development of Residents Associations. Assists in problems which may occur in estates, and investigates complaints of anti-social behaviour	Residents are informed and can be assisted when issues arise
Tenants' Pack	A Tenants' Pack prepared by FCC Housing Maintenance Department will be provided to each resident. This will typically provide a range of detail including information on	Residents are as informed as possible so that any issues can be addressed in a timely and efficient manner.

	<p>contacts for maintenance issues, emergency contact information, transport links in the area and a clear set of rules and regulations.</p>	
<p>Handover Pack</p>	<p>A handover pack will be issued to new residents. This pack will contain important information regarding the new home, including: GPRN, MPRN, Contact details for all relevant suppliers, and user instructions for appliances and devices in the property.</p>	<p>Residents are as informed as possible so that any issues can be addressed in a timely and efficient manner.</p>