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BUILDING LIFE-CYCLE REPORT

LOCAL AUTHORITY OWNED HOUSING DEVELOPMENT

UNDER SECTION 179A OF THE PLANNING AND DEVELOPMENT ACT

for

Lands at Mooretown, Swords, Co. Dublin

May 2024

Fingal County Council
Comhairle Contae Fhine Gall

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1.0 INTRODUCTION

This Building Lifecycle report has been prepared on behalf of Fingal County Council in support of a Section 179a Application at a site of c.9.35 hectares at Mooretown, Swords.

This document has been prepared with reference to the requirements of *Sustainable Urban Housing Design Standards for New Apartments, Guidelines for Planning Authorities December 2022 (updated as of July 2023)*. 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 6.10 to 6.14 of the Apartment Guidelines, under "Operation & Management of Apartment Developments". Specifically, Section 6.12 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."

Thus report specifically refers to the 2no. proposed 4/5 storey apartments blocks along with the 7no. 3-storey and 3no. 2-storey duplex/apartment corner buildings. While many of the strategies adopted will also apply to the 2- and 3-storey houses in the scheme this report does not address the particulars of their design.

Considered scheme design and choice of building materials, together with the effective management of the buildings will 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 Asset Management and 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 subject site for the proposed development is located in the Lands at Mooretown, at the northwestern edge of the town of Swords, North County Dublin, approx. 2km from the town centre. The development constitutes the first phase of the Framework Plan for the Lands at Mooretown and proposes a compact residential settlement of 274 no. dwelling houses, own-door duplexes and apartments and multi-storey apartment units, arranged in clusters varying in height from 2 to 5 storeys, with an average density of 39 units per hectare. It includes all associated road infrastructure with new Link Road, Local Access Roads and car parking as well as extensive pedestrian and cycling connections, with secure bicycle parking to all residential units, comprehensive landscaping of associated open spaces and natural amenities with hard and soft landscaping as well as play areas, connections to existing services and all ancillary / enabling site development works.

Apartment Blocks 2A and 2B each comprise of 25no. apartments. Each of the 7no. 3 storey duplex/apartment corner buildings comprise 2no. apartments and 2no. upper floor duplexes while each of the 3no. 2-storey duplex/apartment corner buildings comprise 2no. apartments and 1no. ground floor duplex.

3.0 PROPOSED SITE PLAN

Fig 1: Proposed Site Plan

4.0 LONG-TERM RUNNING AND MAINTENANCE COSTS AS THEY WOULD APPLY ON A PER RESIDENTIAL UNIT BASIS AT THE TIME OF APPLICATION

Units in this proposed project are designed and will be constructed using quality materials and the skills of highly competent tradespeople. The design has been informed from initial stages through discussion with the relevant Local Authority Departments, and published guidance including the Sustainable Urban Housing Design Standards for New Apartments, Guidelines for Planning Authorities December 2022 (updated as of July 2023).

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.

Certainty around long-term running and maintenance costs for the development will be further strengthened via robust legal and financial arrangements supported by Fingal County Council's effective and appropriately resourced maintenance and operational regimes.

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

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). An Energy Efficiency and Climate Adaptation Design Statement has been prepared by Waterman Moylan Consulting Engineers which outlines the strategy by which the proposed development will meet the relevant standards and targets.

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.

5.1 Building Design

MEASURE	DESCRIPTION	BENEFIT
Building Aspect/ Daylight	The results of the SDA assessment, under BRE guidelines, have presented full compliance, and shows care and consideration for daylight access has been taken into account with regard to internal layouts. The sunlight exposure (SE) assessment demonstrates that the majority of the units will have adequate sunlight levels under BRE guidelines. The Sun on ground (SOG) assessment to the proposed amenity areas has resulted in 100% compliance across all 5 spaces assessed. Refer to 3DDB Daylight and Sunlight Assessment Report for more detail.	Reduces reliance on artificial lighting, thereby reducing costs
Daylighting to Stair & Lift cores	Both stair and lift cores have adequate natural daylighting.	Avoids the requirement for continuous artificial lighting.
Accessibility	All units will comply with the requirements of Building Regs and Technical Guidance Documents Parts K and M while approx. 13.5% of the dwellings meet the standards of Age Friendly Homes.	Reduces the level of future adaptation and associated costs for residents.

Ventilation	All areas to be served with natural unless mechanical ventilation is specifically required in the Technical Guidance to Building Regulation F (Ventilation) .	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
Windows & Doors	Aluclad and doors to apartment buildings. Aluclad or uPVC windows to duplexes.	Aluclad and uPVC windows require no painting, avoiding associated maintenance costs.
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.

5.2 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 e.g. BS 7543:2015 'Guide to Durability of Buildings and Building Elements, Products and Components'	Longevity, durability. Minimises ongoing maintenance and replacements requirement.
Building Envelope - render	Use of pigmented render systems to building envelope or mineral silicate paint on upper floors of higher section of apartment buildings, and on secondary facades of duplexes.	Requires little or no maintenance aside from regular house-keeping, enhanced life-span over standard external paints (over 20 years in normal conditions)
Building Envelope - brickwork	Brickwork used on ground floor and on upper floors of lower section of apartment buildings, as well as on main facades of 3-storey duplexes.	Requires little or no maintenance.

Roofs	Single ply roofing membranes to flat and low pitch roofs on apartments and duplexes	Requires little or no maintenance, minimum 30yr lifespan in normal conditions

5.3 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. The Energy Efficiency and Climate Adaptation Design Statement has been prepared by Waterman Moylan Consulting Engineers which outlines the target fabric u-values and systems required to meet this target.

5.4 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).

5.5 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
- Sustainable ventilation system
- Exhaust Air Heat Pump (HP) Technology in the apartments
- 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.

5.6 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	**Target U-value (W/m2K)**
Flat Roof	0.12 - 0.20
External Walls	0.10 - 0.18
Ground Floor / Exposed Floor	0.10 - 0.18
Windows, Door, Rooflights	0.9 - 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 then 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.

5.7 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.

5.8 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.

5.9 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 and duplex.

The following mechanical ventilation technologies shall be considered for the development

- Whole-apartment/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 window trickle vents or ceiling vents into habitable rooms such as bedrooms and living rooms.

These mechanical ventilation technologies will be analysed in the detailed design phase and with the preferred choice will be designed in compliance with TGD Part F.

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

5.10 Heating Systems

Space heating to the apartments will be provided by decentralised system with 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 a 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.

Air-to-water heat pumps or gas-fired boilers, combined with PV panels, may be considered for use in the corner duplex/apartment buildings, as there will be adequate external space for external heat pumps.

5.11 Renewable Technologies

To comply with building regulations, 20% of the primary energy delivered to a dwelling must be achieved using renewable energy technologies. As outlined above 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 analysed in the detailed design phase to ensure that the required renewable energy targets can be achieved within the proposed development.

5.12 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 design outlined in the Utility and Public Lighting Report prepared by Waterman Moylan Consulting Engineers. Streetlights are specified to match existing Streetlights in the area so as to maximise the service levels that can be provided by FCC. A Public Lighting Report have been undertaken by Waterman Moylan to demonstrate the levels achieved.

5.13 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.

5.14 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 of maintenance and associated costs.

Paving Materials	Sustainable, robust materials, with high slip resistance to be used. Design to incorporate principals of SUDs to aid on site attenuation. Permeable paving proposed 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

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

5.16 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 contacts for maintenance issues, emergency contact information, transport links in the area and a clear set of rules and regulations.	Residents are as informed as possible so that any issues can be addressed in a timely and efficient manner.
Handover Pack	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.	Residents are as informed as possible so that any issues can be addressed in a timely and efficient manner.