BUILDING LIFE CYCLE REPORT

MOORETOWN, SHD

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CONROY CROWE KELLY
Architects & Urban Designers
65 MERRION SQUARE
DUBLIN 2

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0.0 INTRODUCTION

This Building Life Cycle Report has been prepared for the proposed Strategic Housing Development on the townland of Mooretown, Swords by Conroy Crowe Kelly Architects on behalf of Gerard Gannon Properties Ltd.

The purpose of this report is to provide an initial 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 to effectively manage and reduce costs for the benefit of the residents.

This is achieved by producing a Building Lifecycle Report. This Building Lifecycle Report has been developed on foot of the revised guidelines for Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities issued under Section 28 of the Planning and Development Act 2000 (as amended) December 2020. Within the new guidelines, new guidance is being provided on residential schemes.

Section 6.13 of the Operation and Management of Apartment Development Guidelines (December 2020) requires that

"Planning applications for apartment development 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."

This Building Life Cycle Report document sets out to address the requirements of Section 6.13 of the Apartment Guidelines.

The report is broken into two sections as follows:

Section 1: An assessment of long term running and maintenance costs as they would apply on a per residential unit basis at the time of application.

Section 2: Measures specifically considered by the proposer to effectively manage and reduce costs for the benefit of residents.

Image 1 – CGI view of apartment buildings at Mooretown.

0.1 DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development will consist of a mixed-use residential neighbourhood of 650 dwellings comprising 265 houses, 113 duplex units, 6 triplex units, 266 apartments, a 519sqm childcare facility and 946sqm of retail and café uses clustered in a small village centre.

The development includes all associated site works and infrastructure, including landscaped open space, internal road, paths, cycle paths, public lighting and drainage. The development also includes off-site drainage works for a stormwater storage tank and overflow outfall gravity sewer to the Broadmeadow River on lands at the junction of the Glen Ellan and Balheary roads.

SECTION 1

1. ASSESSMENT OF LONG-TERM RUNNING AND MAINTENANCE COSTS

1.1 Management of the Owners' Management Company's assets

The applicant, Gerard Gannon Properties Ltd, have considered the long-term running and maintenance costs for future residents from the outset of the design process with a view to managing and minimising unreasonable expenditure on a per unit basis. This exercise was informed by previous neighbouring residential projects in Swords together with a consideration of the changes in standards arising from the new apartment guidelines.

A property management company will be engaged at an early stage of the development to ensure that all property management functions are dealt with for the development and that the running and maintenance costs of the common areas of the development are kept within the agreed Annual operational budget. The property management company will enter into a contract directly with the OMC for the ongoing management of the built development. Note This contract will be for a maximum period of 3 years and in the form prescribed by the PSRA.

The Property Management Company also has the following responsibilities for the apartment development once constructed:

- Timely formation of an Owners Management Company (OMC) – which will be a company limited by guarantee having no share capital. All future purchasers will be obliged to become members of this OMC.
- Preparation of annual service charge budget for the development common areas
- Fair and equitable apportionment of the Annual operational charges in line with the MUD Act Engagement of independent legal representation on behalf of the OMC in keeping with the MUD Act - including completion of Developer OMC
- Agreement and transfer of common areas Transfer of documentation in line with Schedule 3 of the MUD Act.
- Estate Management.
- Third Party Contractors Procurement and management.
- OMC Reporting.
- Accounting Services.
- Corporate Services.
- Insurance Management.
- After Hours Services.
- Staff Administration.

1.2 Service Charge Budget

A service charge budget will be compiled to put in place funding requirements as costed in the Planned Preventative Maintenance programme and in the Building Investment Fund (BIF) report. The budget will be apportioned to unit owners in a fair and equitable way in accordance with the MUDs Act, with the collection of fees into dedicated Owners' Management Company (OMC) bank accounts.

The OMC will promote competitive tendering of running and maintenance services to help minimise charges for residents. The service suppliers will be discharged the payment for their services from these bank accounts. Monthly reports of operational and financial matters will be provided to the OMC executives and annual to the members at the general meeting.

2.0 MEASURES TO MANAGE & REDUCE COSTS FOR THE BENEFIT OF RESIDENTS.

The proposed layouts make efficient use of the land. The buildings have been designed with a low number of stair and lift cores in order to increase efficiencies and ensuring that service charges and maintenance costs faced by residents into the future are kept at reasonable levels.

The apartment design has followed the principles of the BRE guide - "Site Layout Planning for Daylight and Sunlight". Good levels of sunlight will also be available in the development's amenity areas. When this guidance is followed the result is generally a site which is positioned and laid out in such a way which will provide adequate levels of sun lighting and daylighting while creating an ambience that will appeal to any building occupant and reduce the lighting costs.

Lifecycle costs are also determined by the durability and maintenance requirements of materials. We have selected the very highest standard of finishes across the project. Low maintenance cladding materials such as brick and self-finished render are proposed to minimise the impact of façade maintenance. Balconies are designed to be capable of fabrication offsite, resulting in higher standard of finish, reducing damage during construction and improved durability. Building materials proposed for use on apartment block elevations and in the public realm achieve a durable standard of quality that will not need regular fabric replacement or maintenance outside general day-to-day care. The choice of high quality and long-lasting materials such as brickwork, render, steel and metal as well as hardscape in the semi-public and private realms will contribute to lower maintenance costs for future residents and occupiers.

This report reflects the outline material descriptions and examples of typical materials and systems used for schemes of this nature and their associated lifespans and maintenance requirements. All information is therefore indicative subject to detailed design development.

As the building design develops this document will be updated and a schedule will be generated from the items below detailing maintenance and replacement costs over the lifespan of the materials and development constituent parts. This will enable a robust schedule of building component repair and replacement costs which will be available to the property management company so that running and maintenance costs of the development are kept within the agreed annual operational budget. A general outline of the primary materials used in the scheme can be found below.

Measures are addressed under following headings:

- (2.1) Building Design
- (2.2) External Building Fabric Material Selection
- (2.3) Internal Building Fabric Material Selection
- (2.4) Energy and Building Services
- (2.5) Landscape Material Selection
- (2.6) Waste Management Plan
- (2.7) Human Health and Wellbeing
- (2.8) Transport and Accessibility

Image 2 – CGI view of duplex buildings at Mooretown.

2.1 Building Design

Measure	Description	Benefit
Daylighting to units	Where possible, as outlined in 'Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (March 2018)' to have regard for quantitative performance approaches to daylight provisions 'outlined in guides like the BRE guide 'Site Layout Planning for Daylight and Sunlight' (2nd edition) or BS 8206-2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting' when undertaken by development proposers which offer the capability to satisfy minimum standards of daylight provision'.	Reduces the requirement for continuous daylighting, thus reducing the expense of artificial lighting
Daylighting to circulation areas	Natural lighting provided via tall windows at both the front and rear elevations.	Reduces the requirement for continuous daylighting.
External Lighting	External lighting will comply with the latest standards and achieve: • Low-level lighting • Utilise low voltage LED lamps • Minimum upward light spill Each light fitting is to be controlled via an individual Photoelectric Control Unit (PECU). The operation of the lighting shall be on a dusk-dawn profile.	Lighting will be designed to achieve the required standards, provide a safe environment for pedestrians, cyclists, and vehicular traffic, provide surveillance and limit the impact on the artificial lighting on surrounding existing flora and fauna.

2.2 External Building Fabric Material Selection

Measure	Description	Benefit
Brickwork facade	Primary facade cladding material used. Lifecycle of 100+ years. Mortar pointing has shorter lifecycle of 25-50 years.	Extremely durable, with low maintenance requirements. Preventative maintenance by monitoring mortar joint deterioration ensures longevity of material.
Metal Cladding	Metal facade panels likely zinc on galvanised metal rainscreen support system used at penthouse level, with typical life expectancy of 80-100 years.	Aesthetic impact, durability and weathering. Annual inspection every 5 years.
Render	Generally, only to parts of internal courtyards and selected areas of street elevations. Pigmented render system with lifecycle of circa 30 years. Cleaning of algae and other staining is recommended annually by property maintenance team. To comply with BS 5262 1991	Finish does not require repainting every 5 years.

Flat Roofs	TPO or similar roofing membrane with a maintenance guarantee of 25-30 years installed to manufacturer's proven details. Appropriate protection for access to ensure maintenance of any roof equipment will be carried out without any damage to the membrane. Regular maintenance checks by property maintenance team.	Proven roofing system with regular maintenance prevents needs for repairs and additional cost to residents.
Pitched Roofs	Clay or concrete tiled roofing, solid and inert.	Durable and long lasting material requires minimal maintenance and repair.
Windows and Doors	All units double glazed with thermally broken frames in uPVC or Aluminium.	Minimal ongoing maintenance
Steel Balconies with glass infill	Prefinished powder-coated with toughened glass infill and capability to be manufactured off site.	Minimal ongoing maintenance.

2.3 Internal Building Fabric Material Selection

Measure	**Description**	**Benefit**
Floors – apartment stair cores and entrances	Selected anti-slip porcelain or ceramic floor tile with inset mat well at entrance doors as required. Life span of 20-25 years.	Low maintenance and easily cleaned.
Floors – lobbies/corridors	Selected carpet inlay on underlay. 13 years life span typically. Regular cleaning by property maintenance team.	Attractive aesthetic for residents and flexibility to change in the future.
Walls	Selected contract vinyl wall paper feature or selected paint finish with primer. Wall protection at heavy traffic areas with plasterboard substrate adjacent to lift cores where furniture moving will damage wall fabric. Finish lifespan of 2-10 years, regular maintenance required.	Attractive aesthetic for residents and flexibility to change appearance in the future.
Ceilings	Selected paint finish with primer to skimmed plasterboard ceiling.	Decorative and durable finish.
Internal balustrades and handrails	Painted metal balustrade or proprietary glazed panel system face fixed to stair stringer/landing edge with polished stainless steel brackets and clamps to manufacturers installation details.	Durable finish.
Internal Doors and Frames	Selected primed and painted solid internal doors. Glass and aluminium door system to glazed entrances.	Durable finish with regular inspection and maintenance.

2.4 Energy and Building Services

<table>
<tr><th>Measure</th><th>Description</th><th></th><th>Benefit</th></tr>
<tr><td>Nearly Zero Energy Building specifications (nZEB)</td><td colspan="2">NZEB and TGD Part L The NZEB “Nearly Zero Energy Buildings”
directive in conjunction with the TGD Part L document sets out clearly that all new dwellings built in Ireland will comply with the following:
• A Maximum Permitted Energy Performance Coefficient (MPEPC) of no greater than 0.3
• A Maximum Permitted Carbon Performance Coefficient (MPCPC) of no greater than 0.35

These changes apply to works, or buildings in which material alteration or change of use or major renovation takes place.</td><td>Reduce primary energy demand by 70% viz. 2005 standards. Increased use of renewable energy sources such as heat pumps and PV panels will reduce the CO2 emissions associated with fossil fuel combustion.</td></tr>
<tr><td>BER targets</td><td colspan="2">A Building Energy Rating (BER) certificate will be provided for each dwelling in the proposed development which will provide detail of the energy performance of the dwellings. A BER is calculated through energy use for space and hot water heating, ventilation, and lighting and occupancy. It is proposed to target an A2/A3 rating for the apartments this will equate to the following emissions. A2 – 25-50 kwh/m2/yr with CO2 emissions circa 10kgCO2/m2 year A3 – 51-75 kwh/m2/yr with CO2 emissions circa 12kgCO2/m2 /year</td><td>Higher BER ratings reduce energy consumption and running costs</td></tr>
<tr><td>Fabric Energy Efficiency</td><td>U Values for the development will be in line with the current regulatory requirements of Technical Guidance Document Part L, “Conservation of Fuel and Energy Buildings other than dwellings”. Thermal bridging at junctions between construction elements and at other locations will be minimised in accordance with Paragraphs 1.2.4.2 and 1.2.4.3 within the Technical Guidance Documents Part L. See Table 1 of Part L, Building Regulations</td><td>
Table 1 Maximum elemental U-value (W/m²K)[1, 2]
<table>
<tr><th>Column 1
Fabric Elements</th><th>Column 2
Area-weighted Average Elemental U-value (Um)</th><th>Column 3
Average Elemental U-value – individual element or section of element</th></tr>
<tr><td>Roofs

Pitched roof
- Insulation at ceiling
- Insulation on slope

Flat roof</td><td>

0.16
0.16

0.20</td><td>

0.3</td></tr>
<tr><td>Walls</td><td>0.18</td><td>0.6</td></tr>
<tr><td>Ground floors[3]</td><td>0.18</td><td>0.6</td></tr>
<tr><td>Other exposed floors</td><td>0.18</td><td>0.6</td></tr>
<tr><td>External doors, windows and rooflights</td><td>1.4[4,5]</td><td>3.0</td></tr>
</table>
Notes:
1. The U-value includes the effect of unheated voids or other spaces.
2. For alternative method of showing compliance see paragraph 1.3.2.3.
3. For insulation of ground floors and exposed floors incorporating underfloor heating, see paragraph 1.3.2.2.
4. Windows, doors and rooflights should have a maximum U-value of 1.4 W/m²K.
5 The NSAI Window Energy Performance Scheme (WEPS) provides a rating for windows combining heat loss and solar transmittance. The solar transmittance value g perp measures the solar energy through the window.
</td><td>Lower U-values and improved air tightness will help minimise heat losses through the building fabric, lower energy consumption and
thus minimise carbon emissions to the environment.</td></tr>
</table>

Energy Labelled White Goods	The white good package planned for provision in the apartments will be of a very high standard and have a high energy efficiency rating.	The provision of high rated appliances in turn reduces the amount of electricity required for occupants.
External Lighting	The proposed lighting scheme within the development will be selected for the following reasons; • Low level lighting • Minimal upward light spill • Low voltage LED lamps • Pre-approved by Fingal County Council Each light fitting shall be controlled via an individual Photoelectric Control Unit (PECU). The operation of the lighting shall be on a dusk-dawn profile	The site lighting has been designed to provide a safe environment for pedestrians, cyclists and moving vehicles, to deter anti-social behaviour and to limit the environmental impact of artificial lighting on existing flora and fauna in the area.
The following are Low energy technologies that are being considered for the development and during the design stage of the development the specific combination from the list below will be decided on and then implemented to achieve the A2/A3 BER Rating and NZEB compliance.		
Natural Ventilation	Natural ventilation is being evaluated as a ventilation strategy to minimise energy usage and noise levels.	The main advantages of natural ventilation are: • Low noise impact for occupants and adjacent units. • Completely passive therefore no energy required with associated. • Minimal maintenance required. • Reduced environmental impact as minimal equipment disposal over life cycle.
Space and Water Heating	An air-to-water heat pump system is being considered for each dwelling as the optimal balance of practicality, efficiency and contribution of renewable energy. Each heat pump system shall be listed on the HARP database or have IS EN14511-2, IS EN 255-2 or EN 15879 test certificates (or otherwise as required by changes to the Regulations). The hot water storage will form part of the composite heat-pump systems, with certified loss factors. Space heat distribution will be via low-temperature radiators generally, and the space and hot water system will have full time and temperature controls.	Air source heat pumps use electrical energy from the grid to drive the refrigerant cycle but do so extremely efficiently. Modern heat pumps will typically provide 4 to 5 times more heat energy to the dwelling than the electrical energy they consume.

PV Solar Panels	PV Solar Panels are being considered which converts the electricity produced by the PV system (which is DC) into AC electricity. The panels are typically placed on the South facing side of the building for maximum heat gain and in some instances, can also be used to assist	PV Solar Panels offer the benefit of reducing fossil fuel consumption and carbon emissions to the environment.
ECAR Charging Points	Provision for the installation of a fully functional electric vehicle charging point will be provided in the apartment blocks as agreed with the management company	Providing the option of E-car charging points will allow occupants to avail of the ever-improving efficient electric car technologies.

2.5 Landscape Material Selection

Measure	Description	Benefit
Paving and Decking Materials	Use of robust high-quality materials and detailing to be durable for bikes, play, etc.	Ensures the longevity of materials.
Site Layout & Landscaping Design	High quality landscaping both hard surface (for the cycle /car parking and pavements) and soft landscaping with planting and trees. The landscaping will be fully compliant with the requirements for Part M / K of the Technical Guidance Documents and will provide level access and crossings for wheelchair users and pedestrians with limited mobility. Designated car parking including accessible & visitor car parking reduces the travel distances for visitors with reduced mobility. The landscape design approach is to provide a variety of high-quality durable communal recreation areas for residents within the blocks which feature a range of quality tree, shrub and herbaceous planting. Hard landscape paving and decking materials will be robust and durable and installed using proven details to minimise maintenance requirements.	Plenty of room for cycles and pedestrians along with car spaces provide a good balance between pedestrians and car users. Wheelchair user-friendly. A landscape maintenance company will be retained by the OMC(s) to ensure regular maintenance improves the quality of the living environment for all residents.
Soft Landscape Materials	Planting proposals have been formulated to complement the local setting as well as being fit for purpose in respect of private and public realm uses and spatial constraints imposed by garden sizes and the width of planting strips.	Reduction in the frequency of required soft landscape maintenance
Sustainability & Biodiversity	Gerard Gannon Properties are active business supporters of the All-Ireland Pollinator Plan and were the first residential development company to sign up. It is of great importance to Gannons that all	Enhanced sustainability of long-term estate management

	their developments embraces the Plan's objectives and implements these and other positive actions supporting bio-diversity on the ground.	

2.6 Waste Management

Measure	Description	Benefit
Construction and Operational Waste Management Plan	The application is accompanied by a Construction and Operational Waste Management Plan by the applicants.	The report demonstrates how the scheme complies with best practice
Storage of Non-Recyclable Waste and Recyclable Household Waste	Domestic waste management strategy: Grey, brown and green bin distinction Competitive tender for waste management collection	Helps reduce potential waste charges
Composting	Organic waste bins to be provided throughout	Helps reduce potential waste charges

2.7 Human Health and Wellbeing

How human health and well-being has been considered:

Measure	Description	Benefit
Natural / day light	The design, separation distances and layout of the apartment blocks have been designed to optimise the ingress of natural daylight/ sunlight to the proposed dwellings to provide good levels of natural light	Reduces reliance on artificial lighting, thereby reducing costs
Accessibility	All units will comply with the requirements of Building Regulations, Technical Guidance Documents Parts K and M	Reduces the level of adaptation, and associated costs potentially necessitated by residents' future circumstances.
Security	The scheme is designed to incorporate passive surveillance with the following security strategies likely to be adopted: • CCTV monitoring details • Secure bicycle stands • Overlooked communal open space in the form of a courtyard	Helps to reduce potential security/ management cost
Natural	Parks and pocket park near access.	Facilitates community interaction, socialising and play- resulting in improved well being.

2.8 Transport & Accessibility

Transport considerations for increasing the update of the use of public transport, cycling and walking and reducing the ownership of private cars and reducing oil dependency:

Measure	Description	Benefit
Access to Public Transport	At present, there are no plans to introduce a bus service into Mooretown, but the distributor road and Main Street were designed with public transport in mind: a 2012 scheme for a BRT (Bus Rapid Transit) proposed to extend that service beyond the Glen Ellan Road and into Mooretown. This project was shelved pending a decision on the Metro. Local and express bus services run on the Rathbeale Road (800m distance) and Murrough Road (1.7km). The Abbeyvale connection will create a shorter walking distance of 450m from the southern end of Mooretown to the No. 500 bus stop on Brackenstown Road. If and when the Metro is constructed, the Estuary stop will be c.4.5km from Mooretown, via Oldtown (Millers Glen) and the Broadmeadow linear park, which is a comfortable distance for cyclists, taking c.20 minutes travel time.	Availability, proximity to bus and railway services reduces the reliance on the private motor.
Bicycle Storage	The provision of high-quality secure & covered bicycle parking facilities, for both short term and long-term parking requirements are provided.	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicle.
Storage of Non-Recyclable Waste and Recyclable Household Waste	Domestic waste management strategy: Grey, brown and green bin distinction Competitive tender for waste management collection	Helps reduce potential waste charges
Composting	Organic waste bins to be provided throughout	Helps reduce potential waste charges

3. BUILDING INVESTMENT FUND

In accordance with the MUDs Act, the OMC(s) will allocate a certain portion of funds towards a sinking fund, in order to adequately resource long-term replacement of components. The Building Investment Fund table below illustrates what could be incorporated in the calculation of a Sinking Fund:

Element	**Life Expectancy**
Roofs	
Replacement felt roof covering incl. insulation to main roofs	18
Replacement parapet, fascia details	18
Replace roof access hatches	25
Specialist Roof Systems - Fall arrest	25
Waterproofing details to penthouse paved areas	12
Elevations	
Brick Re-pointing	80
Metal Panels - recoating	25
Minor repairs to render areas	18
Replace exit/entrance doors	25
Replace rainwater goods	25
Replace balcony floor finishes	25
External Areas/Car Parking	
External handrails and guarding	18
Surface finishes	18
Check drains for accumulation of debris and other sediments	6
Repaint parking spaces and numbering	7
Replace bike stands	25
Replace access control at entrances	12
M&E Services	
Internal re-lamping common areas	7
Replace internal light fittings	18
Replace external light fittings	18
Replace smoke detector heads	18
Replace manual break glass units	18
Replace fire alarm panel	18
Replace lift car and controls	25
Replace AOVs	25
Emergency lighting	20
External mains water connection	20