Rathcoole Housing



Metropolitan Workshop

Architecture + Urbanism

Appendix 3 Building Lifecycle Report

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1. Introduction

This report was prepared by Metropolitan Workshop Architects on behalf of South Dublin County Council, to accompany a Part 10 proposal for the development at Rathcoole.

The purpose of this report is to provide an initial assessment of long term running maintenance costs, as they would apply on a 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 and building owner. This is achieved by producing a Building Lifecycle Report.

The Sustainable Urban Housing; Design Standard for New apartments - Guidelines for Planning Authorities were published in December 2020 (here after referred to as the Apartment Guidelines). The Apartment Guidelines introduced a requirement to include details on the management and maintenance of apartment schemes. Section 6.13 of the Apartment Guidelines 2018 requires that apartment applications must:

'...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 applications 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 above requirements of Section 6.13 of the Apartment Guidelines.

Additionally, the South Dublin 2022-2028 County Development Plan, section 12.6.7 notes that;
'As such, planning applications for apartment developments shall include a building
lifecycle report. The contents of this, in line with the Sustainable Urban Housing:
Design Standards for New Apartments (2020) 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;
Property Management of the Common Areas of the development;
Service Charge Budget;
The report should demonstrate what measures have been specifically considered
by the proposer to effectively manage and reduce costs for the benefit of
residents.

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2. Description of Development

The site comprises greenfield lands located to the south and south-east of Rathcoole Village, adjoining established residential areas, with Rathcoole Park located immediately to the north. The overall site extends to approximately 17.78 hectares, with the development within the red line boundary comprising approximately 11.3 hectares.

The proposed development comprises 130 new residential units, including 34 one-bed, 45 two-bed, 47 three-bed and four four-bed homes, arranged across a mix of apartment, duplex and house typologies. The scheme incorporates 60 apartments within four blocks, 20 duplex apartments within three blocks, 43 two-storey houses, and seven single-storey age-friendly houses together with an age-friendly consultation room. The tenure mix comprises 66 affordable purchase homes and 64 social homes. The social housing provision includes age-friendly units, Traveller-specific accommodation, and a range of three- and four-bedroom terraced houses, duplexes and apartments. The affordable homes comprise a combination of three-bedroom terraced houses, duplexes and apartments. Eleven of the 130 units are age-friendly, comprising seven single-storey houses and four duplex apartments.

The wider development includes two senior GAA grass pitches measuring 20,800 sq.m and one junior grass pitch measuring 6,240 sq.m, served by a GAA pavilion of 185 sq.m with associated changing facilities, 43 dedicated car parking spaces and 20 bicycle parking spaces. The proposed GAA pitches will be formed through localised site levelling, reprofiling and drainage works to establish the required pitch platforms. Existing topsoil will be retained on site, with topsoil stripped and temporarily stored before being reinstated following completion of the pitch platforms and associated drainage works, and sand imported to the site as required.

The masterplan adopts a landscape-led approach, with landscaped corridors providing pedestrian and cycle routes throughout the development. Existing connections will be retained and enhanced, including new pedestrian and cycle access from Coolamber Road and from Mullally's Lane, and pedestrian links to Coolamber Drive and Rathcoole Park. Primary vehicular and pedestrian access will be provided through a new T-junction at Greenogue Drive, with Mullally's Lane widened to accommodate the proposed active travel provision. An internal access road will connect the new junction, the approved primary school (SDCC Reg. Ref. SD23A/0336) and the residential portion of the site, and a new bridge over the Coolmine Stream is also proposed to provide access to the development.

The development provides 1,040 sq.m of communal open space serving the apartment and duplex accommodation, together with 17,911 sq.m of public open space incorporating formal and informal play areas. Private open space is provided to serve the proposed residential units. A total of 186 car parking spaces are provided throughout the development. 143 spaces are provided for the residential units, equating to 1.1 spaces per dwelling, and comprising 24 EV spaces, four accessible spaces and 15 EV/accessible spaces. 43 spaces are provided for the GAA grounds and facilities. The development also includes a network of pedestrian and cycle routes connecting the residential areas and public open spaces with Rathcoole Village and Rathcoole Park. A total of 169 bicycle parking spaces are proposed to serve the residential units, comprising 124 secure, sheltered resident spaces and 45 visitor spaces, with a further 12 bicycle parking spaces proposed to serve the GAA pitches and associated facilities.

The development also includes the construction of new ESB substations and switchrooms, together with lighting, site drainage works, SuDS features and all associated roads, site services, infrastructure, development works and necessary enabling works. Sensitive ecological habitats have been considered throughout the design process, with residential development positioned to avoid identified ecologically sensitive areas. The landscape strategy incorporates and retains existing ecological features within the development, together with replacement planting, enhancements to the riparian corridors and boundary treatments.

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3. Lifecycle Report Requirements

The South Dublin 2022-2028 County Development Plan section 12.6.7 notes that the Building Lifecycle Report should address the following headings:

(A) Assessment of long term running and maintenance costs	
Property/Owner Management Company & Common Areas	Refer to page 6, Operational Management Plan below in this report.
Service Charge Budget	Service charge arrangements will be developed as part of the detailed management strategy for the development and will reflect the maintenance requirements of communal areas and shared facilities.
(B) Measures to manage and reduce costs	
Treatment, materials and finishes	Refer to the below pages 9,10, 11 for a brief description of materials and finishes. Additionally refer to the Architectural design statement and Architectural planning drawings for further information on finishes and materials.
Construction methodology	At detailed design stage, a variety of construction methods will be considered and the pros and cons of each reviewed with cost management and reduction in mind. A detailed inspection plan will be requested from contractors as part of the tender process to ensure regular inspection of the works to monitor quality and mitigate against the risk of the post-occupancy issues which could incur repair costs.
Material Specification	At detailed design stage a clear set of appropriate performance requirements will be set out as part of the tender Preliminaries to ensure the scheme is constructed in line with design life requirements. The design will be specified at a minimum to comply with national building regulations and where possible to exceed these requirements
Landscaping	Refer to the below page 12 for a brief description of materials and finishes. Additionally refer to the Landscape Architects design statement and planning drawings for further information.
Waste Management	Refer to page 13 and also the Architectural Design Report for further information.
Human Health and well-being	Refer to page 14 and also the Architectural Design Report for further information.
Residential management	Refer to page 15 of this report
Energy and carbon emissions	Refer to page 7 and 8 of this report. Additionally refer to the MEP and energy and sustainability reports as issued with this application.
Transport and Accessibility	Refer to page 15 of this report. Additionally refer to the Transport consultants Mobility Management Plan and Traffic Transport Assessment as issued with this application.

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A. Long Term Running and Maintenance Costs

Operational management plan

Social housing units are anticipated to be managed by South Dublin County Council or a suitably appointed management operator. An Owners Management Company (OMC) is currently proposed for the management and maintenance of communal areas and shared building elements associated with the apartment and duplex units. Responsibility for the lifecycle replacement of building elements will be allocated in accordance with the final management arrangements for the development.The final management structure will be confirmed as the development progresses.

As part of the contract, a specification will be developed that will outline the level of robustness and life expectancy of materials to be used, the required maintenance regimes and the residual life of building elements. The performance specification will cover external envelope materials, internal and external communal areas and all areas within the public realm, including approaches to providing lighting, heating, hot water provision and other services. This will be in line with South Dublin County Council employers requirements.

At this planning stage, consideration has been given to the external materials to buildings, boundaries, and the public realm, and also outline energy and carbon reduction strategies. The materials and services proposed will be durable and will provide a long life and low maintenance requirements for the residents.

The detail associated with each element heading i.e., specification and estimation of the costs to maintain, repair or replace, can only be determined after detailed design and the procurement/construction of the development and therefore has not been included in this document.

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B. Measures to manage and reduce costs

Energy and Carbon Emissions

The following are an illustration of the energy measures that have been designed for and which SDCC will be able to consider for the units to assist in reducing costs for the occupants.

Measure	Description	Benefit
BER Certificates	A Building Energy Rating (BER) certificate will be provided for each dwelling in the proposed development which will provide detail of the energy performance. A BER is calculated based on the energy use for space and hot water, heating, ventilation, and lighting. A2/A3 rating for the new build apartments as a minimum will be targeted.	Lower BER ratings reduce energy consumption and running costs
Fabric Energy Efficiency	The fabric u-values for the new build apartments will improve upon the minimum requirements of Part L of the Building Regulations "Conservation of Fuel and Energy Buildings other than Dwellings" 2021. Refer to the Climate Action Energy Statement for further information on fabric efficiency.	Lower U-values and improved air tightness will be utilised to help minimise heat losses through the building fabric. This will reduce energy consumption and thus minimise carbon emissions.
Lighting Efficiency	Low energy LED lighting will be used throughout the development, for both internal and external lighting, to minimise energy consumption. Automatic controls such as motion sensors in communal areas and photocells on external lighting will be used to maximise efficiency in use. External lighting will be provided to ensure 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.	Low energy lamps and automatic controls improve energy efficiency. Adequate lighting levels ensure safe environments, particularly in public areas, as per the Public Lighting Report issued as part of the Part 8 application
Heating System/ Heat Pumps	Domestic water heating throughout the development will be provided by a decentralised heating system, with each home provided with its individual Exhaust Air Heat Pump (EAHP). Low Temperature Hot Water (LTHW) will be generated through these units, and distributed through individual apartments via a heat network. Fossil fuel heat sources will not be used, with air source heat pumps providing the vast majority of the heating and hot water demand.	Heat pumps can operate with seasonal efficiencies greater than 300% which significantly reduces the energy consumption of space and domestic water heating.

Measure	Description	Benefit
Mechanical Ventilation Heat Recovery or Demand controlled ventilation	Mechanical Ventilation with Heat Recovery (MVHR) utilises the extract air from wet rooms to heat incoming fresh air which is supplied to habitable rooms. Centralised Continuous Mechanical Extract Ventilation (CMEV) extracts air from wet rooms on a continual basis, with fresh air provided by wall or trickle vents. Demand control systems can vary the extract rates depending on humidity levels in the space. MVHR will be utilised in all new build apartments.	MVHR provides continuous ventilation to habitable rooms with low energy usage. Continuous extract is also provided from wet rooms, with exhausted air preheating the incoming fresh air via a heat exchanger in the unit. 90% of the heat can be recovered through this process that would otherwise be wasted. MEV, or demand control ventilation, relies on continuous extract from wet rooms, without heat recovery. It incorporates automated wall vents which open/close dependent on internal humidity conditions. MEV is more power efficient than the MVH. MVHR is more beneficial in energy terms when the outdoor air is cold.
ECAR Charging Points	A percentage of parking spaces will be ducted for future installation of EV charging in accordance with the requirements Part L of the Building Regulations, Conservation of Fuel and Energy Buildings other than Dwellings 2021 and the South Dublin 2022 – 2028 County Development Plan	Providing infrastructure for EV charging will facilitate the provision of EV charging as the national car fleet moves away from fossil fuels

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Treatment, Materials and finishes

All dwellings are designed in accordance with the Building Regulations, in particular Part D 'Materials and Workmanship', which includes all elements of the construction.

The Design Principles and Specification are applied to both the apartment units and the common parts of the building. The below lists general measures that have been taken in the specification of materials and finishes:

General Measures Description	Benefit
Consideration is given to the requirements of the Building Regulations and includes reference to BS 7543:2015, 'Guide to Durability of Buildings and Building elements, Products and Components', which provides guidance on the durability, design life and predicted service life of buildings and their parts. All common parts of the proposed Apartment buildings and, the durability and performance of these are designed and specified in accordance with Figure 4; Phases of the Life Cycle of BS7543; 2015. (Please see Appendix B for this figure). The common parts are designed to incorporate the guidance, best practice principles and mitigations of Annexes of BS 7543: 2015 including: Annex A Climatic Agents affecting Durability Annex B Guidance on materials and durability Annex C Examples of UK material or component failures Annex D Design Life Data sheet.	Ensures that the long-term durability and maintenance of Materials is an integral part of the Design and Specification of the proposed development
Use of brickwork to the street facing envelope of building (and particularly where robustness and durability are required), with render in areas to internal courtyards, where less robustness is required. Render is located on internal courtyards, on ground floor areas to private amenity areas and is contained to deck access or internal courtyard areas.	Requires minimal on-going maintenance
Use of high-performance powder-coated windows, doors and railings.	Requires minimal on-going maintenance
Robust green and blue warm roof finishes with proven detailing.	Built up warm roof system with sedum layer over, reduced maintenance & are easy to repair.

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The following tables outline the typical performance indicators for a range of external materials as described on the planning drawings:

Green and Blue warm Roof	
Description	Blue & Green warm roof; Pre cultivated Sedum vegetation blanket combined with blue roof void. Substrate; concrete deck
Typical life expectancy	Employers Requirements require 30 years. Average lifecycle is 30-35 years on most green roofs. Lifecycle will be extended with robust proven detailing to adjoining roof elements and appropriate and regular maintenance of the roof materials.
Robustness & Security	Not in vulnerable locations, with access for maintenance purposes only
Replacement & Repair	Easily replaced in case of damage
Typical Maintenance	Quarterly maintenance visits to include inspection of drainage layer and outlets and removal of any blockages to prevent ponding. Inspection of vegetation layer for fungus and decay. Carry out weeding as necessary. No irrigation necessary with sedum blankets.
Rainwater Drainage	
Description	Rainwater outlets: Suitable for specified roof membranes Pipework: PPC aluminium/PVC downpipes and gutters
Typical life expectancy	Employers Requirements require 30 years. Aluminium gutters and downpipes have an expected life expectancy of 50 years in rural and suburban conditions. PVC has 30 years.
Robustness & Security	Good resistance to accidental damage
Replacement & Repair	Easily replaced
Typical Maintenance	As with roofing systems routine inspection is key to preserving the lifecycle of rainwater systems. Regular cleaning and rainwater heads and gutters, checking joints and fixings and regularly cleaning polyester coated surfaces (no caustic or abrasive materials).
Windows and doors	
Description	Thermally broken Aluclad composite windows and doors.
Typical life expectancy	Employers Requirements require 30 years. PPC aluminium has a typical life expectancy of 45-50 years.
Robustness & Security	Good resistance to accidental damage
Replacement & Repair	Moderate- able to be touched up.
Typical Maintenance	Low maintenance. Annually. Check surface of windows and doors regularly. Silicone seals and gaskets should be checked to ensure they are intact and secure. Check fixings and furniture. Ensure regular cleaning regime. Check for condensation on frame of window and ensure ventilation louvres are operable.

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Balconies & Railings	
Description	Powder coated metal
Typical life expectancy	Employers Requirements require 30 years. The metal balcony structure is typically 70 years, general metal items have a 25-45 year lifespan.
Robustness & Security	High resistance to accidental damage
Replacement & Repair	Moderate- able to be touched up
Typical Maintenance	Low maintenance. Regular visual inspection of connection pieces for impact damage or alterations.
External Brick walls	
Description	Clay brick
Typical life expectancy	Employers Requirements require 60 years. Brick is an extremely durable material. Brickwork in this application is expected to have a lifespan of 50-80 years. Mortar pointing has a shorter lifespan of 25-50 years.
Robustness & Security	Very high resistance to accidental damage
Replacement & Repair	Excellent- easily replaced.
Typical Maintenance	Very low maintenance. Most maintenance is preventative: checking for hairline cracks, deterioration of mortar, plant growth on walls, or other factors that could signal problems or lead to eventual damage.
External render	
Description	External render finish applied to blockwork
Typical life expectancy	Employers Requirements require 60 years. Life expectancy is circa 25 years however the render is in low-traffic areas and can be repaired locally.
Robustness & Security	High resistance to accidental damage
Replacement & Repair	Good - able to be repaired locally
Typical Maintenance	Medium level of maintenance, will require painting regularly.

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Landscape

The following tables outline the typical performance indicators for a range of external landscape materials as described on the planning drawings:

Measure	Description	Benefit
Hard Landscaping Materials	Sustainable, robust materials, with high slip resistance to be used for paving. Durable and robust finishes to be selected for all play elements, fencing, furniture, bin and bicycle storage units.	Materials selected to minimise ongoing maintenance inputs. Robust, well chosen materials allow the long term aesthetic quality of the site to remain high.
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. Native tree species have been selected for planting along boundaries and across open spaces while non-native species have also been selected where spatial constraints are a factor. The plant selection proposed has a proven record to thrive in the Irish climate.	Reduction in the frequency of required soft landscape maintenance. Positive impact on the surrounding natural environment.
Site Layout and Design	Pedestrian and cyclist friendly hierarchy of public streets facing spaces and semi private open spaces are complemented by generous and high-quality landscape treatments including street tree planting and soft landscaping within public spaces providing long term high quality residential environments.	Safe, high quality residential environments reduce vandalism and antisocial behaviour issues while also seamlessly incorporating into the existing public realm environment.
Maintenance & Management	Maintenance and management requirements have been considered through the design process. Complex planting arrangements have been omitted thus avoiding onerous maintenance and management requirements.	Estate maintenance costs reduced
Sustainability & Biodiversity	Sustainability aspects of the proposed development include the use of native trees where possible across the site. Other species have been carefully selected for compatibility with the size of available spaces which is an important factor in long term management. The overall objective is to enhance the biodiversity potential of the site in addition to providing seasonal interest and variety.	Enhanced sustainability of the site in context of the surrounding landscape. Long-term management and care will allow the site's biodiversity impact to thrive.

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Waste Management

The following measures illustrate the intentions for the management of Waste:

Measure	Description	Benefit
Construction Waste Management Plan	An Outline Construction Demolition Resource Waste Management Plan has been included with this application. A Construction and Operational Waste Management Plan will be developed by the contractor in due course.	Achieving best practice in the segregation of waste, recycling and reusing where possible, reducing material to landfill and promoting the circular economy.
Operational Waste Management Plan	This application includes an Operational Waste Management Plan. Refer to Architectural Design Statement.	The report demonstrates how the scheme has been designed to comply with local, regional, and national waste legislation.
Storage of Non-Recyclable & Recyclable Household Waste	Inclusion of centralised waste storage areas. Domestic waste management strategy: Grey, Brown and Green bin distinction. Enough space to accommodate regular collection of bins. Domestic waste management strategy: General waste, mixed recyclable and organic bin distinction.	Easily accessible by all residents, minimizes potential littering of the scheme, reduce potential waste charges and not limit waste contractor selection.
Composting	Organic waste bins to be provided in waste storage areas	Reduces materials to landfill and waste charges

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Health and Wellbeing

The following are illustrations of how the health and wellbeing of future residents are considered:

Measure	Description	Benefit
Natural / Day Light	The design, separation distances and layout of the duplex / apartment blocks have been designed to optimize natural daylight/ sunlight and to provide good levels of natural light. Refer to Daylight and Sunlight Analysis Report for further information.	Reduces reliance on artificial lighting thereby reducing costs.
Accessibility	All units will comply with the requirements of Part M and Part K. In addition there are Universal Design and Universal Design+ units, refer to the HQA schedules and Architectural Design Statement for further information.	Reduces the level of adaptation, and associated costs, potentially necessitated by residents' future circumstances.
Privacy & Security	The scheme has been designed in line with the South Dublin 2022-2028 County Development Plan Chapter: 6.7.5 Privacy and Security Security and privacy is well considered by providing a clear definition between public, semi-private and private spaces. Furthermore security can be aided by maximising passive and active surveillance of streets and spaces. The apartment blocks are designed to incorporate the following security strategies available for adaption into the design where applicable: • Fobbed access into communal bin and shared bicycle facilities. • Controlled Access to individual circulation cores • Controlled access between Public Spaces and Residents Communal Spaces • Appropriately lit external spaces • Adequate lighting for public and semi private spaces	Aids in reducing potential security/ management costs. Enhances safety for residents and visitors
Natural Amenity	High quality external spaces are being provided for residents (communal courtyard with playspaces).	Facilitates community interaction, socialising, and play – resulting in improved wellbeing. Proximity and use of external green spaces promotes a healthy lifestyle.

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Management

Consideration has been given to ensuring the users will have a clear understanding of their property:

Measure	Description	Benefit
Home user guide	Consideration will be given to providing all residents with a home user guide. This will provide important information for the residents on details of the new property. It typically includes details of the property such as MPRN and GPRN, Information in relation to connect with utilities and communication providers, contact details for all relevant suppliers and User Instructions for appliances and devices in the property. A Residents Pack prepared by the OMC which will typically provide information on contact details for the Managing agent, emergency contact information, transport links in the area and a clear set of rules and regulations.	Residents are kept as informed as possible so that any issues can be addressed in a timely and efficient manner.
Caretaker	A caretaker or management representative may be appointed by the OMC or housing management provider. They will be available to help residents with any home user issues and generally contribute to ensuring maintenance and care of the development.	Ensures home user issues are managed

Transport

Consideration has been given to the ensuring the users will have a clear understanding of their property:

Measure	Description	Benefit
Access to Public Transport	The development is a 5 minute walk to bus stops on Rathcoole Main street.	The availability, proximity and ease of access to high quality public transport services contributes to reducing the reliance on the private motor vehicle for all journey types.
Permeable Connections	Dedicated pedestrian and cycle infrastructure on-site, and their connectivity with adjoining lands and off-site networks.	Permeable connections for residents
Bicycle Storage	The provision of high-quality secure bicycle parking facilities, for both short term and long-term parking requirements.	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicles.

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Appendix. A:

The table below illustrates what would be incorporated for the calculation of a Building Investment Fund (Sinking Fund).

Building Element	Minimum Service Life (years) at Service Commencement Date
Structure/sub structure	60
Floor Structure	60
Roof Structure	60
Roof covering- up to 5 deg pitch	60
Roof covering- over 5 degree pitch	60
Windows	30
External wall/cladding inc. openings	30
External Doors	30
Internal partitions inc. openings	40
Internal finishes	15
Ceilings	40
Internal doors	30
Internal fixtures and fittings	15
Sanitary fittings	20
Kitchen sanitary fittings	20
Built in furniture	20
Mechanical Plant	As CIBSE Guide, Vol.B
Electrical Plant	As CIBSE Guide, Vol.B
Engineering service distribution systems	As CIBSE Guide, Vol.B
CCTV installations	20
Fire installations	20
Security installations	20
Communications installations	20
Lifts	40
Underground Drainage	60
External finishes- decorative coatings	25
External fences	30

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