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BUILDING LIFECYCLE REPORT

for the development at

Tay Lane, Rathcoole Age-Friendly Development

Prepared by PAC Studio Ltd, Tower 1, Fumbally Court, Fumbally Lane, Dublin 8

(acting as Architect)

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PAC Studio Ltd Tower 1, Fumbally Court, Fumbally Lane, Dublin D08 PX95, Rep. of Ireland
T: +353 (1) 453 0406 w: www.pacstudio.ie e: info@pacstudio.ie
Directors: Graham Petrie MRIAI, ARB, RIBA & Peter Crowley, MRIAI
Company Registration Number 443435 VAT Registration IE 9663801O

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1.0 INTRODUCTION

PAC Studio Ltd. were instructed by Riverside Projects Limited, to provide a Building Lifecycle Report for the proposed age-friendly scheme at Tay Lane, Newcastle Road, Rathcoole, Dublin 24.

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) under Section 28 of the Planning and Development Act 2000 (as amended). Within the new guidelines, new guidance is being provided on residential schemes.

Section 6.13 of the Apartment Guidelines 2018 requires that apartment applications 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 the residents."

2.0 DESCRIPTION OF DEVELOPMENT

The proposed development consists of the construction of 58no. age-friendly residential apartments to the proposed site.

The development will consist of the following:

- The construction of a four-storey building comprising 58no. residential units consisting of 20no. one-bedroom and 38no. two-bedroom apartments to the site;
- Removal of existing trees to the site and its boundaries;
- The provision of an ancillary community facility, associated accommodation including refuse stores and cycle stores, car and cycle parking, landscaped communal and public open space and boundary treatment works;
- Installation of internal access roads and pedestrian / cycle pathways and linkages, public lighting, landscaping, and all associated site and development works to facilitate the proposed development.

3.0 EXECUTIVE SUMMARY – BUILDING LIFECYCLE REPORT

Measures to effectively manage and reduce costs for the benefit of residents

The following document reviews the outline specification set out for the proposed residential development at Tay Lane, Newcastle Road, Rathcoole, Dublin 24 and explores the practical implementation of the design and material principles which has informed design of building roofs, façades, internal layouts and detailing of the proposed development.

Building materials proposed for use on 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, as well as both soft and hardscape in the public, semi-public and private realm will contribute to lower maintenance costs for future residents and occupiers.

Please note that detailed specifications of building fabric and services have not been provided at this stage. This report reflects the outline material descriptions contained within the planning drawings that accompany this application.

For any elements where information was not available, typical examples have been provided of building materials and services used for schemes of this nature and their associated lifespans and maintenance requirements. All information is therefore indicative subject to further information at detailed design stage.

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 in a summary document. 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, this will take the form of a Planned Preventative Maintenance Schedule (PPM) at operational commencement of the development.

4.0 EXTERNAL BUILDING FABRIC SCHEDULE

4.1 Roofing

4.1.1 Roofs (Manufacturer / Supplier TBC)

Location	All proposed flat roof areas (maintenance access only)
Description	Asphalt built-up felt roof system with gravel ballast
Lifecycle	Average lifecycle of 20-25 years on most asphalt roofs. Lifecycle will be extended with robust proven detailing to adjoining roof elements and appropriate and regular maintenance of the roof materials.
Required maintenance	Quarterly maintenance visits to include inspection of drainage layer and outlets and removal of any blockages to prevent ponding. Carry out weeding as necessary.
Year	Quarterly
Priority	Medium
Selection process	The gravel ballast will add to the character of the overall scheme, as well as providing limited attenuation to storm water run-off while protected the roofing system from birds.
Reference	PAC Studio Ltd planning drawings and Design Report.

4.1.2 Fall Arrest System for Roof Maintenance Access (Manufacturer / Supplier TBC)

Location	All flat roof areas (maintenance access only)
Description	• Fall Protection System on approved anchorage device • Installation in accordance with BS 7883 by the system manufacturer or a contractor approved by the system manufacturer
Lifecycle	25-30 years dependent on quality of materials. Generally steel finishes to skyward facing elements can be expected to maintain this life expectancy.
Required maintenance	Check and reset tension on the line as per manufacturer's specifications. Check all hardware components for wear (shackles, eye bolts, turn buckles). Check elements for signs of wear and/or weathering. Lubricate all moving parts. Check for structural damage or modifications.
Year	Annually
Priority	High
Selection process	Fall protection systems are a standard life safety system, provided for safe maintenance of roofs and balconies where there is not adequate parapet protection. An FPS must comply with relevant quality standards.
Reference	N/A

4.1.3 Flashings (Manufacturer / Supplier TBC)

Location	All flashing locations
Description	Lead to be used for all flashing and counter flashings
Lifecycle	Typical life expectancy of 70 years recorded for lead flashings. Recessed joint sealing will require regular inspections.
Required maintenance	Check joint fixings for lead flashing, ground survey annually and close-up inspection every 5 years. Re-secure as necessary.
Year	Ground level inspection annually and close-up inspection every 5 years
Priority	Medium
Selection process	Lead has longest life expectancy of comparable materials such as copper (60 years) and zinc (50 years). Lead is easily formed into the required shapes for effective weathering of building junctions according to Lead Sheet Association details.
Reference	N/A

4.2 Rainwater Drainage (Manufacturer / Supplier TBC)

Location	All buildings
Description	• *Rainwater outlets:* Suitable for specified roof membranes • *Pipework:* uPVC downpipes • *Below ground drainage:* To M&E/ Structural Engineers design and specification • *Disposal:* To surface water drainage to Structural Engineers design • *Controls:* To M&E/ Structural Engineers design and specification • *Accessories:* allow for outlet gradings, spigots, downspout nozzle, hopper heads, balcony and main roof outlets
Lifecycle	uPVC gutters and downpipes have an expected life expectancy of 40 years in rural and suburban conditions (25 years in industrial and marine conditions), this is comparable to cast iron of 50 years and plastic, less so at 30 years.
Required 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).
Year	Annually, cleaning bi-annually
Priority	High
Selection process	As above, uPVC fittings compare well against cast iron (in terms of cost) and aluminium (in terms of lifespan and aesthetic)
Reference	N/A

4.3 External Walls

4.3.1 Brick (Manufacturer / Supplier TBC)

Location	Façades
Description	Facing brickwork external leaf to selected colour
Lifecycle	While bricks have a high embodied energy, they are an extremely durable material. Brickwork in this application is expected to have a lifespan of 50-80 years. The mortar pointing however has a shorter lifespan of 25-50 years.
Required maintenance	In general, given their durability, brickwork finishes require little 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.
Year	Annual
Priority	Low
Selection process	Aesthetic, lightweight, cost-efficient and low maintenance cladding option, indistinguishable from traditional brick construction.
Reference	PAC Studio Ltd. planning drawings and Design Report.

4.3.2 Render (Manufacturer / Supplier TBC)

Location	Façades
Description	Painted sand/cement render to blockwork on external leaf to selected colour
Lifecycle	While blockwork have a reasonably high embodied energy, they are an extremely durable material. The render in this application is expected to have a lifespan of 20-30 years.
Required maintenance	In general, given their durability, rendered blockwork finishes require little maintenance. Most maintenance is preventative: checking for hairline cracks, deterioration of render, plant growth on walls, or other factors that could signal problems or lead to eventual damage.
Year	Annual
Priority	Low
Selection process	Aesthetic, lightweight, cost-efficient and low maintenance cladding option.
Reference	PAC Studio Ltd. planning drawings and Design Report.

4.4 External Windows & Doors (Manufacturer / Supplier TBC)

Location	Façades
Description	• uPVC framed windows, doors to selected colour. • All units to be double glazed with thermally broken frames. • All opening sections in windows to be fitted with suitable restrictors. Include for all necessary ironmongery; include for all pointing and mastic sealant as necessary; fixed using stainless steel metal straps screwed to masonry reveals; include for all bends, drips, flashings, thermal breaks etc.
Lifecycle	uPVC has a typical lifespan of 30-40 years. Timber windows have a typical lifespan of 35-50 years,
Required maintenance	Check surface of windows and doors regularly so that damage can be detected. Vertical mouldings can become worn and require more maintenance than other surface areas. Lubricate at least once a year. Ensure regular cleaning regime. Check for condensation on frame from window and ensure ventilation.
Year	Annual
Priority	Medium
Selection process	uPVC is durable and low maintenance with an average lifespan of 30-40 years.
Reference	PAC Studio Ltd. planning drawings and Design Report.

5.0 INTERNAL BUILDING FABRIC SCHEDULE

5.1 Floors

5.1.1 Common Areas

Location	Entrance lobbies / corridors
Description	• Selected anti-slip porcelain or ceramic floor tile • Provide for inset matwell
Lifecycle	Lifespan expectation of 20-30 years in heavy wear areas, likely requirement to replace for modernisation within this period also
Required maintenance	Visual inspection, intermittent replacement of chipped / loose tiles
Year	Annual
Priority	Low
Selection process	Durable, low maintenance floor finish. Slip rating required at entrance lobby, few materials provide this and are as hard wearing.
Reference	N/A

Location	Stairwells, landings / half landings
Description	Selected carpet covering. Approved anodised aluminium nosings to stairs.
Lifecycle	• 10-15 year lifespan for carpet. Likely requirement to replace for modernisation within this period also. • 20 year lifespan for aluminium nosings.
Required maintenance	Visual inspection with regular cleaning.
Year	Quarterly inspection and cleaning as necessary.
Priority	Low
Selection process	Using carpet allows flexibility to alter and change as fashions alter and change providing enhanced flexibility.
Reference	N/A

5.2 Walls

5.2.1 Common Areas

Location	Entrance lobbies / Stairwell
Description	Selected paint finish with primer to skimmed plasterboard
Lifecycle	2-10 years for finishes; 40 years for plasterboard
Required maintenance	Regular maintenance required, damp cloth to remove stains and replacement when damaged
Year	Bi-annually
Priority	Low
Selection process	Decorative and durable finish.
Reference	N/A

5.3 Lift

Location	Common areas
Description	Replace lift car and controls
Lifecycle	25 years
Required maintenance	Regular maintenance required, damp cloth to remove stains and replacement when damaged
Year	Annually
Priority	Low
Selection process	Regular inspections of general materials
Reference	N/A

5.4 Ceilings

Location	Common areas
Description	Selected paint finish with primer to skimmed plasterboard ceiling on M/F frame. Acoustic ceiling to lift core and apartment lobbies. Moisture board to wet areas.
Lifecycle	2-10 years for finishes; 40 years for plasterboard
Required maintenance	Regular maintenance required, damp cloth to remove stains and replacement when damaged
Year	Bi-annually
Priority	Low
Selection process	Decorative and durable finish
Reference	N/A

5.5 Internal Handrails & Balustrades

Location	Stairs & landings
Description	• PPC steel balustrade face fixed to stairs stringer / landing slab to manufacturer's details and specifications, or
Lifecycle	25-30 years typical lifecycle
Required maintenance	Regular inspections of holding down bolts and joints
Year	Annually
Priority	High
Selection process	Hard-wearing long-life materials against timber options
Reference	N/A

5.6 Carpentry & Joinery

5.6.1 Internal Doors and Frames

Location	All buildings
Description	• Selected white primed and painted/varnished solid internal doors, or hardwood veneered internal doors • All fire rated doors and joinery items to be manufactured in accordance with B.S. 476. Timber saddle boards. • Brushed aluminium door ironmongery or similar
Lifecycle	30 years average expected lifespan
Required maintenance	General maintenance in relation to impact damage and general wear and tear
Year	Annual
Priority	Low, unless fire door High
Selection process	Industry standard
Reference	N/A

5.6.2 Skirtings and Architraves

Location	All buildings
Description	Painted timber/MDF skirtings and architraves
Lifecycle	30 years average expected lifespan
Required maintenance	General maintenance in relation to impact damage and general wear and tear
Year	Annual
Priority	Low
Selection process	Industry standard
Reference	N/A

5.6.3 Window Boards

Location	Residential blocks
Description	Painted timber/MDF window boards
Lifecycle	30 years average expected lifespan
Required maintenance	General maintenance in relation to impact damage and general wear and tear
Year	Annual
Priority	Low
Selection process	Industry standard
Reference	N/A

6.0 BUILDING SERVICES

6.1 Mechanical Systems

6.1.1 Mechanical Plant

Location	Roof
Description	Water Heating plant is proposed to consist of Air to Water Heat Pumps. Specification to be further details to be provided by the M&E Consultant at detailed design stage.
Lifecycle	• Annual Maintenance / Inspection to Heating System • Annual Maintenance of Air to Water Heat Pumps. • Annual Maintenance / Inspection to Heating and Water Pumps. • Annual Maintenance / Inspection to Water Tanks. • Annual Maintenance / Inspection to Booster - sets. • Annual Maintenance / Inspection to DHS Tanks. • Cost for replacement equipment to be updated on completion of design matrix of equipment at detailed design stage. • Replacement of equipment at (End of Life) EOL to be determined at detailed design stage.
Required maintenance	Annual Service Inspections to be included as part of Development Planned Preventative Maintenance Programme
Year	Annually
Priority	Medium
Selection process	All equipment to be detailed as part of the detailed design section of the development. This equipment will be selected in conjunction with the design and management team to meet and exceed the CIBSE recommended lifecycles.
Reference	N/A

6.1.2 Soils and Wastes

Location	All Areas / kitchens etc
Description	PVC Soils and Wastes Pipework
Lifecycle	• Annual inspections required for all pipework within landlord areas. • Cost for replacement equipment to be updated on completion of design matrix of equipment at detailed design stage.
Required maintenance	Annual Service Inspections to be included as part of Development Planned Preventative Maintenance Programme
Year	Annually
Priority	Medium
Selection process	All equipment to be detailed as part of the detailed design section of the development. This equipment will be selected in conjunction with the design and management team to meet and exceed the CIBSE recommended lifecycles.
Reference	N/A

6.1.3 Water Services

Location	Apartments
Description	LPHW HIU for domestic Hot Water Copper Water Services Pipework and associated fittings and accessories.
Lifecycle	• Annual Inspection of HIU. • Annual inspections required for all pipework within landlord areas. • Cost for replacement equipment to be updated on completion of design matrix of equipment at detailed design stage.
Required maintenance	Annual Inspections, including legionella testing to be included as part of Development Planned Preventative Maintenance Programme
Year	Annually
Priority	High
Selection process	All equipment to be detailed as part of the detailed design section of the development. This equipment will be selected in conjunction with the design and management team to meet and exceed the CIBSE recommended lifecycles.
Reference	N/A

6.1.4 Ventilation Services

Location	Apartment Bathrooms
Description	Heat Recovery Ventilation System (HRV) System, Ducting & Grilles (MVHR)
Lifecycle	• Annual inspection of extract fan / HRV and grilles • Annual Inspection of operation of fan and boost / setback facility. • Cost for replacement equipment to be updated on completion of design matrix of equipment at detailed design stage.
Required maintenance	Annual Service Inspections to be included as part of Development Planned Preventative Maintenance Programme
Year	Annually
Priority	Medium
Selection process	All equipment to be detailed as part of the detailed design section of the development. This equipment will be selected in conjunction with the design and management team to meet and exceed the CIBSE recommended lifecycles.
Reference	N/A

6.2 Electrical / Protective Systems

6.2.1 Electrical Infrastructure

Location	Switch rooms / Risers
Description	Maintenance of Electrical Switchgear
Lifecycle	• Annual Inspection of Electrical Switchgear and switchboards. • Thermographic imagining of switchgear 50% of MV Switchgear Annually and LV switchgear every 3 years. • Cost for replacement equipment to be updated on completion of design matrix of equipment at detailed design stage.
Required maintenance	Annual / Every three years to be included as part of Development Planned Preventative Maintenance Programme
Year	Annually
Priority	High
Selection process	All equipment to meet and exceed ESB, ETCI, CIBSE recommendations and be code compliant in all cases.
Reference	N/A

6.2.2 Lighting Services Internal

Location	All Areas – Internal
Description	Lighting – LED throughout with presence detection in circulation areas and locally controlled in apartments.
Lifecycle	Annual Inspection of All Luminaires Quarterly Inspection of Emergency Lighting. Cost for replacement equipment to be updated on completion of design matrix of equipment at detailed design stage.
Required maintenance	Annual / Quarterly Inspections certification as required per above remedial works.
Year	Annually / Quarterly
Priority	High
Selection process	All equipment to meet requirements and be in accordance with the current IS3217, Part M and DAC Requirements.
Reference	N/A

6.2.3 Lighting Services External

Location	All Areas – External
Description	Lighting – All LED with Vandal Resistant Diffusers where exposed.
Lifecycle	• Annual Inspection of All Luminaire • Quarterly Inspection of Emergency Lighting • Cost for replacement equipment to be updated on completion of design matrix of equipment at detailed design stage.
Required maintenance	Annual / Quarterly Inspections certification as required as per the PPM schedule.
Year	Annually / Quarterly
Priority	High
Selection process	All equipment to meet requirements and be in accordance with the current IS3217, Part M and DAC Requirements.
Reference	N/A

6.2.4 Protective Services – Fire Alarm

Location	All areas – Internal
Description	Fire alarm
Lifecycle	• Quarterly Inspection of panels and 25% testing of devices as per IS3218 requirements. • Cost for replacement equipment to be updated on completion of design matrix of equipment at detailed design stage.
Required maintenance	Annual / Quarterly Inspections certification as required as per the PPM schedule.
Year	Annually / Quarterly
Priority	High
Selection process	All equipment to meet requirements and be in accordance with the current IS3218 and the Fire Cert
Reference	N/A

6.2.5 Protective Services – Fire Extinguishers

Location	All Areas – Internal
Description	Fire Extinguishers and Fire Blankets
Lifecycle	Annual Inspection
Required maintenance	Annual with Replacement of all extinguishers at year 10
Year	Annually
Priority	Cost for replacement equipment to be updated on completion of design matrix of equipment at detailed design stage.
Selection process	All fire extinguishers must meet the requirements of I.S 291:2015 Selection, commissioning, installation, inspection and maintenance of portable fire extinguishers.
Reference	N/A

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

7.1 Energy and Carbon Emissions

The following are an illustration of the energy measures that are planned 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 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	Higher BER ratings reduce energy consumption and running costs.
Fabric Energy Efficiency	The U-values being investigated will be in line with the requirements set out by the current regulatory requirements of the Technical Guidance Documents Part L, titled "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 Paragraphs 1.2.4.2 and 1.2.4.3 within the Technical Guidance Documents Part L.	Lower U-values and improved air tightness is being considered to help minimise heat losses through the building fabric, lower of energy consumption and thus minimise carbon emissions to the environment.
Energy Labelled White Goods	The white good package (where provided) in the apartments will be of a very high standard and have a high energy efficiency rating. It is expected that the below appliance ratings will be provided: • Oven - A plus • Fridge Freezer - A plus • Dishwasher - AAA • Washer/Dryer - B	The provision of high rated appliances in turn reduces the amount of electricity required for occupants.
Internal Common Areas & External Lighting	Low energy luminaires and automatic controls such as motion sensors are to be provided for electric lighting to maximize efficiency in use. LED lamps will be preferred as far as is practical. Lighting will be provided to ensure a safe environment for pedestrians and cyclists, to deter anti-social behavior 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.

The following are Low energy technologies that are being considered for the development and during the design stage of the development in order to meet the requirements of Part L of the Building Regulations and the Near Zero Energy Building standard. The specific combination from the list below will be decided on and then implemented to achieve the A2/A3 BER Rating.

Measure	Description	Benefit
Condensing Boilers	If gas fired heating is adopted, condensing boilers will be provided as they have a higher operating efficiency, typically over 90%, than standard boilers and have the benefit of lower fuel consumption resulting from the higher operating efficiencies.	Condensing boiler have lower fuel consumption resulting from the higher operating efficiencies.
Mechanical Ventilation Heat Recovery	Mechanical ventilation will be provided to all dwellings to ensure that the air quality within the dwellings will be adequate. The inclusion of Heat Recovery Ventilation into the ventilation system will be considered and assessed in order to minimise the energy usage within the dwelling.	Mechanical Heat Recovery Ventilation provides ventilation with low energy usage. The MVHR reduces overall energy and ensures a continuous fresh clean air supply.
PV Solar Panels	PV Solar Panels will be considered in order to meet the renewable energy contribution required by Part L of the Building Regulations. These panels convert sunlight into electricity which can be used within the apartments or common areas. The flat roofs provided allow panels to face south to maximise the solar exposure.	PV Solar Panels offer the benefit of reducing fossil fuel consumption and carbon emissions to the environment. They also reduce the overall requirement to purchase electricity from the grid.
Air Source Heat Pump	As part of the overall energy strategy for apartments, the use of Air Source Heat Pumps will be assessed to determine their technical and commercial feasibility. These systems extract heat energy from the outside air and, using a refrigerant cycle, raise the temperature of the heat energy using a refrigerant vapour compression cycle.	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 apartments than the electrical energy they consume.

7.2 Materials

The practical implementation of the Design and Material principles has informed the design of internal layouts, detailing of the proposed apartment buildings, and building facades. The façade materials will consist of brick, stone, render, glazing, zinc and pressed metal.

7.2.1 Buildings

Apartment Buildings 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 and specific measures taken include:

Measure Description	Benefit
Daylighting to staircore areas	Reduces the requirement for artificial lighting
Natural/Passive ventilation system to circulation areas. Passive smoke shafts are proposed (where required under TGD B) minimizing mechanical maintenance of extract fans	Avoids costly mechanical ventilation systems and associated maintenance and future replacement.
External paved and landscaped areas	All of these require low/minimal maintenance
Plant is located beside the lift in the main entrance lobby for ease of access. (except for any PV/solar panels which may be located on the roof)	Allows for easier maintenance and replacements as necessary

7.2.2 Material Specification

Measure 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. 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 sheets	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 and rendered panels to cladding envelope.	Requires minimal on-going maintenance.
Use of factory finished and alu or uPVC windows and doors, and powder coated steel balconies	Requires minimal on-going maintenance

7.3 Landscape

Measure	Description	Benefit
Site Layout and Design	The site is self-contained with access only permitted for occupiers and their guests. The communal courtyard and landscaping has been designed for shared use with a mix of hard and soft landscaping. Sedum roofs are provided to 50% of roof areas and the podium areas have a mixture of soft and hard landscaping	SUDs drainage system and landscape maintenance preferable Attenuation reduces the burden on vulnerable rainwater goods, resulting in fewer elements that could require replacement or repair.
Hard Landscaping Materials	Sustainable, robust materials, with high slip resistance to be used for paving. Durable and robust equipment (e.g. bicycle parking, seating, fencing etc.) to be used throughout.	Robust materials and elements reduce the frequency of required repair and maintenance.
Soft Landscaping	A selection including native trees and planting is proposed. Hard and soft landscaped areas are balanced to ensure a quality public environment.	High quality soft landscaping improves the general quality of the environment for residents.

7.4 Waste Management

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

Measure	Description	Benefit
Construction and Operational Waste Management Plan	The application is accompanied by a Construction and Operational Waste Management Plan prepared by the applicant	The report demonstrates how the scheme has been designed to comply with best practice.
Storage of Non-Recyclable Waste and Recyclable Household Waste	Access to centralised bin storage areas is provided at ground floor level.	Easily accessible by all residents and minimises potential littering of the scheme
	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

7.5 Health and Well Being

The following are illustrations of how the health and well-being of future residents are considered.

Measure	Description	Benefit
Natural / Day Light	The buildings have been favorably orientated East/West. The design, separation distances and layout of the apartment blocks have been designed to optimize the ingress of natural daylight/sunlight to the proposed apartments to provide good levels of natural light.	Reduces reliance on artificial lighting thereby reducing costs.
Accessibility	All units will comply with the requirements of Part 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 • Routine access fob audits	Help to reduce potential security/management costs.
Natural Amenity	Communal Courtyards are provided at ground floor level and shared with all residents.	Facilitates community interaction, socialising and play – resulting in improved wellbeing

7.6 Management

Consideration has been given to the ensuring the homeowners have a clear understanding of their property.

Measure	Description	Benefit
Home User Guide	If the apartments are sold, and once a purchaser completes their sale, a homeowner box will be provided which will include: • **Homeowner manual** – this will provide important information for the purchaser on details of their 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 as informed as possible so that any issues can be addressed in a timely and efficient manner.

7.7 Transport

Measure	Measure Description	Benefit
Access to Public Transport	There are high quality bus services available on Rathcoole High Street to the South of the site which is on an Urban Transport Corridor. The site is located walking distance to the village centre (50m).	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	The site sits within the established urban grain of Rathcoole with existing cycle ways and footpaths close to the building. Local services, retail areas, and public open spaces are all within close proximity to the site	Promotes cycling and pedestrian activity
Bicycle Storage	The provision of high quality secure bicycle parking facilities within the communal area for both short term and long-term parking requirements.	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicle.
Car Parking	Due to the central location, this development is proposed as a car free scheme and no car parking will be provided.	Reduces the reliance on the private motor vehicle in parallel with reducing oil dependency.

8.0 ASSESSMENT OF LONG TERM RUNNING AND MAINTENANCE COSTS

MATERIALS	MATERIAL LIFE CYCLE	INSPECTION PERIOD	MAINTENANCE COST PER YEAR	PROJECTED LIFE CYCLE COST x 30 YR
External Building Fabric				
Felt Roof	20-25 years	Annually	600	18000
Parapets	18 years	Annually	600	18000
Waterproofing to terraces / balconies	12 years	Annually	600	18000
Fall Arrest System	25-35 years	Annually	600	18000
Flashings	70 years	Every 5 years	600	18000
PVC Rainwater Drainage	25 years	Annually	300	9000
Rendered Blockwork External Walls	20-35 years	Annually	600	18000
Brick External Walls	50-80 years; Mortar 25-50 years	Annually	600	18000
Re-coat zinc / metal panels	25 years	Annually	600	18000
Render - minor repairs	18 years	Annually	600	18000
PVC External Entrance / Exit Doors	30 years	Annually	600	18000
Re-coat Powder Coated Finishes	20 years	Annually	600	18000
Replacement of external fixings	5 years	Quarterly	600	18000
Replace balcony floor finishes	25 years	Annually	600	18000
Replace bike stands	25 years	Annually	300	9000
TOTAL			8400	252000
Internal Building Fabric (Communal Areas)				
Floors – Tiling	20-30 years	Annually	600	18000
Floors – Carpets / Nosings	12 years	Annually	600	18000
Floors – Matwell	10 years	Annually	50	1500
Walls	Finish 2-10 years; Plaster 40 years	Bi-Annually	600	18000
Lift			1200	36000
Ceilings	Finish 2-10 years; Plaster 40 years	Bi-Annually	600	18000
Handrails / Balustrades	25-30 years	Annually	300	9000
Internal Doors	30 years	Annually	600	18000
Skirting / Architraves	30 years	Annually	600	18000
Window Boards	30 years	Annually	600	18000
Fixed Furniture	18 years	Annually	600	18000
Replace access control at core	12 years	Annually	600	18000
TOTAL			6950	208500

MATERIALS	MATERIAL LIFE CYCLE	INSPECTION PERIOD	MAINTENANCE COST PER YEAR	PROJECTED LIFE CYCLE COST x 30 YR
Building Services				
General – Internal Relamping	7 years	Annually	300	9000
Replace internal / external light fittings	18 years	Annually	300	9000
Replace smoke detector heads	18 years	Annually	300	9000
Replace break glass units / disabled refuge call points	18 years	Annually	400	12000
Replace fire alarm panel	18 years	Annually	600	18000
Replace lift car and controls	25 years	Annually	400	12000
Replace AOV's	25 years	Annually	600	18000
Replace security access control	15 years	Annually	400	12000
Electrical main / sub-mains distribution	20 years	Annually	500	15000
Emergency lighting	20 years	Annually	500	15000
Mechanical Plant	Varies	Annually	500	15000
Replace waste pipes, stacks and vents	20 years	Annually	500	15000
External mains water connection	20 years	Annually	500	15000
Ventilation Services		Annually	500	15000
Protective Services	Fire Extinguishers 10 years	Annually	500	15000
Replace CCTV	12 years	Annually	500	15000
TOTAL			7300	219000
Landscaping				
External boundary treatments	60 years	Bi-Annually	500	1500
External handrails and balustrades	18 years	Annually	500	1500
External signage	18 years	Bi-Annually	500	1500
Replace hard landscaping	18 years	Bi-Annually	500	1500
Soft landscaping – generally	15 years		500	1500
Garden Maintenance	Varies	Monthly	2500	7500
TOTAL			500	15000
General Maintenance				
Cleaning		Weekly	600	3000
Waste Management		Weekly	600	3000
Building Manager		Monthly	1200	6000
General Overheads		Monthly	1200	3000
TOTAL			3600	15000
TOTAL FOR DEVELOPMENT			**31250**	**802500**
TOTAL PER APARTMENT PER YEAR			**539**	**13836**

PAC Studio Ltd
Tower 1, Fumbally Court, Fumbally Lane, Dublin D08 PX95, Rep. of Ireland
T: +353 (1) 453 0406 w: www.pacstudio.ie e: info@pacstudio.ie
Directors: Graham Petrie MRIAI, ARB, RIBA & Peter Crowley, MRIAI
Company Registration Number 443435 VAT Registration IE 9663801O