Proposed Part 8 Residential Development, Kishoge, Lucan, Co. Dublin

BUILDING LIFE CYCLE REPORT

South Dublin County Council

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INTRODUCTION

This Building Lifecycle Report was prepared on behalf of the National Development Finance Agency (NDFA) and, to accompany a Part 8 proposal for the development of 118 no. residential units on a site of circa 2.3142ha hectares in area, located at Kishoge, Lucan, Co. Dublin.

The Sustainable Urban Housing; Design Standards for New Apartments – Guidelines for Planning Authorities were published in March 2018 and updated in December 2020 and subsequently in 2023, known as The Sustainable Urban Housing; Design Standards for New Apartments – Guidelines for Planning Authorities 2023, (hereafter referred to as the Apartment Guidelines). The Apartment Guidelines introduced a requirement to include details on the management and maintenance of apartment schemes. This is set out in Section 6.11 to 6.14 - "*Operation & Management of Apartment Developments*", specifically Section 6.13.

Section 6.13 of the Apartment Guidelines 2018 requires that apartment applications shall:

> *"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"*
>
> *"demonstrate 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 01:

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 02:

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

PROPOSED DEVELOPMENT

The development will consist of:

i. 118 no. residential units in a mix of two storey houses, 3 storey duplex units and apartment blocks of 4 – 6 storeys comprising 26 no. 1 bed apartments; 42 no. 2 bed apartments; 21 no. 3 bed apartments; 23 no. 3 bed houses; and 6 no. 4 bed houses, with renewable energy design measures (which may be provided externally) for each housing unit;

ii. Landscaping works including provision of (a) communal open space areas (b) outdoor sports and play areas; (c) new pedestrian and cycle connections; and (d) civic plaza;

iii. Associated site and infrastructural works including provision for (a) ESB substations and switchrooms; (b) energy centre to the rear of 6 storey block; (c) photovoltaic panels; (e) car and bicycle parking; (f) public lighting; (g) bin storage; (h) temporary construction signage; (i) estate signage; and (j) varied site boundary treatment comprising walls and fencing; and

iv. all associated site development works.

On a site measuring 2.3142 Ha site located in the townland of Kishoge, Lucan, Co. Dublin.

The site is bound by Lynch's Lane (L5218) to the northwest and west, Lynch's Park and Kishoge Community College to the north, Traveller accommodation in Lynch's Park to the east and the main railway line running west from Dublin Heuston Station to the south.

This building life cycle relates to the 89 no. apartment units in accordance with the Apartment Guidelines.

SECTION 01

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

1.1. Property Management of the Apartment Units and Common Areas

The apartment units shall be owned by South Dublin County Council. The units are not planned for individual re sale. The local authority and or their agents shall be responsible for the management of the buildings and common areas.

The units are to be delivered using an 'availability-based PPP model'. Under this model a consortium designs (in accordance with the Part 8 consent), builds, finances, and maintains the social housing units on behalf of the local authority subject to a contract.

The maintenance and upkeep services are provided for a period of 25 years after construction. After this the units are returned to the local authority in good, pre-defined, condition.

The sites for this project always remain in State ownership and are made available to the PPP Company by way of a license. As the model is 'availability-based,' the private sector partner is responsible for ensuring that units are available for occupation.

The local authority is the landlord and is responsible for nominating tenants from the local authority social housing waiting list, based on the local authority's allocation scheme.

The MUDS Act and in particular the requirement to establish an Owners Management Company (OMC) shall not apply to these units unless at some stage in the future it is decided to offer the units for individual sale. In that event an OMC would be required but at this stage that is not envisaged.

1.2. Maintenance Costs / Life Cycle Costs

The owner shall be responsible for building maintenance and upkeep. The following section outlines the design measures that have been adopted to reduce long-term running costs. It also includes a sample Building Investment Fund report that identifies those works which are necessary to maintain, repair, and enhance the premises over a 30-year life cycle period. This can be used to guide the preparation of maintenance and renewal budgets over the lifecycle of the buildings. A sample format of the typical BIF report is set out in Appendix A.

Note: the detail associated with each element heading i.e., specification and estimate 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.

SECTION 02

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

2.1. 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.

<table>
<tr><th>Measure</th><th>Description</th><th>Benefit</th></tr>
<tr><td>BER Certificates</td><td>A Building Energy Rating (BER) certificate will be provided for each dwelling in the proposed development which will provide details 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

Note proposed Part L revisions will increase the energy efficiency standard required for residential units.</td><td>BER ratings reduce energy consumption and running costs.</td></tr>
<tr><td>Fabric Energy Efficiency</td><td>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. See below Table 1 of Part L, Building Regulations.

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>0.21</td><td>0.6</td></tr>
<tr><td>Ground floors[3]</td><td>0.21</td><td>0.6</td></tr>
<tr><td>Other exposed floors</td><td>0.21</td><td>0.6</td></tr>
<tr><td>External doors, windows and rooflights</td><td>1.6[4]</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 1.6 W/m²K when their combined area is 25% of floor area. However areas and U-values may be varied as set out in Table 2.</td><td>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.</td></tr>
<tr><td>Energy Labelled White Goods</td><td>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</td><td>The provision of high rated appliances in turn reduces the amount of electricity required for occupants.</td></tr>
<tr><td>Internal Common Areas & External Lighting</td><td>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, cyclists and moving vehicles, to deter anti-social behavior and to limit the environmental impact of artificial lighting on existing flora and fauna in the area.</td><td>Low energy lamps and automatic controls improve energy efficiency. Adequate lighting levels ensure safe environments.</td></tr>
</table>

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	There will be no fossil fuels on this site.	
Mechanical Ventilation Heat Recovery	Centralised 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 centralised 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 dwelling. The panels are typically placed on the South facing side of the building 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, 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 dwelling than the electrical energy they consume.
E-car Charging Points	Within the parking areas, ducting shall be provided from a local landlord distribution board to parking spaces. This will enable company the option to install several E-car charging points to cater for E-car demand of the residents. This system operates on a single charge point access card. A full re-charge can take from one to eight hours using a standard charge point.	Providing the option of E-car charging points will allow occupants to avail of the ever-improving efficient electric car technologies.

2.2. 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, render, glazing and pressed metal.

2.2.1 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
Own Door Access to duplex and associated apartment overhead	Avoids the cost of heating and lighting shared communal spaces. Each occupier responsible for their own energy use
Waste storage	Communal bin stores for apartment blocks – Apartment Block 1 conveniently located within the communal open space within walking distance of the stair/ lift core Apartment Block 2 at ground floor level within walking distance of the stair/ lift core Duplex and own-door apartments provided with individual refuse storage allocated to each unit. Each located within walking distance from the front door of each unit.
Improved Daylighting	Reduces the requirement for artificial lighting
Passive ventilation in conjunction with background mechanical ventilation	Avoids the reliance on mechanical ventilation systems for purge ventilation
External paved and landscaped areas	All of these require low/minimal maintenance
Plant is easily accessible at ground level and via a staircase at roof level for ease for access.	Allows for easier maintenance and replacements as necessary

2.2.2 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 envelope.	Requires minimal on-going maintenance.
Use of factory finished alu or uPVC windows and doors, and powder coated steel balconies	Requires minimal on-going maintenance.

2.3. Landscape

Measure	Description	Benefit
Site Layout and Design	Surface water attenuation provisions are included in the proposals; please refer to Section 2 of the Engineering Report prepared by Malone O'Regan Consulting Engineers which forms part of this application. These measures include a combination of green/ blue roofs, permeable paving, and attenuation tank.	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., play, exercise, boundary treatments 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.

2.4. 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	Apartment Block 1 conveniently located within the communal open space within walking distance of the stair/ lift core Apartment Block 2 at ground floor level within walking distance of the stair/ lift core Duplex and own-door apartments provided with individual refuse storage allocated to each unit. Each located within walking distance from the front door of each unit. - Grey, Brown, and Green bin distinction.	Easily accessible by all residents, with external access from the street for waste collection
Composting	Organic waste bins to be provided in communal store	Helps reduce potential waste charges.

2.5. Health & 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. The design, separation distances and layout of the building has been designed to optimize the ingress of natural daylight/sunlight to the proposed apartments to provide good levels of natural light. Please refer to the daylight/ sunlight report prepared by Digital Dimensions that accompanies this application.	Reduces reliance on artificial lighting thereby reducing costs.
Accessibility	All units will comply with the requirements of Part M fostering easy access and circulation through the proposed scheme.	Reduces the level of adaptation, and associated costs, potentially necessitated by residents' future circumstances.
Security	The scheme is designed to incorporate passive surveillance with all public spaces overlooked by residential units. Parking is located on street and proximate to the units.	Help to reduce potential security/management costs.
Natural Amenity	The development will include two areas of landscape amenity space. A first open space is in the centre of the site and will be treated as a Civic Square. The public open space will provide a diverse range of gathering opportunities and active and recreative features. The second open space is surrounded by the housing development and will be treated as a communal open space, providing seating and informal play opportunities. Both amenity spaces are designed to provide formal and informal recreative opportunities.	Facilitates community interaction, socialising and play – resulting in improved wellbeing

2.6. Management

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

Measure	Description	Benefit
Home User Guide	Occupiers shall be provided with • **Homeuser 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.	Residents are as informed as possible so that any issues can be addressed in a timely and efficient manner.

2.7. Transport

Measure	Measure Description	Benefit
Access to Public Transport	The site is located within a 9-minute (700m) walking distance to Kishoge Railway Station and associated bus stops Kishoge Station is due to open in 2024 with local Heuston & Phoenix Park Tunnel services serving this station. https://www.transportforireland.ie/news/new-iarnrod-eireann-irish-rail-timetable-from-10th-december-2023/#:~:text=Kishoge%20Station%20will%20open%20in,of%20this%20station%20at%20Kishoge. These stops (ID 8070/ 8072) serve the following frequent bus routes- W4, Blanchardstown Shopping Centre to the Square in Tallaght approx. every 30 minutes peak) Stop ID 7142, 8- minute walk, Foxborough Rise- Bus Routes W4 and 151 (Docklands to Foxborough approx. every 20 minutes peak) Stop ID 7386, 9-minute walk, Foxborough Park- Bus Routes C1/ C2 (Adamstown-Sandymount approx. every 20 minutes peak); L53 Adamstown-Liffey Valley; L54 River Forest Leixlip- Red Cow Lus Stop	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
Bicycle Storage	In apartment block 1 there are 47 secure bicycle parking spaces proposed in a dedicated room within the block at ground level accommodating cycles for residents. 3 of these are allocated for cargo bikes *Note 1 below* In apartment block 2 here are 57 secure bicycle parking spaces proposed in a dedicated room within the block at ground level accommodating cycles for residents. 3 of these are allocated for cargo bikes *Note 1 below* In the duplex blocks, there is a provision of 1 bike space per bedroom serving the own-door apartments in a secure area under the access stair. The duplex units each have a dedicated bike store to the rear with provision for 3 bikes, 1 per bedroom. *Note 1 below* In accordance with SPRR 4 - Cycle and Storage, Sustainable Residential Development and Compact Settlements Guidelines for Local Authorities 2024 Note 1- Minimum 1 long stay space per bedroom	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicle.
E-car Facilities	EV charging facilities will be provided to 20% of car parking spaces; *Note 1 below* In accordance with paragraph 12.7.5 SDCC Development Plan 2022-2028 EV charging shall be provided in all residential, mixed use and commercial development and shall comprise a minimum of 20% of the total parking spaces provided, with higher provision within this range required in urban areas. The remainder of the parking spaces should be constructed to be capable of accommodating future charging point	To accommodate the growing demand for E-car which assist in decarbonising society and reducing oil dependency.

APPENDIX A:

ITEMS INCLUDED IN A TYPICAL BIF

The BIF table below illustrates what would be incorporated for the calculation of a Sinking Fund.

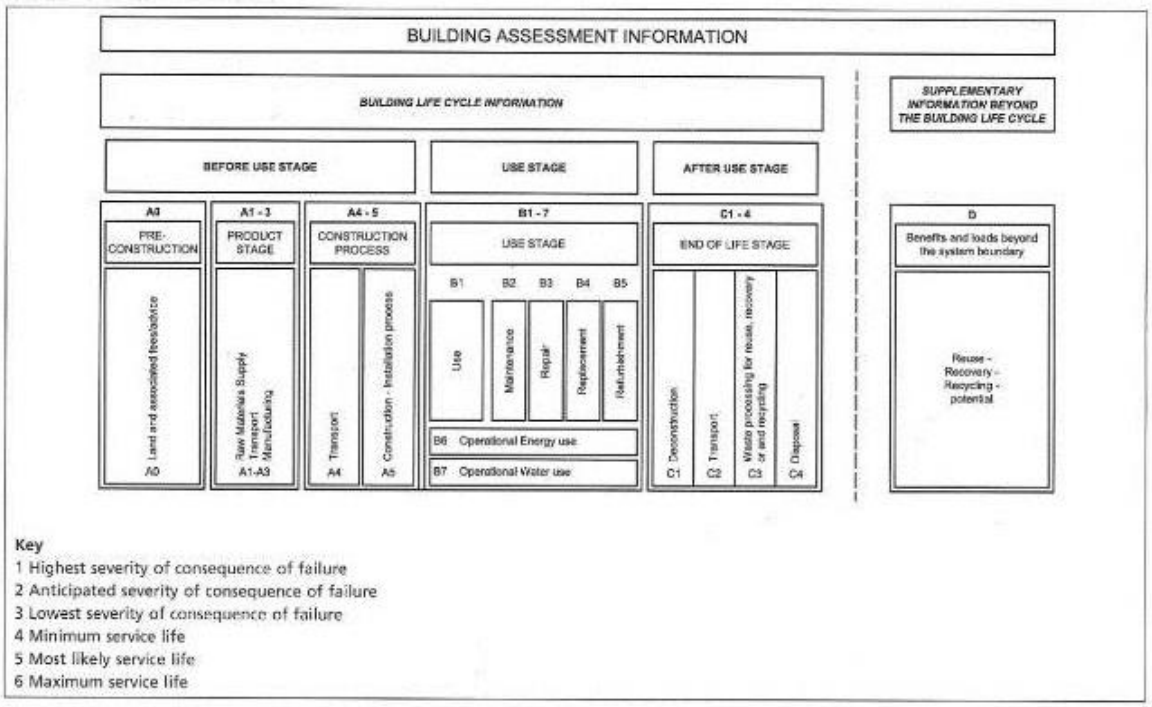
Building Investment Fund (Sinking Fund) Calculations	
Building Element	**Minimum Service life (years) at Service Commencement Date***
Structure/ sub structure	60
Floor Structure	60
Roof Structure	60
Roof covering – up to 5 degree pitch	40
Roof covering – over 5 degree pitch	40
Windows	40
External wall/ cladding inc. openings	40
External doors	40
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 services distribution systems	As CIBSE Guide, Vol. B
CCTV installations	20
Fire installations	20
Security installations	20
Communications installations	20
Lifts	15

Underground drainage	60
External finishes -decorative coatings	25
External fences	30

APPENDIX B:

Phases of the Life Cycle of BS7543; 2015

Figure 4 Phases of the life cycle



Key
1 Highest severity of consequence of failure
2 Anticipated severity of consequence of failure
3 Lowest severity of consequence of failure
4 Minimum service life
5 Most likely service life
6 Maximum service life