Proposed Social Housing Development Farganstown

on behalf of
Meath County Council

Life Cycle Report

October 2020
1820-OMP-XX-XX-RP-A-1000

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6.11 to 6.14 of the newly published Sustainable Urban Housing; Design Standards for New Apartments – Guidelines for Planning Authorities relates to the "Operation & Management of Apartment Developments"

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 Apartment Guidelines 2018,

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Meath County Council

Section 01:

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

SECTION 01

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

1.1 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 detail of the energy performance of the dwellings. A BER is calculated through energy use for space and hot water heating, ventilation, and lighting and occupancy. It is proposed to target an A2/A3 rating for the apartments this will equate to the following emissions.

A2 – 25-50 kwh/m2/yr with CO2 emissions circa 10kgCO2/m2 year
A3 – 51-75 kwh/m2/yr with CO2 emissions circa 12kgCO2/m2 /year</td><td>Higher BER ratings reduce energy consumption and running costs.</td></tr>
<tr><td>Fabric Energy Efficiency</td><td>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.</td><td>
Table 1 Maximum elemental U-value (W/m²K)[1, 2]
<table>
<tr><th>Column 1
Fabric Elements</th><th>Column 2
Area-weighted Average Elemental U-Value (Um)</th><th>Column 3
Average Elemental U-value – individual element or section of element</th></tr>
<tr><td>Roofs

Pitched roof
- Insulation at ceiling
- Insulation on slope

Flat roof</td><td>

0.16
0.16

0.20</td><td>

0.3

</td></tr>
<tr><td>Walls</td><td>0.21</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>
<tr><td colspan="3">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></tr>
</table>
</td><td>Lower U-values and improved air tightness is being considered.
considered to help minimise heat losses through the building fabric, lower of energy consumption and thus minimise carbon emissions to the environment.</td></tr>
</table>

Energy Labelled White Goods	The white good package planned for provision in the apartments will be of a very high standard and have a high energy efficiency rating. 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.
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, cyclists and moving vehicles, to deter anti-social behaviour and to limit the environmental impact of artificial lighting on existing flora and fauna in the area.	The site lighting has been designed to provide a safe environment for pedestrians, cyclists and moving vehicles, to deter anti-social behaviour and to limit the environmental impact of artificial lighting on existing flora and fauna in the area.

The following are **Low energy technologies** that are being considered for the development and during the design stage of the development the specific combination from the list below will be decided on and then implemented to achieve the A2/A3 BER Rating

Measure	Description	Benefit
Natural Ventilation	Natural ventilation is being evaluated as a ventilation strategy to minimise energy usage and noise levels.	The main advantages of natural ventilation are: • Low noise impact for occupants and adjacent units. • Completely passive therefore no energy required with associated. • Minimal maintenance required. • Reduced environmental impact as minimal equipment disposal over life cycle. • Full fresh air resulting in healthier indoor environment.
Mechanical Ventilation Heat Recovery	Centralised mechanical ventilation will be provided to all dwellings to ensure that the air quality within the apartment 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 for the development, 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 2.5 to 4 times more heat energy to the dwelling than the electrical energy they consume.

1.2 Materials

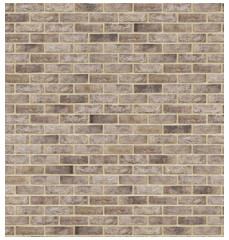
The practical implementation of the Design and Material principles has informed design of building facades, internal layouts and detailing of the proposed apartment buildings. The façade materials will consist of brick, render and glazing.

1.2.1 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 circulation areas	Avoids the requirement for continuous artificial lighting
Natural/Passive ventilation system to circulation areas	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 at basement floor level for ease for access, except for any PV/solar panels which may be located on the roof	Allows for easier maintenance and replacements as necessary

1.2.2 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. 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 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 pigmented render.	 	Requires no on-going maintenance.
Use of factory finished and alu clad windows and doors, and powder coated steel balconies		Requires no on-going maintenance.

1.3 Landscape

	Measure Description	Benefit
Paving and Decking Materials	Use of robust, high quality paving and decking materials, with robust and proven details	Require no on-going maintenance.
Materials	Sustainable, robust materials, with high slip resistance to be used for paving. Durable and robust equipment (e.g. play, exercise, fencing etc.) to be used throughout.	Robust materials and elements reduce the frequency of required repair and maintenance.
Site Layout and Design	Generous and high quality mature landscaping, with ecological corridors with landscape and pedestrians prioritized over the car – increase in soft landscaping	Natural attenuation and landscape maintenance preferable

1.4 Waste Management

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

Measure	Description	Benefit
Storage of Non-Recyclable Waste and Recyclable Household Waste	Domestic waste management strategy: 1) Grey, Brown and Green bin distinction 2) Competitive tender for waste management collection	Helps reduce potential waste charges.
Composting	Organic waste bins to be provided throughout.	Helps reduce potential waste charges.

1.5 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 design, separation distances and layout of the apartment blocks have been designed to optimize the ingress of natural daylight/ sunlight to the proposed dwellings to provide good levels of natural light.	Reduces reliance on artificial lighting thereby reducing costs.
Accessibility	All units will comply with the requirements of Part M/K.	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 – covered by CCTV	Help to reduce potential security/management costs.
Natural Amenity	Open landscaped communal open space to the south of the development site opening onto the Howth Road	Facilitates community interaction, socialising and play – resulting in improved wellbeing

Appendix A:

ITEMS INCLUDED IN A TYPICAL BIF

The BIF table below illustrates what would be incorporated for the calculation of a Sinking Fund. It is based on the proposed development which consists of 44 apartments in 3no four storey apartment blocks.

	BUILDING INVESTMENT FUND (SINKING FUND) CALCULATIONS Blocks 01, 02 and 03		
Ref	**Element**	**Life Expectancy**	**Nr.**
1.00	**Roofs**		
1.01	Replacement felt roof covering incl. insulation to main roofs	18	
1.02	Replacement parapet details	18	
1.03	Replacement/ repairs to facias	18	
1.04	Replace roof access hatches / roof lights	25	
1.05	Specialist Roof Systems - Fall arrest	25	
1.06	Overhaul waterproofing details to terraces / balconies	12	
2.00	**Elevations**		
2.01	Recoat zinc / metal panels	25	
2.03	Minor repairs and preparation for decorations of rendered areas	18	
2.04	Replace exit/ entrance doors	25	
2.05	Replace Rainwater goods	25	
2.06	Recoat powder coated Finishes to balconies	20	
2.07	Periodic replacement and overhauling of external fixings	5	
2.08	Replace Balcony floor finishes	25	

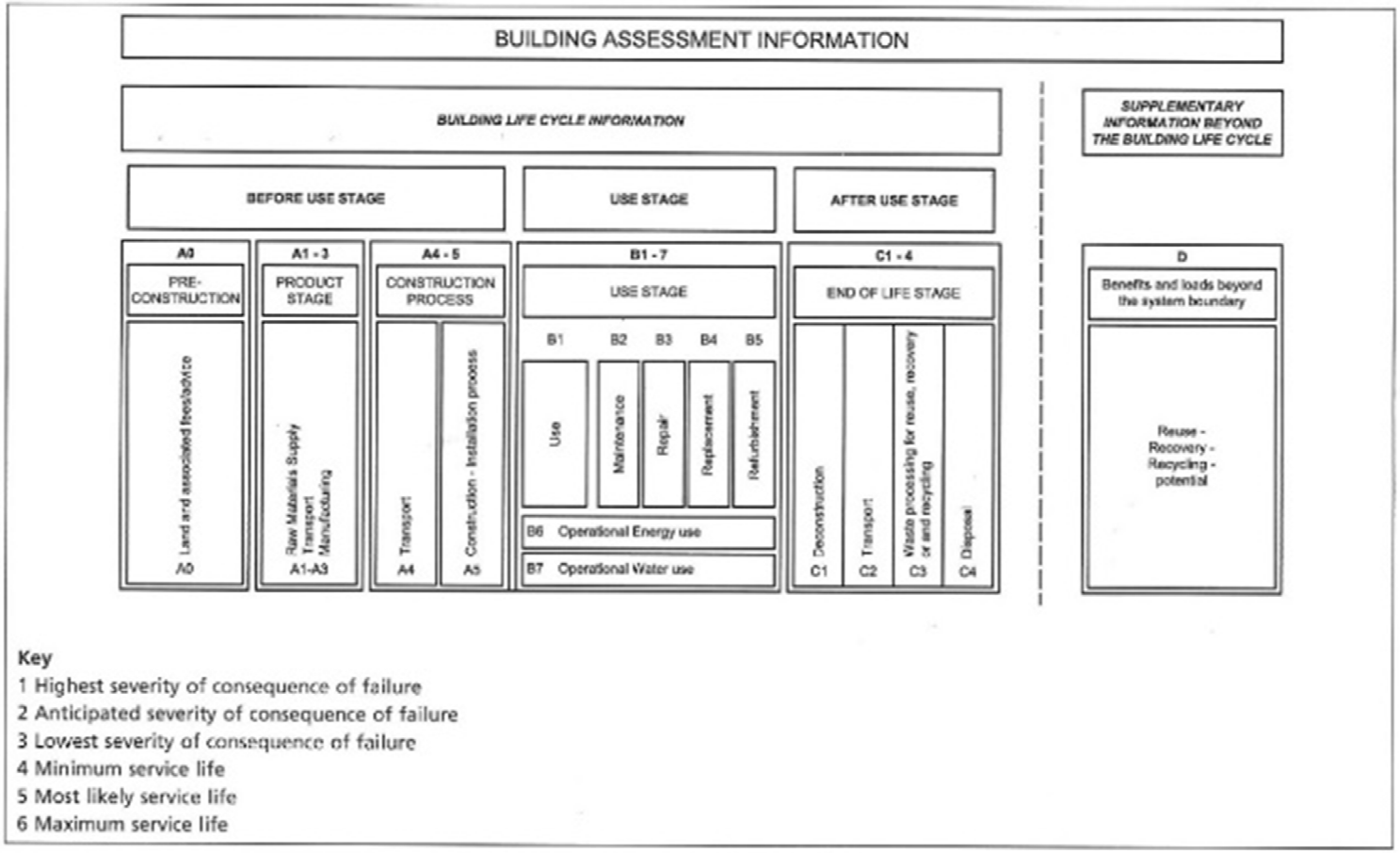
3.00	**Staircores & lobbies (3 No. Cores)**		
3.01	Decorate Ceilings	7	
3.02	Decorate Walls	7	
3.03	Decorate Joinery	7	
3.04	Replace fire doors	25	
3.05	Replace carpets (stairwells & lobbies)	12	
3.06	Replace entrance mats	10	
3.07	Replace nosings	12	
3.08	Replace ceramic floors tiles Entrance lobbies	20	
3.09	Fixed Furniture & Equipment - Provisional Sum	18	
4.00	**M&E Services**		
4.01	General - Internal relamping	7	
4.02	Replace Internal light fittings	18	
4.03	Replace External light fittings (lights at entrance lobbies)	18	
4.04	Replace smoke detector heads	18	
4.05	Replace manual break glass units/ disabled refuge call points	18	
4.06	Replace Fire alarm panel	18	
4.07	Replace lift car and controls	25	
4.08	Replace AOV's	25	
4.08	Replace security access control installation	15	
4.09	Sump pumps replacement	15	
4.10	External Mains Water connection	20	
4.12	Electrical Mains and Sub Mains distribution	20	
4.13	Emergency Lighting	20	
4.14	Overhaul and/or replace Waste Pipes, Stacks & Vents	20	

5.00	**Exterior**		
5.01	External boundary treatments - Recoat powder coated Finishes to railings	60	
5.02	Replace external signage	18	
5.03	Replace cobblelock areas	18	
5.04	15-year overhaul of soft landscaping generally	15	
5.05	Replace CCTV provision	12	
5.06	External Handrails and balustrade	18	

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

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