

## **NEWTOWNPARK AVENUE SHD**

Proposed Strategic Housing Development,

Lands adjacent to Cluain Mhuire,

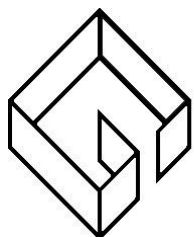
Newtownpark Avenue,

Co. Dublin



## **BUILDING LIFECYCLE REPORT**

October 2020



**Glenveagh  
Homes**

## 0.0 Introduction

6.11 to 6.14 of the Sustainable Urban Housing; Design Standards for New Apartments - Guidelines for Planning Authorities relates to the “Operations & 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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# Henry J Lyons



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## 0.1 Description of the Proposed Development

The development will consist of the demolition of the existing c. 26sqm single storey shed on site and construction of a residential development comprising;

- 140 no. apartment and duplex units (total gross floor area 14,383sqm) across 5 no. 2-5 storey buildings (Blocks C&D over basement) comprising 1 no. studio apartment, 59 no. 1 bedroom apartments, 71 no. 2 bedroom apartments and 9 no. 3 bedroom apartments (along with a 'linked' single storey amenity building) as follows:
- Block A (4 storeys) comprises 32 no. apartments [balconies on all elevations] consisting of 17 no. 1 bedroom, and 15 no. 2 bedroom apartments;
- Block B (5 storeys) comprises 40 no. apartments [balconies on all elevations] consisting of 21 no. 1 bedroom and 19 no. 2 bedroom apartments;
- Block C (4 - 5 storeys over basement) comprises 31 no. apartments [balconies on all elevations] consisting of 1 no. studio apartment, 8 no. 1 bedroom, 17 no. 2 bedroom and 5 no. 3 bedroom apartments;
- Block D (4 storeys over basement) comprises 28 no. apartments [balconies on all elevations] consisting of 9 no. 1 bedroom, 15 no. 2 bedroom and 4 no. 3 bedroom apartments;
- Block E (2 - 3 storeys) comprises 9 no. duplex units [balconies on north and south elevations] consisting of 4 no. 1 bedroom units and 5 no. 2 bedroom units;
- Communal Amenity Space (889sqm) and public open space (1680 sqm) totalling 2,569sqm is provided throughout the site including internal amenity space/concierge area totalling 175sqm within a single story 'linked' building between Blocks A and B;
- Vehicular access to the development will be from the upgraded existing access from Newtownpark Avenue (including demolition of c. 10m of the existing boundary wall to facilitate the widening of the site entrance) and will extend throughout the site linking to the basement car parking level (as well as provision of a future potential links to lands to the west and to Cluain Mhuire);
- Provision of 97 no. car parking spaces (29 no. surface car parking and 68 no. basement car parking); 226 no. cycle parking spaces (56 no. surface cycle parking space and 170 no. basement car parking) and 6 no. motorcycle spaces;
- Provision of a single storey ESB substation, hard and soft landscaped areas, public lighting, attenuation, service connections, bin stores, and a new pedestrian crossing on Newtownpark Avenue and all ancillary site development works.

## **Section 1 – Assessment of Long-Term Running and Maintenance Costs**

### **1.1 Property Management of the Common Areas of the development**

A property management company will be engaged at an early stage of the development to ensure that all property management functions are dealt with for the development and that the running and maintenance costs of the common areas of the development are kept within the agreed Annual operational budget.

The property management company will enter into a contract directly with the OMC for the ongoing management of the built development. Note: This contract will be for a maximum period of 3 years and in the form prescribed by the PSRA.

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

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

#### **1.1 Service Charge Budget**

The property management company has a number of key responsibilities with first and foremost being the compiling of the service charge budget for the development for agreement with the OMC. The service charge budget covers items such as cleaning, landscaping, refuse management, utility bills, insurance, maintenance of mechanical/electrical lifts/ life safety systems, security, property management fee, etc, to the development common areas in accordance with the Multi Unit Developments Act 2011 (“MUD” Act).

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

In line with the requirements of the MUD Act, the members of the OMC will determine and agree each year at a General Meeting of the members, the contribution to be made to the Sinking Fund, having regard to the BIF report produced.

A sample format of the typical Building Investment Fund is set out in Section 3.

**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.

## 2.0 Measures to Manage and Reduce Costs for the Benefit of Residents

The proposed layouts make efficient use of the site. The buildings have been designed with an efficient number of stair and lift cores in compliance with Specific Planning Policy Requirement 6 of the Design Standards for New Apartments. This ensures an efficient arrangement of circulation versus apartment space and that service charges and maintenance costs faced by residents into the future are kept at reasonable levels.

Lifecycle costs are also determined by the durability and maintenance requirements of materials. We have selected high quality materials and finishes across the project.

Durable, low-maintenance cladding materials such as brick, stone, aluminium and cement fibre paneling are proposed to minimise the impact of façade maintenance. Balconies are designed to be capable of fabrication off-site, resulting in higher standard of finish, reducing damage during construction and improved durability.

Materials proposed for use on apartment building elevations and to the reception building, surface level bicycle store and ESB substation are durable and of a quality that will not need regular fabric replacement or maintenance outside general day-to-day care. The choice of high quality and long-lasting materials such as brickwork, stone, aluminium, steel and cement fibre paneling as well as hardscaping in the public, semi-public and private realms will contribute to lower maintenance costs for future residents and occupiers.

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

As the building design develops this document will be updated and a schedule will be generated from the items below detailing maintenance and replacement costs over the lifespan of the materials and development constituent parts. This will enable a robust schedule of building component repair and replacement costs so that running and maintenance costs of the development are kept within the agreed annual operational budget.

A general outline of the primary materials used in the scheme can be found below;

Measures are addressed under three main headings:

- External Building Fabric Material Selection
- Internal Building Fabric Material Selection
- Energy and Building Services
- Landscape Material Selection

### 2.1 External Building Fabric Material Selection

Measure	Description	Benefit
Brickwork & Stone Façade	While bricks have a high embodied energy, they are an extremely durable material. Brickwork and stone in this application is	Extremely durable, with low maintenance requirements. Preventative maintenance by monitoring mortar joint deterioration ensures

	<p>expected to have a lifespan of 100+ years. The mortar pointing however has a shorter lifespan of 25-50 years.</p> <p>In general, given their durability, brickwork and stone 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.</p>	longevity of material.
Aluminium Cladding to Parapets and Balcony Fascias	Aluminium sheeting panels with a typical life expectancy of 25 years.	Aesthetic impact, durability and weathering. Annual inspection and cleaning every 5 years.
Flat Roofs	<p>Green roof sedum on a built-up insulated bituminous membrane base. Average lifecycle of 15-35 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.</p> <p>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</p>	A green roof will add to the character of the overall scheme, as well as providing attenuation to storm water run-off and less burden on rainwater goods, increased thermal and sound insulation to the building and increased bio-diversity. Natural soft finishes can provide visual amenity for residents where roof areas are visible or accessible from within areas of the scheme. Sedum roofs are a popular and varied choice for green roofs requiring minimal maintenance.
Windows and Doors	<p>All units double glazed with thermally broken frames in Aluminium or uPVC.</p> <p>All opening sections in windows to be fitted with</p>	Minimal ongoing maintenance



	<p>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. Aluminium has a typical lifespan of 45-50 years.</p> <p>Required maintenance: Check surface of windows and doors regularly so that damage can be detected at early stage and remedial action taken. Silicone seals and gaskets should be checked to ensure they are intact and secure. Check fixings and furniture and lubricate at least once a year. Ensure regular cleaning regime. Check for condensation on frame from window and ensure ventilation louvres are operable.</p>	
Balconies	<ul style="list-style-type: none"> <li>• Concrete balcony system to engineer's detail, or</li> <li>• Powder-coated steel frame balcony system to engineer's detail</li> <li>• Thermally-broken ferrat plate connections to main structure of building.</li> </ul> <p>Lifecycle:</p> <ul style="list-style-type: none"> <li>• Metal structure has a typical life expectancy of 70 years dependent on maintenance of components.</li> <li>• Concrete structures have a high embodied energy, however it is an extremely durable material. Concrete frame has a typical life expectancy of over 80 years.</li> </ul>	Minimal ongoing maintenance

	<p>Maintenance: Relatively low maintenance required. Check balcony system as per manufacturer's specifications. Check all hardware components for wear. Check elements for signs of wear and/or weathering. Check for structural damage or modifications.</p>	
Balustrades & Handrails	<ul style="list-style-type: none"> <li>• Clear glass / metal balustrades</li> <li>• Fixing in accordance with manufacturer's details</li> </ul> <p>General glass and metal items with a 25-45 year lifespan</p> <p>Regular visual inspection of connection pieces for impact damage or alterations</p>	Minimal ongoing maintenance
Fibre Cement Panelling	<p>Facade cladding material to single storey buildings. Life expectancy of at least 50 years.</p>	Durable, with low maintenance requirements.
Fall Arrest System for Roof Maintenance Access	<ul style="list-style-type: none"> <li>• Latchways Constant Force B1 Fall Restraint System/B2 Fall Arrest System</li> <li>• Installation in accordance with BS 7883 by the system manufacturer or a contractor approved by the system manufacturer.</li> </ul> <p>25-30 years. Generally steel finishes to skyward facing elements can be expected to maintain this life expectancy.</p> <p>Required maintenance: Check and reset tension on</p>	Fall protection systems are a standard life safety system, provided for safe maintenance of roofs and balconies where there is not adequate parapet protection. A FPS must comply with relevant quality standards.

	<p>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.</p>	
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## 2.2 Internal Building Fabric Material Selection

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

## **2.3 Energy and Building Services**

### **2.3.1 Energy Strategy**

All dwellings in the proposed development will be required to minimise overall energy use and to incorporate an adequate proportion of renewable energy in accordance with Building Regulations Part L 2019, Conservation of Energy & Fuel (hereinafter referred to as Part L) and anticipated future revisions.

The Regulations require that the energy consumption and carbon emissions of every dwelling is assessed using the DEAP software and that reductions of 70% in energy consumption and 65% in carbon emissions are achieved when compared to a baseline dwelling. The baseline against which this reduction is to be measured is considered to be a dwelling which is constructed to comply with the 2005 version of Building Regulations Part L.

It is also a requirement that all new dwellings are provided with a renewable energy source. The regulations state that 20% of the total energy consumed within the dwelling must be provided from renewable thermal sources (solar thermal, biomass, heat pumps) or renewable electrical sources (Photovoltaic, Micro-wind).

In practical terms, for a multiple unit development, this requirement is usually met by incorporating PV panels at roof level, incorporating air source heat pump technology or by adding an element of biomass or micro-CHP to a district heating scheme.

Based on the current design all of the proposed dwellings in the Newtownpark Avenue SHD development are expected to comply with the requirements of Part L 2019. Preliminary calculations have been completed using the DEAP 4.2 software tools released by the SEAI and these indicate that the dwellings will meet the new standard . The BER calculations that have been prepared indicate that all dwellings will achieve an A2 rating

## 2.3.2 Building Fabric

### U-values

The U-Values that will be targeted for the dwellings in this development will exceed the minimum targets Part L 2019. The table below sets out the minimum requirements of each of these standards and the targets range that will be adopted for the site.

U-Values	Range of Target Values Proposed	Part L 2019 Compliant Values
Floor	0.10 to 0.18 W/m <sup>2</sup> K	0.18 W/m <sup>2</sup> K
Roof (Flat)	0.15 to 0.18 W/m <sup>2</sup> K	0.20 W/m <sup>2</sup> K
Roof (Pitched)	0.11 to 0.16 W/m <sup>2</sup> K	0.16 W/m <sup>2</sup> K
Walls	0.12 to 0.18 W/m <sup>2</sup> K	0.18 W/m <sup>2</sup> K
Windows	1.2 to 1.5 W/m <sup>2</sup> K	1.4 W/m <sup>2</sup> K

### Thermal Bridging

Thermal bridges occur at junctions between planar elements of the building fabric and are typically defined as areas where heat can escape the building fabric due to a lack of continuity of the insulation in the adjoin elements.

Careful design and detailing of the manner in which insulation is installed at these junctions can reduce the rate at which the heat escapes. Standard good practice details are available and are known as Acceptable Construction Details (ACDs). Adherence to these details is known to reduce the rate at which heat is lost.

The rate at which heat is lost is quantified by the Thermal Bridging Factor of the dwelling which is entered into the overall dwelling Part L calculation.

It is intended that all building junctions will either be designed in accordance with the Acceptable Construction Details (issued by The Department of the Environment) or that thermal modelling will be carried out for all thermal bridges on the dwellings within proposed development. The resultant Thermal Bridging Factor will be in the range of 0.04W/m<sup>2</sup>K to 0.08W/m<sup>2</sup>K.

### Air Tightness

A major consideration in reducing the heat losses in a building is the air infiltration. This essentially relates to the ingress of cold outdoor air into the building and the corresponding displacement of the heated internal air. This incoming cold air must be

heated if comfort conditions are to be maintained. In a traditionally constructed building, infiltration can account for 30 to 40 percent of the total heat loss, however construction standards continue to improve in this area.

In order to ensure that a sufficient level of air tightness is achieved, air permeability testing will be specified carried out on all dwellings. A design air permeability target of 3 m<sup>3</sup>/m<sup>2</sup>/hr has been identified for the apartments.

### **2.3.3 Building Services Installation**

#### **Proposed Heating systems:**

Air source heat pumps (ASHPs) utilise grid supplied electricity to extract thermal energy from a heat source, in this case, the external ambient air. The electricity consumed is obviously not renewable energy, however the efficiency at which a heat pump operates allows a significant portion of the heat delivered to be considered as renewable. The amount of heat considered to be renewable is determined by the efficiency of the heat pump and the “primary energy conversion factor” for grid supplied electricity. Typically, approximately 40% to 50% of the heat supplied is considered to be renewable energy

In recent years, the design of ASHPs has improved bringing about higher efficiencies and reduced costs. This, in turn, has led to an increase use of this technology in large scale housing developments. Certified seasonal efficiencies of some models can exceed 500% in heating mode and 250% to 300% in hot water mode meaning that the use of this technology can deliver compliance with Part L 2019 requirements.

Apartments will be provided with Exhaust Air Heat Pumps (EAHPs). These will operate on the same principle as the air source heat pumps but will generally have a smaller capacity and have no outdoor unit making them suitable for use in apartments.

#### **Proposed Ventilation System:**

Mechanical Extract Ventilation (MEV) systems will be provided in each dwelling. The system will extract air from all wet rooms using a central extract fan which runs continuously with supply air to the dwelling being provided through trickle vents in each habitable room. It is possible to incorporate a humidity control function into the fan which will result in a system which is capable of varying air extract rates in accordance with the humidity levels in the dwelling.

This approach to the design of a domestic ventilation system minimises energy consumption by retaining close control of the ventilation rates thereby minimising heat loss by infiltration. The fans used in the MEV systems will be energy efficient DC motors and only fans with recognised energy efficiency test data will be selected.

#### **Proposed Lighting:**

All lighting installed in the dwellings will include LED type luminaires. LED light fittings typically use 50% less energy than compact fluorescent fittings and produce a superior quality of lighting in the dwelling. LED fittings have a life expectancy in

excess of 10 years which reduces the volume of waste produced and further reduces the overall carbon footprint.

## 2.4 Landscape Material Selection

The landscape design approach is to provide a variety of high-quality durable communal recreation areas for residents around the apartment buildings which feature a range of quality tree, shrub and herbaceous planting.

Hard landscape paving and decking materials will be robust and durable and installed using proven details to minimise maintenance requirements. High slip resistance paving materials will ensure safety for all.

Proven planting details for trees, shrubs and hedging will ensure growth will be robust and future maintenance as minimal as possible.

## 3.0 Building Investment Fund

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

<b>Element</b>	<b>Life Expectancy</b>
<b>Roofs</b>	
Replacement felt roof covering incl. insulation to main roofs	18
Replacement parapet, fascia details	18
Replace roof access hatches	25
Specialist Roof Systems - Fall arrest	25
Waterproofing details to duplex paved areas	12
<b>Facades</b>	
Brick Re-pointing	80
Minor repairs to fibre cement areas	18
Replace exit/entrance doors	25
Replace rainwater goods	25
Replace balcony floor finishes	25
<b>External Areas/Car Parking</b>	
External handrails and guarding	18
Surface finishes	18
Check drains for accumulation of debris and other sediments	6
Repaint parking spaces and numbering	7
Replace bike stands	25
Replace access control at entrances	12

M&E Services	
Internal re-lamping common areas	7
Replace internal light fittings	18
Replace external light fittings	18
Replace smoke detector heads	18
Replace manual break glass units	18
Replace fire alarm panel	18
Replace lift car and controls	25
Replace AOVs	25
Emergency lighting	20
External mains water connection	20