BUILDING LIFE CYCLE REPORT

Charlestown Place SHD

Residential Development

Dublin 11

For

Puddenhill Property Ltd

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On behalf of:

Puddenhill Property Ltd

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INTRODUCTION

The Sustainable Urban Housing; Design Standards for New Apartments – Guidelines for Planning Authorities were published in March 2018 (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 1:

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 2:

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

PROPOSED DEVELOPMENT

The proposed development consists of a total 590 apartments (235 No. one beds, 315 two beds and 40 three beds) a creche, a health centre, four offices, and two retail units all contained in four blocks – Block 1, Block 2, Block 3 and Block 4.

The blocks range in height from 2-10 storeys in height. A new vehicular entrance to the site is proposed from Charlestown Place with surface level parking and basement carparks to Blocks 1& 2 (shared) and Block 4.

The development also includes the provision of a public park and all associated landscaping and site works on a 3.57ha site at Charlestown, Dublin 11.

For a more detailed description please refer to the statutory notices that accompany this application

SECTION 1

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 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 Owners Management Company (OMC) for the ongoing management of the built development. This contract will be for a maximum period of 15 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 Multi Units Development Act 2011 (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.

1.2. Service Charge Budget

The property management company has a number of key responsibilities, primarily 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., related to the development common areas in accordance with the Multi Unit Developments Act 2011 (“MUD” Act).

This service charge budget also includes an allowance for a Sinking Fund and this allowance is determined following the review of the Building Investment Fund (BIF) report prepared for the OMC. The BIF report once adopted by the OMC, determines an adequate estimated annual cost provision requirement based on the needs of the development over a 30-year cycle period. The BIF report will identify those works which are necessary to maintain, repair, and enhance the premises over the 30-year life cycle period, as required by the Multi Unit Development Act 2011.

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 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 2

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 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 rating for the apartments this will equate to the following emissions.

A2 – 25-50 kwh/m2/yr with CO2 emissions circa 10kgCO2/m2 year

Note proposed Part L revisions will increase the energy efficiency standard required for residential units.</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 - 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>0.18</td><td>0.6</td></tr><tr><td>Ground floors[3]</td><td>0.18</td><td>0.6</td></tr><tr><td>Other exposed floors</td><td>0.18</td><td>0.6</td></tr><tr><td>External doors, windows and rooflights</td><td>1.4[4,5]</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 1.4 W/m²K.
5 The NSAI Window Energy Performance Scheme (WEPS) provides a rating for windows combining heat loss and solar transmittance. The solar transmittance value g perp measures the solar energy through the window.</td><td>Lower U-values and improved air tightness is being considered to help minimise heat losses through the building fabric, lower 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 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	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 for houses, 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.
Combined Heat and Power	Combined Heat and Power, (CHP), is a technology being evaluated for the apartment developments within the scheme as part of a Community Heating System. This technology generates electricity and captures the waste heat from the generation unit that can be used within the heating systems in the development.	CHP can achieve energy efficiencies by reusing waste heat from the unit to meet the space heating and domestic hot water needs of the apartments. As electricity from CHP is both generated and consumed onsite in common areas.
E-car Charging Points	Within the basement parking areas, ducting shall be provided from a local landlord distribution board to parking spaces. This will enable the management company the option to install a number of E-car charging points within the basement carpark to cater for E-car demand of the residence. Ducting and on street infrastructure will also be provided throughout the housing development to provide EV charging facilities in on-street parking spaces. 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, stone, render, glazing, zinc, 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
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.
It is proposed to naturally ventilate the carpark in order to reduce the need for full mechanical ventilation.	Avoids more extensive mechanical ventilation systems and associated maintenance, running costs and future replacement
External paved and landscaped areas	All of these require low/minimal maintenance
Plant is located in the basement or at ground 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

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, stone, rendered panels, and profiled metal cladding to 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.

2.3. Landscape

Measure	Description	Benefit
Site Layout and Design	All on street parking spaces are provided with permeable paving. 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. play, exercise, 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.

2.4. Waste Management

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

Measure	Description	Benefit
Construction and Operational Waste Management Plans	The application is accompanied by a site-specific Construction Waste Management Plan (CWMP) and an Operational Waste Management Plan (OWMP) prepared by the applicant	The CWMP details how the construction phase will be managed to reduce the volumes of waste materials produced and thus minimise the impact on the natural environment. The OWMP details how the development shall be designed with sufficient waste management infrastructure to encourage residents to segregate waste at source and maximise recycling and thus minimise the impact of the operational phase of the development on the receiving environment.
Storage of Non-Recyclable Waste and Recyclable Household Waste	Access to centralised bin storage areas is provided at basement or ground floor level.	Easily accessible by all residents and encourages the segregation of domestic wastes.
	Domestic waste management strategy: • Provision of grey, green and brown 3-bin systems in each residential unit • Management of communal domestic waste storage areas by the facilities management company	The management of domestic waste at the development through design and infrastructure will assist the development to achieve Regional Waste Reduction and Recycling Targets

Measure	Description	Benefit
Composting	Space for organic waste bins to be provided in each unit.	Will assist in the reduction of mixed domestic wastes containing compostable waste

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 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.	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	Public open space is provided to the south of the site.	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	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	Residents are as informed as possible so that any issues can be addressed in a timely and efficient manner.

Measure	Description	Benefit
	set of rules and regulations.	

2.7. Transport

Measure	Measure Description	Benefit
Access to Public Transport	There are bus stops located on Charlestown Place directly in front of the site and the future Luas line expansion is proposed to connect to Charlestown immediately adjacent to the site	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. This will enhance the accessibility levels of the proposed residential development in addition to providing a viable and practical sustainable alternative to journeys undertaken by the private motor car
Permeable Connections	Provision and subsequent maintenance of dedicated pedestrian and cycle infrastructure on-site, providing connectivity with existing paths on the adjoining wider road network subsequently providing convenient access to local services and the surrounding area.	Ensure the long-term attractiveness of walking and cycling to a range of local education, retail and community facilities and services.
Bicycle Storage	The provision of high quality secure bicycle parking facilities externally and at basement / ground floor level for both non-residential and residential short term and long-term parking requirements.	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicle. Reduces the reliance on the private motor vehicle in parallel with reducing oil dependency.
Motorcycle Parking	The implementation of secure, attractive, best practice motorcycle parking facilities for residents.	Reduces the reliance on the private motor vehicle in parallel with reducing oil dependency.
E-car Facilities	Ducting will be provided from a local landlord distribution board to designated E-car charging car park spaces.	To accommodate the growing demand for E-car which assist in decarbonising society and reducing oil dependency.
Car Club Parking	4 No. dedicated parking spaces provided at surface level to facilitate a car club scheme	To accommodate changing driving and car ownership habits and growing demand for car sharing which assist in decarbonizing 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	
Ref	**Element**	**Life Expectancy**
1.00	**Roofs**	
1.01	Replacement felt roof covering incl. insulation to main roofs/ overhaul to green roofs.	18
1.02	Replacement parapet details	18
1.03	Replacement/ repairs to cappings	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
2.02	Minor repairs and preparation for decorations of rendered areas	18
2.03	Replace exit/ entrance doors	25
2.04	Replace Rainwater goods	25

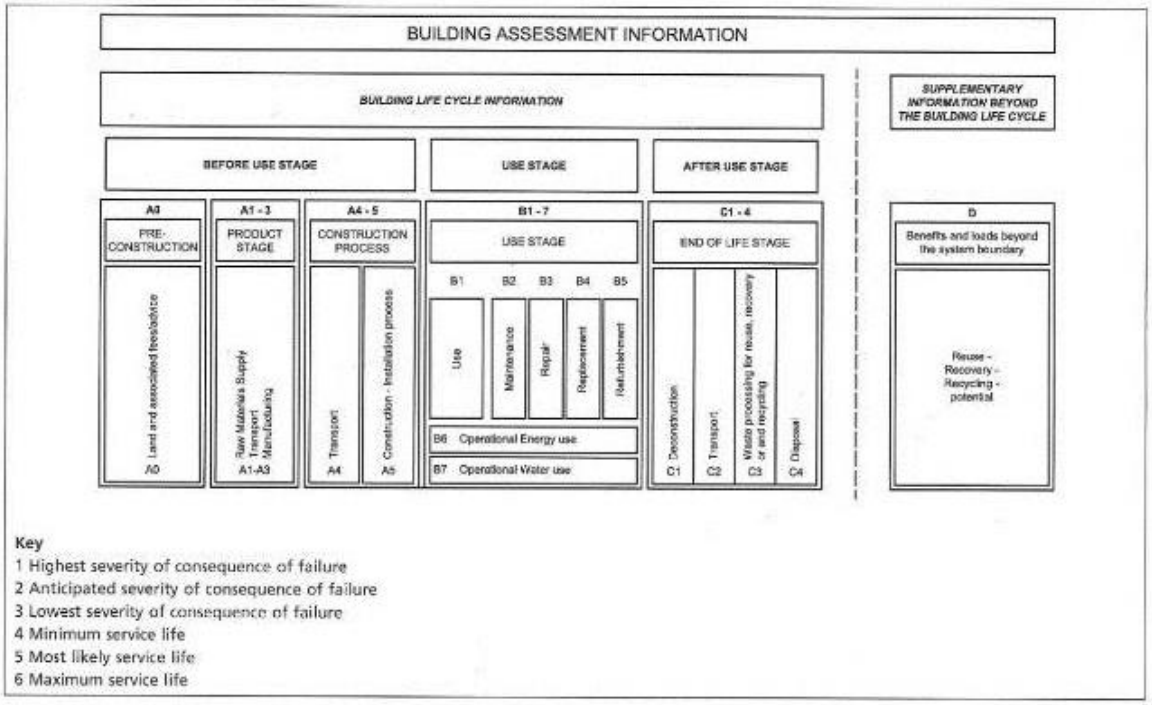
2.05	Recoat powder coated Finishes to balconies / Grills to Basement vents	20
2.06	Periodic replacement and overhauling of external fixings	5
2.07	Replace Balcony floor finishes	25
3.00	**Staircores & lobbies (6 No. Cores)**	
3.01	Decorate Ceilings	7
3.02	Decorate Walls	7
3.03	Decorate Joinery	7
3.04	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	**Basement & Car Parking**	
4.01	Remove/ Replace ceiling insulation if soffit insulation if provided	25
4.02	Repaint parking spaces & Numbering	7
4.03	Replace store doors, ironmongery & digi-locks	15
4.04	Replace Bike stands	25
4.05	Replace basement access control at entrance & core entrances	12
5.00	**M&E Services**	
5.01	General - Internal relamping	7
5.02	Replace Internal light fittings	18
5.03	Replace External light fittings (lights at entrance lobbies)	18
5.04	Replace smoke detector heads	18
5.05	Replace manual break glass units/ disabled refuge call points	18
5.06	Replace Fire alarm panel	18

5.07	Replace lift car and controls	25
5.08	Replace AOV's	25
5.08	Replace security access control installation	15
5.09	Sump pumps replacement	15
5.10	External Mains Water connection	20
5.12	Electrical Mains and Sub Mains distribution	20
5.13	Emergency Lighting	20
5.14	Overhaul and/or replace Waste Pipes, Stacks & Vents	20
6.00	**Exterior**	
6.01	External boundary treatments - Recoat powder coated Finishes to railings	60
6.02	Replace external signage	18
6.03	Replace cobblelock areas	18
6.04	15-year overhaul of soft landscaping generally	15
6.05	Replace CCTV provision	12
6.06	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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