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BUILDING LIFE CYCLE REPORT

For Residential Development at

Hillhouse, Lucan Road, Lucan, Co. Dublin K78 R5P6

For Frances Dowling

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INTRODUCTION

The 2020 adopted Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (December 2020) provide policy guidance on the operation and management of apartment developments, to include a statement of the aim of certainty regarding their long-term management and maintenance structures. This certainty is to be provided via legal and financial arrangements supported by effective and appropriately resourced maintenance and operational regimes.

The Guidelines state that consideration is to be given matters of the long-term running costs and the manner of compliance of the proposal which should now be considered as part of any assessment of a proposed apartment development to achieve this policy objective, planning applications for apartment developments now need to include a Building Lifecycle Report with the Multi- Unit Developments Act, 2011; these are to include 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 specific measures have been considered to effectively manage and reduce costs for the benefit of residents.

Section 6.13 of the Apartment Guidelines 2020 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"

"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 2020, and is divided into 2 sections:

Section 01 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 Demonstrate what measures have been specifically considered by the proposer to effectively manage and reduce costs for the benefit of residents.

0.1 Proposed Development

The proposed development consists of a single 2 to 4-storey block located at Hillhouse, Lucan Road, Lucan. Co. Dublin. The site is located just East of the center of Lucan. The proposed development comprises 19 residential units consisting of one and two-bedroom apartments.

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

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 proposed development and that the running and maintenance costs of the common areas of the development, including communal areas of open space, residential amenity facilities and any public areas not taken in charge by the local authority, 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., 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 the sinking fund requirements are listed to show what elements must be covered by this service charge.

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.

Measure	Description	Benefits
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, 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	Higher BER ratings reduce energy consumption and running costs
Fabric Energy Efficiency	**Building Fabric Performance** 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 "Conservation of Fuel and Energy Dwellings". The current regulation is Part L 2019. The dwellings built under this planning permission will be designed and constructed to meet the relevant regulation, as may be appropriate, in accordance with the transitional period. **U-values** The U-Values that will be targeted for the dwellings in this development will exceed the minimum targets set out in Part L 2019	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.

as may be appropriate. 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/m2K	0.18 W/m2K
Roof (Flat)	0.15 to 0.20 W/m2K	0.20 W/m2K
Walls	0.12 to 0.18 W/m2K	0.18 W/m2K
Windows	1.2 to 1.4 W/m2K	1.4 W/m2K

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/m2K to 0.08W/m2K.

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 specifically carried out on all

	dwellings. A design air permeability target of 2 m3/m2/hr has been identified for the apartments on the site.	
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	The proposed lighting scheme within the development consists of range of luminaires, each selected to suit the specific location on the site. All fittings selected will be LED and will be mounted on columns ranging in height from 4m to 6m. • 3000K CCT LED to minimise impact on wildlife • High efficiency 119 lm/W • Zero Upward Light Output Ratio (ULOR) • Intelligent lighting control systems provided along pedestrian routes in sensitive woodland areas • Shading louvres included on light fittings adjacent to the most sensitive areas of the site. • Meets or exceeds all other WCC Specification criteria. Each light fitting shall be controlled via an individual Photoelectric Control Unit (PECU). The operation of the lighting shall be on a dusk-dawn profile.	The site lighting will be 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
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 boilers use the heat losses from the boiler flue to preheat the circulating heating water • By preheating the heating water, the boiler can achieve efficiencies in excess of 90%
Demand Controlled Mechanical Ventilation	Centralised mechanical ventilation will be provided to all dwellings to ensure that the air quality within the dwellings will be adequate. The system will be designed to respond to occupancy usage patterns and to humidity levels within the dwelling.	Mechanical ventilation provides enhanced air quality in modern air tight dwellings which are

		otherwise designed to minimise unwanted air infiltration
PV Solar Panels	PV Solar Panels will be considered as an option for the apartments 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. For apartments, there are products which incorporate air source heat pump technology but which do not require the traditional "outdoor unit" making them suitable for apartments. These are general referred to as "Exhaust Air Heat Pumps" and are capable of extracting energy from the air within the apartment through a ducting system.	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.
ECAR Charging Points	Within the surface parking areas, ducting shall be provided from a local landlord distribution board to designated E-car charging car park spaces. This will enable the management company the option to install a number of E-car charging points within the carpark to cater for E-car demand of the residence. 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 futureproof the development

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, coloured panels, glazing and zinc.

2.2.1 Building

The proposed apartment building is 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
Dual aspect design where possible	Dual aspect glazing increases natural light and adds the benefit of passive solar gain to reduce heating costs
Internal circulation areas have been minimised	Whilst maximising the use of space, avoids any unnecessary expense in cleaning and renewal of finishes
Roof construction includes rain-water goods.	Requires twice a year maintenance
External paved and landscaped areas	All of these require low/minimal maintenance

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. All common areas if the scheme, and their durability and performance are designed and specified in accordance with Figure 4: Phases of Life Cycle BS 7543:2015. The common parts are designed to incorporate the guidance, best practice, principles and mitigations of Annexes of BS 7543:2015	Ensures that the long-term durability and maintenance of materials is an integral part of the design and specification of the proposed development.
The architectural approach to the scheme proposed the extensive use of robust materials of brickwork (predominately) and render to the building envelope. The top floor finish will consist of a zinc cladding system and pressed metal to frame certain elements.	These traditional materials will require minimal on-going maintenance and have a longer life-cycle expectancy
Use of factory finished and alu-clad or uPVC windows and doors, and powder coated steel balconies	Requires no on-going maintenance.

2.3 Landscape

Element	Measure Description	Benefit
Paving and decking Materials	Use of robust, high quality paving and decking materials, with robust proven details	Requires no ongoing 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 prioritising pedestrians and landscape over the car- increase in soft landscaping	Natural attenuation and landscape maintenance preferable.

2.4 Waste Management

Measure	Description	Benefit
Operational Waste Management Plan	The application is accompanied by an Operational Waste Management Plan by the applicants.	The report demonstrates how the scheme complies with best practice
Storage of Non-Recyclable Waste and Recyclable Household Waste	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

2.5 Human Health & Wellbeing

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 optimise the ingress of natural daylight/ sunlight to the proposed	Reduces reliance on artificial lighting, thereby reducing costs

	dwellings to provide good levels of natural light	
Accessibility	All units will comply with the requirements of Building Regulations, Technical Guidance Documents Parts K and 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 • Overlooked communal open space in the form of a courtyard	Helps to reduce potential security/ management cost
Natural Amenity	Pocket parks and existing trees and hedgerows. Connections to local amenities such as Willsbrook Park and Vesey Park.	Facilitates community interaction, socialising and play- resulting in improved well being

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 set of rules and regulations.	Residents are as informed as possible so that any issues can be addressed in a timely and efficient manner.

2.7 Transport & Accessibility

Measure	Measure Description	Benefit
Access to Public Transport (Bus Services)	The site is served by the Dublin Bus no. 66 which has a stop conveniently located within walking distance of the proposed residential development	The availability, proximity and ease of access to public transport services contributes to reducing the reliance on the private motor vehicle for all journey types.
Permeable Connections	Provision and subsequent maintenance of dedicated pedestrian and cycle infrastructure along Mayne River Linear Park. Permeable connections through the blocks to connect to the wider network of pedestrian and cycle infrastructure.	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 and sheltered bicycle parking facilities, for both short term and long-term parking requirements.	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicle.
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.