

RESIDENTIAL DEVELOPMENT

Application:

Social Housing Bundle 3 - Residential
Development at Shangan Road, Ballymun

Applicant Name:

Dublin City Council

LIFE CYCLE REPORT

December 2021

Job ref: SHB3

CONTENTS

Section 01

General Introduction

- 1.1 Requirements of the Apartment Guidelines
- 1.2 Proposed Development
- 1.3 Procurement Method

Section 02

Measures considered to effectively manage and reduce costs for the benefit of residents

- 2.1 Energy and Carbon Emissions
- 2.2 Materials
 - 2.2.1 Buildings
 - 2.2.2 Material Specification
 - 2.2.3 External Material Typical Performance Indicators
- 2.3 Landscape
- 2.4 Waste Management
- 2.5 Health & Well Being
- 2.6 Management
- 2.7 Transport

Section 1.0

General Introduction

1.1 Requirements of the Apartment Guidelines

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.

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

“... 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 as well as demonstrating 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

1.2 Proposed Development

The development will consist of:

- i) Apartments for Older Persons - the construction of 73 no. apartment units, consisting of 67 no. 1 bed units; 6 no. 2 bed units and communal facilities, including a communal meeting room)
- ii) Dwellings and duplexes – the construction of 16no. Dwellings and 4no, duplex apartments, consisting of general needs units (5 no. 2 bed, 4no. 3 bed, and 1no. 4bed unit(s)); UD units (3no. 2bed, 2no. 3bed, 1no. 4bed unit(s)); and wheelchair accessible units (2no. 2bed and 2no. 3bed units).
- iii) landscaped communal open spaces, car-parking, cycle-parking, and all other site works required to facilitate the development

1.3 Procurement Method

It is intended that the development will be delivered through a Public Private Partnership (PPP) structure which will include maintenance and tenancy management services. Under this arrangement, the appointed PPP Company in partnership with an Approved Housing Body, will be responsible for the maintenance and management of the development and the life cycling of building elements on behalf of Dublin City Council and the residents over a 25-year period. Thereafter the maintenance and management of the development will be handed over to Dublin City Council.

As part of the appointment of the PPP Company, a performance specification will be developed that will outline the level of robustness and life expectancy of materials to be used, the required maintenance regimes and the residual life of building elements at the end of the 25-year period. The performance specification will cover external envelope materials, internal and external communal areas and all areas within the public realm including approaches to providing lighting, heating, hot water provision and other services.

At this planning stage, consideration has been given to the external materials to buildings, boundaries, and the public realm, and also outline energy carbon reduction strategies. The materials and services

proposed will be durable, and will provide a long life and low maintenance requirements for the residents.

Section 2.0

Measures considered 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 have been designed for and which the PPP Company will be able to consider for the units to assist in reducing costs for the occupants.

Measure	Description	Benefit
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, and lighting and occupancy. It is proposed to target an A2 rating for the apartments as a minimum, and this will equate to the following emissions. A2–25-50 kwh/m2/yr with CO2 emissions c.10kgCO2/m2 /year	Higher BER ratings reduce energy consumption and running costs.
Fabric Energy Efficiency	The U-values being investigated will improve upon 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”. They are as follows: <ul style="list-style-type: none"> • Walls: 0.13 W/m2.K • Window: 0.8 W/m2.K (solar fraction (g factor) of 0.65 or greater, Frame factor of 0.7 or better) • Roof: 0.12 W/m2.K • Doors: 1.2 W/m2.K (This is to include frame) • Ground Floor slab: 0.11 W/m2.K • Thermal Bridging: Factor of 0.08, with junction details to conform with “Limiting Thermal Bridging and Air Infiltration – Acceptable Construction Details” • Airtightness: 3 m3/m2/hr @50Pa 	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.

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 BER Rating.

Measure	Description	Benefit
Heat Pump Units	Air source Heat pump or internal exhaust air heat pump units have been designed for and are to be considered to provide heating and hot water demands.	Heat pumps operate with efficiencies >400%. Air to water heat pumps utilise external cold air as the air source for the heat pump.

		Through compression, heat pumps can 'pump up' heat at low temperature and release it at a higher temperature so that it may be used again.
Mechanical Ventilation Heat Recovery or Demand-controlled ventilation	<p>With air tightness of housing improving to reduce heat loss and energy and healthy environment is needed to be considered to ensure fresh air is provided and that condensation is not an issue.</p> <p>Mechanical Ventilation Heat Recovery or Demand-controlled ventilation will be considered to provide ventilation with low energy usage.</p>	<p>MVHR provides continuous ventilation to habitable rooms with low energy usage. Continuous extract is also provided from wet rooms, with exhausted air preheating the incoming fresh air via a heat exchanger in the unit. 90% of the heat can be recovered through this process that would otherwise be wasted.</p> <p>MEV, or demand control ventilation, relies on continuous extract from wet rooms, without heat recovery. It incorporates automated wall vents which open/close dependent on internal humidity conditions.</p> <p>MEV is more power efficient than the MVH. MVHR is more beneficial in energy terms when the outdoor air is cold.</p>
PV Solar Panels	<p>PV Solar Panels have been considered as part of the planning application.</p> <p>The panels are typically placed on the South facing side of the building for maximum heat gain and in some instances, can also be used to assist the heating system.</p>	<p>PV Solar Panels offer the benefit of reducing fossil fuel consumption and carbon emissions to the environment.</p> <p>They also reduce the overall requirement to purchase electricity from the grid.</p>
ECAR Charging Points	<p>Parking spaces will be ducted for future installation of EV charging.</p> <p>Where parking is on curtilage, EV charging will be from the distribution board of each house. Where parking is not on curtilage, a central EV charging network will be established for the street parking.</p>	<p>Providing the option of E-car charging points will allow occupants to avail of the ever-improving efficient electric car technologies.</p>
Water Butts	<p>Consideration has been given to the use of water butts in the design.</p>	<p>Collecting rainwater can help reduce demand on mains water supply. Water butts are a relatively simple option in reducing water usage and using a natural resource like rainwater helps conserve treated water and protect the environment.</p>

2.2 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.

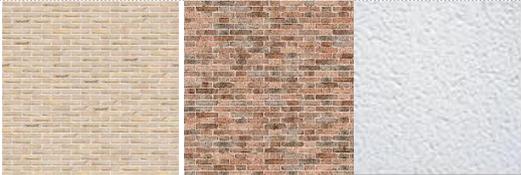
2.2.1 Buildings

All dwellings 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
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.
Daylighting to circulation areas where possible	Avoids the requirement for continuous artificial lighting.

2.2.2 Material Specification

Measure Description	Benefit
<p>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.</p> <p>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</p>	Ensures that the long-term durability and maintenance of Materials is an integral part of the Design and Specification of the proposed development.

Examples of UK material or component failures Annex D Design Life Data sheets	
Use of brickwork, stone and render to envelope of buildings	 <p>Requires minimal on-going maintenance</p>
Use of high-performance powder-coated windows, doors and railings.	Requires minimal on-going maintenance
Traditional roof coverings with robust and proven detailing to roof elements	Built up warm roof system with sedum layer over, reduced maintenance & are easy to repair.

2.2.3 External Material Typical Performance Indicators

The following tables typical performance indicators for a range of external materials as described on the planning drawings:

External Material Typical Performance Indicators	
Roof	
Description	Built up warm roof system
Typical Life Expectancy	20 years ++
Robustness & Security	High – generally not in vulnerable locations
Replacement & Repair	High- easily replaced in case of damage
Typical Maintenance	Very low maintenance
Entrance Canopy	
Description	Powder-coated aluminium
Typical Life Expectancy	45-50 years
Robustness & Security	Good resistance to accidental damage
Replacement & Repair	Moderate- able to be touched up
Typical Maintenance	Low maintenance
Balconies & Railings	
Description	Powder-coated metal
Typical Life Expectancy	Metal structure typically 70 years
Robustness & Security	High resistance to accidental damage
Replacement & Repair	Moderate- able to be touched up
Typical Maintenance	Low maintenance
External Brick	
Description	Clay brick
Typical Life Expectancy	50-80 years. Pointing, 25-50 years
Robustness & Security	Very high resistance to accidental damage
Replacement & Repair	Excellent- easily replaced
Typical Maintenance	Very low maintenance
External Render	
Description	Render finish
Typical Life Expectancy	Circa 25 years

Robustness & Security	High resistance to accidental damage
Replacement & Repair	Good - able to be repaired locally
Typical Maintenance	Low maintenance
Rainwater Goods	
Description	Powder-coated metal
Typical Life Expectancy	40-50 years
Robustness & Security	Good resistance to accidental damage
Replacement & Repair	Excellent- easily replaced
Typical Maintenance	Low maintenance
External Steps	
Description	Concrete
Typical Life Expectancy	80 years
Robustness & Security	Very high resistance to accidental damage
Replacement & Repair	Good - able to be repaired locally
Typical Maintenance	Very low maintenance

2.3 **Landscape**

Measure	Description	Benefit
Hard Landscape Materials	Sustainable, robust materials, with high slip resistance to be used for paving. Durable and robust finishes to be selected for all play elements, fencing, furniture, bin and bicycle storage units.	Materials selected to minimise on-going maintenance inputs
Soft Landscape Materials	Planting proposals have been formulated to complement the local setting as well as being fit for purpose in respect of private and public realm uses and spatial constraints imposed by garden sizes and the width of planting strips. Native tree species have been selected in significant numbers for planting along boundaries and across open spaces while non-native species have also been selected where spatial constraints are a factor. The plant selection proposed has a proven record to thrive in the Irish climate.	Reduction in the frequency of required soft landscape maintenance
Site Layout and Design	Pedestrian and cyclist friendly hierarchy of streets and open spaces are complemented by generous and high-quality landscape treatments including street tree planting and soft landscaping within public spaces providing long term high quality residential environments.	Safe, high quality residential environments reduce vandalism and antisocial behaviour issues
Maintenance & Management	Maintenance and management requirements have been considered through the design process. Complex planting arrangements have been omitted thus avoiding onerous maintenance and management requirements.	Estate maintenance costs reduced
Sustainability & Biodiversity	Sustainability aspects of the proposed development include the use of native trees where possible across the site. Other species have been carefully selected for compatibility with the size of available spaces which is an important factor in long term management. The overall objective is to enhance the biodiversity potential of the site in addition to providing seasonal interest and variety. Judiciously placed flowering shrub and groundcover planting have been included to further promote biodiversity (pollinator species attracting insects and birdlife). Sedum is also included to roofs, for both SUDs benefit and biodiversity gains.	Enhanced sustainability of long-term management

2.4 Waste Management

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

Measure	Description	Benefit
Construction and Operational Waste Management Plan	A Construction and Operational Waste Management Plan will be developed by the developer in due course	
Recyclable Waste	Domestic waste management strategy: Grey, Brown and Green bin distinction. Competitive tender for waste management collection	Helps reduce potential waste charges.

2.5 Health & Wellbeing

The following are illustrations of how the health and wellbeing of future residents are considered.

Measure	Description	Benefit
Natural / Day Light	The design, separation distances and layout of the Apartment block, dwelling and duplexes have been designed to optimize natural daylight/ sunlight and 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 and Part 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 available for adaption into the design: CCTV monitoring details will be considered at detailed design if appropriate. Fobbed access into communal bin and shared bicycle facilities are under consideration. All public areas will be well-lit.	Aids in reducing potential security/ management costs. Enhances safety for residents and visitors.
Natural Amenity	Large open green spaces proposed throughout the scheme, connecting to the existing green spaces and promoting health and wellbeing.	Facilitates community interaction, socialising and play – resulting in improved wellbeing

2.6 Management

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

Measure	Description	Benefit
Home User Guide	<p>Consideration will be given to providing all residents with a home user guide including:</p> <p>User information 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.</p> <p>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.</p>	Residents are kept as informed as possible so that any issues can be addressed in a timely and efficient manner.

2.7 Transport

Measure	Description	Benefit
Access to Public Transport (Train)	<p>The Dart (Bray/Greystones to Howth/Malahide), Northern Commuter Train, Southwestern Commuter Train and the Western Commuter Train is located within cycling distance of the Shangan site. The Dart has a high frequency service, especially during peak travel times, usually every 5 – 15 minutes. The other commuter trains are generally medium frequency and the timetables for these are available on www.irishrail.ie.</p> <p>These rail services can be accesses from the Drumcondra, Clontarf or Killester Stations. The nearest rail stations to the site, along with the cycling times are shown in Table 2-2. These rail routes are displayed on the Dublin area rail and airport bus services map in Figure 2-5.</p> <p>The closest Luas stop to the Shangan site is at Cabra (Green Line) Street at 4.6km. The Luas tram service has two main routes through Dublin City. The Luas Red Line runs in a predominantly east west direction from Saggart/Tallaght to the Point and has a stop at Connolly Station. The Luas Green Line</p>	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.

	<p>extends in a north south direction through the city from Bloombridge to Brides Glen and is accessible from the Luas Red Line. Trams operate at 3 - 5 minute frequencies during peak travel times and 12 – 15 minute frequencies during off peak travel times generally between 05:30 – 12:00. It should also be noted the Luas Red Line also provides a connection to Heuston Station.</p>	
<p>Access to Public Transport (Bus)</p>	<p>The site is located directly adjacent to bus stops on Shangan Road (stop number 4687 and 124) and 350m from bus stops on Ballymun Road (stop number 94 and 112). The bus stops on Shangan Road are basic in nature with no shelters, however the stops on Ballymun Road both have bus shelters. There is also a real-time electronic bus sign located at the southbound bus stop on Ballymun Road. These bus stops facilitate 6No. routes to the wider Dublin area.</p> <p>The site is also located approximately 6.0km from the Busáras Central Station which equates to a 19-minute cycle.</p>	<p>The proximity, frequency and additional destinations served by this local bus service 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</p>
<p>Cycling facilities</p>	<p>The site on Shangan Road is within cycling distance of various shops, schools, community amenities and transport hubs.</p> <p>There are no dedicated cycle facilities on Shangan Road. Cycle facilities are provided on Ballymun Road extending in a north-south direction, including cycle lanes, advisory cycle lanes and shared bus and cycle lanes. This cycle route provides connectivity to Dublin City Centre, surrounding shops, schools, commercial areas and employment centres.</p>	<p>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.</p>
<p>Bicycle Storage</p>	<p>The provision of high-quality secure & covered bicycle parking facilities, for both short term and long-term parking requirements</p>	<p>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.</p>