Residential Development

Courtstown, Little Island LRD

Building Lifecycle Report

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Contents

1. INTRODUCTION

This Building Lifecycle Report has been prepared by Engenuiti on behalf of Ruden Homes Ltd. in support of the proposed 172-unit large scale residential development at Courtstown, Little Island, Co. Cork.

The purpose of this report is to provide an assessment of long-term running and maintenance costs as they would apply on a residential unit basis at the time of application, while also demonstrating what measures have been considered to effectively manage and reduce costs for the benefit of the residents.

This Building Lifecycle Report has been developed having regard to revised guidelines for Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities) under Section 28 of the Planning and Development Act 2000 (as amended).
The relevant direction stated in the Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities) as set out in section 6.10 to section 6.13.
and are as follows.

"Operation and Management of Apartment Developments
6.11 Certainty regarding the long-term management and maintenance structures that are put in place for an apartment scheme is a critical aspect of this form of residential development. It is essential that robust legal and financial arrangements are provided to ensure that apartment development is properly managed, with effective and appropriately resourced maintenance and operational regimes.

6.12 In this regard, consideration of the long-term running costs and the eventual manner of compliance of the proposal with the Multi- Unit Developments Act, 2011 are matters which should be considered as part of any assessment of a proposed apartment development.

6.13 Accordingly, planning applications for apartment development 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, as well as demonstrating what measures have been specifically considered by the proposer to effectively manage and reduce costs for the benefit of residents.

6.14 The Multi-Unit Developments Act, 2011 (MUD Act) sets out the legal requirements regarding the management of apartment developments. In this regard it is advised that when granting permission for such developments planning authorities attach appropriate planning conditions that require:
• Compliance with the MUD Act,
• Establishment of an Owners Management Company (OMC) and:
• Establishment and ongoing maintenance of a sinking fund commensurate with the facilities in a development that require ongoing maintenance and renewal."

Extracted from 'The Sustainable Urban Housing Design Standards for New Apartments – Guidelines for Planning Authorities', DoHPLG, December 2020

2. PROPOSED DEVELOPMENT

Ruden Homes Ltd., intend to apply for Planning Permission for a Large-scale residential development at lands located at Courtstown, Little Island, Co. Cork on a net site developable area measuring 4.35 Ha. The proposed development comprises of 152 No. residential units (mix of house types) and 26 No. apartments (mix of 2& 3-bedroom units) as follows:

- 5 No. 4 bed detached.
- 35 No. 4 bed semi-detached/end of terrace
- 65 No. 3 bed semi-detached/end of terrace
- 41 No. 2 bed semi-detached/end of terrace
- 6 No. 2 bed duplex apartments
- 12 No. 1 bed apartments
- 5 No. 2 bed apartments
- 3 No. 3 bed apartments

Total: 172 No. units

Vehicular access is proposed from the Ballytrasna park public road to the north.

The proposal includes a planned distributor road identified as LI-U-05 in the Cork County Development Plan 2022 has been provided for and incorporated on the eastern edge of the site. An east-west internal spine provides a main access route from this, with further mews roads connecting 3 distinctive character areas and incorporating home zones together with open space community areas. Connectivity is also proposed by way of pedestrian and cyclist links to all home zones and amenity area, together with potential future links to residential zoned lands to the south and west, and to the wider public transport network.

- Adequate car parking is proposed together with cycle parking and bin storage.

- Associated site services and infrastructural works include wastewater and mains water.
connection to Irish Water Network, storm water connection to existing public storm sewer to the east (following on site attenuation) and connection to existing cable networks.

- Landscaping proposals include for satisfactory boundary treatment and soft and hard landscaped areas as per Landscape Architects design details.

- Internal road network incorporates shared surfacing, pedestrian connectivity and links to home zones in accordance with DMURS.

3. BUILDING LIFECYCLE REPORT SECTION 01

This building lifecycle report relates to the apartment block element of the proposal.
This comprises of the following-

The Apartment Block /Creche /Commercial building is centrally located within character area 2 and is towards the eastern side of the proposal adjacent to the main distributor road identified in the CDP 2022(LI-U-05) with easy access via the east-west spine. It comprises 20 number 1, 2 &3-bed apartments arranged over 3/4 storeys with 3 No 3 bed penthouse apartments located across levels 2,3 & 4 on the northern elevation. The apartments are served by 2 No. ambulant compliant stair core. Car parking is provided at grade adjacent to the apartment block, creche & commercial center. All resident bicycle parking and bin stores are accommodated outside the building at ground floor level.

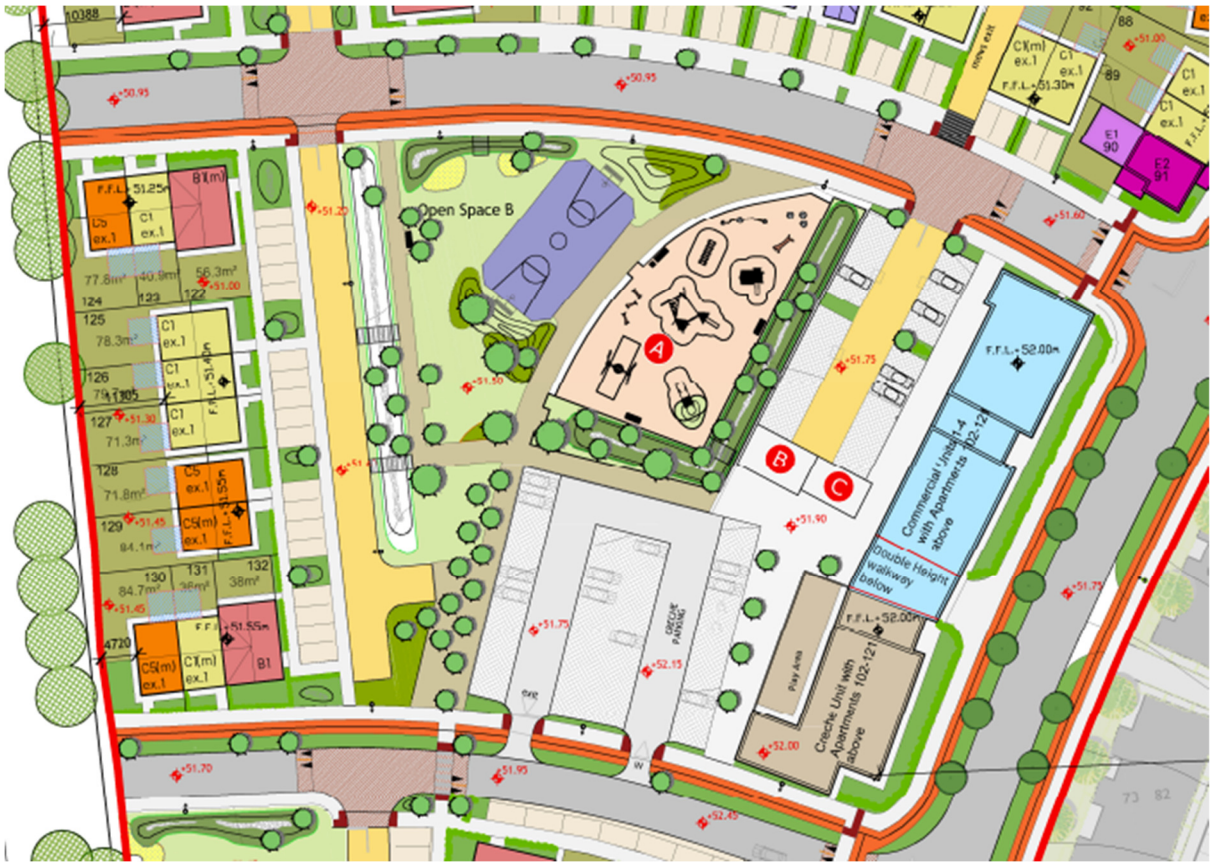

Fig 1 - Apartment | Creche | Commercial units

3.1. Long-Term Running Costs

This section relates to an assessment of long-term running and maintenance costs as they would apply on a per residential unit basis at the time of application. (Refer to Energy assessment report submitted as part of this application)

3.2. Property Management of Common Areas

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 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

3.3. Service Charge Budget

The property management company has several 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*.

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 B.

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 figures provided are estimates.

3.4. Sinking Fund

It is expected that a sinking fund allowance will account for future major maintenance and upgrade costs. In line with the requirements of the *Multi Unit Development Act 2011*, 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.

4. BUILDING LIFECYCLE REPORT SECTION 02

The following measures were specifically considered by the proposer to assist in the reduction of costs for the benefit of residents.

4.1. Building Design

MEASURE	DESCRIPTION	BENEFIT
Layout.	Internal Circulation areas have been minimised within the confines of TGD Part M compliance.	Providing cost efficiency in cleaning and maintenance.
Limited heating of Circulation Areas.	Internal circulation areas are to be included within the insulated envelope of the building and provided with limited space heating.	Minimises the risk of condensation within the public areas and reduction in maintenance.
Daylight to circulation areas.	Stair cores are located on external walls with windows at all floor levels.	Avoids reliance on artificial lighting and reduces associated running and maintenance costs.
Daylighting to apartments.	Where possible, as outlined in 'Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities' to have regard for quantitative performance approaches to daylight provisions 'outlined in guides like the New European Standard for Daylighting in Buildings IS EN17037:2018, UK National Annex BS EN17037:2019 and the associated BRE Guide 209 2022 Edition (June 2022), or any relevant future standards or guidance specific to the Irish context, when undertaken by development proposers which offer the capability to satisfy minimum standards of daylight provision;'.	Reduces the requirement, and therefore expense, for continuous artificial lighting.
Natural /Passive ventilation to circulation areas.	Stair cores are located on external walls with windows at all floor levels. Vertical natural air vents are provided to provide ventilation as required under Technical Guidance Document Part B – Fire Safety.	Avoids the requirement for mechanical ventilation and reduces associated running and maintenance costs.
Natural / Passive ventilation to apartments.	Most apartments have been designed to be dual aspect with openable windows and terrace doors. Refer to audit schedules.	Lessens the requirement for mechanical ventilation and reduces associated running and maintenance costs.

Dual Aspect Apartments	Most apartments are dual aspect. Refer to audit schedules.	Dual aspect apartments have increased levels of natural light and passive heat gain contributing to resident comfort and reducing lighting and heating costs.

4.2. Landscape

MEASURE	DESCRIPTION	BENEFIT
Site Layout and Design	High-quality landscaped areas with Pedestrian and cyclist connectivity link a series of neighbourhood home zones, distributed on-site open space amenity and active playground areas and link also to potential adjacent future development.	Encourages improved wellbeing through social interaction, exercise and play and contributes to the local social infrastructural inventory. Management Plan to be implemented.
Hard Landscaping Surfaces	Hard landscape materials have been selected with quality, robustness and ease of maintenance in mind. Hot rolled asphalt will be used for road surfaces. Home zone areas and traffic calming raised tables will be highlighted with coloured and imprinted asphalt. Roadside footpaths will have a concrete finish and footpaths through open spaces will be finished out in bitumen macadam or concrete. Hardstand areas in public open spaces and within the curtilage of the apartment block and houses will be finished with a combination of concrete sett pavers, imprinted asphalt and compacted gravel for visual effect and variation through the site.	Requires minimal on-going maintenance and retains a high quality of visual appearance indefinitely.
Soft Landscaping & Existing Landscape	Native trees have been selected for planting along boundaries and across open spaces and along roads and near houses. Shrubs and ground cover planting are provided to the front of plot boundary walls which face onto roads and open spaces and in planting beds within the curtilage of the houses and apartment block to provide visual interest and a sense of seasonality and diversity. Existing tree lined boundaries are maintained to the west, south and north.	Reduced frequency of maintenance. Enhanced biodiversity within the site minimize maintenance, weeding, etc. Encourages improved wellbeing through social interaction and provides diversity and identity to the various character areas.

4.3. Energy & Carbon Emissions

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/A3 rating for the apartments this will equate to the following emissions. A2 – 25-50 kwh/m2/yr. with CO2 emissions circa 10kgCO2/m2 year A3 – 51-75 kwh/m2/yr. with CO2 emissions circa 12kgCO2/m2 /year.	Higher BER ratings reduce energy consumption and running costs.
Fabric Energy Efficiency	The U-values being investigated will be in line with the requirements set out by the current regulatory requirements of the Technical Guidance Documents Part L, titled "Conservation of Fuel and Energy Buildings other than Dwellings". Thermal bridging at junctions between construction elements and at other locations will be minimised in accordance Paragraphs 1.2.4.2 and 1.2.4.3 within the Technical Guidance Documents Part L. See Appendix C, Table 1 of Part L, Building Regulations. To achieve the NZEB standards, in most cases the above standards will be exceeded in the proposed development.	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.
Energy Labelled White Goods	The white goods 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.

Public Lighting	Public lighting within the development is set out in Horizon Engineering Ltd., public lighting plan and supporting report.	The site lighting has been designed to provide a safe environment for pedestrians, cyclists and moving vehicles and to deter anti-social behaviour.

4.4. Low Energy Technologies

The following are Low energy technologies that are being considered for the development and during the design stage of the development to meet the requirements of Part L of the Building Regulations and to meet the Near Zero Energy Building standard (NZEB).

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 boiler have lower fuel consumption resulting from the higher operating efficiencies.
Mechanical Ventilation Heat Recovery	Centralised mechanical ventilation will be provided where required 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 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 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.

Space and Water Heating	An air-to-water heat pump system is proposed for each dwelling as the optimal balance of practicality, efficiency and contribution of renewable energy. Each heat pump system shall be listed on the HARP database or have IS EN14511-2, IS EN 255-2 or EN 15879 test certificates (or otherwise as required by changes to the Regulations). The hot water storage will form part of the composite heat pump systems, with certified loss factors. Space heat distribution will be via low-temperature radiators generally, and the space and hot water system will have full time and temperature controls.	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	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 E-car charging points within the carpark to cater for E-car demand of the residence. This system operates on a single charge point access card. A full recharge 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.

4.5. Materials / Material Specification

The practical implementation of the Design and Material principles has informed design of building facades, internal layouts and detailing of the proposed apartment buildings. The proposed envelope of the building is a mix brick and durable render finish, with high performance double or triple-glazed aluminium windows. These materials are considered durable and would not require regular replacement or maintenance.

It is expected that a sinking fund allowance will account for future major maintenance and upgrade costs. A 10-year Planned Preventative Maintenance (PPM) strategy will determine the level of sinking fund required.

The 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
Implementation of the Design and Material principles to the design of the proposed development.	Materials have been selected with a view to longevity, durability and low maintenance. Consideration is given to the requirements of the Building Regulations and includes reference to BS 7543:2015, 'Guide to Durability of Buildings and Building elements, Products and Components', which provides guidance on the durability, design life and predicted service life of buildings and their parts. All common parts of the proposed Apartment building and, the durability and performance of these are designed and specified in accordance with Figure 4; Phases of the Life Cycle of BS7543; 2015. (Please see Appendix B for this figure). The common parts are designed to incorporate the guidance, best practice principles and mitigations of Annexes of BS 7543: 2015 including: · Annex A Climatic Agents affecting Durability · Annex B Guidance on materials and durability · Annex C Examples of UK material or component failures · Annex D Design Life Data sheets	Longevity, durability and low maintenance of materials

Use of brickwork to sections of multi-storey facades.	Selected brickwork is proposed to dwelling houses and to sections of Multi-storey Apartment Block. Brick is subject to availability.	Brickwork requires no-on-going maintenance work and retains a high quality of visual appearance indefinitely.
Use of pre-coloured render.	Pre-coloured render in selected sand & cement Knapp finish or a wet dash appearance is proposed throughout.	Pre-coloured render (silicone based) requires low maintenance work and retains a high quality of visual appearance.
UPVC / Alu-clad windows & doors.	Factory finished UPVC / Alu-clad windows and doors throughout.	Requires no on-going maintenance and retains a high quality of visual appearance indefinitely.
Standing metal seam cladding	Standing metal seam cladding as principal finish to entrance canopies of dwellinghouses.	Requires minimum ongoing maintenance and ensures the long-term durability of maintenance of materials.
External Balconies.	Installation of factory finished powder coated steel balconies and glass balustrades	Minimum maintenance and high-quality visual appearance.
Flat roof, Selected single ply or similar approved warm roof.	Multi Storey apartment roofs are flat in nature. Flat roof`s will consists of single ply membrane or similar approved roofing membranes on a warm roof.	Minimises ongoing maintenance.

4.6. Waste Management

MEASURE	DESCRIPTION	BENEFIT
Waste Management Plan.	This application is accompanied by a Construction, Environmental & Waste Management Plan prepared by Murphy, Mathson& O'Sullivan Civil & structural Engineers (MMOS) and Operational Waste Management Plan prepared by BG Architecture.	The plan demonstrates how the scheme has been designed to comply with national, regional and local waste legislation and current best practice.
Storage of Non-Recyclable waste and Recyclable household waste	Bin stores with access control are provided adjacent to each of Block. Domestic waste management strategy: All centralised collection points to consist of mixed non-recyclable waste, Dry mixed recyclables, glass and organic waste segregation.	Easily accessible to residents and waste management contractors. Access control to deter fly tipping. Helps reduce potential waste charges.
Composting	Organic waste bins to be provided in the communal waste stores.	Helps reduce potential waste charges and ensures compliance regarding segregation of bio-degradable waste.

4.7. Health & Human Well Being

MEASURE	DESCRIPTION	BENEFIT
Natural / Day light	Apartment design, orientation and living spaces have been assessed to maximise day light hours to the primary living spaces within individual apartments and to optimise the ingress of natural daylight. Most Apartments are dual aspect.	Orientation, layout and dual aspect apartments have increased levels of natural light and passive heat gain leading to increased resident comfort and a reduction in running costs.
Security	The scheme has been designed to maximise passive surveillance. Controlled access provided to the apartment block. Additional security controls such as CCTV management will be provided to bicycle stores and communal car parks.	Assists in the reduction of potential security requirements / costs. Enhances safety for residents and visitors.
Public Open / Amenity Space	Interconnected local home zone areas and neighbourhood play area with pedestrian access routes are provided through the site. External terraces to apartment block are provided. Connectivity to zoned recreation / amenity lands and to adjacent future development and amenity is also proposed.	Encourages improved wellbeing through social interaction, exercise and play. Facilitates community interaction and wellbeing.
Accessibility	All residential units are designed to have level access for persons with disabilities as required under TGD Part M & K. All residential units are designed to include Part M compliant visitor toilets, minimum door & corridor widths and accessible light switches and sockets.	Reduces the requirements and associated costs for changes in design to accommodate resident's future changing circumstances.

4.8. Transport & Accessibility

TRANSPORT & ACCESSIBILITY		
MEASURE	DESCRIPTION	BENEFIT
Public Transport	Current provision in the area includes the 211 Cork/Little Island bus service, a 30min frequency service linked to Cork City Centre. The Cork – Midleton- Cobh Rail service via Kent Station regularly operates 7 days a week. The station at Little Island is within 2Km of the proposed development.	Availability, proximity and ease of access to high quality public transport services contributes to reducing the reliance on motor vehicles. The frequency and range of additional destinations served by these local bus services enhances the accessibility levels of the proposed development.
Pedestrian & Cyclist Permeability	Pedestrian connectivity is provided throughout the development. Links are provided to home zones and play area together with adjoining developments and off-site networks. Pedestrian and cycle connectivity is also proposed via upgraded pathway along the Ballytrasna Road thereby providing greater connectivity to Little Island Town Centre and Train Station which can also link into the wider CMAT Plan produced by Cork County Council.	Provides for the long-term benefits of walking and cycling to the health and well-being of residents. Pedestrian and bicycle connectivity encourages the use of amenity spaces provided.
Bicycle	Bicycle storage spaces are provided within the proposed development in accordance with the criteria set out under Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities. Apartment Block within the proposed development includes integrated bicycle stores / standalone stores. A proportion of bicycle visitor storage points as required under The Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities are provided externally close to apartment entrances.	Substantial bicycle storage promoting the importance placed upon bicycle connectivity.

4.9. Management

MEASURE	DESCRIPTION	BENEFIT
Home User Guide	The management of the property will ultimately be the responsibility of the owners and operators of this scheme. Consideration has been given to ensuring owners / tenants have a clear understanding of the property which they will own / rent. At closeout, or 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 resident's pack prepared by the operational management company will also be provided and will include information on contact details for the managing agent, emergency contact details, transport links and a clear set of rules and regulations for tenants of the property. This will ensure residents are appropriately informed, so any issues can be addressed in a timely and efficient manner and ensure the successful operation of this build to let scheme.	Residents are provided with the necessary information to manage, maintain properties in an appropriate manner and to maximise enjoyment of their property. Assists in minimizing maintenance expenditure and plant replacement costs.

APPENDIX A

APARTMENT LOCATION PLAN

Figure 1 Apartment Location Plan

APPENDIX B

ITEMS INCLUDED IN TYPICAL BUILDING INVESTMENT FUND (BIF)

Residential Development
Courtstown, Little Island LRD
Building Lifecycle Report

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Courtstown, Little Island LRD
Building Lifecycle Report

Items Included in a Typical BIF

The BIF table below illustrates what would be incorporated for the calculation of a Sinking Fund.

REF.	ELEMENT	LIFE EXPECTANCY
1.00	**Roofs**	
1.01	Replacement of flat roofing membrane, warm roof build-up including insulation.	18
1.02	Replacement of parapet capping and upstand.	18
1.03	Replacement of rainwater gutters and downpipes	40
1.04	Specialist roof Systems / fall arrest	25
1.05	Replacement of roof access hatches and doors	25
2.00	**Elevations**	
2.01	Minor repairs, preparation for decoration, decoration of rendered areas.	20
2.02	Replace entrance and exit doors	25
2.03	Replace rainwater goods	25
2.04	Recoat powder coated finish to balcony structure and balustrade	20
2.05	Periodic replacement and maintenance of external fixings	5
2.06	Replace balcony floor finishes	25
2.07	Replace louvre frames	20
2.08	Replacement of vertical raised seam cladding, on vapour barrier, on plywood sarking and ventilated double batten.	40
2.09	Decorate timber panels.	18
2.10	Re-powder coat finishes.	20
3.00	**Stair cores & lobbies**	
3.01	Decorate ceilings 7	7
3.02	Decorate walls 7	7
3.03	Decorate joinery 7	7
3.04	Replace fire doors 25	25
3.05	Replace carpets (Stairwells, lobbies & corridors)	12
3.06	Replace entrance mats.	10
3.07	Replace ceramic floor tiles and nosing's to stairs and landings.	15
4.00	**M&E Services**	

4.01	General – internal re-lamping.	10
4.02	Replace internal light fittings.	20
4.03	Replace external light fittings.	18
4.04	Replace smoke detector heads.	18
4.05	Replace manual break glass units.	18
4.06	Replace fire alarm panel.	15
4.07	Replace lift car controls.	25
4.08	Replace AOV`s.	25
4.09	Replace Security Access control system	15
4.10	External mains water connection.	20
4.11	External mains and sub mains distribution board.	20
4.12	Emergency lighting.	20
5.00	**Exterior / Landscaping.**	
5.01	Repaint car parking.	12
5.02	Replace tarmacadam.	60
5.03	External boundary treatments to landscaped area.	20
5.04	Replace paved areas.	18
5.05	10 years cut back and thinning of trees. Renewal of landscaping generally.	10
5.06	Replace CCTV provision.	12
5.07	Replace external signage.	18

APPENDIX C

Residential Development
Courtstown, Little Island LRD

FABRIC REQUIREMENTS (BUILDING REGULATIONS PART L)

Table 1	Maximum elemental U-value (W/m^2K)[1, 2]	
Column 1 Fabric Elements	Column 2 Area-weighted Average Elemental U-value (Um)	Column 3 Average Elemental U-value – individual element or section of element
Roofs Pitched roof - Insulation at ceiling - Insulation on slope Flat roof	 0.16 0.16 0.20	 0.3
Walls	0.18	0.6
Ground floors[3]	0.18	0.6
Other exposed floors	0.18	0.6
External doors, windows and rooflights	1.4[4,5]	3.0

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/m^2K.*
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.*

Figure 2 Elemental U-Value Technical Guidance

APPENDIX D

PHASES OF THE LIFE CYCLE

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Courtstown, Little Island LRD
Building Lifecycle Report

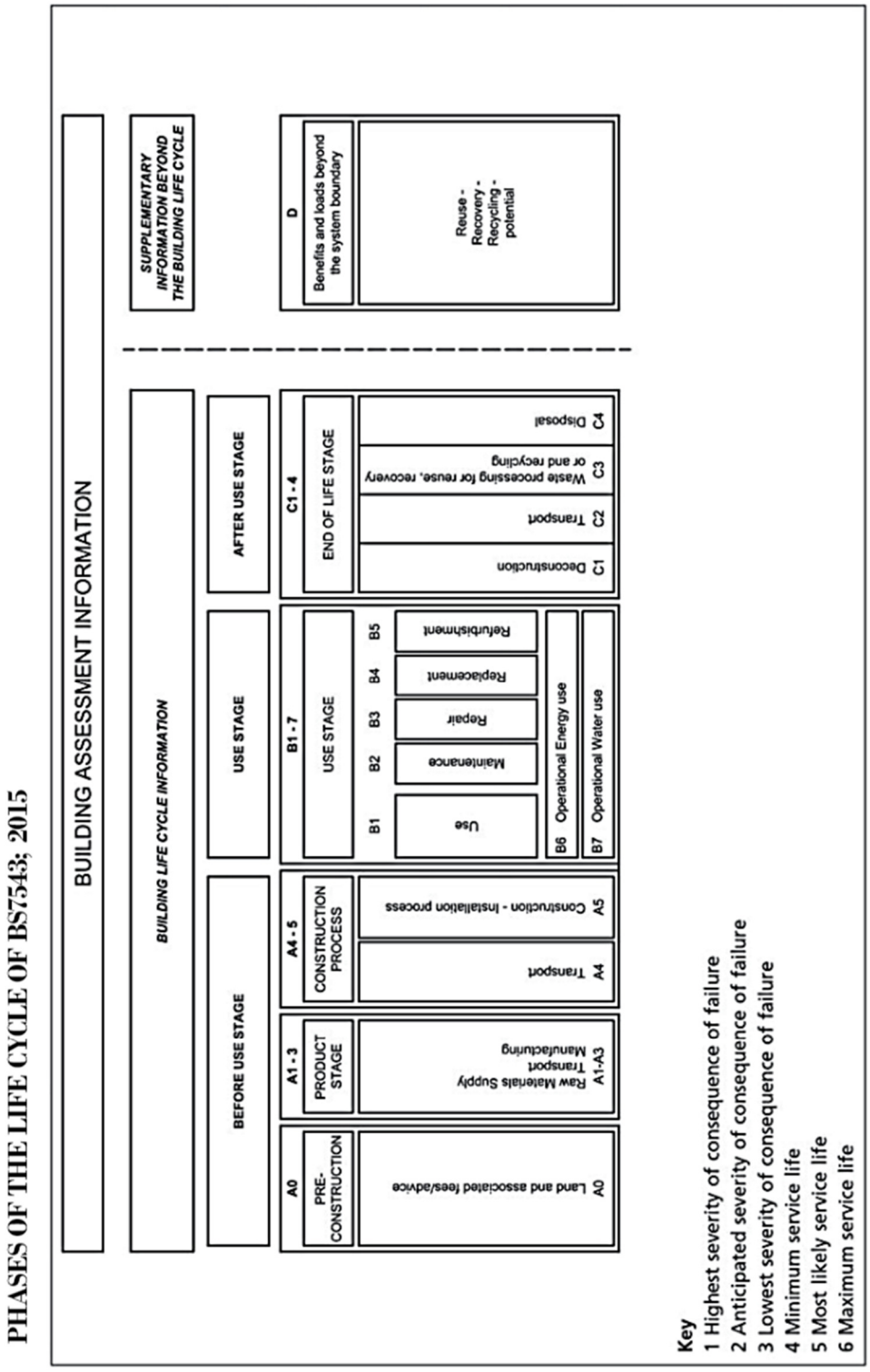

Figure 3 BS 7543:2015 Figure 4