

Building Life Cycle Report

In respect of:

Strategic Housing Development

at former De La Salle national school and associated lands, located north of Ballyfermot Road, Ballyfermot, Dublin 10.



Prepared by:

**Delphi Design
Architecture & Planning**

On behalf of the applicant:

Dwyer Nolan Developments Ltd.

April 2022



1.0 Introduction

This Building Life Cycle report has been prepared in support of a strategic housing development proposed by Dwyer Nolan Developments Ltd. (the Applicant) for a new residential development, on lands measuring approximately 8.3ha, located on a site at lands north of Ballyfermot Road, on the former De La Salle lands in Ballyfermot, Dublin 10.

The application is for a development consisting of 927 no. apartments & duplex / triplex units comprised of 325 no. one bed, 538 no. two bed, & 64 no. three bed dwellings, 1 no. commercial unit and 1 no. retail / café unit in 8 no. blocks (Blocks A-H) ranging in height from 2 to 13 storeys, and caters for communal open spaces, including roof gardens, and private open spaces, including terraces, balconies, and gardens. The development also includes for undercroft, basement & surface car parking and bicycle parking.

The 2020 Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities (hereafter referred to as the “*Apartment Guidelines*”) contain a requirement to include details on the management and maintenance of apartment schemes. This is set out in Sections 6.11 to 6.14 under “*Operation & Management of Apartment Developments*”.

Specifically, Section 6.13. of the Apartment Guidelines requires that applications for apartment developments 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”.

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



2.0 Proposed Development

The proposed development is as follows:

Dwyer Nolan Developments Ltd. intends to apply to An Bord Pleanála for permission for a strategic housing development on a site of c. 8.3 hectares located at the grounds of the former De La Salle National School, Ballyfermot Road, Ballyfermot, Dublin 10.

The application site is bounded to the south by Ballyfermot Road (R833), to the east by The Steeples residential estate, to the north by the wooded margin of the Chapelizod Bypass (R148), and to the west by Lynch's Lane and other adjoining institutional lands.

The application site contains a Protected Structure i.e., the De La Salle National School Central Classroom Block, including 2 no. staircase towers, 2 no. flanking single storey loggia and principal paired entrance gate piers only (RPS Ref No. 8784).

The development will consist of the following:

- (1) Demolition of: (i) the east and west wings of the former national school (c. 1,250m² & c. 1,244m² respectively); (ii) existing buildings / shelters on site (c. 1,818m²); (iii) the rear return of the Protected Structure (c. 121m²) & 2 no. flanking single storey loggia (c. 100m²); and (iv) the Mount La Salle "Monastery" building (c. 1,700m²).
- (2) Renovation and change of use of the 2 storey Protected Structure, forming part of proposed Block A, from previous educational use to (a) proposed childcare use on the ground & first floor (c. 1,005m²), with associated outdoor play space to the rear (c. 256m²), and (b) community use (c. 92m²) on the ground floor. The development also seeks permission for the relocation of the principal paired entrance gate piers on Ballyfermot Road inwards (northwards) to the site.
- (3) Construction of 927 no. apartments & duplex / triplex units comprised of 325 no. one bed, 538 no. two bed, & 64 no. three bed dwellings, 1 no. commercial unit and 1 no. retail / café unit in 8 no. blocks (Blocks A-H) ranging in height from 2 to 13 storeys. The breakdown of individual blocks is as follows:
 - Block A consists of: (i) the 2 storey Protected Structure, and (ii) a 2 to 5 storey building located to the rear of the Protected Structure consisting of 69 no. apartments, including terraces at the ground floor and terraces/balconies at all upper levels, comprised of 26 no. one bed, 41 no. two bed, & 2 no. three bed dwellings. At ground floor level 2 no. communal amenity rooms (c. 65m² & c. 65m² respectively) are provided, along with bin stores, and bicycle storage areas (Total: 128 no. internal bicycle spaces). Communal open space (c. 857m²) is provided in the centre of Block A. Block A also includes internal stair core access to shared basement level with Block H.
 - Block B is a 2 to 8 storey building consisting of 128 no. apartments & duplex units, including terraces at the ground floor and terraces/balconies at all upper levels, comprised of 55 no. one bed, 67 no. two bed, & 6 no. three bed dwellings. At ground floor level 1 no. communal amenity room (c. 71m²) is provided, along with bin stores, bicycle storage areas (Total: 235 no. internal bicycle spaces), 1 no. commercial unit (c.107m²), and undercroft parking for 58 no. car parking spaces. Podium level



communal open space (c. 827m²) is provided at first floor level with additional communal open space (c.137m²) in the form of a roof garden provided on the fifth floor.

- Block C is a 2 to 7 storey building, over part basement level, consisting of 101 no. apartments & duplex units, including terraces at the ground floor and terraces/balconies at all upper levels, comprised of 28 no. one bed, 61 no. two bed, & 12 no. three bed dwellings. At ground floor level 1 no. communal amenity room (c.147m²) is provided, with an associated outdoor terrace. Block C caters for a part basement level (c. 3,049m²) comprised of 93 no. car parking spaces, bin stores, bicycle storage areas (Total: 220 no. bicycle spaces) and plant room. Communal open space (c. 583m²) is provided in the centre of Block C.
- Block D is a 4 to 7 storey building consisting of 189 no. apartments & duplex units, including terraces at the ground floor and terraces/balconies at all upper levels, comprised of 68 no. one bed, 106 no. two bed, & 15 no. three bed dwellings. At ground floor level 1 no. communal amenity room (c. 156m²) is provided, along with bin stores, bicycle storage areas (Total: 469 no. internal bicycle spaces), ESB / plant rooms, and undercroft parking for 103 no. car parking spaces. Podium level communal open space (c. 1,867m²) is provided at first floor level.
- Block E consists of 2 no. 2-3 storey buildings catering for 22 no. apartments & duplex / triplex units comprised of: (i) 1 no. 2-3 storey building comprised of 8 no. two bed & 2 no. three bed dwellings, and (ii) 1 no. 2-3 storey building comprised of 10 no. two bed & 2 no. three bed dwellings. Private open space for Block E is provided in the form of rear gardens for lower ground floor / ground floor units and balconies on the first floor.
- Block F is a 2 to 10 storey building, over basement level, consisting of 121 no. apartments & duplex units, including terraces at the ground floor and terraces/balconies at all upper levels, comprised of 57 no. one bed, 61 no. two bed, & 3 no. three bed dwellings. At ground floor level 1 no. communal amenity room (c. 76m²) is provided. Block F caters for a basement level (c. 1,838m²) comprised of 68 no. car parking spaces, bin stores, and bicycle storage areas (Total: 190 no. bicycle spaces). Communal open space (c. 530m²) is provided to the rear (north) of Block F with additional communal open space in the form of roof gardens provided on the sixth and eighth floors (c. 250m² & c. 265m² respectively).
- Block G is a 2 to 10 storey building consisting of 154 no. apartments & duplex units, including terraces at the ground floor and terraces/balconies at all upper levels, comprised of 39 no. one bed, 99 no. two bed, & 16 no. three bed dwellings. At ground floor level 1 no. communal amenity room (c. 82m²) is provided, along with bin stores, bicycle storage areas (Total: 320 no. internal bicycle spaces), plant rooms, and undercroft parking for 69 no. car parking spaces. Podium level communal open space (c. 1,597m²) is provided at first floor level with additional communal open space in the form of roof gardens provided on the fifth floor (c. 210m² & c. 90m² respectively) and eighth floor (c. 170m²).
- Block H is a 3 to 13 storey building, over basement / part undercroft level, consisting of 143 no. apartments & duplex units, including terraces at the ground floor and terraces/balconies at all upper levels, comprised of 52 no. one bed, 85 no. two bed, & 6 no. three bed dwellings. At ground floor level 2 no. communal amenity rooms (c. 170m² & c. 89m² respectively) are provided, with associated outdoor terrace spaces, along with bin stores, bicycle storage areas (Total: 400 no. bicycle spaces), plant room, ESB substation, and 1 no. retail / café unit (c.71m²). Block H caters for a basement level (c. 4,696m²)



comprised of 134 no. car parking spaces which provides for internal stair core access to Block A. Podium level communal open space (c. 457m²) is provided at first floor level with additional communal open space in the form of roof gardens provided on the second floor (c. 262m² & c. 237m² respectively).

- (4) The development provides for open spaces in the form of: (i) multi-use playing pitches (1.16 hectares) located in the north-west of the development with access off Lynch's Lane, and (ii) public open space (0.91 hectares) located between Blocks B, C, D, G & H, which combined caters for 2.07 hectares of open spaces representing 25% of the site area. In addition, 2 no. public plaza areas are also catered for: (a) to the south of Block A, fronting onto Ballyfermot Road (c. 0.14 hectares), & (b) between Blocks A & H (c. 0.06 hectares), along with a running / fitness trail along the northern / western boundary of the development (c. 0.14 hectares).
- (5) The development includes an area of 0.5 hectares reserved for a future school site in the south-west of the development, at the junction of Ballyfermot Road and Lynch's Lane.
- (6) Vehicular access to the proposed development is from 2 no. access points as follows: (i) from Lynch's Lane to the west, and (ii) from Ballyfermot Road to the south. The development also includes for a pedestrianised street, accessed from Ballyfermot Road, located between Blocks A & B.
- (7) The proposed development also provides for (i) all associated site development works, above and below ground, (ii) hard & soft landscaping, boundary treatments & green roofs, (iii) public lighting, (iv) signage, (v) plant (M&E) & utility services, (vii) undercroft, basement & surface car parking, including EV, disabled & car share spaces (Total: 687 no. car parking spaces), (viii) motorcycle parking (Total: 26 no. motorcycle parking spaces), (xi) undercroft, basement & surface bicycle parking, including for external bicycle stores, cargo bike spaces & visitor spaces (Total: 2,249 no. bicycle parking spaces), and (x) bin storage areas.

The application contains a statement setting out how the proposal is consistent with the objectives of the Dublin City Development Plan 2016-2022, and also contains a statement indicating why permission should be granted for the proposed development, having regard to a consideration specified in section 37(2)(b) of the Planning and Development Act, 2000, as amended, notwithstanding that the proposed development materially contravenes a relevant development plan or local area plan other than in relation to the zoning of the land.

An Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement (NIS) have been prepared in respect of the development proposal and accompany the application. The application, together with the Environmental Impact Assessment Report and Natura Impact Statement, may be inspected, or purchased at a fee not exceeding the reasonable cost of making a copy, during public opening hours at the offices of An Bord Pleanála and Dublin City Council. The application may also be inspected online at the following website set up by the applicant: www.delasalleshd.ie.

2.1 Design Concept

Due to the prominent location of the site addressing the main road at Ballyfermot Road, at an important node in the local environs, the proposed development has been designed to become a focal point in the local neighbourhood. The design and positing of the proposed buildings opens up this enclosed site to create a strong urban form providing good street frontage. In light of the orientation of the site the proposed development forges



a new strategic green network connection between the subject site and Markievicz Park to the south / south-east of the site, creates a high quality residential development and neighbourhood centre with a strong sense of place and community and provides a focal point / landmark on this key gateway site which announces a new contemporary settlement in Ballyfermot with its high quality amenities and residential accommodation.

3.0 Section A

An Assessment of Long Term Running and Maintenance Costs as they would Apply on a Per Residential Unit Basis at the Time of Application

Property Management Company and Owner's Management Company (OMC)

3.1 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 running and maintenance costs of the common areas of the development are kept within the annual operational budget.

The property management company will enter into a contract directly with the Owner's Management Company (OMC) for the ongoing management of the built development. It is intended that this is a contract for a maximum of 5 years and in the form prescribed by the PSRA.

The property management will also have the following responsibilities for the apartment development once completed:

- Timely formation of an Owner's 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.
- Estate management.
- Third Party Contractors procurement and management.
- OMC Reporting.
- Accounting Services.
- Corporate Services.
- Insurance Management.
- After Hours Services.
- Staff Administration.

3.2.1 Service Charge Budget

The property management company has a number of key responsibilities most notably, 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 by 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.

Notwithstanding the above, it should be noted that 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 B

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

4.1 Energy and Carbon Emissions

The following are an illustration of the energy measured that are planned 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, lighting and occupancy. A Nearly Zero-Energy Building (NZEB) rating will be achieved in accordance with Part L 2019 (Housing) and Part L 2020 (Other than Housing) which set building fabric and energy performance requirements.	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 Technical Guidance Document Part L, "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 with Appendix D within the Technical	Lower U-values and improved air tightness is being considered to help minimize heat losses through the building fabric, lower energy consumption and thus minimize



	<p>Guidance Documents Part L. See below Table 1 of Part L, Building Regulations.</p> <p>All windows shall be triple glazed windows with a combined thermal transmittance not greater than 1.0W/m²K. All windows shall comply with BS EN ISO 10077-1: 2006 - 'Thermal performance of windows, doors and shutters. Calculation of thermal transmittance'. Building fabric will include insulation levels, sufficient to meet the Part L 2019 U-values.</p>	carbon emissions to the environment.
Energy Labelled White Goods	<p>Should the applicant provide a white goods package for the apartments, they will be A rated appliances to achieve a high energy efficiency rating.</p> <p>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:</p> <ul style="list-style-type: none"> • 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.
Internal Common Areas & External lighting	<p>Low energy luminaires and automatic controls such as time sensors are to be provided for electric lighting to maximize efficiency in use. LED lamps will be preferred as far as is practical.</p> <p>Public / external lighting will be provided to ensure 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.</p> <p>The proposed lighting scheme within the development consists of columns, titled Type A, B, B2, C, D, F & H; ranging in height from 1/5/6/8m. The luminaires selected are chosen for the following reasons:</p> <ul style="list-style-type: none"> ▪ Low Level lighting ▪ Minimal upward light spill ▪ Low voltage LED lamps ▪ Prep to be approved by Dublin City Council 	<p>Low energy lamps and automatic controls improve energy efficiency.</p> <p>The site lighting has been 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 fauna and flora in the area.</p>
Air Source Heat Pumps	<p>The thermal energy from the outside air is absorbed and transferred to the space heating and domestic hot water generation systems. This is included in the design put forward for permission.</p>	<ul style="list-style-type: none"> ▪ Reduced carbon emissions ▪ Low fuel costs ▪ No fossil fuel requirement



The following are the **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 to meet the Near Zero Energy Building standard, if required. The specific combination from the list below will be decided upon and then implemented to achieve an NZEB rating. All apartment units have been oversized to allow for in-unit plant, such as air source heat pump to be installed without affecting development standards.

Measure	Description	Benefit
Condensing boilers	Condensing boilers are being investigated 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.	<p>Higher BER ratings reduce energy consumption and running costs</p> <p>Condensing boilers use the heat losses from the boiler flue to preheat the circulating heating water</p> <p>By preheating the heating water, the boiler can achieve efficiencies in excess of 90%</p>
Natural Ventilation	Natural ventilation is being evaluated as a ventilation strategy to minimize energy usage and noise levels	<p>The main advantages of natural ventilation are-</p> <ul style="list-style-type: none"> • Low noise impact for occupants and adjacent units • Completely passive therefore no energy required. • Minimal maintenance required. • Reduced environmental impact as minimal equipment disposal over life cycle. • Full fresh air resulting in healthier indoor environment
Mechanical Ventilation Heat Recovery	Centralised mechanical ventilation will be provided to 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 air supply.
PV Solar Panels	PV solar panels are being considered which converts the electricity produced by the PV system (which is DC) into AC electricity, and in order to meet the renewable energy contribution required by Part L of the Building Regulations. 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.	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.



Combined Heat and Power	Combined heat and power (CHP) is not suitable for this type of development	N/A
Air Source Heat Pump	As part of the overall energy strategy for the development, 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 2.5 to 4 times more heat energy to the dwelling than the electrical energy they consume.
E-CAR charging points	Charging shall be provided from a local landlord distribution board to designated E-car charging car parking spaces. This will enable the management company the option to install a number of E-car charging points within the surface car parking spaces to cater for E-car demand of the residences. 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.

4.2 Materials

The practical implementation of the Design and Material principles has informed design of the building facades, internal layouts and detailing of the proposed apartment buildings.

4.2.1 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 and openable windows to areas of regular use and circulation	Avoids the requirement for continuous artificial lighting
Natural/Passive ventilation system to and openable windows to areas of regular use and circulation	Avoids costly mechanical ventilation systems and associated maintenance and future replacement
External paved and landscaped areas	All of these require low/minimal maintenance



<p>Traditional pitched roofs with concrete roof tiles are proposed to the housing & duplex units.</p>	<p>All of these require low/minimal maintenance.</p>
---	--

4.2.2 Material Specification

Implementation of the Design and Material principles to the design of the building envelope, internal layouts, facades and detailing has informed the materiality of the proposed development.

The proposed envelope of the building is a mix of brick and durable render finish, with high-performance double-glazed aluminium windows. Based on comparison with similar schemes developed, the proposed materials are considered durable and would not require regular replacement or maintenance.

Measure Description	Benefit
<p>Consideration is given to the requirements of the building regulations and includes reference to BS 7543:2015, “<i>Guide to Durability of Buildings and Building Elements, Products and Components</i>”, which provides guidance on the durability, design life and predicted service life of buildings and their parts.</p> <p>All common areas of 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 including:</p> <ul style="list-style-type: none"> 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 	<p>Ensures that the long term durability and maintenance of materials is an integral part of the design and specification of the proposed development.</p>
<p>Use of brickwork and pigmented render systems to envelope</p>	<p>Requires minimal maintenance and does not require regular replacement</p>
<p>Factory finished and aluminum (or similar) windows and doors and powder coated steel balconies</p>	<p>Requires minimal maintenance and does not require regular replacement</p>



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, lighting and occupancy. It is proposed to achieve NZEB rating in accordance with current standards/guidance.	Higher BER ratings reduce energy consumption and running costs

4.3 Landscaping

Element	Measure Description	Benefit
Site Layout and Design	<p>The central open space is substantial and has a mixture of soft and hard landscaping.</p> <p>Generous and high quality mature landscaping, with ecological corridors prioritizing pedestrians and landscape over the car - increase in soft landscaping.</p> <p>Significant tree planting and soft landscaping within public spaces</p>	<p>SUDs drainage system and landscape maintenance preferable</p> <p>Attenuation reduces the burden on vulnerable rainwater goods.</p> <p>Fewer elements would require replacement or repair.</p>
Paving Materials	<p>Use of 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.</p> <p>High quality landscaping both hard surface (for the cycle /car parking and pavements) and soft landscaping with planting and trees. The landscaping will be fully compliant with the requirements for Part M / K of the Technical Guidance Documents and will provide level access and crossings for wheelchair users and pedestrians with limited mobility.</p> <p>Designated car parking including accessible & visitor car parking reduces the travel distances for visitors with reduced mobility.</p>	<p>Required ongoing maintenance significantly reduced through use of robust materials installed with proven details.</p> <p>Plenty of room for cycles and pedestrians along with car spaces provide a good balance between pedestrians and car users.</p> <p>Wheelchair user-friendly</p>
Planting Details	Proven trees staking details. Shrub, hedging, herbaceous and lawn installation planting details provided.	Correctly installed planting will develop into well established and robust soft landscape reducing future maintenance.
Balcony & Decking Materials	Use of robust high-quality materials and detailing to be durable for bikes, play, etc.	Ensures the longevity of materials.



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
------------------	---	---

4.4 Waste Management

Measure	Description	Benefit
Construction and Operational Waste Management Plan	The application is accompanied by a Construction and Operational Waste Management Plan	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. Centralized bin storage areas are provided at grade adjacent to apartment buildings / duplex blocks Competitive tender for waste management collection	Helps reduce potential waste charges Easily accessible by all residents and minimises potential littering of the scheme
Composting	Organic waste bins to be provided throughout	Helps reduce potential waste charges

4.5 Human Health and Wellbeing

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 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 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:	Helps to reduce potential security/ management cost



	<ul style="list-style-type: none"> ▪ CCTV monitoring details ▪ Secure bicycle stands ▪ Overlooked communal open spaces 	
Natural Amenity	Public parks dispersed throughout the development. Pocket parks and existing trees and hedgerows. Connections to local amenities such as Markievicz Park	Facilitates community interaction, socialising and play - resulting in improved wellbeing

4.6 Management

Consideration has been given to ensuring that homeowners have a clear understanding of their property:

Measure	Description	Benefit
Home User Guide	<p>Once a purchaser completes their sale, a homeowner box will be provided which will include:</p> <p>Homeowner Manual - This will provide important information for the purchaser on details of the property. Typically it includes details of the property such as MPRN and GPRN information in relation to connection with utilities and communication providers. Contact details for all relevant suppliers and user instructions for appliances and devices in the property.</p> <p>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 as informed as possible so that any issues can be addressed in a timely and efficient manner.

4.7 Transport

Measure	Description	Benefit
Access to Public Transport	The subject site benefits from excellent public transport accessibility levels. Dublin Bus currently operates route numbers 40, 860, 25N, 76, 76A, 18, 79, 79A, 18, 40, 76, 79 & 79A which are all in walking distances from the subject site providing links to the City Centre, and west Dublin. The site is also within walking distance of Luas Red line services at Kylemore, being located 2km from the site.	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	The development facilitates potential future interconnections by pedestrian and cycling routes to adjoining lands / environs.	Ensures the long term attractiveness of walking and cycling to a range of local education, retail and community facilities and services.
Bicycle Storage	Secure high quality secure bicycle parking both for short and longer term parking requirements.	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicle.
ECAR facilities	Ducting provided from a local landlord distribution board to designated e-car charging car spaces.	To accommodate the growing demand for e-cars which assist in de-carbonising society and reducing oil dependency.



Appendix A

Figure 1- TGD Part L 2019, Table 1

Table 1 Maximum elemental U-value (W/m²K)^{1, 2}		
Column 1 Fabric Elements	Column 2 Area-weighted Average Elemental U-value (U_m)	Column 3 Average Elemental U-value – individual element or section of element
Roofs		
Pitched roof		
- Insulation at ceiling	0.16	0.3
- Insulation on slope	0.16	
Flat roof	0.20	
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 ² K.		
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.		



Appendix B

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	Amount
1.00	Roofs		
1.02	Replacement parapet details	20	
1.03	Replacement/ repairs to fascias	20	
1.04	Replace roof access hatches	25	
1.05	Specialist Roof Systems - Fall arrest	25	
2.00	Elevations		
2.02	Minor repairs and preparation for decorations of rendered areas	15	
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	
2.07	Replace Balcony floor finishes	25	
	Creche		
3.00	Stair cores & lobbies		
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 nosing's	12	
3.08	Replace ceramic floors tiles Entrance lobbies	20	
3.09	Fixed Furniture & Equipment - Provisional Sum	18	
4.00	Shared surface Car & Bike Parking		
4.01	Remove/ Replace ceiling insulation	25	
4.02	Repaint parking spaces & Numbering	7	
4.03	Replace store doors, ironmongery & digi-locks to bike parking	15	
4.04	Replace Bike stands to bike parking	25	
4.05	Replace basement access control at entrance & core entrances	12	
5.00	M&E Services		
5.01	General - Internal re-lamping	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	



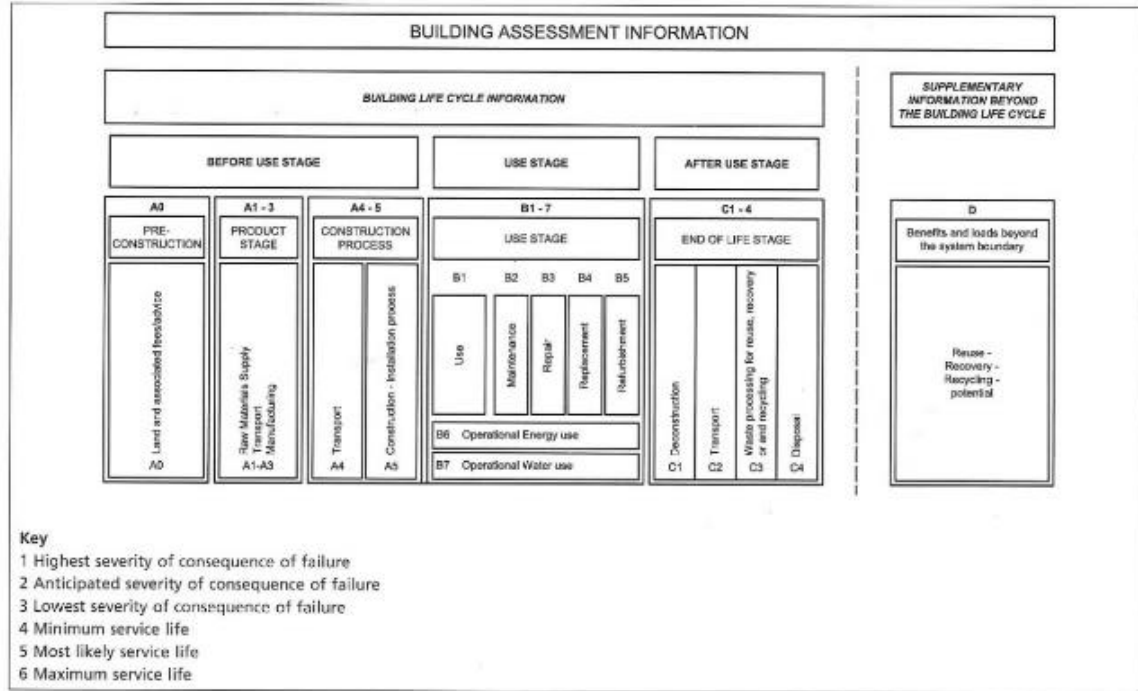
5.12	Electrical Mains and Sub Mains distribution	20	
5.13	Emergency Lighting	20	
5.14	Overhaul and/or replace Waste Pipes, Stacks & Vents	20	
6.00	Exterior		
6.01	External boundary treatments - Recoat powder coated Finishes to railings	60	
6.02	Replace external signage	18	
6.03	Replace cobblelock areas	18	
6.04	15-year cutback & thinning of trees. Overhaul landscaping generally	20	
6.05	Replace CCTV provision	12	
6.06	External Handrails and balustrade	18	



Appendix C

Phases of the Life Cycle of BS7543; 2015

Figure 4 Phases of the life cycle



BRITISH STANDARD

BS 7543:2015