

# Building Life Cycle Report

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**RE: ST. MICHAEL’S HOSPITAL  
STRATEGIC HOUSING DEVELOPMENT**

**APPLICANT: Fitzwilliam DL Ltd.**

December 2020

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## APPENDIX A

### The Team:

Applicant	Fitzwilliam DL Ltd.
Architect	Reddy Architecture + Urbanism
Planning Consultant	John Spain Associates
Engineer (Civil, Structural, Transport & Traffic)	Muir Associates
Engineer (Mechanical & Electrical)	Parkbourne Consulting Engineers
Landscape Architect	Dermot Foley Landscape Architects
Verified Views & Visual Impact Assessment	ARC Consultants
Daylight & Sunlight Analysis	Hollis Global
Conservation	Rob Goodbody
Archaeology	IAC
Waste Management Consultant	Muir Associates
Environmental	EnviroGuide
Engineer (Fire Consultant)	Jeremy Gardner Associates
CGI's	3D Design Bureau & Digital Dimensions

## INTRODUCTION

The Sustainable Urban Housing; Design Standards for New Apartments – Guidelines for Planning Authorities were published in March 2018 (hereafter referred to as the Apartment Guidelines). The Apartment Guidelines introduced a requirement to include details on the management and maintenance of apartment schemes. This is set out in Section 6.11 to 6.14 – “Operation & Management of Apartment Developments”, Specifically Section 6.13.

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

*“include a building lifecycle report, which in turn includes an assessment of long term running and maintenance costs as they would apply on a per residential unit basis at the time of application”*

*“demonstrate what measures have been specifically considered by the proposer to effectively manage and reduce costs for the benefit of residents.”*

This Building Life Cycle Report document sets out to address the requirements of Section 6.13 of the Apartment Guidelines. The report is broken into two sections as follows:

### **Section 01:**

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 02:**

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



## DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed development will consist of the demolition of an existing 2 no. storey house on the site and the construction of 102 no. build-to-rent residential apartments (80 no. 1-bed and 22 no. 2-bed units) across 2 no. buildings (Building 01 and Building 02), along with ancillary residential amenities and a publicly accessible café on a c. 0.42ha site. Building 01 to the north extends to part 5, part 6, part 8 and part 13 no. storeys in height. Building 02 to the south extends to part 8, part 9 no. storeys in height, with setback 9<sup>th</sup> storey.

Residential amenity space in the form of a reception, coworking/study space, gym, games area, lounge/kitchen area, and multi-purpose recreational space is provided at ground floor level of Building 01, alongside a reception and postal storage area. External roof terraces are included at storeys 6 and 9 at Building 01, with an enclosed glazed amenity space at 13<sup>th</sup> storey level, with external terrace. An external roof terrace is provided at 9<sup>th</sup> storey level at Building 02.

The development includes a vehicle right of way providing access to St. Michael’s Hospital along the western perimeter of the site, accessed from Crofton Road. This provides access to 3 no. car parking spaces (including 1 no. disabled space) located between the two buildings. A secondary right of way is provided via a landscaped pedestrian route along the eastern perimeter of the site providing access to St. Michael’s Hospital. A total of 150 no. bicycle parking spaces are provided at the ground floor level of Building 02 (alongside a bicycle repair area), 26 no. within the central courtyard and 8 no. adjacent to the café at the northern perimeter.

The development also includes an ESB substation, bin store, services and drainage infrastructure, boundary treatments, access provision at Crofton and all ancillary development works necessary to facilitate the development.

## SECTION 01

### *AN ASSESSMENT OF LONG TERM RUNNING AND MAINTENANCE COSTS AS THEY WOULD APPLY ON A Per RESIDENTIAL UNIT BASIS AT THE TIME OF APPLICATION*

#### **1.1. Property Management of the Common Areas of the development**

A property management company will be engaged at an early stage of the development to ensure that all property management functions are dealt with for the development and that the running and maintenance costs are minimised on a per residential unit basis. The property management company will enter into a contract directly with the Operating Company for the ongoing management of the built development. This contract will be for a maximum period of 15 years and in the form prescribed by the PSRA.

The Property Management Company has a number of key responsibilities for the development that require to be set out with the Operating Company, and as copied below from the Design Standards for New Apartments:

*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.*

*6.15 Build-To-Rent and Shared Accommodation schemes, where there is a commercial entity owning, or operating and maintaining the development, may by their nature have different arrangements and obligations. Planning authorities should provide planning conditions for such developments which ensure the provision of appropriate management and maintenance structures including for the scenario where the BTR nature of a development is altered following specified period under SPPR 7(a) above.*

#### **1.2. Service Charge Budget**

There would typically be a service charge budget in multi-unit developments to cover 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);

**With Build-to-Rent schemes the management of all of all above items is undertaken by the Management Company operating the facility on behalf of the commercial entity that owns the entire property.**

## SECTION 02

*MEASURE SPECIALLY CONSIDERED BY THE PROPOSED TO EFFECTIVELY MANAGE AND REDUCE COSTS FOR THE BENEFIT OF RESIDENTS*

### **2.1. Energy Performance and Carbon Emissions**

A Building energy Rating (BER) certificate will be provided for each apartment which will provide detail of the energy performance and carbon emissions associated with each of the dwellings. It is proposed to target a BER Rating for each apartment of A2/A3. This will equate to the following emissions:

A2 – 25-50 kWh/m<sup>2</sup>/yr. with CO<sub>2</sub> emissions approx. 10 kgCO<sub>2</sub>/m<sup>2</sup>/yr.

A3 – 51-75 kWh/m<sup>2</sup>/yr. with CO<sub>2</sub> emissions approx. 10 kgCO<sub>2</sub>/m<sup>2</sup>/yr.

The following table outlines the proposed passive and active, energy and carbon emission reduction measures which will directly benefit occupants in terms of reducing operational costs. It should be noted that the project will be seeking a **BREEAM Very Good** rating.

Measure	Description	Benefit																										
Building Fabric Efficiency	<p>The U-Value of a building element is a measure of the amount of heat energy that will pass through the constituent element of the building envelope. Increasing the insulation levels in each element will reduce the heat lost during the heating season</p> <p>It is possible to exceed the requirements of the current building regulations. The current target U-Values are identified below:</p> <table border="1"> <thead> <tr> <th rowspan="2">Element</th> <th colspan="2">U value (W/m<sup>2</sup>.K)</th> </tr> <tr> <th>Part L 2019 (NZEB)</th> <th>Targeted</th> </tr> </thead> <tbody> <tr> <td>Pitched Roof</td> <td>0.16</td> <td>0.16</td> </tr> <tr> <td>Flat Roof</td> <td>0.20</td> <td>0.15</td> </tr> <tr> <td>Walls</td> <td>0.18</td> <td>0.18</td> </tr> <tr> <td>Ground Floors</td> <td>0.18</td> <td>0.15</td> </tr> <tr> <td>Exposed floors</td> <td>0.18</td> <td>0.15</td> </tr> <tr> <td>External doors, windows and roof lights</td> <td>1.40</td> <td>1.30</td> </tr> <tr> <td>Glazing gv (EN410)</td> <td></td> <td>0.4-0.6</td> </tr> </tbody> </table> <p>To avoid excessive heat losses and local condensation problems, consideration will be given to ensure continuity of insulation and to limit local thermal bridging, e.g. around windows, doors and other wall openings, at junctions between elements and other locations. Heat loss associated with thermal can heavily impact the calculated energy use and CO<sub>2</sub> emissions. The proposed design is targeting a thermal bridging <math>\Psi</math> value of at least 0.08 to reduce the heat loss due to thermal bridging.</p> <p>Another major consideration in reducing the heat losses in a building is the air infiltration. This essentially relates to the ingress of cold outdoor air into the building and the corresponding displacement of the heated internal air. This incoming cold air</p>	Element	U value (W/m <sup>2</sup> .K)		Part L 2019 (NZEB)	Targeted	Pitched Roof	0.16	0.16	Flat Roof	0.20	0.15	Walls	0.18	0.18	Ground Floors	0.18	0.15	Exposed floors	0.18	0.15	External doors, windows and roof lights	1.40	1.30	Glazing gv (EN410)		0.4-0.6	Reduction in the consumption of fuel and the associated carbon emissions and operating costs.
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	<p>must be heated if comfort conditions are to be maintained. In a traditionally constructed building, infiltration can account for 30 to 40 percent of the total heat loss; however, construction standards continue to improve in this area.</p> <p>With good design and strict on-site control of building techniques, infiltration losses can be significantly reduced.</p> <p>In order to ensure that a sufficient level of air tightness is achieved, air permeability testing will be specified, with the responsibility being placed on the main contractor to carry out testing and achieve the targets identified in the tender documents.</p> <p>A design air permeability target of 2 m3/m2/hr has been identified</p> <p>Air testing specification will require testing to be carried out in accordance with: BS EN 13829:2001 'Determination of air permeability of buildings, fan pressurisation method' CIBSE TM23: 2000 'Testing buildings for air leakage'</p>	
Lighting Efficiency	It is proposed to provide 100% of lighting outlets to be low energy (LED)	Reduction in the consumption of electricity and the associated carbon emissions and operating costs.
Sanitary ware	Showers are proposed with a max flow rate at 3 Bar to be no greater than 6 litres per minute. Bath volume to be no greater than 150 litres	Reduction in the consumption of potable water and energy associated with domestic hot water heating
Energy Labelled White Goods	White goods provider by the developer will be have a high energy rating.	Reduction in the consumption of electricity and the associated carbon emissions and operating costs.

The following Low Energy / Carbon & Renewable Energy Solutions that are being considered for the development.

Measure	Description	Benefit
Heat Pumps	<p>The general principal of heat pump technology is the use of electrical energy to drive a refrigerant cycle capable of extracting heat energy from one medium at one temperature and delivering this heat energy to a second medium at the desired temperature.</p> <p>The efficiency of any heat pump system is measured by its coefficient of performance (CoP). This is a comparison between the electrical energy required to run the heat pump and the useful heat output of the heat pump, e.g. a heat pump requiring 1kW of electrical power in order to deliver 3kW of heat energy has a CoP of 3.0.</p> <p>This operating principle can be applied to different situations, making use of the most readily available renewable heat source on any given site. The most common types are.</p> <ul style="list-style-type: none"> <li>• Ground Source</li> <li>• Water Source</li> <li>• Air Source</li> </ul> <p>Exhaust Air source heat pumps are being considered.</p>	Reduction in the consumption of fuel and the associated carbon emissions and operating costs.

<p>Mechanical Ventilation Heat Recovery</p>	<p>Mechanical heat recovery ventilation (MVHR) will provide ventilation to each apartment.</p> <p>MVHR provides tempered external fresh air to occupied spaces and extract ventilation from rooms with “Bad Air” such as Bathrooms, utility stores etc.</p> <p>Heat is recovered from exhaust air streams and transferred to the fresh air stream negating the requirements to use heating energy to heat incoming cold external fresh air.</p>	<p>Reduction in the consumption of fuel and the associated carbon emissions and operating costs. Increases comfort conditions for occupants Prevents mould growth.</p>
<p>Photovoltaic (PV) Panels</p>	<p>PV Panels are capable of generating direct current electricity from the sun’s energy, which can then be converted to alternating current and used within the building. They are generally a “maintenance free” technology as there are no moving parts. They also typically have a 20-year manufacturer’s guarantee on electrical output and can be expected to operate effectively for 30 years or more.</p> <p>Capital costs have also reduced significantly in recent years due to worldwide increase in production levels. They are adaptable and scalable in that the amount installed can be selected to suit the budget available.</p>	<p>Reduction in the consumption of electricity and the associated carbon emissions and operating costs.</p>
<p>ECAR Charging Points</p>	<p>Ducting shall be provided from local distribution boards to designated E-Car charging car park spaces. This will enable the management company the option to install a number of E-Car charging points to cater future E-Car demand of residents</p>	<p>Providing the option for E-Car charging points will futureproof the development.</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**

The 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, commercial spaces and the common parts of the building and specific measures taken include:

Measure Description	Benefit
Daylighting to residential circulation areas where possible	Avoids the requirement for continuous artificial lighting
Natural/Passive ventilation system to residential circulation areas where possible	Avoids costly mechanical ventilation systems and associated maintenance and future replacement.
External paved and hard landscaped areas	All of these require low/minimal maintenance

### **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 A for this figure). 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"> <li>• Annex A Climatic Agents affecting Durability</li> <li>• Annex B Guidance on materials and durability</li> <li>• Annex C Examples of material or component failures</li> <li>• Annex D Design Life Data sheets</li> </ul>	Ensures that the long-term durability and maintenance of Materials is an integral part of the Design and Specification of the proposed development.
Use of brickwork and reconstituted stone cladding	Requires no on-going maintenance.
Use of factory finished and alu clad/aluminium windows and external doors.	Requires no on-going maintenance.
Use of Galvanised Steel balconies and Juliet balconies and handrails with PPC finish on exposed visual surfaces. Composite self finished board for deck of the balcony.	Requires no on-going maintenance.

### **2.3 Landscape**

Measure	Description	Benefit
Site Layout & Landscape design	Generous and high-quality landscaping utilising semi-mature to mature tree species, shrub planting and dense groundcovers. Species are chosen for compatibility with available root and canopy space, aspect is also a guiding consideration. The objective is to enhance biodiversity whilst providing year-round visual interest and high-quality residential environments.	Natural attenuation, reduced surface water runoff from site and increased biodiversity.
Green Roofs	Use of green roofs and traditional roof coverings with robust and proven detailing to landscape roof elements.	Attenuation reduces the burden on vulnerable rainwater goods, resulting in fewer elements that could require replacement or repair.
Paving and Decking materials	Use of robust, high-quality and high slip-resistance materials throughout the development.	Required ongoing maintenance significantly reduced through use of robust materials installed with proven details.
Materials	Sustainable, robust materials with high slip-resistance to be used for paving. Durable and robust street furniture used throughout	Robust materials and elements reduce the frequency of required repair and maintenance.
Planting details	Proven tree-staking and underground guying details provided. Shrub, hedging, herbaceous and lawn installation details also provided.	Correctly installed planting will develop into well established and robust soft landscaping, reducing future maintenance and replacement of failures.

## **2.4 Waste Management**

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

Measure	Description	Benefit
Operational Waste Management Plan	This application will be accompanied by an Operational Waste Management Plan prepared by Muir Associates	The report demonstrates how the scheme has been designed to comply with local, regional, and national waste legislation along with current best practice.
Storage of Non-Recyclable Waste and Recyclable Household Waste	Inclusion of centralised waste storage areas, with sufficient space to accommodate a weekly/biweekly collection of waste containers.	Easily accessible by all residents, minimises potential littering of the development, reduces potential waste charges and does not restrict waste contractor selection.
	Domestic waste management strategy: General waste, mixed recyclable, and organic bin separation.	Helps reduce potential waste charges and does not restrict waste contractor selection.
	Waste storage areas with controlled access.	Reduces potential for fly tipping by residents and non-residents.
	Well signed waste storage rooms and containers.	Help reduce potential cross contamination of waste and reduces waste charges.
Composting	Organic waste containers to be provided in waste storage areas.	Helps reduce potential waste charges.

## **2.5. Health & Well Being**

The following are illustrations of how the health and well-being of future residents are considered.

Measure	Description	Benefit
Natural / Day Light	The design, layout and separation distances of the building blocks have been designed to optimize the ingress of natural daylight/sunlight to the proposed dwellings to provide good levels of natural light.	Reduces reliance on artificial lighting thereby reducing running costs.
Accessibility	All units will comply with the requirements of Building regulations Parts M and K.	Reduces the level of adaptation, and associated costs, potentially necessitated by residents’ future circumstances.
Security	<p>The scheme is designed to incorporate passive surveillance with the following security strategies available for adaptation into the design:</p> <ul style="list-style-type: none"> <li>• CCTV monitoring details</li> <li>• Secure bicycle stands – covered by CCTV</li> <li>• Controlled Access to individual circulation cores</li> <li>• Controlled access between Public Spaces and Residents Communal Spaces</li> <li>• Routine access fob audits</li> <li>• Appropriately lit external spaces.</li> </ul>	Aids in reducing potential security/management costs. Enhances safety for residents and visitors.
Natural Amenity	<p>Multiple roof top garden spaces are provided with a variation in their design to provide active and passive use of the spaces. Roof level spaces provide excellent solar access for residents and panoramic views high above the busy streets and railway line. The top floor of the building has a Residents lounge space and terrace that will be particularly spectacular in terms of its views and visual connectivity across Dublin Bay, with the City of Dublin and the Mountains inland from Dun Laoghaire.</p> <p>The proposed scheme also has a ground level semi public courtyard which is the centerpoint for the residents shared internal services and amenities.</p>	Facilitates community interaction and socialising resulting in improved wellbeing. Proximity and use of external green spaces promotes a healthy lifestyle. External spaces being provided separately for residents (communal courtyards & private balcony’s) and public (Quality Public open Space)

## **2.6 Management**

Consideration has been given to ensuring the residents have a clear understanding of the subject property.

Measure	Description	Benefit
Home User Guide	<b>A Residents Pack</b> prepared by the Operations and Management Company (OMC) which will typically provide information on contact details for the Managing agent, emergency contact information, transport links in the area and a clear set of rules and regulations.	Residents are 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 (Bus Services)	<p>The site is well served by bus services and the closest bus stops are located on Crofton Road, Marine Road and Georges Street. The proposed development is serviced by 3 No Dublin Bus routes and 5 No GoAhead Bus routes with a total frequency of 23 buses per hour during morning peak hour. The Aircoach and the Dublin Bus Night Link also stop in proximity to the proposed site.</p> <p>The future BusConnects Dublin project includes the provision of a number of Spine and Branch Routes in proximity to the development site.</p>	These bus services provide access to a range of destinations nearby and in Dublin city centre transport hubs such as Busáras and Dublin Airport. The proximity, frequency and range of destinations served by these local bus services enhance the accessibility levels of the proposed residential development in addition to providing a viable and practical sustainable alternative to journeys undertaken by private motor car.
Access to Public Transport (DART/Irish Rail)	<p>The DART service runs along the east coast of Dublin, from Malahide and Howth southwards as far as Greystones, Co Wicklow. The Dún Laoghaire DART station is located immediately opposite the proposed development. The DART service connects to the wider Irish Rail Network at Connolly Station and Heuston Station.</p> <p>The DART service operates at approximately 10-minute frequencies at peak times on weekdays.</p>	The availability, proximity, and ease of access to the DART service contribute to reducing the reliance on the private motor vehicle for all journey types.
Permeable Connections	<p>Provision and subsequent maintenance of dedicated pedestrian infrastructure on-site provides connectivity with the surrounding local area including the proposed East Coast Greenway and local transport hubs.</p> <p>Close to the site the local authority has recently implemented a two-way cycle lane on the N31 between Blackrock and Sandycove to encourage sustainable methods of travel and facilitate the increase in cyclists during and arising from the Covid-19 lockdown.</p>	Ensures the long-term attractiveness of walking and cycling to local shopping districts and employment locations within the city centre.
Bicycle Storage	The provision of high-quality secure bicycle parking facilities, for both short term and long-term parking requirements. Cycle parking spaces are provided in accordance with the DLRC’s “Standards for Cycle Parking and Associated Cycling Facilities for New Developments, January 2018”.	Accommodates the uptake of cycling and reduces the reliance on the private motor vehicle for both residents and guests.
ECAR Facilities	All car parking spaces will include electrical charging points.	To accommodate the growing demand for ECARS which assist in decarbonising society and reducing oil dependency.
Car Sharing	<p>The scheme will include designated car sharing spaces for the exclusive use of the residents. There is also a Go Car base in proximity to the proposed site.</p> <p>YUKŌ Toyota Car Club have committed to providing 2 No car share club vehicles within the proposed development.</p>	Reduces the reliance on the private motor Vehicle.

APEENDIX A

BS 7543:2015



BSI Standards Publication

# Guide to durability of buildings and building elements, products and components

Figure 4 Phases of the life cycle

