Concorde Industrial Estate

BUILDING LIFE CYCLE REPORT

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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.

PROPOSED DEVELOPMENT

The proposed development comprises of the demolition of the existing single storey industrial building (8660sq.m.) on the site and the construction of a "Build to Rent" Residential and commercial development on lands at Concorde Industrial Estate (1.88ha), Naas Road, Dublin 12.

The proposed development comprises of 492 no. residential units comprising of 104 no. studios, 136 no. 1 beds and 252 no. 2 beds. The proposed development includes the provision of communal residential facilities such as concierge, resident lounge, shared winter gardens, shared work space, meeting rooms, events spaces and external residential courtyards and all associated resident support facilities to accompany the "Build to Rent" development.

The development also includes the provision of 3,347 sq.m. commercial uses comprising of retail, café, restaurant, medical centre, car showroom, and creche. The proposed development also accommodates 200 no. car parking spaces at basement level and 44 no. at surface level, 276 no. cycle parking spaces at basement level and 236 no. at surface level, plant rooms, refuse storage, public open space, landscaping, SUDS drainage, and all associated site 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 of the common areas of the development are kept within the agreed Annual operational budget. The property management company will enter into a contract directly with the Owners Management Company (OMC) for the ongoing management of the built development. This contract will be for a maximum period of 15 years and in the form prescribed by the PSRA.

The Property Management Company also has the following responsibilities for the apartment development once constructed:

Timely formation of an Owners Management Company (OMC) – which will be a company limited by guarantee having no share capital. All future purchasers will be obliged to become members of this OMC.

- Preparation of annual service charge budget for the development common areas.
- Fair and equitable apportionment of the Annual operational charges in line with the Multi Units Development Act 2011 (MUD Act).
- Engagement of independent legal representation on behalf of the OMC in keeping with the MUD Act - including completion of Developer OMC Agreement and transfer of common areas.
- Transfer of documentation in line with Schedule 3 of the MUD Act.
- Estate Management.
- Third Party Contractors Procurement and management.
- OMC Reporting.
- Accounting Services.
- Corporate Services.
- Insurance Management.
- After Hours Services.
- Staff Administration.

1.2. Service Charge Budget

The property management company has a number of key responsibilities, primarily the compiling of the service charge budget for the development for agreement with the OMC. The service charge budget covers items such as cleaning, landscaping, refuse management, utility bills, insurance, maintenance of mechanical/electrical lifts/ life safety systems, security, property management fee, etc., to the development common areas in accordance with the Multi Unit Developments Act 2011 ("MUD" Act). This service charge budget also includes an allowance for a Sinking Fund and this allowance is determined following the review of the Building Investment Fund (BIF) report prepared for the OMC.. The BIF report will identify those works which are necessary to maintain, repair, and enhance the premises over the 30-year life cycle period, as required by the Multi Unit Development Act 2011. In line with the requirements of the MUD Act, the members of the OMC will determine and agree each year at a General Meeting of the members, the contribution to be made to the Sinking

Fund, having regard to the BIF report produced. A sample format of the typical BIF report is set out in Appendix A.

Note: the detail associated with each element heading i.e. specification and estimate of the costs to maintain / repair or replace, can only be determined after detailed design and the procurement/ construction of the development and therefore has not been included in this document.

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 which will provide detail of the energy performance and carbon emissions associated with 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/m2/yr. with CO2 emissions approx. 10 kgCO2/m2/yr.
A3 – 51-75 kWh/m2/yr. with CO2 emissions approx. 10 kgCO2/m2/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.

<table>
<tr><th>Measure</th><th>Description</th><th>Benefit</th></tr>
<tr><td>Building Fabric Efficiency</td><td>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

It is possible to exceed the requirements of the current building regulations. The current target U-Values are identified below:

<table>
<tr><th>Element</th><th>New Buildings & extensions to existing buildings [W/m²k]</th><th>Proposed for this development [W/m²k]</th><th>Percentage Improvement</th></tr>
<tr><td>Walls</td><td>0.21</td><td>0.18</td><td>14%</td></tr>
<tr><td>Floors</td><td>0.21</td><td>0.15</td><td>29%</td></tr>
<tr><td>Windows</td><td>1.60</td><td>1.40</td><td>13%</td></tr>
<tr><td>Roofs</td><td>0.20</td><td>0.15</td><td>25%</td></tr>
</table>

A major consideration in reducing the heat losses in a building is the air infiltration. This essentially relates to the ingress of cold outdoor air into the building and the corresponding displacement of the heated internal air. This incoming cold air must be heated if comfort conditions are to be maintained. In a traditionally constructed building, infiltration can account for 30 to 40 percent of the total heat loss; however, construction standards continue to improve in this area.

With good design and strict on-site control of building techniques, infiltration losses can be significantly reduced.

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.

A design air permeability target of 3 m3/m2/hr has been identified

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’</td><td>Reduction in the consumption of fuel and the associated carbon emissions and operating costs.</td></tr>
<tr><td>Lighting Efficiency</td><td>It is proposed to provide 100% of lighting outlets to be low energy (LED)</td><td>Reduction in the consumption of electricity and the associated carbon emissions and operating costs.</td></tr>
</table>

Energy Labelled White Goods	ARCHITECT TO INPUT	

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

The optimum option will be determined and decided upon once the TGD L 2018 is formally published by Department of Environment (DOE) along with the ratified calculation method.

Measure	Description	Benefit
Heat Pumps	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. 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. 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. • Ground Source • Water Source • Air Source Air and water source heat pumps are being considered.	Reduction in the consumption of fuel and the associated carbon emissions and operating costs.
Thermal Storage	The application of thermal energy storage (TES) vessels coupled with heat pump technologies is being considered for a number of purposes. TES enables low energy technologies such as heat pumps to operate at low night time electricity tariffs to generate low temperature hot water for heating and DHW at night which will be drawn off during the day to offset a proportion of the heating load. TES also increases scope to implement other low energy technologies such as CHP	Reduction in operating costs. TES may also decrease peak electrical infrastructure required on site. Extend the life of plant by preventing On / Off short cycling of plant which occur at times of low heat demand
Combined Heat & Power	The inclusion of combined heat and powe (CHP) plant in any building scheme must be given very careful consideration due to the large capital costs involved and the potential risk of higher running costs than would be incurred if separate heating plant and grid electricity were used. The most important consideration when designing CHP plant is to carefully assess both the heat load and the electrical load. A CHP installation will typically operate at approximately 80% combined efficiency. Approximately 60% of the useful output will be thermal energy with the remaining 40% being available as electric energy. E.g. a CHP plant which consumes 100kWhrs of gas will produce approximately 80kWhrs of useful output. 50 kWhrs of this output will be available as thermal energy while the electric energy output will be 30kWhrs.	Reduction in the consumption of gas & electricity and the associated carbon emissions and operating costs.

	Following analysis, CHP has been included for in option 2.	
Photovoltaic (PV) Panels	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. Capital costs have also reduced significantly in recent years due to worldwide increase in production levels, particular from China. They are adaptable and scalable in that the amount installed can be selected to suit the budget available.	Reduction in the consumption of electricity and the associated carbon emissions and operating costs.
Condensing Gas Boilers	Condensing gas boilers are being considered in conjunction with renewable technologies as they have a higher operating efficiency standard boilers. Condensing boilers utilize heat losses from the boiler exhaust flue gases to preheat the circulating heating water which typically results in an operating efficiency in excess of 90%.	Reduction in the consumption of fuel and the associated carbon emissions and operating costs.
Mechanical Ventilation Heat Recovery	Mechanical heat recovery ventilation (MVHR) will be considered to provide ventilation provision to apartments. MVHR provides tempered external fresh air to occupied spaces and extract ventilation from rooms with "Bad Air" such as Bathrooms, utility stores etc. 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.	Reduction in the consumption of fuel and the associated carbon emissions and operating costs. Increases comfort conditions for occupants Prevents mould growth.
ECAR Charging Points	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	Providing the option for E-Car charging points will futureproof the development.

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 circulation areas where possible	Avoids the requirement for continuous artificial lighting
Natural/Passive ventilation system to circulation areas	Avoids costly mechanical ventilation systems and associated maintenance and future replacement.
Assisted Natural Ventilation system to basement car park with limited extent of induction fans.	Avoids provision of fully mechanically ventilating the basement.
External paved and landscaped areas	All of these require low/minimal maintenance

2.2.2. Material Specification

Measure Description	Benefit
Consideration is given to the requirements of the Building Regulations and includes reference to BS 7543:2015, 'Guide to Durability of Buildings and Building elements, Products and Components', which provides guidance on the durability, design life and predicted service life of buildings and their parts. All common parts of the proposed Apartment buildings and, the durability and performance of these are designed and specified in accordance with Figure 4; Phases of the Life Cycle of BS7543; 2015. (Please see Appendix B for this figure). The common parts are designed to incorporate the guidance, best practice principles and mitigations of Annexes of BS 7543: 2015 including: •Annex A Climatic Agents affecting Durability • Annex B Guidance on materials and durability • Annex C Examples of UK material or component failures • Annex D Design Life Data sheets	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, render and profiled metal cladding to envelope 	Requires no on-going maintenance.
Use of factory finished and alu clad/aluminium windows and doors, and powder coated steel balconies	Requires no on-going maintenance.

2.3 Landscape

Measure	Description	Benefit
Site Layout & Landscape design	High quality landscaping with landscape, cycles and pedestrians prioritised over car. An increase in soft landscaping. Please refer to Landscape Report for further detail.	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 materials and detailing to be durable for play, etc.	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 equipment (e.g. play, exercise, fencing etc.) to be used throughout.	Robust materials and elements reduce the frequency of required repair and maintenance.
Sustainable drainage	Use of a 40mm deep combined drainage board/reservoir system across podium	Reduces the volume of irrigation required
Planting details	Proven trees staking details. Shrub, hedging, herbaceous and lawn installation	Correctly installed planting will develop into well established and robust soft landscape reducing future maintenance.

2.4 Waste Management

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

Measure	Description	Benefit	Discipline
Operational Waste Management Plan	This application will accompanied by an Operational Waste Management Plan prepared by AWN Consulting	The report demonstrates how the scheme has been designed to comply with local, regional, and national waste legislation along with best practice	AWN
Storage of Non-Recyclable Waste and Recyclable Household Waste	Inclusion of centralised waste storage areas, with enough space to accommodate a weekly collection of bins	Easily accessible by all residents, minimises potential littering of the scheme, reduce potential waste charges and not limit waste contractor selection	AWN
	Domestic waste management strategy: General waste, mixed recyclable and organic bin distinction	Helps reduce potential waste charges and not limit waste contractor selection	
	Security restricted waste storage rooms	Reduce potential for fly tipping by residents and non-residents	
	Well signed waste storage rooms and bins	Help reduce potential cross contamination of waste and reduce waste charges.	
Composting	Organic waste bins to be provided in waste storage areas	Helps reduce potential waste charges	AWN

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	The scheme is designed to incorporate passive surveillance with the following security strategies likely to be adopted: • CCTV monitoring details • Car registration recognition at entrance gate • Secure bicycle stands – covered by CCTV • Controlled Access to individual circulation cores • Controlled access between Public Spaces and Residents Communal Spaces • Routine access fob audits • Appropriately lit external spaces.	Aids in reducing potential security/management costs. Enhances safety for residents and visitors.
Natural Amenity	4no. Communal Courtyards at the rear of the Naas Road Block located between the four finger apartment blocks. Landscaped green 'buffer' zone adjacent to Naas Road. High Quality Public Open Space to South and East of site. Connections and green linkages in line with objectives of Naas Road LAP	Facilitates community interaction, socialising and play – 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	Once a purchaser completes their sale, a homeowner box will be provided which will include: • **Homeowner manual** – this will provide important information for the purchaser on details of their new property. It typically includes details of the property such as MPRN and GPRN, Information in relation to connect with utilities and communication providers, Contact details for all relevant suppliers and User Instructions for appliances and devices in the property. • **A Residents Pack** prepared by the OMC which will typically provide information on contact details for the Managing agent, emergency contact information, transport links in the area and a clear set of rules and regulations.	Residents are as informed as possible so that any issues can be addressed in a timely and efficient manner.

2.7 Transport

Measure	Description	Benefit
Access to Public Transport (LUAS / Light Rail)	The LUAS Red Line is located on the Naas Road, directly to the north of the proposed development. Two stops are located within a convenient walking distance (less than 5-minute walk travel time) of the proposed residential development and new pedestrian crossings at the Naas Road are proposed as part of the development to promote their use.	The availability, proximity and ease of access to high quality public transport services contributes to reducing the reliance on the private motor vehicle for all journey types.
Access to Public Transport (Bus Services)	A total of 6 local Bus services operate in close proximity to the subject development site.	These bus services provide access to a range of additional destinations above that serviced by the LUAS services. The proximity, frequency and range of additional 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 the private motor car.
Permeable Connections	Provision and subsequent maintenance of dedicated pedestrian and cycle infrastructure on-site, and their connectivity with adjoining third party lands and off-site networks, providing connectivity and continuation of the City Wide Green Route, subsequently providing convenient access to local services including shops, schools, restaurants and doctor's surgeries.	Ensure the long-term attractiveness of walking and cycling to a range of local education, retail and community facilities and services.
Bicycle Storage	The provision of high quality secure bicycle parking facilities, for both short term and long-term parking requirements.	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicle.
ECAR Facilities	Ducting will be provided from a local landlord distribution board to designated ecar charging car park spaces.	To accommodate the growing demand for ECARS which assist in decarbonising society and reducing oil dependency.
Car Sharing	The scheme will include designated car sharing spaces for exclusive use of the residents.	Reduces the reliance on the private motor vehicle and reducing oil dependency.