
**Library Square Ringsend – Public Realm Improvement
and Library Refurbishment and Extension**

**BUILDING
LIFECYCLE
REPORT**

FEBRUARY 2023

DMOD
ARCHITECTS

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The purpose of this Building Lifecycle Report is to provide an assessment of long term running and maintenance costs as they would apply to the Library Refurbishment and Extension at Ringsend and to demonstrate what measures have been specifically considered in the design to effectively manage and reduce costs for the benefit of the owner, Dublin City Council. In particular, this report should be read in conjunction with the Sustainability Report prepared by J V Tierney & Co and accompanying this application for Part 8 Planning Permission.

1. Introduction

- 1.1 This Building Lifecycle Report has been prepared for this application for Planning Permission (Part 8) for the Library Square Ringsend – Public Realm Improvement and Library Refurbishment and Extension proposal.
- 1.2 This Building Lifecycle Report has been informed, prepared and compiled through the collaboration of the following parties;
 - Dublin City Council South East Area Office
 - Dublin City Council Libraries
 - DMOD Architects
 - Mitchell & Associates Landscape Architects and Urban Designers
 - J V Tierney & Co. Consulting Engineers (Mechanical and Electrical)
 - Fergal McGirl Architects, Building Conservation Architects
 - Roughan & O'Donovan Consulting Engineers (Civil, Structural and Transport)
- 1.3 This Building Lifecycle Report should be read in conjunction with the following documents that accompany this application for Planning Permission (Part 8):
 - Design Statement prepared by DMOD Architects
 - Sustainability Report prepared by J V Tierney & Co.
 - Engineering Planning Report prepared by Roughan & O'Donovan Consulting Engineers
 - Building Conservation Report prepared by Fergal McGirl Architects
 - Public Lighting Report prepared by J V Tierney & Co.
- 1.4 This Building Lifecycle Report is divided into four sections as follows:
 - Description of Development
 - Management
 - Assessment of Long Term Running Costs
 - Measures to Reduce Costs
- 1.5 This Building Lifecycle Report includes an assessment of the ongoing operation and maintenance of the proposed development and any costs indicated is based on arrangements as agreed at the time of making this application for Planning Permission (Part 8). It may be subject to adjustment within the constraints indicated and as may result from any conditions attaching to a grant of Planning Permission as appropriate.

2. Proposed Development

- 2.1 The proposed development comprises demolition of outer sections of the existing Ringsend Library building and construction of the following:
- (a) new staff accommodation and ancillary library accommodation
 - (b) new access and egress arrangements
 - (c) new rooflights in the existing roof
 - (b) new energy measures
- 2.2 As this development involves additions and alterations to an existing structure the building lifecycle considerations will be multiple.

3. Management

- 3.1 The developers, Dublin City Council, have commissioned this assessment of the long term running and maintenance costs applicable for the proposed redevelopment of and extension to the Ringsend Library, Dublin 2.
- 3.2 The mission statement of Dublin City Council's Libraries is to "provide quality services for [Dublin's] citizens and visitors and act to protect and promote Dublin's distinct identity in a way that acknowledges our past and secures our future."
- 3.3 It is noted that this proposal seeks to renew and extend the current management arrangements on this site. The current management structure is available at <https://www.dublincity.ie/residential/libraries/about-libraries>
- 3.4 It is anticipated that the management for the proposal will be entrusted to a Dublin City Council Management Entity at an early stage to ensure that all property management functions are dealt with for the development and that the running and maintenance costs of the building are kept within agreed annual operational budgets, as highlighted in the following section.

4. Assessment of Long Term Running Costs

- 4.1 This section relates to an assessment of long term running and maintenance costs as would apply at the time of application.
- 4.2 The Dublin City Council Management Entity 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 building are kept within agreed annual operational budgets.
- 4.3 The Dublin City Council Management Entity also has the following responsibilities for the development once constructed:
 - Third Party Contractors Procurement and Management.
 - Accounting Services.
 - Corporate Services.
 - Insurance Management.
 - After Hours Services.
 - Staff Administration.
- 4.4 The Dublin City Council Management Entity will propose an annual service plan for the building. The annual service plan will budget for items such as cleaning, landscaping, waste management, utility bills, insurance, maintenance of mechanical/electrical items and life safety systems, security, lighting, etc.
- 4.5 This annual service plan will also consider a budget allowance for a Sinking Fund and this allowance is determined following an annual review of the Building Investment Fund (BIF) report. The BIF report determines an adequate estimated annual cost provision requirement based on the needs of the building 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.

5. Measures to Reduce Costs

5.1 The following measures have been specifically considered to effectively manage and reduce costs for the benefit of each of the demises and can be read in conjunction with the Sustainability and Energy report included with this application:

Energy and Carbon Emissions

Table 5.1 – Energy and Carbon Emissions

Measure	Description	Benefit																								
Certificates																										
Fabric Energy Efficiency (also, Refer to Section 2 in the accompanying Sustainability Report.)	<p>The U-values for new areas of construction in the building 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”.</p> <p>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 below Table 1 of Part L, Building Regulations.</p> <table border="1"> <thead> <tr> <th>Element</th> <th>U-value (W/m².K)</th> </tr> </thead> <tbody> <tr> <td>Pitched Roof (insulated on slope or ceiling)</td> <td>0.16</td> </tr> <tr> <td>Flat Roof</td> <td>0.20</td> </tr> <tr> <td>Walls</td> <td>0.21</td> </tr> <tr> <td>Ground Floor</td> <td>0.21</td> </tr> <tr> <td>Ground Floor with Underfloor Heating</td> <td>0.15</td> </tr> <tr> <td>Exposed Floor</td> <td>0.21</td> </tr> <tr> <td>External doors, windows and roof windows</td> <td>1.60*</td> </tr> </tbody> </table> <p>* Applies where the combined area equals 25% of the building floor area. Variations up and down are permissible under 1.3.2.4 and Table 2 of TGD L.</p> <table border="1"> <thead> <tr> <th>Element</th> <th>U-value (W/m².K)</th> </tr> </thead> <tbody> <tr> <td>Walls</td> <td>0.18</td> </tr> <tr> <td>Ground Floor</td> <td>0.18</td> </tr> <tr> <td>External doors, windows and roof windows</td> <td>1.40</td> </tr> </tbody> </table>	Element	U-value (W/m ² .K)	Pitched Roof (insulated on slope or ceiling)	0.16	Flat Roof	0.20	Walls	0.21	Ground Floor	0.21	Ground Floor with Underfloor Heating	0.15	Exposed Floor	0.21	External doors, windows and roof windows	1.60*	Element	U-value (W/m ² .K)	Walls	0.18	Ground Floor	0.18	External doors, windows and roof windows	1.40	<p>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. In order to achieve the NZEB standards, in most cases the above standards will be exceeded in the building.</p>
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Energy Labelled White Goods	<p>The white good package planned for provision in the kitchenette will be of a very high standard and will have a high energy efficiency rating. It is expected that the following appliance ratings will be provided:</p> <ul style="list-style-type: none"> • Fridge Freezer - A plus • Dishwasher - AAA • Washer/Dryer - B 	<p>The provision of high rated appliances in turn reduces the amount of electricity required for occupants.</p>																								
External Lighting	<p>The external lighting within the overall design for the Ringsend Library Square varies. The luminaires are selected for the following reasons;</p> <ul style="list-style-type: none"> • Low level lighting • Minimal upward light spill • Low voltage LED lamps <p>Each light fitting shall be controlled either by a master Photoelectric Control Unit (PECU) or via an individual Photoelectric Control Unit. The operation of the lighting shall be on a dusk-dawn profile.</p>	<p>The public 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 flora and fauna in the area. Having PECU allows for the optimum operation of lighting which minimizes costs.</p>																								

Low Energy Technologies

5.2 The following are 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 upcoming Near Zero Energy Building standard if required. The specific combination from the list below will be decided on and then implemented to achieve the A2/A3 BER Rating.

Table 5.2 – Low Energy Technologies (refer to Sustainability and Energy Report for more detail)

Measure	Description	Benefit
Gas fired Combined Heat and Power		Combined heat and power (CHP) plant has lower fuel consumption resulting from the higher operating efficiencies.
Mechanical Ventilation Heat Recovery	Mechanical Ventilation and Heat Recovery (MVHR) will be provided where required within the Library to ensure that the air quality 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 apartments.	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 in order 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 Library. The panels are typically placed south facing on the rooftop of the area of new construction behind parapets to minimise visual impact and 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 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.

Materials

5.3 The practical implementation of the design and material principles has informed the design of new areas of construction. The façade materials will consist predominantly of new brick on public frontages with coated metal double and triple glazing, coated metal shingle cladding to feature projecting bay window and office window boxes.

5.4 The proposed development has been 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 throughout and specific measures taken include:

Table 5.3 – Measures for Minimum Maintenance

Description of Measure	Benefit
Daylighting to circulation areas.	Avoids the requirement for continuous artificial lighting.
The areas of new construction have been designed with sufficient openings to permit natural ventilation.	Omits the requirement for costly mechanical ventilation systems and associated maintenance.
Natural ventilation strategy maintained in the existing Library building.	Avoids costly mechanical ventilation systems and associated maintenance and future replacement.
External paved and landscaped areas.	All of these require low/minimal maintenance.
Roof construction is designed to function with internalised rainwater dispersal downpipes.	Minimises ongoing maintenance.

Table 5.4 – Material Specification

Description of Measure	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 the building, both the new areas of construction and the existing building.</p> <p>The durability and performance of the new areas of construction are designed and specified in accordance with Figure 4; Phases of the Life Cycle of BS7543; 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 	Ensures that the long-term durability and maintenance of Materials is an integral part of the Design and Specification of the proposed development.
Where required, the reinforced concrete floor slabs in the areas of new construction will comprise Ecocem concrete made from recycled waste material.	Reduces production of carbon, recycles existing waste materials.
Use of brickwork, self-finished render and pigmented concrete parapet cappings to the envelope.	Requires no on-going maintenance.
Use of factory finished coated metal double and triple glazing and coated metal bar guardings for the loggia openings.	Requires no on-going maintenance.

Table 5.5 – Landscape

Measure	Description	Benefit
Hard Landscape Materials.	Sustainable, robust materials, with high slip resistance to be used for paving. Durable and robust finishes to be selected for all furniture, bin and bicycle storage units. Hard materials will be sourced from local surfaces where possible.	Materials selected to minimise on-going maintenance inputs. Reduction in Carbon Footprint
Soft Landscape Materials	Planting proposals have been formulated to complement the local setting as well as being fit for purpose in respect of private and public realm uses. Native tree species have been selected in significant numbers for planting across the public open space. The tree & plant selection proposed has a proven record to thrive in the Irish climate.	A 'right plant, right place' strategy is employed to reduce frequency of maintenance visits required for the soft landscape.
Site Layout and Design	Pedestrian and cyclist friendly hierarchy of open spaces are complemented by generous and high-quality landscape treatments providing long term high quality public space environments.	Safe, high quality public space environments reduce vandalism and antisocial behaviour issues.
Maintenance and Management	Maintenance and management requirements have been considered through the design process. Complex planting arrangements have been omitted thus avoiding onerous maintenance and management requirements.	Ongoing maintenance costs reduced.
Sustainability & Biodiversity	The sustainable aspects of the redevelopment of Ringsend Library Square include the retention and relocation of the existing 'Open Door' commemorative structure. It also includes the use of native trees where possible in the public space. Other species have been carefully selected for compatibility. With the size of available spaces an important factor in the long term management of the public space the overall objective is to enhance the biodiversity potential of Ringsend Square in addition to providing seasonal interest and variety. Judiciously placed flowering shrub and groundcover planting have been included to further promote biodiversity (pollinator species attracting insects and birdlife). The landscape design incorporates a combined approach to Sustainable Urban Drainage (SuDS) with planting areas designed to receive surface water run-off from adjacent footpaths and cycle lanes where the levels allow. Refer to Landscape Design Report prepared by Mitchell & Associates.	Enhanced sustainability of long term building management. Reduction of rainwater run-off. Reduction in rainwater goods that would require maintenance and repair.

Waste Management

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

Table 5.6 – Waste Management

Measure	Description	Benefit
Outline Demolition and Construction Waste Management Plan	The application is accompanied by an Outline Demolition and Construction Waste Management Plan.	The report demonstrates how the scheme has been designed to comply with best practice.
Outline Operational Waste Management Plan	The application is accompanied by an Outline Operational Waste Management Plan.	The report demonstrates how the scheme has been designed to comply with best practice.

Table 5.7 – Health and Well Being

Measure	Description	Benefit
Natural / Day Light	The design, separation distances across Fitzwilliam Street and layout of the building has been considered to optimize the ingress of natural daylight/sunlight to the proposed Library to provide good levels of natural light.	Reduces reliance on artificial lighting thereby reducing costs.
Accessibility	The new areas of construction will comply with the requirements of Part M and Part K and will facilitate universal access to the re-used areas of the existing building.	Provides access for all, both staff and library users.
Natural Amenity	The new Library will have extensive visual connection with the public realm outdoors both in the newly created formal square and along Fitzwilliam Street and Ringsend Road. In addition, the new Library will avail of the new focus on connecting Library Square through to Ringsend Park and its amenities generated by the new road crossing at the north eastern corner.	Facilitates community interaction, socialising and play - resulting in improved wellbeing. Proximity and use of parks promote a healthy lifestyle.

Table 5.8 – Management

Measure	Description	Benefit
Home User Guide	Dublin City Council.	Subject to public scrutiny.

Transport

Table 5.9 – Public Transport

Measure	Description	Benefit
Access to Public Transport (Bus Services)	The new Library fronts a Bus Connects route?.	These bus services provide access throughout Dublin and a viable and practical sustainable alternative to journeys undertaken by the private motor car.
Bicycle Storage	The provision of high-quality secure & covered 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.

Appendix 1 ITEMS INCLUDED IN A TYPICAL BIF

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

Reference	Item	Typical Life Expectancy
1.00	Roofs	
1.01	Replacement felt roof covering incl. insulation to small sections of flat roof	18
1.02	Replacement parapet details	18
1.03	Replacement/ repairs to fascias	18
1.04	Replace roof access hatches	25
1.05	Specialist Roof Systems - Fall arrest	25
1.06	Overhaul waterproofing details to paved areas	12
2.00	Elevations	
2.01	Recoat metal panels	25
2.02	Minor repairs and preparation to brick walls	18
2.03	Replace exit/ entrance doors	25
2.04	Replace rainwater goods	25
2.05	Recoat powder coated finishes to rainwater goods	20
2.06	Periodic replacement and overhauling of external fixings	5
3.00	Circulation & 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 ceramic floors tiles Entrance lobbies	20
3.08	Fixed Furniture & Equipment - Provisional Sum	18
4.00	M&E Services	
4.01	General - Internal re-lamping	7
4.02	Replace Internal light fittings	18
4.03	Replace External light fittings (lights at entrance lobbies)	18
4.04	Replace smoke detector heads	18
4.05	Replace manual break glass units/ disabled refuge call points	18
4.06	Replace Fire alarm panel	18
4.07	Replace AOV's	25
4.08	Replace security access control installation	25
4.09	Sump pumps replacement	15
4.10	External Mains Water connection	15
4.11	Electrical Mains and Sub Mains distribution	20
4.12	Emergency Lighting	20
4.13	Overhaul and/or replace Waste Pipes, Stacks & Vents	20
5.00	Exterior	
5.01	External boundary treatments - Recoat powder coated Finishes to railings	60

5.02	Replace external signage	18
5.03	Replace cobblelock areas	18
5.04	15-year cutback & thinning of trees. Overhaul landscaping generally	20
5.05	Replace CCTV provision	12
5.06	External Handrails and balustrade	18