BUILDING LIFE CYCLE REPORT

Development at Clonburris 1A

November 2021

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Document Control Sheet:

[illegible]	[illegible]	[illegible]	Checked	Issue Date
A	Draft	EF		14/10/2021
B	Final	EF	EF	23/11/2021

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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:

> *"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 residents.

PROPOSED DEVELOPMENT

The proposed development will consist of the construction of 569 dwellings, a creche, innovation hub and open space in the Clonburris South West Development Area of the Clonburris SDZ Planning Scheme 2019 as follows:

A. 173 no. houses comprising 8 no. 2 bedroom houses, 153 no. 3 bedroom houses and 12 no. 4 bedroom houses (147 no. dwellings in CSW-S4 consisting of 8 no. 2 bedroom houses, 127 no. 3 bedroom houses & 12 no. 4 bedroom houses & 26 no. 3 bedroom dwellings in CSW-S3); all 2 no. storey comprising semi-detached, terraced, end terrace units (with parking and private open space);
B. 148 no. duplex apartments/apartments (88 no. in CSW-S4 & 60 no. in CSW-S3) comprising 74 no. 2 bedroom units and 74 no. 3 bedroom units, in 16 no. 3 no. storey buildings. In CSW-S4 Duplex Blocks A,B,C,D,E,F,G,J,K, comprise 8 no. units (4 no. 2 bed & 4 no. 3 bed units), Duplex Block H comprises 16 no. units (8 no. 2 bed & 8 no. 3 bed units); In CSW-S3 Blocks L, N & O comprise 8 no. units (4 no. 2 bed & 4 no. 3 bed units), Block M comprises 14 no. units (7 no. 2 bed & 7 no. 3 bed units), Block P comprises 10 no. units (5 no. 2 bed & 5 no. 3 bed units), Block Q comprises 12 no. units (6 no. 2 bed & 6 no. 3 bed units), all to have terraces;
C. 396 no. apartments as follows: within CSW-S4, Block 1 consists of 172 no. apartments (76 no. 1 bedroom, 91 no. 2 bedroom and 5 no. 3 bedroom apartments), in a 2-building arrangement both 6 no. storeys in height. Within CSW-S3, Block 2 (4 storeys) comprises 16 no. 1 bedroom apartments and 22 no. 2 bedroom apartments, Block 3 (4 storeys) comprises 16 no. 1 bedroom apartments and 22 no. 2 bedroom apartments (all apartments to have terrace or balcony).
D. Provision of an innovation hub (626 sq. m) and creche (c. 547 sq. m) in a part 3/4 storey *'local node'* building in CSW-S4;
E. Vehicular access will be from the permitted Clonburris Southern Link Street and R113 to the east (along with provision of internal haul routes (for construction) to connect to the R136 to the west);
F. Public Open Space/landscaping of c. 4.1 hectares (to include Local Park and MUGA in CSW-S3, Grand Canal Park, along the southern and eastern boundaries of the site to connect to existing Grand Canal towpath) as well as a series of communal open spaces to serve apartments and duplex units (c. 0.39 ha).
G. All ancillary development works including footpaths, landscaping boundary treatments, public, private open space areas, car parking (656 no. spaces) and bicycle parking (672 no. spaces), single storey ESB substations/bike/bin stores, and all ancillary site development/construction works;
H. Permission is also sought for revisions to attenuation permitted under SDZ20A/0021 (Surface water attenuation measures and underground attenuation systems) as well as connection to water supply, and provision of foul drainage infrastructure.

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, including communal areas of open space, residential amenity facilities and any public areas not taken in charge by the local authority, 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 once adopted by the OMC, determines an adequate estimated annual cost provision requirement based on the needs of the development over a 30-year cycle period. The BIF report will identify those works which are necessary to maintain, repair, and enhance the premises over the 30-year life cycle period, as required by the Multi Unit Development Act 2011.

In line with the requirements of the MUD Act, the members of the OMC will determine and agree each year at a General Meeting of the members, the contribution to be made to the Sinking Fund, having regard to the BIF report produced.

A sample format of the typical BIF report is set out in Appendix 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

MEASURES SPECIFICALLY CONSIDERED BY THE PROPOSER TO EFFECTIVELY MANAGE AND REDUCE COSTS FOR THE BENEFIT OF RESIDENTS.

2.1. Energy and Carbon Emissions

The following are an illustration of the energy measures that are planned for the units to assist in reducing costs for the occupants.

BER Certificates	A Building Energy Rating (BER) certificate will be provided for each dwelling in the proposed development which will provide detail of the energy performance of the dwellings. A BER is calculated through energy use for space and hot water heating, ventilation, and lighting and occupancy. It is proposed to target an A2 rating for the apartments this will equate to the following emissions. A2 – 25-50 kwh/m2/yr with CO2 emissions circa 10kgCO2/m2 year	Higher BER ratings reduce energy consumption and running costs.
Fabric Energy Efficiency	Building Fabric Performance The U-values being investigated will be in line with the requirements set out by the current regulatory requirements of the Technical Guidance Documents Part L "Conservation of Fuel and Energy Buildings other than Dwellings". The current regulation is Part L 2011 but this will be superseded by Part L 2019 in November 2019 and a transitional period of 12 months will commence. The dwellings built under this planning permission will be designed and constructed to meet the relevant regulation, as may be appropriate, in accordance with the transitional period. U-values The U-Values that will be targeted for the dwellings in this development will exceed the minimum targets set out in Part L 2011 or Part L 2019 as may be appropriate. The table below sets out the minimum requirements of each of these standards and the targets range that will be adopted for the site. **Thermal Bridging** Thermal bridges occur at junctions between planar elements of the building	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.

U-Values	Range of Target Values Proposed	Part L 2011 Compliant Values	Part L 2019 Compliant Values
Floor	0.10 to 0.18 W/m2K	0.21W/m2K	0.18 W/m2K
Roof (Flat)	0.15 to 0.20 W/m2K	0.20 W/m2K	0.20 W/m2K
Walls	0.12 to 0.18 W/m2K	0.18 W/m2K	0.18 W/m2K
Windows	1.2 to 1.5 W/m2K	1.6 W/m2K	1.4 W/m2K

	fabric and are typically defined as areas where heat can escape the building fabric due to a lack of continuity of the insulation in the adjoin elements. Careful design and detailing of the manner in which insulation is installed at these junctions can reduce the rate at which the heat escapes. Standard good practice details are available and are known as Acceptable Construction Details (ACDs). Adherence to these details is known to reduce the rate at which heat is lost. The rate at which heat is lost is quantified by the Thermal Bridging Factor of the dwelling which is entered into the overall dwelling Part L calculation. It is intended that all building junctions will either be designed in accordance with the Acceptable Construction Details (issued by The Department of the Environment) or that thermal modelling will be carried out for all thermal bridges on the dwellings within proposed development. The resultant Thermal Bridging Factor will be in the range of 0.04W/m2K to 0.08W/m2K. **Air Tightness** 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. In order to ensure that a sufficient level of air tightness is achieved, air permeability testing will be specified carried out on all dwellings. A design air permeability target of 2 m3/m2/hr has been identified for the apartments and houses on the site.	
Energy Labelled White Goods	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: • 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.
External Lighting	The proposed lighting scheme within the development consists of range of luminaires, each selected to suit the specific location on the site. All fittings selected will be LED and will be mounted on columns ranging in height from 4m to 6m. • 3000K CCT LED to minimise impact on wildlife • High efficiency 119 lm/W • Zero Upward Light Output Ratio (ULOR) • Intelligent lighting control systems provided along pedestrian routes in sensitive woodland areas • Shading louvres included on light fittings adjacent to the most sensitive areas of the site. • Meets or exceeds all other WCC Specification criteria. Each light fitting shall be controlled via an individual Photoelectric Control Unit (PECU). The operation of the lighting shall be on a dusk-dawn profile.	The site lighting will be 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.

The following are **Low energy technologies** that are being considered for the development and during the design stage of the development the specific combination from the list below will be decided on and then implemented to achieve the A2/A3 BER Rating.

[illegible]	[illegible]	[illegible]
Condensing Boilers	If gas fired heating is adopted, condensing boilers will be provided as they have a higher operating efficiency, typically over 90%, than standard boilers and have the benefit of lower fuel consumption resulting from the higher operating efficiencies.	• Condensing boilers use the heat losses from the boiler flue to preheat the circulating heating water • By preheating the heating water, the boiler can achieve efficiencies in excess of 90%
Demand Controlled Mechanical Ventilation	Centralised mechanical ventilation will be provided to all dwellings to ensure that the air quality within the dwellings will be adequate. The system will be designed to respond to occupancy usage patterns and to humidity levels within the dwelling.	• Mechanical ventilation provides enhanced air quality in modern air tight dwellings which are otherwise designed to minimise unwanted air infiltration
PV Solar Panels	PV Solar Panels will be considered as an option for both houses and apartments 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 dwelling. The panels are typically placed on the South facing side of the building to maximise the solar exposure.	PV Solar Panels offer the benefit of reducing fossil fuel consumption and carbon emissions to the environment. They also reduce the overall requirement to purchase electricity from the grid.
Air Source Heat Pump	As part of the overall energy strategy for houses, 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. For apartments, there are products which incorporate air source heat pump technology but which do not require the traditional "outdoor unit" making them suitable for apartments. These are general referred to as "Exhaust Air Heat Pumps" and are capable of extracting energy from the air within the apartment through a ducting system.	Air source heat pumps use electrical energy from the grid to drive the refrigerant cycle but do so extremely efficiently. Modern heat pumps will typically provide 4 to 5 times more heat energy to the dwelling than the electrical energy they consume.
ECAR Charging Points	Within the basement parking areas, ducting shall be provided from a local landlord distribution board to designated E-car charging car park spaces. This will enable the management company the option to install a number of E-car charging points within the basement carpark to cater for E-car demand of the residence. Ducting and on street infrastructure will also be considered for the housing development to provide EV charging facilities in on-street parking spaces. 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. Furthermore, all houses with on-curtilage parking will be wired to allow future installation of EV charging points by house purchasers.	Providing the option of 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 buildings.

2.2.1.Buildings

All proposed 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:

[illegible]	[illegible]
Openable window sections are provided to all stair cores within the development providing natural daylight to circulation areas.	Avoids the requirement for continuous artificial lighting
Openable window sections are provided to all stair cores within the development providing Natural/Passive ventilation to common circulation areas.	Openable window sections are provided to all stair cores within the development providing natural daylight and ventilation throughout all common areas. Avoids costly mechanical ventilation systems and associated maintenance and future replacement.
Natural ventilation though grills, louvres and tree pits are proposed to provide fresh air to basement and sub-basement areas.	Avoids costly mechanical ventilation systems and associated maintenance and future replacement
External paved and landscaped areas	All of these require low/minimal maintenance

2.2.2.Material Specification

[illegible]	[illegible]
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.

The architectural approach to the scheme proposed the extensive use of robust materials of brickwork (predominately) and render to the building envelope. The façade materials will also consist of limited areas of stone cladding.		These traditional materials will require minimal on-going maintenance and have a longer life-cycle expectancy.
Use of factory finished and alu clad or uPVC windows and doors, and powder coated steel balconies		Requires no on-going maintenance.

2.3. Landscape

Site Planning	Generous and high-quality landscape with ecological corridors designed within the proposed development. Pedestrians prioritized over the car. Significant tree planting and soft landscaping within courtyards and public spaces.		Natural attenuation and landscape maintenance preferable
Green Roofs	Use of green roofs and traditional roof coverings with robust and proven detailing to roof elements.		Attenuation reduces the burden on vulnerable rainwater goods, resulting in fewer elements that could require replacement or repair.
Paving Materials	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.		Required ongoing maintenance significantly reduced through use of robust materials installed with proven details.

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.

2.4. Waste Management

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

Measure	Description	Benefit
Construction and Demolition Waste Management Plan	Details regarding Construction and Demolition Waste Management Plan prepared by Byrne Environmental Ltd.	The Construction and Demolition Waste Management Plan demonstrates how the scheme has been designed to comply with best practice.
Operational Waste Management Plan	The application is accompanied by an Operational Waste Management Plan prepared by Byrne Environmental Ltd.	The report demonstrates how the scheme has been designed to comply with best practice.
Storage of Non-Recyclable Waste and Recyclable Household Waste	Residential waste storage allows for a weekly (seven day) storage capacity for MDR, food, glass and residual (i.e. nonrecyclable). Residential bins will be provided within dedicated storage rooms within the core of each residential block.	Easily accessible by all residents and minimises potential littering of the scheme
	Domestic waste management strategy: Grey, Brown and Green bin distinction. Competitive tender for waste management collection.	Helps reduce potential waste charges.
Composting	Organic waste bins to be provided throughout.	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, separation distances and layout of the apartment 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 costs.
Accessibility	All units will comply with the requirements of Part M/K and a universal access statement is provided within the design statement of this submission.	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 of basement parking area. • Secure bicycle stands – covered by CCTV	Help to reduce potential security/management costs.

	• Routine access fob audits	
Natural Amenity	Large public areas of open space are evenly distributed throughout the site where they can be overlooked by surrounding residential units.	Proximity and use of parks promotes a healthy lifestyle

2.6. Management

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

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

Access to Public Transport (Bus Services)	Route numbers 13, 68 and 151 travel along New Nangor Road approximately 900m to the south of the subject site. Route number 25b travel along Griffeen Avenue approximately 1.9km to the northwest of the subject site. In addition, route numbers 40 and 239 travel along Ninth Lock Road approximately 1.3km to the northeast of the subject site. The majority of these Dublin Bus services operate daily and offer relatively frequent services (i.e. every 10 minutes at peak times).	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.
Access to Public Transport (DART)	Clondalkin Fonthill Rail Station is located approximately 200m north of the subject site on the R113 Fonthill Road North. Dart services to Heuston Station call at Clondalkin Fonthill Station with regular services throughout the day serving the destinations of Drumcondra, Connolly, Tara Street, Pearse and Grand Canal Dock.	The DART provides an alternative high frequency public transport option to the bus for commuting to the city centre. 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.
Permeable Connections	Provision of dedicated pedestrian and cycle accesses along the Clonburris Southern Link Street. Pedestrian crossings will also be provided along the Clonburris Southern Link Street	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 and sheltered 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.
E-car Facilities	Ducting will be provided from a local landlord distribution board to designated E-car charging car park spaces.	To accommodate the growing demand for E-car which assist in de-carbonising society and reducing oil dependency.

APPENDIX A:

ITEMS INCLUDED IN A TYPICAL BIF

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

	CALCULATIONS		
Ref	[illegible]	**Life Expectancy**	[illegible]
1.00	**Roofs**		
1.01	Replacement felt roof covering incl. insulation to main roofs/ overhaul to green roofs.	[illegible]	
1.02	Replacement parapet details	[illegible]	
1.03	Replacement/ repairs to facias	[illegible]	
1.04	Replace roof access hatches	[illegible]	
1.05	Specialist Roof Systems - Fall arrest	[illegible]	
1.06	Overhaul waterproofing details to penthouse paved areas	[illegible]	
2.00	**Elevations**		
2.01	Recoat metal panels to penthouse apartments	[illegible]	
2.02	Minor repairs and preparation for decorations of rendered areas	[illegible]	
2.03	Replace exit/ entrance doors	[illegible]	
2.04	Replace Rainwater goods	[illegible]	
2.05	Recoat powder coated Finishes to balconies / Grills to Basement vents	[illegible]	
2.06	Periodic replacement and overhauling of external fixings	[illegible]	
2.07	Replace Balcony floor finishes	[illegible]	
3.00	**Stair cores & lobbies (3No. Cores)**		
3.01	Decorate Ceilings	[illegible]	

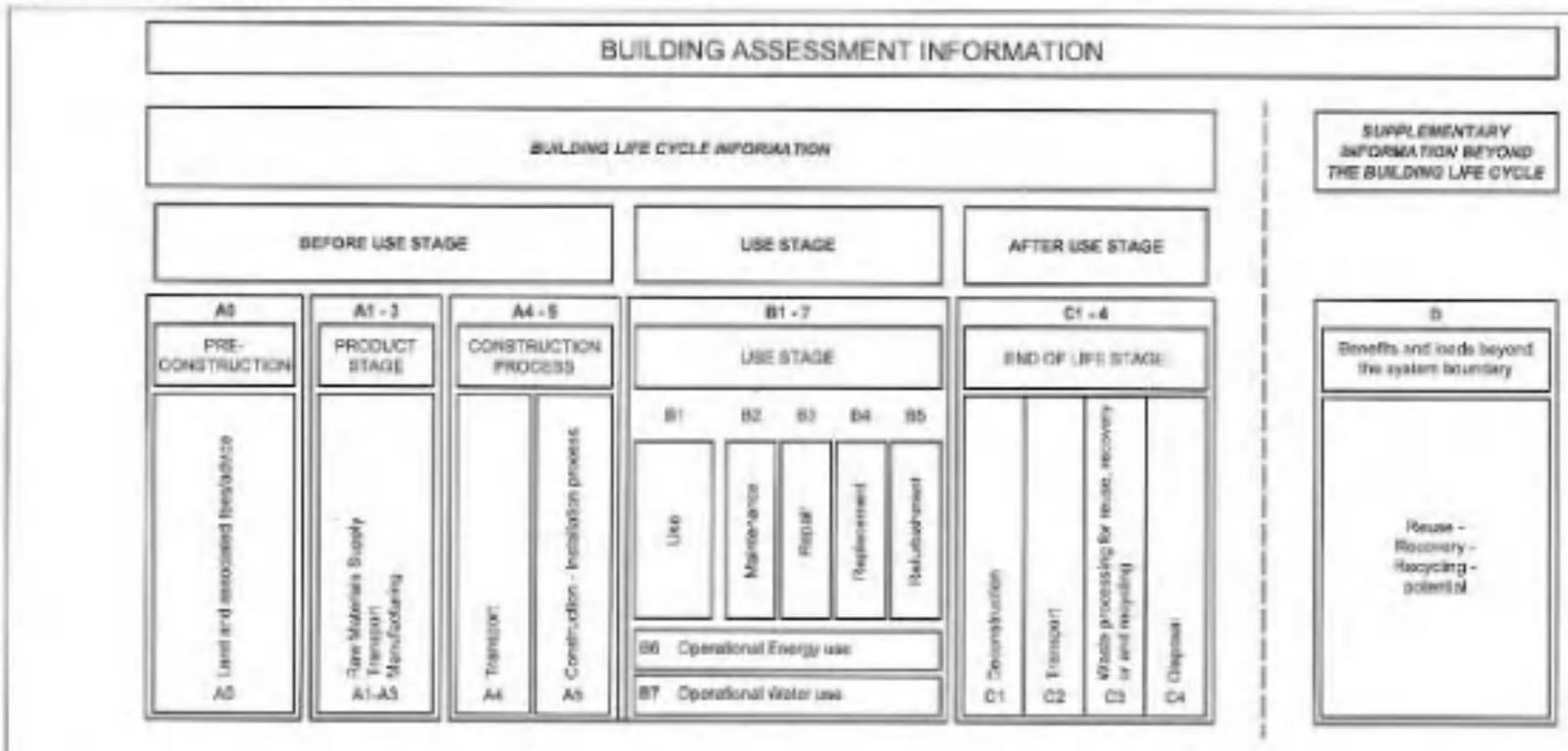
3.02	Decorate Walls		
3.03	Decorate Joinery		
3.04	Replace fire doors		
3.05	Replace carpets (stairwells & lobbies)		
3.06	Replace entrance mats		
3.07	Replace nosing's		
3.08	Replace ceramic floors tiles Entrance lobbies		
3.09	Fixed Furniture & Equipment - Provisional Sum		
4.00	**Basement & Car Parking**		
4.01	Remove/ Replace ceiling insulation		
4.02	Repaint parking spaces & Numbering		
4.03	Replace store doors, ironmongery & digi-locks		
4.04	Replace Bike stands		
4.05	Replace basement access control at entrance & core entrances		
5.00	**M&E Services**		
5.01	General - Internal re-lamping		
5.02	Replace Internal light fittings		
5.03	Replace External light fittings (lights at entrance lobbies)		
5.04	Replace smoke detector heads		
5.05	Replace manual break glass units/ disabled refuge call points		
5.06	Replace Fire alarm panel		
5.07	Replace lift car and controls		
5.08	Replace AOV's		
5.08	Replace security access control installation		
5.09	Sump pumps replacement		
5.10	External Mains Water connection		
5.12	Electrical Mains and Sub Mains distribution		

5.13	Emergency Lighting	[illegible]	
5.14	Overhaul and/or replace Waste Pipes, Stacks & Vents	[illegible]	
6.00	**Exterior**		
6.01	External boundary treatments - Recoat powder coated Finishes to railings	[illegible]	
6.02	Replace external signage	[illegible]	
6.03	Replace cobblelock areas	[illegible]	
6.04	15-year cutback & thinning of trees. Overhaul landscaping generally	[illegible]	
6.05	Replace CCTV provision	[illegible]	
6.06	External Handrails and balustrade	[illegible]	

APPENDIX B:

Phases of the Life Cycle of BS7543; 2015

Figure 4 Phases of the life cycle



Key
1 Highest severity of consequence of failure
2 Anticipated severity of consequence of failure
3 Lowest severity of consequence of failure
4 Minimum service life
5 Most likely service life
6 Maximum service life