

BUILDING LIFE CYCLE REPORT

(Rev. A—March 2022)

FOR

GREAT CONNELL SHD

NEWBRIDGE

FOR

ASTON LTD.



©

Prepared By

O' FLYNN ARCHITECTS

Lower Eyre St.,

Newbridge,

Co. Kildare.

telephone/email: 045 433400 & info@oflynnarchitects.ie

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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 2020 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 residents.

PROPOSED DEVELOPMENT

The development will consist of the demolition of existing site structures (2,622.3 sqm) and the construction of 569 no. residential units, a neighbourhood centre with 11 no. units (commercial floor area 2,141 sqm) and a childcare facility (886 sqm), a circa 350 metre section of distributor road, and all ancillary and associated works on a site of 27.64 ha. The proposed development comprises:

1. Demolition of existing site structures (total 2,622.3 sqm) comprising; 'Great Connell' a two-storey dwelling of 331.9 sqm with detached single storey garage and outhouses of 48 sqm; 'Valencia Lodge' a single storey dwelling of 135.6 sqm with a single storey garage of 17.8 sqm; two no. single storey sheds of 1,440 sqm and 595 sqm, and a three-sided shed of 54 sqm.
2. Construction of 569 no. new residential dwellings (325 no. houses and 244 no. apartments) comprising:
 - 64 no. two-bed houses; 173 no. three-bed houses; and 88 no. four-bed houses (ranging in height from 2 to 3 storeys).
 - Apartment Block A (Part 3 and 4 Storeys): 5 no. one-bed apartments; 14 no. two-bed apartments; and 3 no. three-bed apartments. These proposed units have private balconies or terraces, and access to a community roof terrace of 112.4 sqm.
 - Apartment Block B (Part 3 and 4 Storeys): 5 no. one-bed apartments; 14 no. two-bed apartments; and 3 no. three-bed apartments. These proposed units have private balconies or terraces, and access to a community roof terrace of 112.4 sqm.
 - Apartment Block C (Part 3 and 4 Storeys): 4 no. one-bed apartments; 19 no. two-bed apartments and 4 no. three-bed apartments. These proposed units have private balconies or terraces, and access to a community roof terrace of 87 sqm.
 - 13 no. apartments above the proposed Neighbourhood Centre comprising; 4 no. own-door two-bed apartments; 3 no. shared-access one-bed apartments; and 6 no. shared-access two-bed apartments. These proposed units have private balconies or terraces.
 - 160 no. own-door apartments in 2- and 3- storey buildings comprising; 16 no. one-bed apartments; 78 no. two-bed apartments, 66 no. three-bed duplex apartments. These units will have private amenity areas in the form of terraces, balconies and/or rear gardens.
3. Provision of Neighbourhood Centre (ranging in height between 2 and 4 storeys) with 11 no. commercial units comprising: a convenience shop of 909 sqm (unit 1); 3 no. doctor/dentist/physio units of 120 sqm, 120 sqm and 90 sqm (units 6, 7, and 8, respectively); a café of 125 sqm (unit 4); a restaurant of 213 sqm (unit 9); and 5 no. shop/convenience services units of 112 sqm, 49 sqm, 171 sqm, 100sqm and 100 sqm (units 2, 3, 5, 10 and 11, respectively). The proposed Neighbourhood Centre includes an external roof terrace of 176 sqm.
4. Provision of a childcare facility (886 sqm) within the Neighbourhood Centre with capacity for in the order of 154 no. children.
5. Provision of 1,008 no. car parking spaces comprising 650 no. spaces for the proposed houses; 312 no. spaces for the proposed apartments; and 46 no. spaces to serve the Neighbourhood Centre.
6. Provision of 732 bicycle parking spaces comprising 536 no. secure residential spaces, 134 no. residential visitor spaces, and 62 no. spaces to serve the Neighbourhood Centre.
7. A series of 18 no. public open spaces and pocket parks are proposed throughout the residential development (2.613 ha net area).
8. Provision of an 8.31 ha amenity area adjoining the River Liffey.

9. Vehicular access to the proposed development from Great Connell road via a circa 350 metre section of the Newbridge Southern Orbital Ring Road (NSORR), including footpaths and cycle paths. It is proposed to upgrade the existing Great Connell Roundabout to a signalised junction and provide footpaths and cycle paths within the subject site along the Great Connell Road.
10. Proposed development facilitates future potential pedestrian, cycle and vehicular links to adjoining residential development and undeveloped lands.
11. All enabling and site development works, landscaping, boundary treatments, lighting, services and connections, including connection to permitted wastewater pumping station, waste management, ESB substations, compensatory flood storage and all other ancillary works above and below ground on a site of 27.64 ha.
12. A 7-year permission is sought.

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.

(see taken in charge drawing Appendix A appended to this document for extent of management company lands)

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., related 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 B.

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.*

1.3. Management of Public Open Space

The public areas of the development will be under a separate agreement with Kildare Co Co these will include parks areas within the development, linear park to bordering the river Liffey within the red line boundary and all roads, footpaths, and cycle ways. Refer to Appendix A for Public Authority Taking in charge drawings.

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

Measures	Description	Benefit
BER Certificates	A Building Energy Rating (BER) certificate will be provided for each dwelling in the proposed development which will provide detail of the energy performance of the dwellings. A BER is calculated through energy use for space and hot water heating, ventilation, and lighting and occupancy. It is proposed to target an A rating for the apartments this will equate to the following emissions.	Higher BER ratings reduce energy consumption and running costs
Fabric Energy Efficiency	The U-values being investigated will be in line with the requirements set out by the current regulatory requirements of the Technical Guidance Documents Part L, 'Conservation of Fuel and Energy for Dwellings'. All buildings will be NZEB compliant. Thermal bridging at junctions between construction elements and at other locations will be minimised in accordance with Paragraph 1.2.4.2 and 1.2.3.4 within the Technical Guidance Documents Part L	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.
Energy Labelled White Goods	The white good package (where provided) 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: <ul style="list-style-type: none"> • Oven - A plus • Fridge Freezer - A plus • Dishwasher - AAA • Washer/Dryer - B 	The provision of high rated appliances in turn reduces the amount of electricity required for occupants.
Internal Common Areas & External Lighting	Low energy luminaires and automatic controls such as motion sensors are to be provided for electric lighting to maximize efficiency in use. LED lamps will be preferred as far as is practical. Lighting will be provided to ensure a safe environment for pedestrians, cyclists and moving vehicles, to deter antisocial behaviour and to limit the environmental impact of artificial lighting on existing flora and fauna in the area.	Low energy lamps and automatic controls improve energy efficiency. Adequate lighting levels ensure safe environments.

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 NZEB Building standards. The specific combination from the list below will be decided on and then implemented to achieve the A2 BER Rating. All apartment units have been oversized to allow for in-unit plant, such as air source heat pump to be installed without affecting development standards.

Measures	Description	Benefit
Mechanical Ventilation Heat Recovery	Centralised mechanical ventilation will be provided to all dwellings to ensure that the air quality within the dwellings will be adequate. The inclusion of Heat Recovery Ventilation into the centralised ventilation system will be considered and assessed in order to minimise the energy usage within the dwelling.	Mechanical Heat Recovery Ventilation provides ventilation with low energy usage. The MVHR reduces overall energy and ensures a continuous fresh 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 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 the development, the use of Air Source Heat Pumps will be assessed to determine their technical and commercial feasibility. These systems extract heat energy from the outside air and, using a refrigerant cycle, raise the temperature of the heat energy using a refrigerant vapour compression cycle.	Air source heat pumps use electrical energy from the grid to drive the refrigerant cycle but do so extremely efficiently. Modern heat pumps will typically provide 2.5 to 4 times more heat energy to the dwelling than the electrical energy they consume.

Exhaust Air 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 within the dwelling from the air exhausted from wet areas and kitchen and, using a refrigerant cycle, raise the temperature of the heat energy using a refrigerant vapour compression cycle.	Air source heat pumps use electrical energy from the grid to drive the refrigerant cycle but do so extremely efficiently. Modern heat pumps will typically provide 3.5 to 5 times more heat energy to the dwelling than the electrical energy they consume.
E-car Charging Points	Ducting and on street infrastructure shall be provided from a local landlord distribution board to parking spaces identified. This will allow management company the option to install a number of E-car charging points to cater for E-car demands of the residences. This system operates on a single charge point access card. A full re-charge can take from one to eight hours using a standard charge point.	Providing the option of E-car charging points will allow occupants to avail of the ever-improving efficient electric car technologies.

2.2. Materials

The practical implementation of the Design and Material principles has informed the design of internal layouts, detailing of the proposed apartment buildings, and building facades. The façade materials will consist of brick, render, glazing, and pressed metal.

Measures	Description	Benefit
Daylighting to apartments	Where possible, as outlined in 'Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities' to have regard for quantitative performance approaches to daylight provisions 'outlined in guides like the BRE guide 'Site Layout Planning for Daylight and Sunlight' (2nd edition) or BS 8206-2: 2008 – 'Lighting for Buildings–Part2:Code of Practice for Daylighting' when undertaken by development proposers which offer the capability to satisfy minimum standards of daylight provision'.	Reduces the requirement, and therefore expense, for continuous artificial lighting.
Daylighting to circulation areas	Natural lighting provided via windows at both the front and rear elevations.	Reduces the requirement, and therefore expense, for continuous artificial lighting.
External Lighting	<p>The proposed lighting scheme within the development consists of 8m, 6m & 5m column mounted LED luminaires in locations as indicated on the drawings. The luminaires selected are the C U Phosco P863 & E950, this fitting was selected for the following reasons:</p> <ul style="list-style-type: none"> • Dark sky friendly, 0% upward light. • High performance photometrics. • Advanced thermal management. • Maximised savings on energy and maintenance costs. • 100% recyclable. <p>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. Additionally, all luminaires to be supplied pre-programmed to automatically dim to 75% 00:00 – 06:00 each night (U14 profile).'</p>	<p>Lighting will be designed to achieve the required standards, provide a safe environment for pedestrians, cyclists, and vehicular traffic, provide surveillance and limit the impact on the artificial lighting on surrounding existing flora and fauna. Having PECU allows for the optimum operation of lighting which minimizes costs.</p>

2.2.1. Buildings

Apartment Buildings are designed in accordance with the Building Regulations, in particular Part D 'Materials and Workmanship', which includes all elements of the construction. The Design Principles and Specification are applied to both the apartment units and the common parts of the building and specific measures taken include:

Measures	Description	Benefit
Implementation of the Design and Material principles to the design of the proposed development.	Materials have been selected with a view to longevity, durability and low maintenance with Consideration given to Building Regulations and include reference to BS 7543:2015 'Guide to Durability of Buildings and Building elements, Products and Components'.	Longevity, durability and low maintenance of materials.
Metal Cladding and/or Brickwork to the envelope	A range of complimentary brickwork and metal cladding has been selected to enhance the public realm through the creation of distinctive character areas. The robust materials have been chosen for their longevity and solid characteristics, to endure for the lifetime of the buildings.	Requires minimal maintenance and does not require regular replacement
Installation of factory finished aluminium / uPVC windows and doors	Fenestration has been designed with optimum thermal and daylighting factors considered. The necessity for thermally efficient windows and doors to meet a dwellings' energy requirements is essential for a whole-envelope approach to building fabric design. Frame colours have been proposed to compliment overall building / location character.	Requires minimal maintenance and does not require regular replacement
Installation of factory finished Precast steel / glass balcony railings	Apartment buildings are provided with private amenity spaces in the form of balconies and ground floor terraces. The balustrading and finish to these elements is designed for strength and protection in the first instance, while detailed design will ensure that these elevational elements provide a pleasing aesthetic.	Security and protection are paramount while ease and access to maintenance are achieved.

2.3. Landscape

Measures	Description	Benefit
Site Layout and Design	All on street parking spaces which are not being taken in charge are provided with permeable paving. The central open space is substantial and has a mixture of soft and hard landscaping.	SUDs drainage system and landscape maintenance preferable Attenuation reduces the burden on vulnerable rainwater goods. Fewer elements would require replacement or repair.
Hard Landscaping Materials	Sustainable, robust materials, with high slip resistance to be used for paving. Durable and robust equipment with emphasis on 'natural play' (e.g. play, exercise, fencing etc.) to be used throughout.	Robust materials and elements reduce the frequency of required repair and maintenance.
Soft Landscaping	A selection including native trees and planting is proposed. Hard and soft landscaped areas are balanced to ensure a quality public environment.	High quality soft landscaping improves the general quality of the environment for residents.

2.4. Waste Management

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

Measures	Description	Benefit
Construction and Operational Waste Management Plan	The application is accompanied by a Construction and Operational Waste Management Plan prepared by the applicant	The report demonstrates how the scheme has been designed to comply with best practice.
Storage of Nonrecyclable Waste and Recyclable Household Waste	Access to centralised bin storage areas is provided at grade adjacent to each apartment building / duplex block. Domestic waste management strategy: <ul style="list-style-type: none"> • 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.

Measures	Description	Benefit
Natural/Day Light	The buildings have been favourably orientated. 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.	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: <ul style="list-style-type: none"> • CCTV monitoring details • Secure bicycle stands • Routine access fob audits 	Help to reduce potential security/management costs.
Private Amenity Space	Provision of private amenity spaces in the form of gardens, balconies, and communal areas for apartment buildings provide compliant areas for the external enjoyment of dwellings and allow a space for play / interaction.	Facilitates interaction with outdoors, increasing health benefits.
Natural Amenity	A number of green spaces proposed throughout the scheme, connecting to a large active and passive area within the development, including access to the River Liffey.	Facilitates community interaction, socialising and play, resulting in improved wellbeing.

2.6. Management

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

Measures	Description	Benefit
Resident Information Packs	<p>Once a purchaser completes their sale, a homeowner box will be provided which will include:</p> <ul style="list-style-type: none">• 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 Developer which will typically provide information on contact details for the Managing agent, emergency contact information, transport links in the area and a clear set of rules and regulations.	<p>Residents will be as informed as possible so that any issues can be addressed in a timely and efficient manner.</p>

2.7. Transport

Measures	Description	Benefit
Access to Public Transport.	<p>Rail Services Newbridge Train Station is located on the main Dublin – Waterford rail service and is approximately a 25 minute walk from the site.</p> <p>Bus Services Bus stops on Newbridge Main Street are situated within a 20-minute walk of the subject development, with a regular Airport Bus link also in operation. With the opening of Ballyfarm Rd, as part of the proposed development within this area a new bus route will be included, which is 500m from the entry to the development.</p>	The availability, proximity, and ease of access to public transport services contributes to reducing the reliance on the private motor vehicle for all journey types.
Permeable Connections	There is provision of dedicated pedestrian and cycle infrastructure within the site. The upgrading and provision of new high-quality pedestrian and cyclist facilities form part of the works within the development site. These connect with existing paths on the wider urban network, subsequently providing convenient access to local services including shops, schools, restaurants and medical facilities.	Ensures long-term attractiveness of walking, and cycling to a range of local facilities. This strong infrastructure ensures that there will be a balance of transport modes used by future residents of the proposed development.
Cycle Links	There is currently cycle infrastructure in the immediate vicinity of the site, which is being enhanced with eh new link road, under construction. The provision of private secure & covered bicycle parking facilities for each apartment, together with quality short term and long-term parking requirements	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicle.
Bicycle Storage	The provision of secure bicycle parking facilities at grade service the entire site.	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicle.
E-car Facilities	<p>Ducting will be provided from a local landlord distribution board to designated E-car charging within the neighbourhood centre.</p> <p>There will also be the provision of E-Car charge units within each residential unit.</p>	To accommodate the growing demand for E-car which assist in decarbonising society and reducing oil dependency.

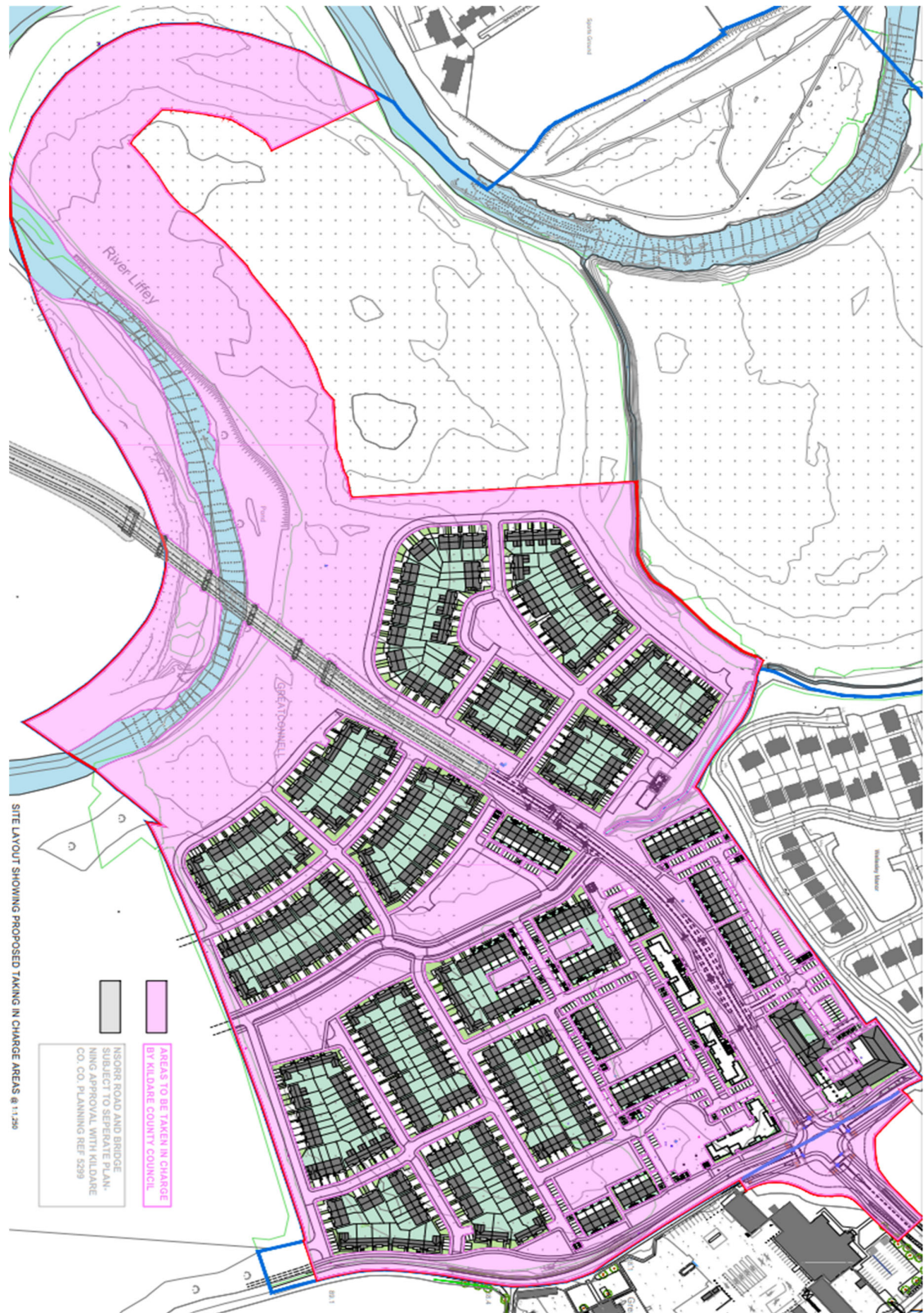
Appendix A

- **Property Management of the Common Areas of the Development Buildings**
- **Taking in charge drawing of Public Open Spaces**

Appendix A:Property Management of the Common Areas of the Development Buildings



Appendix A: Taking in charge drawing of Public Open Spaces



Appendix B

ITEMS INCLUDED IN A TYPICAL BIF

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

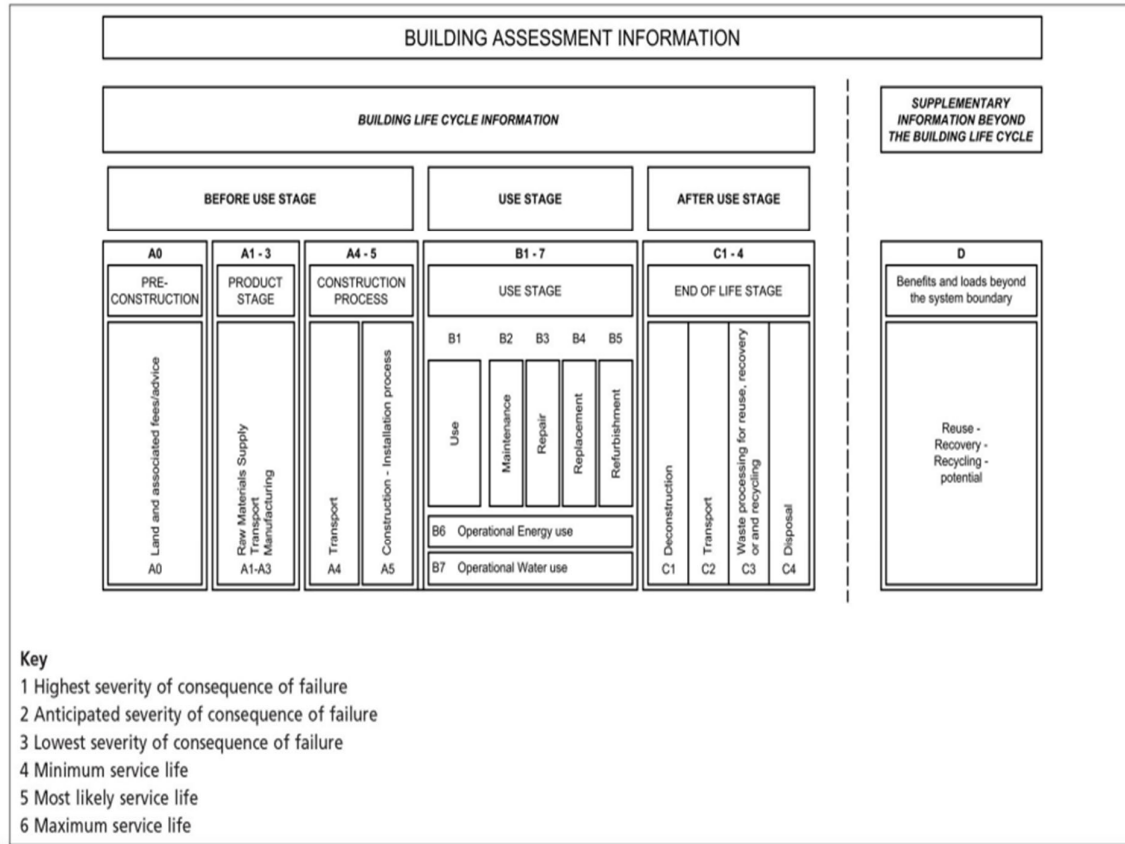
Building Investment Find (Sinking Fund)			
Ref	Element	Life Expectancy	Amount
1	Roofs		
	Replacement felt roof covering incl. insulation to main roofs/ overhaul to green roofs.	18	
	Replacement parapet details	18	
	Replacement/ repairs to fascias	18	
	Replace roof access hatches / roof lights	25	
	Specialist Roof Systems - Fall arrest	25	
	Overhaul waterproofing details to terraces / balconies	18	
2	Elevations		
	Recoat zinc / metal panels	25	
	Minor repairs and preparation for decorations of rendered areas	18	
	Replace exit/ entrance doors	25	
	Replace Rainwater goods	25	
	Recoat powder coated Finishes to balconies / Grills to Basement vents	20	
	Periodic replacement and overhauling of external fixings	5	
	Replace Balcony floor finishes	25	
3	Stair cores & lobbies (9 No. Cores)		
	Decorate Ceilings	7	
	Decorate Walls	7	
	Decorate Joinery	7	
	Replace fire doors	25	
	Replace carpets (stairwells & lobbies)	12	
	Replace entrance mats	10	
	Replace nosing's	12	
	Replace ceramic floors tiles Entrance lobbies	20	
	Fixed Furniture & Equipment - Provisional Sum	18	
4	M&E Services		
	General - Internal re-lamping	7	
	Replace Internal light fittings	18	
	Replace External light fittings (lights at entrance lobbies)	18	
	Replace smoke detector heads	18	

	Replace manual break glass units/ disabled refuge call points	18	
	Replace Fire alarm panel	18	
	Replace lift car and controls	25	
	Replace AOV's	25	
	Replace security access control installation	15	
	Sump pumps replacement	15	
	External Mains Water connection	20	
	Electrical Mains and Sub Mains distribution	20	
	Emergency Lighting	20	
	Overhaul and/or replace Waste Pipes, Stacks & Vents	20	
5	Exterior		
	External boundary treatments - Re-coat powder coated finish to railings	60	
	Replace external signage	20	
	Replace cobble lock areas	20	
	15-year overhaul of soft landscaping generally	15	
	Replace CCTV provision	12	
	External Handrails and balustrade	18	

Appendix C

Phases of the Life Cycle of BS7543; 2015

Figure 4 Phases of the life cycle



Appendix D

Fabric Requirements – Building Regulations Part L

Table 1 Maximum elemental U-value (W/m²K)^{1, 2}		
Column 1 Fabric Elements	Column 2 Area-weighted Average Elemental U-value (U_m)	Column 3 Average Elemental U-value – individual element or section of element
Roofs		
Pitched roof		
- Insulation at ceiling	0.16	0.3
- Insulation on slope	0.16	
Flat roof	0.20	
Walls	0.18	0.6
Ground floors ³	0.18	0.6
Other exposed floors	0.18	0.6
External doors, windows and rooflights	1.4 ^{4,5}	3.0
Notes: 1. The U-value includes the effect of unheated voids or other spaces. 2. For alternative method of showing compliance see paragraph 1.3.2.3. 3. For insulation of ground floors and exposed floors incorporating underfloor heating, see paragraph 1.3.2.2. 4. Windows, doors and rooflights should have a maximum U-value of 1.4 W/m ² K. 5. The NSAI Window Energy Performance Scheme (WEPS) provides a rating for windows combining heat loss and solar transmittance. The solar transmittance value g_{perp} measures the solar energy through the window.		