ARMSTRONG
FENTON
ASSOCIATES

PROJECT:

Proposed Large-scale Residential Development (LRD) in the townland of Boherboy, Saggart, Dublin 24.

APPLICANTS: **Kelland Homes Ltd & Evara Developments Ltd.**

REPORT: **Building Life Cycle Report**

DATE: **December 2025.**

Planning &
Development
Consultants

1.0 Introduction

This Building Life Cycle report has been prepared in support of a Large-scale Residential Development proposed by Kelland Homes Ltd and Evara Developments Ltd (the Applicants) for a new residential development, located in the townland of Boherboy, Saggart, Co. Dublin.

The proposed development provides for 611 no. residential dwellings comprised of:

- 306 no. 2, 3, 4 & 4-5 bed, 2 & 3 storey, detached, semi-detached & terraced houses,
- 133 no. 1, 2 & 3 bed duplex units in 12 no. 2-3 storey blocks, and
- 172 no. 1, 2 & 3 bed apartments in 5 no. buildings ranging in height from 4-5 & 5 storeys,

The proposed development also provides for a 2 storey childcare facility of c. 630sq.m, along with all associated site development works, open spaces etc. on a site area of c.18.7Ha.

The 2023 Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities (hereafter referred to as the *"Apartment Guidelines")* contain a requirement to include details on the management and maintenance of apartment schemes. This is set out in Sections 6.11 to 6.14 under "*Operation & Management of Apartment Developments*".

Specifically, Section 6.12 of the Apartment Guidelines requires that applications for apartment developments 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, as well as demonstrating 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 6.12 of the Apartment Guidelines. The report is broken into two sections as follows:

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

2.0 Proposed Development

The proposed development is as follows:

Kelland Homes Ltd. and Evara Developments Ltd. wish to apply for permission for a Large-scale Residential Development (LRD) on a site located at Boherboy, Saggart, County Dublin. To the immediate north of the site is the Carrigmore residential estate, to the west are agricultural lands and a single dwelling, to the east is the Corbally residential estate and Carrigmore Park, while to the south is the Boherboy Road.

The proposed development consists of 611 no. dwellings, comprised of 306 no. 2, 3, 4 & 4-5 bed, 2 & 3 storey, detached, semi-detached & terraced houses, 133 no. 1, 2 & 3 bed duplex units in 12 no. 2-3 storey blocks, and 172 no. 1, 2 & 3 bed apartments in 5 no. buildings ranging in height from 4-5 & 5 storeys. The proposed development also includes a 2-storey crèche (c.630m²).

Access to the development will by via one no. new vehicular access point from the Boherboy Road, along with new vehicular connections to adjoining developments at Corbally Heath to the east and Carrigmore Green to the north. Ten no. houses in the south-east part of the site will be accessed from Corbally Glade to the east. The proposed development includes for pedestrian and cyclist connections throughout the proposed development and accesses into adjoining lands at Carrigmore Park, Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north.

Private amenity space for the residential units is provided in the form of rear gardens for houses and ground floor terraces / upper floor balconies for apartments and duplex units. The proposed development provides for a total of c. 2.3Ha of public open space, and c. 4,750sq.m of communal open space associated with proposed development.

The proposed development provides for (i) all associated site development works above and below ground, including surface water attenuation & an underground foul sewerage pumping station at the northern end of the site, (ii) public open spaces (c. 2.3Ha), (iii) communal open spaces (c. 4,750sq.m), (iv) hard & soft landscaping and boundary treatments, (v) surface car parking (861 no. car parking spaces), (vi) bicycle parking (711 no. bicycle parking spaces), (vii) bin & bicycle storage, (viii) diversion of all existing overhead ESB lines underground, (ix) public lighting, and (x), plant / PV panels (M&E), utility services & 8 no. ESB sub-stations, all on an overall application site area of c.18.7Hha. In accordance with the South Dublin County Development Plan (2022-2028), an area of c.1.03Ha within the site is reserved as a future school site.

2.1 Design Concept

The main design characteristics of the proposed development are as follows, and in no particular order:

- Delivery of a new north-south link street connecting the Boherboy Road to the south with a new vehicular connection into Carrigmore to the north, in line with the Development Plan roads objective,
- Delivery of a new east-west link street connecting the proposed development with Corbally with a new vehicular connection, in line with the Development Plan roads objective,
- Reservation of a site (c. 1.03Ha) to accommodate a future, potential primary school,
- Creation of over 2Ha of public open space,
- New pedestrian and cyclist connections into the adjoining Carrigmore Park,
- Creation of buffer zones free from development from sensitive natural heritage features such as streams and hedgerows on the site,
- Pedestrian and cycle permeability through the site is prioritized in the design layout,
- Given the scale of the site, the development has been designed to cater for five distinct character areas which will ensure the development caters for individual character areas, each with their own sense of place and community.

We refer the reader to the enclosed Architect's Design Statement which provides details of the character areas. Each character area within the development has been carefully designed to possess a distinct identity, ensuring that it is visually different from neighbouring areas. This differentiation is achieved through several key design elements, including building typology, materials and finishes, the proportions and design of individual units, and the planning of open spaces. These factors work together to create a unique sense of place for each area, adding depth and variety to the overall site. The proposed development is split by a north-south link avenue, dividing the site into two architectural zones, each of which will be designed by a separate architectural practice, further enhancing the distinctiveness of each zone. There are five character areas distributed across the site, with each one featuring its own design style, diverse unit types, and a combination of materials and finishes. This variety helps to establish a clear "sense of place" as residents and visitors move through the development. As people walk through the residential streets, they will experience changes in the architectural environment, from one area to the next, providing a dynamic and engaging experience.

3.0 Section A

An Assessment of Long Term Running and Maintenance Costs as they would Apply on a Per Residential Unit Basis at the Time of Application

Property Management Company and Owner's Management Company (OMC)

3.1 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 running and maintenance costs of the common areas of the development are kept within the annual operational budget.

The property management company will enter into a contract directly with the Owner's Management Company (OMC) for the ongoing management of the built development. It is intended that this is a contract for a maximum of 5 years and in the form prescribed by the PSRA.

The property management will also have the following responsibilities for the apartment development once completed:

- Timely formation of an Owner's 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 MUD Act.
- Estate management.
- Third Party Contractors procurement and management.
- OMC Reporting.
- Accounting Services.
- Corporate Services.
- Insurance Management.
- After Hours Services.
- Staff Administration.

3.2.1 Service Charge Budget

The property management company has a number of key responsibilities, most notably, 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 by 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.

Notwithstanding the above, it should be noted that 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.

4.0 Section B

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

4.1 Energy and Carbon Emissions

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

Measure	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, lighting and occupancy. A Nearly Zero-Energy Building (NZEB) rating will be achieved in accordance with Part L 2019 (Housing) and Part L 2020 (Other than Housing) which set building fabric and energy performance requirements.	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 Technical Guidance Document Part L, "Conservation of Fuel and Energy Buildings other than dwellings". Thermal bridging at junctions between construction elements and at other locations will be minimised in accordance with Appendix D within the Technical Guidance Documents Part L. See below Table 1 of Part L, Building Regulations. All windows will be double glazed windows at minimum with a combined thermal transmittance not greater than 1.0W/m2K. All windows shall comply with BS EN ISO 10077-1: 2006 - 'Thermal performance of windows, doors and shutters. Calculation of thermal transmittance'. Building fabric will include insulation levels, sufficient to meet the Part L 2019 U-values.	Lower U-values and improved air tightness is being considered to help minimize heat losses through the building fabric, lower energy consumption and thus minimize carbon emissions to the environment.
Energy Labelled White Goods	Should the applicants provide a white goods package for the apartments, they will be A rated appliances to achieve a high energy efficiency rating. 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 would 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.
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. Public / external lighting will be provided to ensure 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 proposed lighting scheme within the development consists of c.6m pole mounted fittings as indicated on the drawings. The luminaires selected are from ASD Lighting chosen for the following reasons: ▪ Low Level lighting ▪ Minimal upward light spill ▪ Low voltage LED lamps	Low energy lamps and automatic controls improve energy efficiency. The site 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 fauna and flora in the area.

The following are the **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 Near Zero Energy Building (NZEB) standard, if required. The specific combination from the list below will be decided upon and then implemented to achieve an NZEB 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.

Measure	Description	Benefit
Natural Ventilation	Natural ventilation is being evaluated as a ventilation strategy to minimize energy usage and noise levels. Will be employed via rapid openings in the building i.e., windows. MVHR is required where the buildings air tightness is under 3	The main advantages of natural ventilation are: • Low noise impact for occupants and adjacent units • Completely passive therefore no energy required. • Minimal maintenance required. • Reduced environmental impact as minimal equipment disposal over life cycle. • Full fresh air resulting in healthier indoor environment
Mechanical Ventilation Heat Recovery	Centralised mechanical ventilation will be provided to 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. Waste air heat recovery is to be employed in apartments. Demand control extract ventilation to be employed in all houses. Heat recovery to be employed in the non-residential units / buildings. Both systems require air bricks linked to fresh air and dump air ducted spigot connections. Some units may require MVHR depending on size of units typically over 110sqm. BER, Part L, Part F and BCAR to be satisfied.	Mechanical Heat Recovery Ventilation provides ventilation with low energy usage. The MVHR reduces overall energy and ensures a continuous fresh air supply.
PV Solar Panels	PV solar panels may be provided, which converts the electricity produced by the PV system (which is DC) into AC electricity, and in order to meet the renewable energy contribution required by Part L of the Building Regulations and BER commitments. The panels are typically placed on the south facing side of the building for maximum heat gain and in some instances, can also be used to assist the heating system.	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.

Combined Heat and Power	Outside of one of the prescribed areas in the development plan.	N/A
Air Source Heat Pumps	As part of the overall energy strategy, 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.	▪ Reduced carbon emissions ▪ Low fuel costs ▪ No fossil fuel requirement Modern heat pumps will typically provide 4 to 5 times more heat energy to the dwelling than the electrical energy they consume.
E-car Charging Points	Within the external parking areas, ducting shall be provided from a local distribution board to parking spaces related to the multi dwelling units (duplexes and apartments). This will enable the management company the option to install several E-car charging points to cater for E-car demand of the residents. 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.

4.2 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, stone, glazing and pressed metal.

4.2.1 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:

Measure Description	Benefit
Daylighting and openable windows to areas of regular use and circulation	Avoids the requirement for continuous artificial lighting
Natural/Passive ventilation system to and openable windows to areas of regular use and circulation	Avoids costly mechanical ventilation systems and associated maintenance and future replacement
External paved and landscaped areas	All of these require low/minimal maintenance
Plant is located at undercroft / basement floor level for ease for access, except for any PV / solar panels which may be located on the roof	Allows for easier maintenance and replacements as necessary

4.2.2 Material Specification

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.

Implementation of the Design and Material principles to the design of the building envelope, internal layouts, facades and detailing has informed the materiality of the proposed development.

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 areas of the scheme, and their durability and performance are designed and specified in accordance with Figure 4: Phases of Life Cycle BS 7543:2015. 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 and pigmented render systems to envelope	Requires minimal maintenance and does not require regular replacement
Factory finished and aluminium (or similar) windows and doors and powder coated steel balconies	Requires minimal maintenance and does not require regular replacement

The proposed envelope of the buildings are a mix of brick and durable render finish / metal cladding, with high-performance double-glazed aluminium windows. The choice of materials also has a strong durability with minimal maintenance and upkeep requirements. Based on comparison with similar schemes developed, the proposed materials are considered durable and would not require regular replacement or maintenance.

Measure	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, lighting and occupancy. It is proposed to achieve NZEB rating in accordance with current standards/guidance.	Higher BER ratings reduce energy consumption and running costs

4.3 Landscaping

Element	Measure Description	Benefit
Site Layout and Design	Generous and high-quality mature landscaping, with landscape and pedestrian parks between residential buildings are proposed.	SUDs drainage system and landscape maintenance preferable
	The open spaces are substantial and have a mixture of soft and hard landscaping.	Attenuation reduces the burden on vulnerable rainwater goods.
	Significant tree planting and soft landscaping within public spaces.	Fewer elements would require replacement or repair.
	Sustainable Urban Drainage Systems are included in the proposals; please refer the Engineering Report prepared by Roger Mullarkey & Associates which forms part of this application. SuDS nature-based solutions include, green roofs (60% of all roofs) rain gardens, preamble paving, swales, tree pits, and finally an attenuation basin before discharging into the central ditch via a flow control devise and bypass separator.	Reduce pressure on public drainage infrastructure, improves water quality, enhanced biodiversity, and contribute to climate resilience.

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. High quality landscaping both hard surface (for the cycle /car parking and pavements) and soft landscaping with planting and trees. The landscaping will be fully compliant with the requirements for Part M / K of the Technical Guidance Documents and will provide level access and crossings for wheelchair users and pedestrians with limited mobility. Designated car parking including accessible car parking can reduce the travel distances for visitors with reduced mobility.	Requires ongoing maintenance significantly reduced through use of robust materials installed with proven details. Plenty of room for bicycles and pedestrians along with car spaces provide a good balance between pedestrians and car users. Wheelchair user-friendly
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.
Balcony & Decking Materials	Use of robust high-quality materials and detailing to be durable for bikes, play, etc.	Ensures the longevity.
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.

4.4 Waste Management

Measure	Description	Benefit
Construction and Operational Waste Management Plan	The application is accompanied by an Operational Waste Management Plan.	The report demonstrates how the scheme complies with best practice.
Storage of Non-Recyclable Waste and Recyclable Household Waste	Domestic waste management strategy: grey, brown and green bin distinction. Centralized bin storage areas are provided at grade within the apartment buildings / basement / undercroft areas. Competitive tender for waste management collection.	Helps reduce potential waste charges Easily accessible by all residents and minimises potential littering of the scheme.
Composting	Organic waste bins to be provided throughout	Helps reduce potential waste charges

4.5 Human Health and Wellbeing

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 / duplex buildings have been designed to optimise 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 Building Regulations, Technical Guidance Documents Parts K and M. The principles of universal design have also been applied to scheme, as demonstrated in the enclosed Architectural & Urban Design Statement.	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 ▪ Secure bicycle stands / storage ▪ Overlooked communal open spaces	Helps to reduce potential security/ management cost
Natural Amenity	Large areas of public open space are dispersed throughout the development. Existing trees and hedgerows are retained / augmented and developed. Connections to adjoining lands are facilitated.	Facilitates community interaction, socialising and play - resulting in improved wellbeing

4.6. Management

Consideration has been given to ensuring that homeowners have a clear understanding of their 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 the property. Typically, it includes details of the property such as MPRN and GPRN information in relation to connection with utilities and communication providers. Contact details for all relevant suppliers and user instructions for appliances and devices in the property. 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.

4.7 Transport

Measure	Description	Benefit
Access to Public Transport	There are numerous bus operators providing a bus service locally and within walking distance to the site. Measured from the centre of the site, the nearest stop, located on the N82 Citywest Road, is located approximately 670m away, with the following bus services being available: route no.s 65, 65b, 69, 77a, W62 and S8. Measured from the centre of the site, the Luas Red Line (Saggart/Tallaght to Conolly/The Point) calls at the Fortunestown Luas Stop which is located approximately 950m north of the subject site. The Luas has a major terminus at the Square, Tallaght which is also a major terminus for Dublin Bus. The Square is served by Dublin Bus with several local routes.	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	The development facilitates potential future interconnections by pedestrian and cycling routes to adjoining lands / environs.	Ensures the long term attractiveness of walking and cycling to a range of local education, retail and community facilities and services.
Bicycle Storage	Secure high quality secure bicycle parking both for short and long term parking requirements	Accommodates the uptake of cycling and reducing the reliance on the private motor vehicle.
ECAR facilities	Ducting provided from a local landlord distribution board to designated e-car charging car spaces.	To accommodate the growing demand for e-cars which assist in decarbonising society and reducing oil dependency

Appendix A

Figure 1- TGD Part L 2019, Table 1

Table 1	**Maximum elemental U-value (W/m^2K)[1, 2]**	
Column 1 Fabric Elements	**Column 2 Area-weighted Average Elemental U-value (Um)**	**Column 3 Average Elemental U-value – individual element or section of element**
Roofs Pitched roof - Insulation at ceiling - Insulation on slope Flat roof	 0.16 0.16 0.20	 0.3
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^2K.*
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.*

Appendix B

ITEMS INCLUDED IN A TYPICAL BIF

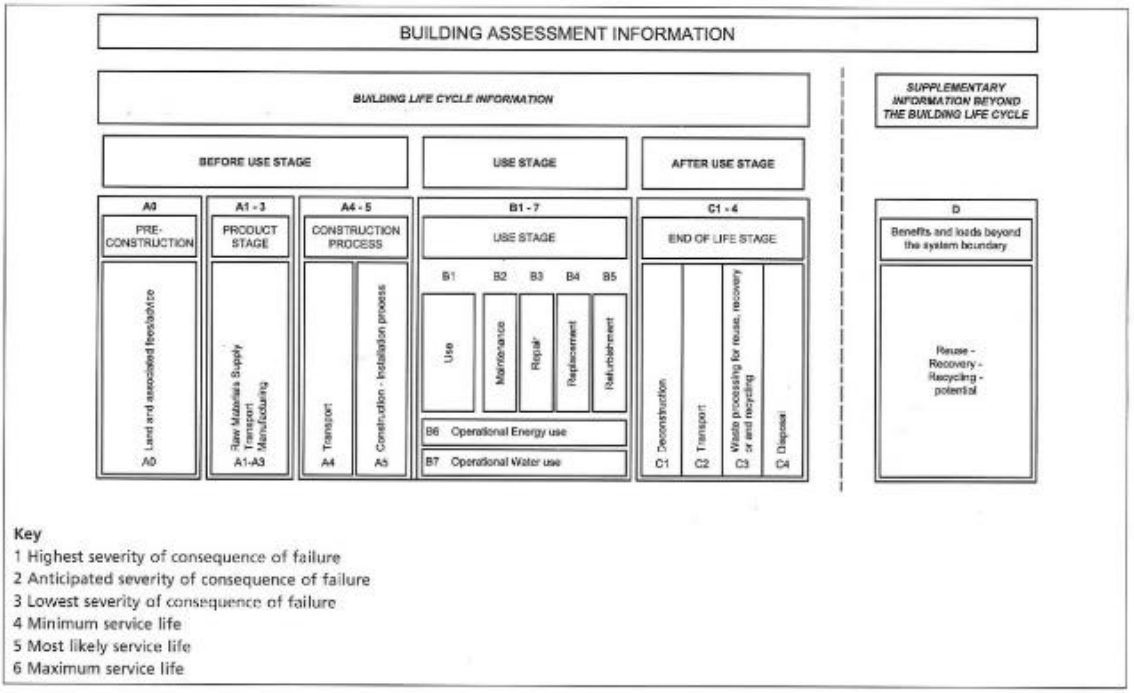
The BIF table below illustrates what would be incorporated for the calculation of a Sinking Fund.

Building Investment Fund (Sinking Fund) Calculations	
Building Element	**Minimum Service life (years) at Service Commencement Date***
Structure/ sub structure	60
Floor Structure	60
Roof Structure	60
Roof covering – up to 5 degree pitch	40
Roof covering – over 5 degree pitch	40
Windows	40
External wall/ cladding inc. openings	40
External doors	40
Internal partitions inc. openings	40
Internal finishes	15
Ceilings	40
Internal doors	30
Internal fixtures and fittings	15
Sanitary fittings	20
Kitchen sanitary fittings	20
Built-in furniture	20
Mechanical plant	As CIBSE Guide, Vol. B
Electrical plant	As CIBSE Guide, Vol. B
Engineering services distribution systems	As CIBSE Guide, Vol. B
CCTV installations	20
Fire installations	20
Security installations	20
Communications installations	20
Lifts	15
Underground drainage	60
External finishes -decorative coatings	25
External fences	30

Appendix C

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