Building Life Cycle Report

RE: **CREAMFIELDS (former CMP Dairy site)**
TRAMORE/KINSALE ROAD, CORK

STRATEGIC HOUSING DEVELOPMENT

APPLICANT: **WATFORE LIMITED**

February 2022

Contents

The Team:

• Applicant	Watfore limited
• Architects	Reddy Architecture + Urbanism
• Town Planning	Coakley O'Neill Town Planning Ltd
• Landscape	Cunnane Stratton Reynolds
• Engineering	Arup
• Transport Engineering	Arup
• Energy and Sustainability	EDC Engineering
• Daylight, Sunlight and Shadowing	Arup
• Ecology and Appropriate Assessment Screening	Arup
• Wind Microclimate Assessment	B Fluid
• Environmental Impact Assessment Report	Arup
• Waste Management Consultant	Arup
• Engineer (Fire Consultant)	Daire Byrne & Associates

INTRODUCTION

The Sustainable Urban Housing; Design Standards for New Apartments – Guidelines for Planning Authorities were published in March 2018 (hereafter referred to as the Apartment Guidelines). The Apartment Guidelines introduced a requirement to include details on the management and maintenance of apartment schemes. This is set out in Section 6.11 to 6.14 – "Operation & Management of Apartment Developments", Specifically Section 6.13.

Section 6.13 of the Apartment Guidelines 2018 requires that apartment applications shall:

> *"include a building lifecycle report, which in turn includes an assessment of long term running and maintenance costs as they would apply on a per residential unit basis at the time of application"*
>
> *"demonstrate what measures have been specifically considered by the proposer to effectively manage and reduce costs for the benefit of residents."*

This Building Life Cycle Report document sets out to address the requirements of Section 6.13 of the Apartment Guidelines. The report is broken into two sections as follows:

Section 01:

An assessment of long term running and maintenance costs as they would apply on a per residential unit basis at the time of application

Section 02:

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

DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed development will consist of a Strategic Housing Development of 609no. dwellings (561no. apartments (of which 257no. are Build To Rent) and 48no. townhouses) in 12 no. buildings of between 1-15 storeys in height over ground, to include a coffee kiosk; gym; café; retail use; creche and community hub; public square; car parking; cycle parking; and all associated site development, infrastructural, and landscaping works on the site of the former CMP Dairies site, Kinsale Road and Tramore Road, Cork.

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 set in place in a timely manner for the development and that the operational and maintenance costs of the common areas of the development are kept within the agreed Annual operational budget.

There will be a structured management approach to the entire scheme. In essence there will be at least two Management Companies across the entire which will be responsible for:

a) The Common Areas throughout the estate; and

b) Each individual block.

There will be an Estate Management Company which will be responsible for all common areas including roads, landscaping, lighting, insurances and car parking as well as combined waste management system for the entire estate.

There will then be an individual Management Company for each specific building on the site who will be responsible for the maintenance, repair and day-to-day management of each individual building.

The delineation of responsibility will be created as and when individual blocks are developed within the scheme to ensure that there is a consistency of approach across the entire scheme for the management which will include house rules with regard to noise, anti-social behaviour, treatment of exterior façade to ensure a consistent and the delivery of a positive residential environment for everybody who lives and works on the site.

There will be a dedicated Estate Manager operational on the site at all times within each building there will then be a Resident Management Team.

The Resident Management Teams' key responsibility will be for the management of day-to-day operations including customer engagement, both in person and electronically. There will be staff on site during the week and the main hours will be 8.30am-8.30pm Monday-Friday; 10am-4pm Saturday; Sunday & Bank Holidays 11am-2pm.

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 3 years and in the form prescribed by the PSRA.

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

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

- Preparation of annual service charge budget for the development common areas.

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

1.2. Service Charge Budget

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

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

SECTION 02

MEASURE SPECIALLY CONSIDERED BY THE PROPOSED TO EFFECTIVELY MANAGE AND REDUCE COSTS FOR THE BENEFIT OF RESIDENTS

2.1. Energy Performance and Carbon Emissions

A Building energy Rating (BER) certificate will be provided for each apartment, duplex apartment and Duplex townhouse, which will provide detail of the energy performance and carbon emissions associated with each of the dwellings. It is proposed to target a BER Rating for each apartment of A3. This will equate to the following emissions:

A3 – 25-50 kWh/m2/yr. with CO2 emissions approx. 10 kgCO2/m2/yr.

The following table outlines the proposed passive and active, energy and carbon emission reduction measures which will directly benefit occupants in terms of reducing operational costs.

<table>
<tr><th>Measure</th><th>Description</th><th>Benefit</th></tr>
<tr><td>Building Fabric Efficiency</td><td>The U-Value of a building element is a measure of the amount of heat energy that will pass through the constituent element of the building envelope. Increasing the insulation levels in each element will reduce the heat lost during the heating season

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

<table>
<tr><th colspan="3">Table 1 Maximum elemental U-value (W/m²K)[1, 2]</th></tr>
<tr><th>Column 1
Fabric Elements</th><th>Column 2
Area-weighted Average Elemental U-value (Um)</th><th>Column 3
Average Elemental U-value – individual element or section of element</th></tr>
<tr><td>Roofs

Pitched roof
- Insulation at ceiling
- Insulation on slope

Flat roof</td><td>

0.16
0.16

0.20</td><td>

0.3</td></tr>
<tr><td>Walls</td><td>0.18</td><td>0.6</td></tr>
<tr><td>Ground floors[3]</td><td>0.18</td><td>0.6</td></tr>
<tr><td>Other exposed floors</td><td>0.18</td><td>0.6</td></tr>
<tr><td>External doors, windows and rooflights</td><td>1.4[4,5]</td><td>3.0</td></tr>
</table>

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

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

In order to ensure that a sufficient level of air tightness is achieved, air permeability testing will be specified, with the responsibility being placed on the main contractor to carry out testing and achieve the targets identified in the tender documents.

A design air permeability target of 3 m3/m2/hr has been identified</td><td>Reduction in the consumption of fuel and the associated carbon emissions and operating costs.</td></tr>
</table>

	Air testing specification will require testing to be carried out in accordance with: BS EN 13829:2001 'Determination of air permeability of buildings, fan pressurisation method' CIBSE TM23: 2000 'Testing buildings for air leakage'	
Lighting Efficiency	Energy-efficient lighting will be implemented throughout the development to achieve the appropriate light levels, as recommended by CIBSE. The design of lighting systems shall ensure that lighting is only used when required, and also that only the specific area where lighting is needed.	Reduction in the consumption of electricity and the associated carbon emissions and operating costs.
Sanitary ware	Showers are proposed with a max flow rate at 3 Bar to be no greater than 6 litres per minute. Bath volume to be no greater than 150 litres	Reduction in the consumption of potable water and energy associated with domestic hot water heating
Energy Labelled White Goods	White goods provider by the developer will be have a high energy rating.	Reduction in the consumption of electricity and the associated carbon emissions and operating costs.

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

Measure	Description	Benefit
Heat Pumps	The general principal of heat pump technology is the use of electrical energy to drive a refrigerant cycle capable of extracting heat energy from one medium at one temperature and delivering this heat energy to a second medium at the desired temperature. The efficiency of any heat pump system is measured by its coefficient of performance (CoP). This is a comparison between the electrical energy required to run the heat pump and the useful heat output of the heat pump, e.g. a heat pump requiring 1kW of electrical power in order to deliver 3kW of heat energy has a CoP of 3.0. Space heating to each apartment/townhouses will be provided by Exhaust Air Heat Pumps (EAHP). The proposed exhaust air heat pump supplies low temperature hot water to the apartment/townhouse radiators. The heat pump will also provide hot water to a built-in water tank. The hot water is produced by a heat exchange with the extracted warm air from the apartment/townhouse wet rooms. An alternative approach is the use of electric radiator using the Dimplex Electric system. .	Reduction in the consumption of fuel and the associated carbon emissions and operating costs.
Condensing Gas Boilers	Condensing gas boilers are being considered in conjunction with renewable technologies as they have a higher operating efficiency standard boilers. Condensing boilers utilize heat losses from the boiler exhaust flue gases to preheat the circulating heating water which typically results in an operating efficiency in excess of 90%. Space heating to the community facilities (gym, café etc.) shall be provided by a small central LPHW system which will comprise of a high efficiency gas boiler, district heating network and panel radiators	Reduction in the consumption of fuel and the associated carbon emissions and operating costs.
Mechanical Ventilation Heat Recovery	Mechanical heat recovery ventilation (MVHR) will provide ventilation to each apartment. MVHR provides tempered external fresh air to occupied spaces and extract ventilation from rooms with "Bad Air" such as Bathrooms, utility stores etc.	Reduction in the consumption of fuel and the associated carbon emissions and operating costs.

	Heat is recovered from exhaust air streams and transferred to the fresh air stream negating the requirements to use heating energy to heat incoming cold external fresh air. Mechanical ventilation to each apartment/townhouse will be provided by Exhaust Air Heat Pumps. An alternative approach is the use of a Mechanical Ventilation Heat Recovery (MVHR) unit. High-efficiency heat recovery system will be employed on appropriate air systems in order to minimise associated energy use. Mechanical ventilation to the community facilities (gym, café etc.) a high-efficiency heat recovery system will be employed on appropriate air systems in order to minimise associated energy use.	Increases comfort conditions for occupants Prevents mould growth.
Photovoltaic (PV) Panels	PV Panels are capable of generating direct current electricity from the sun's energy, which can then be converted to alternating current and used within the building. They are generally a "maintenance free" technology as there are no moving parts. They also typically have a 20-year manufacturer's guarantee on electrical output and can be expected to operate effectively for 30 years or more. Capital costs have also reduced significantly in recent years due to worldwide increase in production levels. They are adaptable and scalable in that the amount installed can be selected to suit the budget available. The energy balance for this high density residential scheme means that Exhaust Air Heat Pumps and PV panels or the Dimplex electric system and PV panels to meet the NZEB requirements would be the most practical option for meeting compliance with the regulations. The use of the PV can also be used to supply energy back to the grid.	Reduction in the consumption of electricity and the associated carbon emissions and operating costs.
ECAR Charging Points	Ducting shall be provided from local distribution boards to designated E-Car charging car park spaces within the basement car park. This will enable the management company the option to install a number of E-Car charging points to cater future E-Car demand of residents	Providing the option for E-Car charging points will futureproof the development.

2.2. Materials

The practical implementation of the Design and Material principles has informed design of building facades, internal layouts and detailing of the proposed apartment buildings.

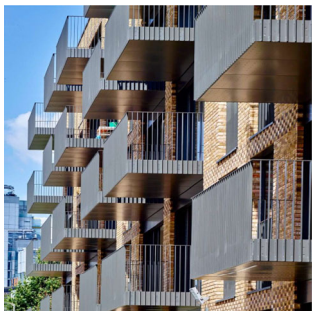
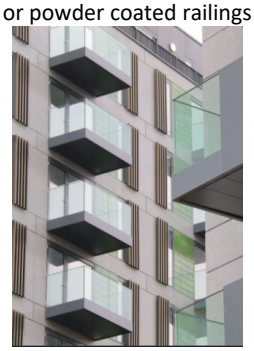
2.2.1. Buildings

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

Measure Description	Benefit
Daylighting to residential circulation areas where possible	Avoids the requirement for continuous artificial lighting
Natural/Passive ventilation system to residential circulation areas where possible	Avoids costly mechanical ventilation systems and associated maintenance and future replacement.
External paved and hard landscaped areas	All of these require low/minimal maintenance

2.2.2. Material Specification

Measure Description	Benefit
Consideration is given to the requirements of the Building Regulations and includes reference to BS 7543:2015, 'Guide to Durability of Buildings and Building elements, Products and Components', which provides guidance on the durability, design life and predicted service life of buildings and their parts. All common parts of the proposed Apartment buildings and, the durability and performance of these are designed and specified in accordance with Figure 4; Phases of the Life Cycle of BS7543; 2015. (Please see Appendix A 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 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 , limited areas of self coloured render, 	Requires no on-going maintenance.

Use of factory finished Aluminium windows doors and curtain walling to stair cores 	Requires no on-going maintenance.
Use of either projecting Galvanised Steel balconies with Powder coated finish or Recessed Balconies with Composite self finished board for deck of the balcony. Guarding to include fully glazed or powder coated railings  	Requires no on-going maintenance.

2.3 Landscape

Measure	Description	Benefit
Site Layout & Landscape design	Generous and high-quality landscaping utilising semi-mature to mature tree species, shrub planting and dense groundcovers. Species are chosen for compatibility with available root and canopy space, aspect is also a guiding consideration. The objective is to enhance biodiversity whilst providing year-round visual interest and high-quality residential environments.	Natural attenuation, reduced surface water runoff from site and increased biodiversity.
Paving and Decking materials	Use of robust, high-quality and high slip-resistance materials throughout the development.	Required ongoing maintenance significantly reduced through use of robust materials installed with proven details.
Materials	Sustainable, robust materials with high slip-resistance to be used for paving. Durable and robust street furniture used throughout	Robust materials and elements reduce the frequency of required repair and maintenance.
Sustainable drainage	Use of a 40-60mm deep combined drainage/reservoir board across podium deck to Town square	Drainage board retains water for planting rootzones, optimising the efficiency of irrigation systems and reducing run-off.

Planting details	Proven tree-staking and underground guying details provided. Shrub, hedging, herbaceous and lawn installation details also provided.	Correctly installed planting will develop into well established and robust soft landscaping, reducing future maintenance and replacement of failures.

2.4 Waste Management

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

Measure	Description	Benefit
Operational Waste Management Plan	This application is accompanied by an Operational Waste Management Plan prepared by Arup	The report demonstrates how the scheme has been designed to comply with local, regional, and national waste legislation along with current best practice.
Storage of Non-Recyclable Waste and Recyclable Household Waste	Inclusion of centralised waste storage areas, with sufficient space to accommodate a biweekly collection of waste containers.	Easily accessible by all residents, minimises potential littering of the development, reduces potential waste charges and does not restrict waste contractor selection.
	Domestic waste management strategy: General waste, mixed recyclable, and organic bin separation.	Helps reduce potential waste charges and does not restrict waste contractor selection.
	Waste storage areas with controlled access.	Reduces potential for fly tipping by residents and non-residents.
	Well signed waste storage rooms and containers.	Help reduce potential cross contamination of waste and reduces waste charges.
Composting	Organic waste containers to be provided in waste storage areas.	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, layout and separation distances of the building blocks have been designed to optimize the ingress of natural daylight/ sunlight to the proposed dwellings to provide good levels of natural light.	Reduces reliance on artificial lighting thereby reducing running costs.
Accessibility	All units will comply with the requirements of Building regulations Parts M and K.	Reduces the level of adaptation, and associated costs, potentially necessitated by residents' future circumstances.
Security	The scheme is designed to incorporate passive surveillance with the following security strategies available for adaptation into the design: • CCTV monitoring details • Secure bicycle stands – covered by CCTV • Controlled Access to individual circulation cores • Controlled access between Public Spaces and Residents Communal Spaces • Routine access fob audits • Appropriately lit external spaces.	Aids in reducing potential security/management costs. Enhances safety for residents and visitors.
Natural Amenity	The proposed scheme has High Quality Public Open Space throughout the site for the residents shared internal services and amenities.	Facilitates community interaction and socialising resulting in improved wellbeing. Proximity and use of external green spaces promotes a healthy lifestyle. External spaces being provided separately for residents (communal courtyards & private balcony's) and public (Quality Public open Space)

2.6 Management

Consideration has been given to ensuring the residents have a clear understanding of the subject property.

Measure	Description	Benefit
Home User Guide	Once a purchaser completes their sale, a homeowner pack 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 kept as informed as possible so that any issues can be addressed in a timely and efficient manner.

2.7 Transport

Measure	Description	Benefit
Access to Public Transport (Bus Services)	The proposed development is located to the south of Cork city centre. there are a number of bus routes in close proximity to the proposed site including the 203, 206 an d 219 routes serving the city and suburbs including C.I.T, Mahon and Douglas. It takes less than 10 minutes to walk from the site to bus stop on Tramore Road and less than 20 minutes to Evergreen Road and South Douglas Road stops. It takes less than 5 minutes to walk from the Black Ash Park and Ride on Mick Barry Road to the development. There is an existing footpath that connects the bus stop to the development site and at the junction of Mick Barry Road to Kinsale Road traffic signals are available which provides pedestrian phasing in the signal cycle.	These bus services provide access to a range of destinations nearby and to Cork city centre transport hubs . The proximity, frequency and range of destinations served by these local bus services enhance the accessibility levels of the proposed residential development in addition to providing a viable and practical sustainable alternative to journeys undertaken by private motor car.
Access to Public Transport (Rail)	Kent Station to the east of Cork city centre has high frequency high capacity intercity rail services, particularly to destinations on the Cork to Dublin and Cork to Limerick / Galway rail lines which travel via Limerick Junction.	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 and subsequent maintenance of dedicated pedestrian infrastructure on-site provides connectivity with the surrounding local area including local transport hubs. Cycle lanes are available currently on site on Kinsale Road connecting to the city centre and the e N27 (Airport Road) south of the junction with the N40. The development proposes to create a cycle lane to along the Tramore to the South within the site boundary which will link the Tramore Road / Kinsale Road junction with the existing cycle lane that commences further along Tramore road to the West of the site boundary. There are also significant improvement of the cycle route network proposed for Cork City by CMATS. A primary cycle route is proposed along Kinsale Road. This route forms part of a strategic route linking Cork Airport to the south, via cycle routes on the N27 to the City Centre via Kinsale Road, Douglas Road and a variety of other routes. This route would be a great asset for the proposed development due to its strategic connection it provided to both the Airport and the City Centre. It however also provides access via the wider proposed primary network to University College Cork, various hospitals, schools, shopping areas and other services.	Ensures the long-term attractiveness of walking and cycling to local shopping districts and employment locations within the area.
Bicycle Storage	The provision of high-quality secure bicycle parking facilities, for both short term and long-term parking requirements. Cycle parking spaces are provided throughout the scheme in accordance with the “Standards for Cycle Parking and Associated Cycling Facilities for New Developments, January 2018”.	Accommodates the uptake of cycling and reduces the reliance on the private motor vehicle for both residents and guests.
ECAR Facilities	Car parking spaces will include electrical charging points and are provided within the Basement car-park.	To accommodate the growing demand for ECARS which assist in decarbonising society and reducing oil dependency.
Car Sharing	The scheme will include designated Car Club & GoCar shared spaces for the exclusive use of the residents.	Reduces the reliance on private motor Vehicle ownership

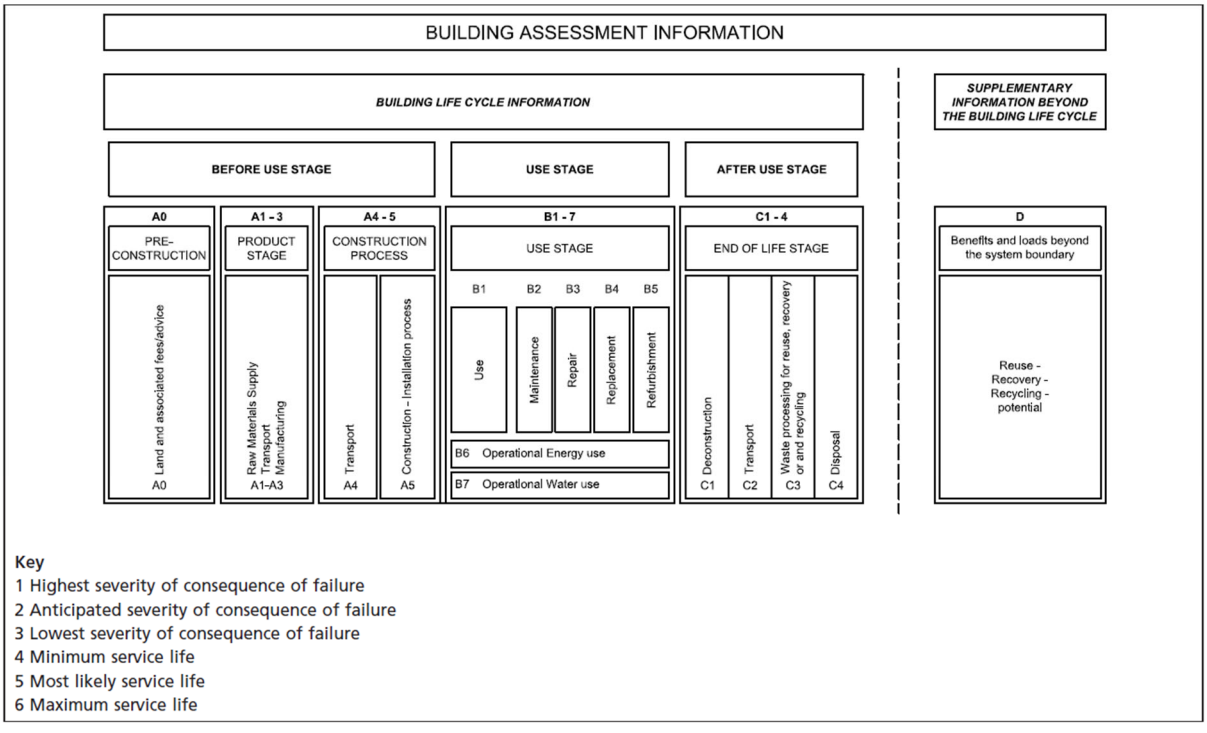
APEENDIX A

BS 7543:2015

BSI Standards Publication

Guide to durability of buildings and building elements, products and components

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