# BUILDING LIFE CYCLE REPORT

*Belcamp – Residential Development*

*DCC Lands at Belcamp, Malahide Road, Dublin 17*

*Prepared for Gerard Gannon Properties*

# Table of Contents

ABP Inspector's report makes the following recommendations for the additional documentation.

*"2. A report that specifically addresses the proposed materials and finishes to the scheme including specific detailing of finishes, the treatment of balconies in the apartment buildings, landscaped areas, pathways, entrances, boundary treatment/s and neighbourhood/commercial centre. Particular regard should be had to the requirement to provide high quality and sustainable finishes and details which seek to create a distinctive character for the development. The documents should also have regard to the long-term management and maintenance of the proposed development and a life cycle report for the apartments in accordance with section 6.3 of the Sustainable Urban Housing: Design Standards for New Apartments (2020)."*

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**REFERENCE NUMBER = ABP-311570-21**

**BELCAMP DCC LANDS – PROPOSED DEVELOPMENT DESCRIPTION**

The Development is situated on a 17.5 Hectare site, which slopes down approximately 4m from the south to the north boundaries.

The proposed number of units is 1230 apartments over a range of 1 to 9 floors, with a proposed density of 70.3 units to the hectare.

The proposed blocks are orientated parallel to the existing hedgerows along a North-South axis which allows for predominantly East and West facing apartments. This layout also allows for views through the site from R139 to the landscaping beyond. Duplex units on Street Level and the Entrance Lobbies, are strategically located along the North -South axis to create an active street front.

Each of the Blocks has got a communal Podiums, creating courtyard style Outdoor Amenity spaces above, with car parking, bicycle parking, bin stores and service rooms located underneath.

The number of levels varies throughout the scheme, with the top floors of the six Blocks are set back to reduce massing, and Sedum-based Green Roof systems are proposed for the roof level of all the Blocks.

**INTRODUCTION TO BUILDING LIFECYCLE REPORT**

The purpose of this report is to provide an initial 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 to effectively manage and reduce costs for the benefit of the residents.

This Building Lifecycle Report has been developed on foot of newly revised guidelines for Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities) under Section 28 of the Planning and Development Act 2000 (as amended).

The relevant direction stated in the Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities) can be found in section 6.11 to section 6.14 and are as follows.

*"**Operation and Management of Apartment Developments***

*6.11 Certainty regarding the long term management and maintenance structures that are put in place for an apartment scheme is a critical aspect of this form of residential development. It is essential that robust legal and financial arrangements are provided to ensure that an apartment development is properly managed, with effective and appropriately resourced maintenance and operational regimes.*

*6.12 In this regard, consideration of the long-term running costs and the eventual manner of compliance of the proposal with the Multi- Unit Developments Act, 2011 are matters which should be considered as part of any assessment of a proposed apartment development.*

*6.13 Accordingly, planning applications for apartment development 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.*

*6.14 The Multi-Unit Developments Act, 2011 (MUD Act) sets out the legal requirements regarding the management of apartment developments. In this regard it is advised that when granting permission for such developments planning authorities attach appropriate planning conditions that require:*

- *Compliance with the MUD Act,*
- *Establishment of an Owners Management Company (OMC) and:*
- *Establishment and ongoing maintenance of a sinking fund commensurate with the facilities in a development that require ongoing maintenance and renewal."*

**SECTION 1 – PROPERTY MANAGEMENT**

## 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. 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 in place for a period of time and form prescribed by the PSRA's best practice.

The PMC – Property Management Company has the following duties once the development has been constructed.

- *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 several 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 BIF document has been included in appendix A to illustrate some of the items/ works which are to be assessed in the report. Time periods and schedules for works are to be formulated by the property management company and agreed by the OMC for the benefit of the residents.

**SECTION 2 – OUTLINE SPECIFICATION**

The following section of this document reviews the outline specification set out for the Strategic Housing Development scheme on Dublin City Council Lands at Belcamp, Malahide Road, Dublin 17, and explores the practical implementation of the design and material principles which has informed the design of building roofs, façades, internal layouts and detailing of the proposed development.

Please note that detailed specifications of building fabric and services have not been provided at this stage. This report reflects the limited information available to WILSON ARCHITECTURE at the date of this issue. For any elements where information was not available, typical examples have been provided of building materials and services used for schemes of this nature and their associated lifespans and maintenance requirements. All information is therefore indicative subject to further information at detailed design stage.

As the building design develops this document will be updated and a schedule will be generated from the items below detailing maintenance and replacement costs over the lifespan of the materials and development constituent parts. This will enable a robust schedule of building component repair and replacement costs which will be available to the property management company so that running and maintenance costs of the development are kept within the agreed annual operational budget.

## 2.1. ENERGY PERFORMANCE AND CARBON EMISSIONS

The core tenets and aims of 'The European Performance of Buildings Directive 2010' have been integrated into Irish legislation in the form of TGD Part L (2021) and the requirement to achieve an NZEB energy rating for new residential developments. A Building energy Rating (BER) certificate will be provided which will provide detail of the energy performance and carbon emissions associated with the dwellings. It is proposed to target a BER Rating for each apartment of A2/A3 which will situate the developments energy performance within the NZEB classification and thus comply with the relevant legislation governing this aspect of the development. This will equate to the following emissions:

A2 – 25-50 kWh/m2/yr. with CO2 emissions approx. 10 kgCO2/m2/yr.

A3 – 51-75 kWh/m2/yr. with CO2 emissions approx. 12 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.<br><br>It is possible to exceed the requirements of the current building regulations. The current target U-Values are identified below:<br><br>
<table>
<tr><th>Element</th><th>Required U-values for New Buildings (W/m²k)</th><th>Target U-values for this development (W/m²k)</th></tr>
<tr><td>Roof</td><td>0.20</td><td>0.15</td></tr>
<tr><td>External Walls</td><td>0.18</td><td>0.18</td></tr>
<tr><td>Ground Floors</td><td>0.18</td><td>0.15</td></tr>
<tr><td>Glazing</td><td>1.40</td><td>1.40</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.<br><br>With good design and strict on-site control of building techniques, infiltration losses can be significantly reduced.<br><br>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.<br><br>A design air permeability target of 3 m³/m²/hr has been identified<br><br>Air testing specification will require testing to be carried out by an independent third party (National Standards Authority of Ireland or equivalent certification body).</td><td>Reduction in the consumption of fuel and the associated carbon emissions and operating costs</td></tr>
<tr><td>Lighting Efficiency</td><td>It is proposed to provide 100% of lighting outlets to be low energy (LED)</td><td>Reduction in the consumption of electricity and the associated carbon emissions and operating costs.</td></tr>
<tr><td>Air Source Heat Pump Per Apartment</td><td>Conventional air source heat pumps per apartment have been incorporated into this development by situating internal condensers in the plant cupboard of each apartment unit.<br><br>Aside from the environmental benefits of heating homes with an Air source heat pump rather than for example a direct electric heating system heat source, there are substantial savings to be made when this system is employed with an air-tight approach to building detailing and construction.<br><br>With lower energy usage within buildings; they have become increasingly airtight. This increased airtightness while providing lower energy levels can lead to problems because stale air is not exhausted from the dwelling and replaced with outside air.<br><br>A Mechanical Heat Recovery Ventilation system provides outdoor filtered air into the apartment whilst retaining most of the energy that has already been used in heating the building. It works on the principle of extracting air from the wet rooms (WCs, kitchens,</td><td>Reduction in the consumption of electricity and the associated carbon emissions and operating costs.</td></tr>
</table>

| | | |
|---|---|---|
| | etc) and recovering the heat energy from this air in a high efficiency heat exchanger and supplying tempered fresh air into the occupied rooms (living area, bedrooms, etc).<br><br>As the possibility of carbon taxation being increased over the years within the Irish legislative framework becomes evermore likely, this system and its's low $CO_2$ output represents a shrewd environmental and financially sound means of heating the development. | |

## 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, glazing, spandrel panels, standing metal seam cladding, and pressed metal parapet.

### *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 and the communal areas of the building and specific measures taken include:

| **MEASURE / DESCRIPTION** | **BENEFIT** |
|---|---|
| Daylighting to circulation areas where possible | Avoids the requirement for continuous artificial lighting |
| Natural Ventilation system to car park beneath podiums. Power coated slatted elements at the ground level, in conjunction with ventilation upstands at podium level allow for unobstructed cross ventilation through area. | Avoids provision of mechanically ventilating the car parking area beneath the podiums. |
| External paved and 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.<br><br>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 | Ensures that the long-term durability and maintenance of Materials is an integral part of the Design and Specification of the proposed development. |
| The primary structural materials are a structural concrete frame combined with standard concrete block infill.<br><br>Contemporary tones of brick are proposed, with complementary use of, spandrel panels, standing metal seam cladding and powder coated metal railing as the principal finishes to the apartment elevations on all blocks.<br><br>Brick makes up most of the façade treatment, which is a robust, low maintenance material. The Brick finishes along with the spandrel panels, standing metal seam cladding and the powder coated metal railing are durable, counteract staining and retaining a quality visual appearance. | Ensures the long term durability and requires minimal on-going maintenance. |
| High quality powder coated aluminum framed glazing systems will be installed throughout the development. | Requires no on-going maintenance. |

## 2.3. LANDSCAPE

| MEASURE / DESCRIPTION | BENEFIT |
|---|---|
| Robust, locally sourced materials, with high slip resistance to be used for paving.<br><br>Enhanced grain anti-slip composite decking proposed for podium terrace areas.<br><br>Durable and robust furniture and equipment (e.g. play, fencing etc.) to be used throughout.<br><br>All external metal fittings galvanised and powder coated to minimise painting requirements. | Robust materials and elements reduce the frequency of required repair and maintenance.<br><br>Required ongoing maintenance significantly reduced through use of robust materials installed to high standards and robust detailing. |
| The landscape design strategy is achieved by:<br>• greening of podium courtyard spaces with trees, wall-climbers, planters and planting beds at ground level.<br>• providing integrated timber slat seating to podium<br>• careful consideration to needs of disabled and visually impaired persons in design of steps and furniture.<br>• careful selection of materials with regard to robustness, durability,<br>• ease of maintenance and compatibility with the site's setting around North Cross Road.<br>• selection of suitably sized, native/adaptive trees and planting is proposed.<br>• 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. |
| A wide variety of flowering plants and shrubs including native and near-native plant species will provide a valuable food source for pollinating insects throughout the year. | Enhanced biodiversity within the site. |
| No invasive plant species have been included in the scheme. | Avoid problematic, invasive vegetation for future maintenance. |
| Low maintenance planting schemes with suitable species, plant size, and spacing with bark mulching to minimise herbicide treatment. | Minimise maintenance weeding, pruning etc. |
| Planting selected to suit site micro-climate, soils and other horticultural variables. | Planting selected to establish and thrive to provide required aesthetic, screening, and biodiversity functional requirements with minimal maintenance. |
| Sedum-based Green Roof systems | Minimise maintenance to roof and maintain attractive surface throughout year. |
| Select low maintenance grass mix to be used in landscape areas. | Reduce grass cutting within scheme. |

## 2.4. WASTE MANAGEMENT

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

| MEASURE | DESCRIPTION | BENEFIT |
|---|---|---|
| Storage of Non- Recyclable Waste and Recyclable Household Waste | Inclusion of centralised waste storage areas, with enough space to accommodate a weekly collection of bins | Easily accessible by all residents, minimises potential littering of the scheme, reduce potential waste charges and not limit waste contractor selection |
| | Domestic waste management strategy: General waste, mixed recyclable, glass and organic bin distinction | Helps reduce potential waste charges and not limit waste contractor selection |
| | Security restricted waste storage rooms | Reduce potential for fly tipping by residents and non-residents |
| | Well signed waste storage rooms and bins | Help reduce potential cross contamination of waste and reduce waste charges. |
| Composting | Organic waste bins intended to be provided in waste storage areas | Helps reduce potential waste Charges |

## 2.5. MANAGEMENT

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

| MEASURE | DESCRIPTION | BENEFIT |
|---|---|---|
| Home User Guide | The management of the property will be ultimately be the responsibility of the owners and operators of this scheme. Consideration has been given to ensuring tenants have a clear understanding of the property which they will rent and we the following will be provided at a minimum to ensure homeowners have a clear understanding of their property. Tenant packs will be provided to new residents which will include a homeowners manual to provide information to purchasers in relation to their new property. This pack will typically include details of the property such as information in relation to connection with utilities and communication providers, contact details for all relevant suppliers and instructions for the use of any appliances and devices in the property.<br><br>A resident's pack prepared by the operational management company will also be provided and will include information on contact details for the managing agent, emergency contact details, transport links and a clear set of rules and regulations for tenants of the property. This will ensure residents are appropriately informed, so any issues can be addressed in a timely and efficient manner and ensure the successful operation of this scheme. | Residents are as informed as possible so that any issues can be addressed in a timely and efficient manner. |

## 2.6. 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 buildings 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 likely to be adopted:<br><br>• CCTV monitoring details<br>• Secure bicycle stands – covered by CCTV<br>• Controlled Access to the under-podium parking space<br>• Controlled Access to individual circulation cores<br>• Controlled access between Public Spaces and Residents Communal Spaces<br>• Routine access fob audits<br>• Appropriately lit external spaces. | Aids in reducing potential security/management costs. Enhances safety for residents and visitors. |
| Natural Amenity | • Public plaza area, and enhanced public streetscape<br>• External courtyard and terraces | Facilitates community interaction, socialising and play – resulting in improved wellbeing. Proximity and use of external green spaces promotes a healthy lifestyle. |

## 2.7. TRANSPORT

| MEASURE | DESCRIPTION | BENEFIT |
|---|---|---|
| Access to Public Transport (Bus Services) | The site is well located with regard to the existing city's bus network, being served by both primary and secondary bus routes. Dublin bus stops located on the main thoroughfare of North Cross road is a eight-minute walk from the site which provides easily accessible travel.<br><br>The provision for a dedicated on-site bus lane has been provided for future bus routes. | The proximity, frequency and range of additional destinations served by these local bus services enhance the accessibility levels of the proposed residential development. |
| Permeable Connections | Provision and subsequent maintenance of dedicated pedestrian and cycle infrastructure on-site, and their connectivity with adjoining third party lands and off-site networks, providing connectivity and continuation of the City Wide Green Route, subsequently providing convenient access to local services including shops, schools, restaurants and doctor's surgeries. | Ensure the long-term attractiveness of walking and cycling to a range of local education, retail and community facilities and services. |
| Bicycle Storage | There will be a provision of 3019 no. bicycle spaces located in secure facilities underneath the podiums. | Accommodates the uptake of cycling. |

**APPENDIX A:**

## Items Included in a Typical BIF

The BIF table below illustrates what would be incorporated for the calculation of a Sinking Fund. Note that Life Expectancy figures are purely for the purposes of illustration and are not to be taken as proscriptive.

| | **BUILDING INVESTMENT FUND (SINKING FUND) CALCULATIONS** | | |
|---|---|---|---|
| **Ref** | **Element** | **Life Expectancy** | **Amount** |
| **1.00** | **Roofs** | | |
| 1.01 | Replacement felt roof covering incl. insulation to main roofs/ overhaul to green roofs. | 18 | |
| 1.02 | Replacement parapet details | 18 | |
| 1.03 | Replacement/ repairs to facias | 18 | |
| 1.04 | Replace roof access hatches / roof lights | 25 | |
| 1.05 | Specialist Roof Systems - Fall arrest | 25 | |
| 1.06 | Overhaul waterproofing details to terraces / balconies | 12 | |
| **2.00** | **Elevations** | | |
| 2.01 | Recoat metal panels | 25 | |
| 2.02 | Minor repairs to Brickwork and preparation for decorations of rendered areas | 18 | |
| 2.03 | Replace exit/ entrance doors | 25 | |
| 2.04 | Replace Rainwater goods | 25 | |
| 2.05 | Recoat powder coated Finishes to balconies / Grills to Basement vents | 20 | |
| 2.06 | Periodic replacement and overhauling of external fixings | 5 | |
| 2.07 | Replace Balcony floor finishes | 25 | |
| **3.00** | **Staircores & lobbies** | | |
| 3.01 | Decorate Ceilings | 7 | |
| 3.02 | Decorate Walls | 7 | |
| 3.03 | Decorate Joinery | 7 | |
| 3.04 | Replace fire doors | 25 | |

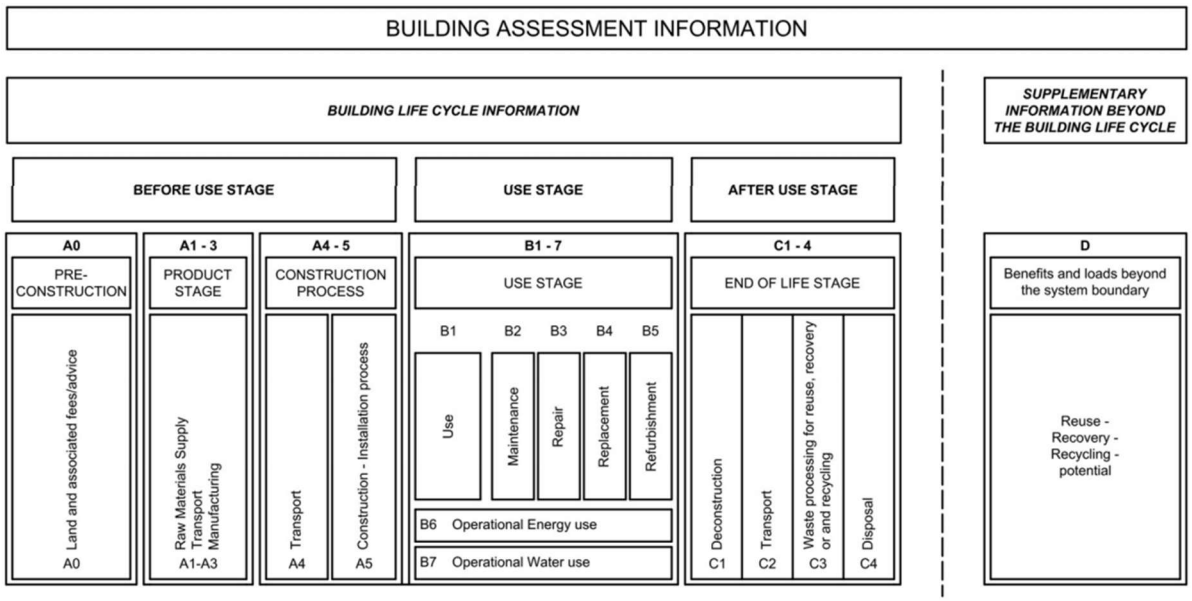
| | | | |
|---|---|---|---|
| 3.05 | Replace carpets (stairwells & lobbies) | 12 | |
| 3.06 | Replace entrance mats | 10 | |
| 3.07 | Replace nosing's | 12 | |
| 3.08 | Replace ceramic floors tiles Entrance lobbies | 20 | |
| 3.09 | Fixed Furniture & Equipment - Provisional Sum | 18 | |
| **4.00** | **Basement & Car Parking** | | |
| 4.01 | Remove/ Replace ceiling insulation | 25 | |
| 4.02 | Repaint parking spaces & Numbering | 7 | |
| 4.03 | Replace store doors, ironmongery & digi-locks | 15 | |
| 4.04 | Replace Bike stands | 25 | |
| 4.05 | Replace basement access control at entrance & core entrances | 12 | |
| **5.00** | **M&E Services** | | |
| 5.01 | General - Internal relamping | 7 | |
| 5.02 | Replace Internal light fittings | 18 | |
| 5.03 | Replace External light fittings (lights at entrance lobbies) | 18 | |
| 5.04 | Replace smoke detector heads | 18 | |
| 5.05 | Replace manual break glass units/ disabled refuge call points | 18 | |
| 5.06 | Replace Fire alarm panel | 18 | |
| 5.07 | Replace lift car and controls | 25 | |
| 5.08 | Replace AOV's | 25 | |
| 5.08 | Replace security access control installation | 15 | |
| 5.09 | Sump pumps replacement | 15 | |
| 5.10 | External Mains Water connection | 20 | |
| 5.12 | Electrical Mains and Sub Mains distribution | 20 | |
| 5.13 | Emergency Lighting | 20 | |
| 5.14 | Overhaul and/or replace Waste Pipes, Stacks & Vents | 20 | |
| **6.00** | **Exterior** | | |

| | | | |
|---|---|---|---|
| 6.01 | External boundary treatments - Recoat powder coated finishes to railings | 60 | |
| 6.02 | Replace external signage | 18 | |
| 6.03 | Replace cobble lock areas | 18 | |
| 6.04 | 15-year overhaul of soft landscaping generally | 15 | |
| 6.05 | Replace CCTV provision | 12 | |
| 6.06 | External Handrails and balustrade | 18 | |

**APPENDIX B:**

Phases of the Life Cycle of BS7543; 2015

Figure 4 **Phases of the life cycle**




**Key**

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