

BUILDING LIFE CYCLE REPORT

In respect of:

**Proposed Residential Development at
Lissywollen, Athlone, Co. Westmeath.**

Prepared by:

- Delphi Design Architects & Planners

On behalf of the applicant:

Alanna Roadbridge Developments Ltd

February 2021

1.0 Introduction

This Building Life Cycle report has been prepared in support of a strategic housing development proposed by Alanna Roadbridge Developments Ltd (the applicant) for a new residential development, on lands measuring approximately 17.5ha, located on a site at Lissywollen, Athlone, Co. Westmeath.

The application is for a development consisting of 576 no. dwellings consisting of 285 no. houses and 291 no. apartment and duplex units, 2 no. creches, a community hub and all associated site development and infrastructural works.

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”) and they introduced 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 6.13. of the Apartment Guidelines 2018 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 6.13 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 permission being sought is as follows:

Alanna Roadbridge Developments Ltd. intend to apply to An Bord Pleanála for permission for a strategic housing development, on a site of c. 17.64 hectares, located in the townlands of Lissywollen, Kilnafaddoge & Retreat, and partially traversing the townlands of Curragh, Cloghanboy (Strain) & Cloghanboy (Homan), Athlone, County Westmeath. The development site is bisected by the existing Brawny residential estate and is generally bounded to the north by the N6, to the south by the Old Rail Trial Greenway, to the west by Scoil na gCeithre Máistrí, and to the east by undeveloped lands, further east of which are ESB Regional Headquarters. Access to the development will be from the Ballymahon roundabout (on the R915 - to the west) and the Garrycastle roundabout (on the R916 - to the east).

The development will consist of the following:

- (1) Construction of 576 no. residential dwellings comprised of 285 no. houses and 291 no. apartments and duplex units consisting of:
 - 285 no. 2 storey semi-detached & terraced houses (50 no. four beds, 200 no. three beds & 35 no. two beds);
 - 8 no. apartments & duplexes (4 no. one beds & 4 no. three beds) in Block A (3 storeys);
 - 8 no. apartments & duplexes (4 no. one beds & 4 no. three beds) in Block B (3 storeys);
 - 15 no. apartments (15 no. two beds) in Block C (3 storeys);
 - 16 no. apartments & duplexes (7 no. one beds, 5 no. two beds & 4 no. three beds) in Block D (3 storeys);
 - 9 no. apartments & duplexes (5 no. one beds, 1 no. two bed & 3 no. three beds) in Block E (3 storeys);
 - 8 no. apartments & duplexes (4 no. two beds & 4 no. three beds) in Block F (3 storeys);
 - 4 no. apartments (4 no. one beds) in Block G (2 storeys);
 - 12 no. apartments & duplexes (12 no. three beds) in Block H (3 storeys);
 - 21 no. apartments (21 no. two beds) in Block K (3 storeys);
 - 36 no. apartments (36 no. two beds) in Block L (part 4 storey / part 5 storey);
 - 20 no. apartments (6 no. one beds, 6 no. two beds & 8 no. three beds) in Block M (part 3 storey / part 4 storey);
 - 27 no. apartments (27 no. two beds) in Block N (3 storeys);
 - 43 no. apartments & duplexes (14 no. one beds, 24 no. two beds & 5 no. three beds) in Block O (2 to 4 storeys);
 - 12 no. apartments (6 no. one beds & 6 no. two beds) in Block P (3 storeys);
 - 8 no. apartments & duplexes (4 no. two beds & 4 no. three beds) in Block Q (3 storeys);
 - 18 no. apartments (6 no. one beds & 12 no. two beds) in Block R (3 storeys);
 - 12 no. apartments & duplexes (6 no. two beds & 6 no. three beds) in Block S (3 storeys);
 - 14 no. apartments (4 no. one beds & 10 no. two beds) in Block T (3 storeys).
- (2) Construction of 2 no. crèches comprised of: a 2 storey crèche of c. 321m² located on the ground & first floors of Block C & a 1 storey crèche of c. 448m² located on the ground floor of Block T.
- (3) Construction of 1 no. community hub of c. 101m² located on the ground floor of Block D.

- (4) Construction of basement level car parking of c. 1,089m² comprising 34 no. car parking spaces & 36 no. bicycle parking spaces, forming part of Block L.
- (5) Construction of an east-west access road through the development site, extending from the Ballymahon roundabout (on the R915 - to the west) to the Garrycastle roundabout (on the R916 - to the east) and all associated road development works.
- (6) Provision of public open spaces, hard and soft landscaping, public lighting, car & bicycle parking, pedestrian and cyclist connections to Old Rail Trail Greenway, bin storage, 6 no. ESB sub-stations, drainage and attenuation, utility services etc. and all associated site development works.

The application contains a statement setting out how the proposal is consistent with the objectives of the Westmeath County Development Plan 2014-2020, the Athlone Town Development Plan 2014-2020 and the Lissywollen South Framework Plan 2018-2024, and also contains a statement indicating why permission should be granted for the proposed development, having regard to a consideration specified in section 37(2)(b) of the Planning and Development Act, 2000, as amended, notwithstanding that the proposed development materially contravenes a relevant development plan or local area plan other than in relation to the zoning of the land.

An Environmental Impact Assessment Report (EIAR) has been prepared in respect of the development proposal and accompanies the application. The application, together with the Environmental Impact Assessment Report, may be inspected, or purchased at a fee not exceeding the reasonable cost of making a copy, during public opening hours at the offices of An Bord Pleanála and Westmeath County Council. The application may also be inspected online at the following website set up by the applicant: www.lissywollenshd.ie.

2.1 Design Concept

Given the nature and character of the site, a number of criteria have informed the design response for the proposed development. The intention is to create a new, high quality, sustainable neighbourhood that compliments the existing Brawney housing estates and integrates into the existing landscape features, characterised by distinct housing designs, contemporary landscaping and public spaces. The key urban design moves towards this goal are:

- create a new sequence of streets running through the scheme linking the Garrycastle Road to the east and the Brawney Road to the west, by providing a new central link street known as 'Lissywollen Avenue', thus building upon the masterplan as set out in the Lissywollen South Framework Plan, 2018-2024;
- create distinct new character areas within the development to foster new communities;
- enhance existing and create new links to the Old Rail Trail Greenway;
- enhance and create strong pedestrian and cycle linkages throughout the site;
- respect, enhance and integrate with the existing Brawney housing developments;
- improve vehicular circulation and parking at Gaelscoil na gCeithre Máistrí;
- maintain and enhance existing green spaces through enclosure and passive supervision;

- maintain all existing hedgerows, trees and landscape features, insofar as possible;
- provide high-quality, well-lit, mixed tenure houses and apartments in a sensitively designed landscape;
- ensure that the majority of houses, duplexes and apartments to have direct view to public open spaces.

The site is divided into five distinct character areas, each with its own architectural identity.

The western end of the site, closest to Athlone town centre and the local schools, contains the highest density of residential units and is one character area in itself. This part of the development is identified by a five storey building, marking the entrance to the scheme from the town centre.

The eastern part of the site is of a lower density, containing a higher number of houses and has 4 character areas. These are arranged around the central area, 'Lissywollen Village,' a higher density zone of apartments and duplexes, which contains a public plaza and Community Hub building, forming a new heart for the scheme.

The entrance to the development from the east is marked by two apartment buildings sitting tight to the street and reflective of the overall urban character of the proposal.

Character Areas:

1. Lissywollen Crossings
2. Lissywollen Callows
3. Lissywollen Village
4. Lissywollen Berths
5. Lissywollen Station

Character Area 1 - Lissywollen Crossings

This character area occupies the south-eastern corner of the development area and abuts the Greenway to the south. This is a lower density area but is comprised of a mix of dwelling types including semi-detached and terraced houses, and duplex apartment units, organised in a north-south orientation, facing on to the main entrance street at the eastern corner. The apartments are arranged as own door accessed units, with high quality, east-west facing private open spaces, which allow for residents' social interaction and relaxation.

The residential streets created across the area enclose a generous public open space, which in turn links into the Greenway. Dwellings facing directly on to the Greenway utilise common parking to the sides of the terraces which facilitates a closer position to the path and ensures an attractive elevation with good passive supervision. Houses on the eastern boundary address an existing path/track that will in time be upgraded as part of the overall area masterplan, but is outside of the subject application area. This will in turn link back across the Greenway, connecting into the existing Ashgrove and on to Cartrontroty Road.

Parking is a mix of on-curtilage and on-street for both houses and apartments, with shared surface and homezone areas indicating pedestrian and cyclist priority. As with the terraced and semi-detached units throughout the scheme, roofs are pitched and finished with a quality dark coloured slate. The proposed brick is a sharp edged buff with a strong texture which works well in contrast with the white render finish, giving a distinct visual identity to the area.

Character Area 2 – Lissywollen Callows

Directly abutting the N6 bypass, this character area has a high percentage of terraced houses, with a L shaped terrace of duplex apartments enclosing a triangular shaped greenspace on the eastern edge, forming the entrance to the development. The shape of the character area is dictated by the location of the main entrance street and the N6 Main Road, resulting in a series of short north-south oriented streets of terraced houses, with terraces of shallow front houses facing on to Lissywollen Avenue. The houses are also pulled back from the N6 boundary and separated from the busy road by a landscaped, linear greenspace with landscaping and mounding for noise mitigation along the northern edge.

The eastern end of this character area is the entrance to the development from the Garrycastle Road area, which is marked by the duplex apartment buildings. The apartments are arranged as own door accessed blocks, with high-quality, south and west facing private open spaces which cater for resident's overlooking a west facing common garden.

Parking is a mix of on-street and on-curtilage for both houses and apartments, which have easily accessible common parking adjacent to each terrace. The terraced houses throughout this character area have pitched roofs finished with a quality mid grey coloured slate. This compliments the proposed brick - a very light buff texture which works in unison with the white render finish, giving a softer white finish and visual identity to the area. Duplex apartments are proposed in the same palette, seamlessly tying into the house terraces.

Character Area 3 – Lissywollen Village

This character area is located in the central section of the eastern end of the development site, connecting to the adjacent Brawney open space. As the higher density centre of the eastern part of the overall development, it has a mix of own door accessed apartments and duplex buildings, of three storeys in height, which is also commensurate with the existing housing height and scale to the west.

The area is conceived as the 'village centre' of the site, defined by the Trianglar urban space, which is carefully landscaped with planting, trees, patterned hard surfaces, raised seating areas and contemporary public benches. It creates space for local gatherings and has a Community Hub building occupying its main corner, addressing the triangle and street. The Community Hub contains spaces for public meetings and general community uses, something that is currently lacking in the area locally. A creche also addresses the triangle and adjacent public open space, providing additional varied use to a predominantly residential area.

While designed as a centre and hub for the locale, the scale of the buildings and space is deliberately small as there is a designation for a new series of significant public buildings at the western end of the development, beside the Greenway and Gaelscoil, as part of the overall Framework Plan for the Lissywollen area.

The apartments and duplexes are arranged around the public space, with own door access, high-quality, south facing private open space and communal garden spaces provided for residents. These spaces are carefully designed with timber and brick screen walls to create optimum privacy given their proximate location beside the public open space. Parking is on street and located behind and adjacent to each building, away from the main street elevations. Bicycle parking is secure and enclosed within the apartment blocks, near entrances and with extensive screen planting to ensure integration into the landscaped common areas.

As this character area is the higher density centre of the east end of the development, it contains own-door accessed apartments and duplexes arranged around the Trianglar public space, creche and Community Hub building. Each cluster of units has its own semi-private landscaped space, overlooked by the apartments, with private balconies generally orientated south or to the street.

Materials proposed for the buildings are a simple palate of white brick with white render. These materials serve as a backdrop for the proposed landscaping and west facing urban space. Roofs are flat to minimise

overshadowing of surrounding two storey houses and facades of the blocks are separated to allow light penetration into the courtyard spaces behind.

Character Area 4 – Lissywollen Berths

This area is part of the central section of the development site, immediately adjacent to the existing Brawney housing scheme, Lissywollen Main Street and Trianglar public square and Old Rail Trail Greenway. It has a mix of own door accessed terraced and semi-detached houses, similar in scale with the existing, adjoining housing height and volume.

In addressing the main street, the terraced housing also fronts directly on to it, creating an attractive residential street frontage with the introduction of a shallow private front area. This facilitates a layer of privacy to the front of the house while creating a strong, urban residential streetscape.

Two public green spaces are located to the south-east and south-west corners, directly abutting the Greenway. Streets are generally shared surface spaces that link the Greenway to the main street at four locations, providing excellent pedestrian and cycle permeability. Parking varies between on-street and on-curtilage with extensive bicycle parking provided adjacent to all houses and the public space.

Houses facing directly on to the Greenway utilise common parking to the sides of the terraces which facilitates a closer position to the path and ensures an attractive elevation with good passive supervision of the Greenway.

The proposed material finishes to the residential units are a sharp contemporary red brick, which will contrast well with the white render finish and dark slate roofs

Character Area 5 – Lissywollen Station

This area is the western most section of the site and closest to Athlone Town centre. It is also the most dense, with a high percentage of apartments and duplex unit types, and also with terraced and semi-detached houses backing on to the existing Brawney housing development, to soften the transition.

The apartment and duplex buildings are typically three to five storeys in height, which is commensurate with the scale and height of the existing housing stock. This rises to 4 and storeys at the north-western corner of the site, where there is a landmark apartment building [Block L] marking the entrance to the development, with underground car parking. Apartments and duplexes are arranged typically in a courtyard type layout, providing controlled private open space for residents. Parking is on-surface and located adjacent to each building, with the houses having on-curtilage spaces. Bicycle parking is located throughout the scheme, close to apartment entrances.

A medium sized public space is located to the south-west corner, adjacent to the Greenway and with a good southerly aspect. The first of two creches in the development is located here on the ground floor of the apartment building [Block K], with a controlled playspace to the rear, facing on to the private open space of the duplexes and apartments. The architecture of the apartments and duplexes is distinctly contemporary, with a mix of brick and render elevations and incorporating stepping balconies and terraces which provide privacy for occupants

Northern zone of Character Area 5

Located at the top of Character Area 5, this part of the development forms the entrance from Brawny Road. It consists of three apartment blocks arranged around a central courtyard open space. The apartments address the existing Brawny Road and form the street facade of Lissywollen Avenue. The building heights vary from 5 storeys at the front corner of Block L, to 3 storeys facing onto Lissywollen Avenue and the existing houses on

Brawny Road. The apartment blocks have been separated where they come closest to the existing houses on Brawne Road. This affords good light penetration to the front of the houses and addresses any issues of overbearing or overshadowing.

The blocks are arranged on the site in such a way that there are breaks in the building line that facilitate access points to the courtyard, stair cores and for sunlight penetration. Roofs are flat and parapets are kept to a minimum height to lower the impact of the buildings volumetrically.

Ground floor apartments are generally own door accessed where possible to ensure an active ground floor facade facing the street. The buildings are held back from the street edge to create a small semi-private interstitial space, a privacy layer to the front of the apartments which also gives a strong residential streetscape. Upper floor apartments have large balconies that face out to the street, again enhancing the residential character, passive supervision and an active facade.

The apartments surround a landscaped courtyard which provides a high quality and well overlooked amenity space for residents. It has a mix of hard and soft landscaping, facilitating children's play areas as well as general seating.

Vehicular parking is part on-street and in a basement under Block L. There is also a significant provision of bicycle parking for each block, both within the buildings and adjacent in the courtyard area.

Mid zone of Character Area 5

Located in the middle of Character Area 5, this part of the development addresses the Gaelscoil and forms a formal streetscape to Lissywollen Avenue to the north, while opening up to the street with residential amenity spaces to the south.

The building heights are 3 storeys across each apartment block affording good light penetration to the residential units and streets on all sides. Blocks are orientated generally north-south, maximising orientation and relationship with the south facing courtyards. Roofs are flat and parapets are kept to a minimum height to lower the impact of the buildings volumetrically.

The apartments surround a landscaped courtyard which provides a high quality amenity space for residents, with a mix of hard and soft landscaping, facilitating children's play areas as well as general seating. Vehicular parking is on-street with a significant provision of bicycle parking for each block, both within the buildings and adjacent in the courtyard areas.

Enhanced pedestrian and cycle paths linking to the school will increase accessibility to the school, both from the Greenway and overall development.

Southern zone of Character Area 5

The southern zone of Character Area 5 sits adjacent to the Old Rail Trail Greenway, backing onto the existing Brawney housing development.

A sequence of 3 apartment and duplex blocks are arranged around an east facing landscaped courtyard. A series of terraced and semi-detached houses back on to the existing houses, forming a residential street which leads to a public open space, which in turn links into the greenway.

The building heights are 3 storeys across each apartment block affording good light penetration to the residential units and streets on all sides. Roofs are flat and parapets are kept to a minimum height to lower the impact of

the buildings volumetrically. The houses are all two storey with pitched roofs. Both are in keeping with the scale and height of the existing development in Brawney.

Block T apartments includes the creche, located adjacent to both the public open space and courtyard surrounding a landscaped courtyard which provides a high quality amenity space for residents, with a mix of hard and soft landscaping, facilitating children's play areas as well as general seating.

Vehicular parking is primarily on-street with a significant provision of bicycle parking for each block, both within the buildings and adjacent in the courtyard areas. Some on curtilage parking is provided for the houses.

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.

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	<p>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".</p> <p>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.</p> <p>All windows shall be triple glazed windows 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.</p>	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	<p>Should the applicant provide a white goods package for the apartments, they will be A rated appliances to achieve a high energy efficiency rating.</p> <p>The white good package planned for provision in the apartments will be of a very high standard and have a high energy efficiency rating. It is expected that the below appliance ratings will be provided:</p>	The provision of high rated appliances in turn reduces the amount of electricity required for occupants.

	<ul style="list-style-type: none"> • Oven - A plus • Fridge Freezer - A plus • Dishwasher - AAA • Washer/Dryer – B 	
Internal Common Areas & External lighting	<p>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.</p> <p>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.</p> <p>The proposed lighting scheme within the development consists of 6/8m pole mounted fittings as indicated on the drawings. The luminaires selected is from Phillips Lighting, range chosen for the following reasons:</p> <ul style="list-style-type: none"> ▪ Low Level lighting ▪ Minimal upward light spill ▪ Low voltage LED lamps ▪ Prep to be approved by Westmeath County Council 	<p>Low energy lamps and automatic controls improve energy efficiency.</p> <p>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.</p> <p>The use of individual PECU's will operate luminaires efficiently and prevent and multiple day burning.</p>
Exhaust Air Heat Pumps	<p>The thermal energy is extracted from the exhaust air and transferred to the supply air, space heating and domestic hot water systems.</p>	<ul style="list-style-type: none"> ▪ Reduced carbon emissions ▪ Low fuel costs ▪ No external condensing unit required ▪ No fossil fuel requirement
Air Source Heat Pumps	<p>The thermal energy from the outside air is absorbed and transferred to the space heating and domestic hot water generation systems. This is included in the design put forward for permission.</p>	<ul style="list-style-type: none"> ▪ Reduced carbon emissions ▪ Low fuel costs ▪ No fossil fuel requirement

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 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
Condensing boilers	Condensing boilers are being investigated as they have a higher operating efficiency, typically over 90% than standard boilers and have the benefit of lower fuel consumption resulting from the higher operating efficiencies.	<p>Higher BER ratings reduce energy consumption and running costs</p> <p>Condensing boilers use the heat losses from the boiler flue to preheat the circulating heating water</p> <p>By preheating the heating water, the boiler can achieve efficiencies in excess of 90%</p>
Natural Ventilation	Natural ventilation is being evaluated as a ventilation strategy to minimize energy usage and noise levels	<p>The main advantages of natural ventilation are-</p> <ul style="list-style-type: none"> • 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.	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 are being considered 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. 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	Combined heat and power (CHP) is not suitable for this type of development	N/A
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.
E-CAR charging points	Charging shall be provided from a local landlord distribution board to designated E-car charging car parking spaces. This will enable the management company the option to install a number of E-car charging points within the surface car parking spaces to cater for E-car demand 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.

4.2 Materials

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

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
Traditional pitched roofs with concrete roof tiles are proposed to the housing & duplex units.	All of these require low/minimal maintenance.

4.2.2 Material Specification

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.

The proposed envelope of the building is a mix of brick and durable render finish, with high-performance double-glazed aluminium windows. Based on comparison with similar schemes developed, the proposed materials are considered durable and would not require regular replacement or maintenance.

Measure Description	Benefit
<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> 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 	<p>Ensures that the long term durability and maintenance of materials is an integral part of the design and specification of the proposed development.</p>

Use of brickwork and pigmented render systems to envelope	Requires minimal maintenance and does not require regular replacement
Factory finished and aluminum (or similar) windows and doors and powder coated steel balconies	Requires minimal maintenance and does not require regular replacement

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	<p>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.</p> <p>Generous and high quality mature landscaping, with ecological corridors prioritizing pedestrians and landscape over the car - increase in soft landscaping.</p> <p>Significant tree planting and soft landscaping within public spaces</p>	<p>SUDs drainage system and landscape maintenance preferable</p> <p>Attenuation reduces the burden on vulnerable rainwater goods.</p> <p>Fewer elements would require replacement or repair.</p>
Paving Materials	<p>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.</p> <p>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.</p> <p>Designated car parking including accessible & visitor car parking reduces the travel distances for visitors with reduced mobility.</p>	<p>Required ongoing maintenance significantly reduced through use of robust materials installed with proven details.</p> <p>Plenty of room for cycles and pedestrians along with car spaces provide a good balance between pedestrians and car users.</p> <p>Wheelchair user-friendly</p>

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 a Construction and 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 adjacent to apartment buildings / duplex blocks 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

Measure	Description	Benefit
Natural / day light	The design, separation distances and layout of the apartment blocks 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	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 ▪ Overlooked communal open spaces 	Helps to reduce potential security/ management cost
Natural Amenity	Public parks dispersed throughout the development. Pocket parks and existing trees and hedgerows. Connections to local amenities such as Old Rail Trail Greenway.	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
---------	-------------	---------

<p>Home User Guide</p>	<p>Once a purchaser completes their sale, a homeowner box will be provided which will include:</p> <p>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.</p> <p>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</p>	<p>Residents are as informed as possible so that any issues can be addressed in a timely and efficient manner.</p>
-------------------------------	--	--

4.7 Transport

Measure	Description	Benefit
---------	-------------	---------

Access to Public Transport	The site is served by 2 no. bus services (A1 & A2) to Athlone town centre, with 3 no. stops located approx. 500m, 600m & 750m walking distance to the site respectively. The proposed new east-west road through the site will has been designed to facilitate the existing local bus route A2 to extend eastwards into the subject development lands beyond its existing extents at Athlone Regional Sports Centre.	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 longer 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/m²K)^{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	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
<p><i>Notes:</i></p> <ol style="list-style-type: none"> <i>1. The U-value includes the effect of unheated voids or other spaces.</i> <i>2. For alternative method of showing compliance see paragraph 1.3.2.3.</i> <i>3. For insulation of ground floors and exposed floors incorporating underfloor heating, see paragraph 1.3.2.2.</i> <i>4. Windows, doors and rooflights should have a maximum U-value of 1.4 W/m²K.</i> <i>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.</i> 		

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			
Ref	Element	Life Expectancy	Amount
1.00	Roofs		
1.02	Replacement parapet details	20	
1.03	Replacement/ repairs to facias	20	
1.04	Replace roof access hatches	25	
1.05	Specialist Roof Systems - Fall arrest	25	
2.00	Elevations		
2.02	Minor repairs and preparation for decorations of rendered areas	15	
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	
2.07	Replace Balcony floor finishes	25	
	Creche		
3.00	Stair cores & 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	Shared surface Car & Bike Parking		
4.01	Remove/ Replace ceiling insulation	25	
4.02	Repaint parking spaces & Numbering	7	
4.03	Replace store doors, ironmongery & digi-locks to bike parking	15	
4.04	Replace Bike stands to bike parking	25	
4.05	Replace basement access control at entrance & core entrances	12	
5.00	M&E Services		
5.01	General - Internal re-lamping	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 cobblelock areas	18	
6.04	15-year cutback & thinning of trees. Overhaul landscaping generally	20	
6.05	Replace CCTV provision	12	
6.06	External Handrails and balustrade	18	

Appendix C

Phases of the Life Cycle of BS7543; 2015

Figure 4 Phases of the life cycle

