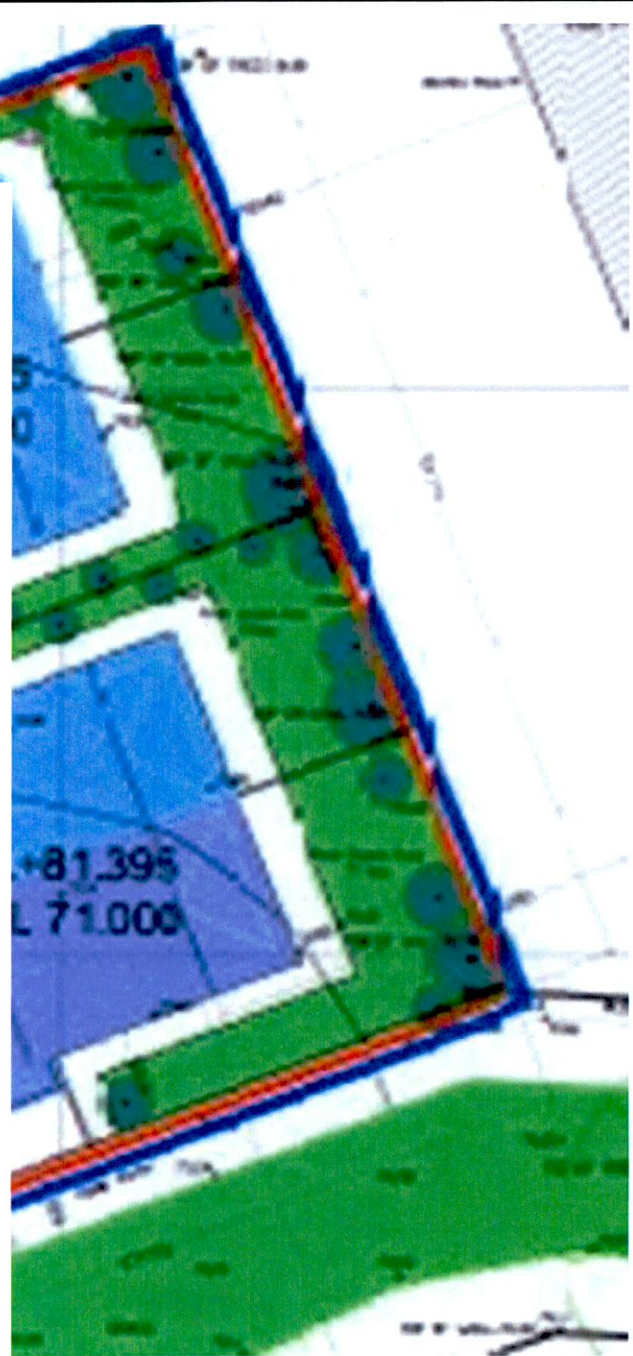


Lifecycle Report 2022



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Pathway Homes Ltd.

**Residential Development, Knocklyon Road,
Knocklyon, Dublin 16.**

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Section 1 – Introduction

1.1 Planning Context

Planning permission is being submitted for residential development on lands at Knocklyon Road, Knocklyon, Dublin 16.

The development will comprise the following:

- a) A total of 4 No. residential units consisting of
 - 4No. – Type A/A1 – 5 Bedroom 2.5 storey semi-detached houses and associated car parking
- b) The provision of private open space, site landscaping, connection to existing services as well as the provision of vehicular access from Knocklyon Road and all associated site development works

1.2 Plan Context

This Building Lifecycle Report addresses requirements as outlined in the “*Design Manual for Quality Housing*” as they relate to this proposed residential project. Considered scheme design and choice of building materials, together with the effective management by each homeowner playing their part, will help contribute towards a desirable, vibrant community into the future.

The document reviews the outline building specification for the proposed development and considers the associated long-term maintenance and operation of the development. The report includes details of measures proposed to manage and reduce costs for the benefit of future residents. The report considers the use of durable materials and finishes for external elevations (e.g. zinc cladding, self-coloured render and metal railings) to reduce the need for regular maintenance and/or replacement, outside of general housekeeping works. The choice of such high-quality and long-lasting materials will minimise maintenance costs for residents and occupants in the future. A similar approach is proposed in the choice of building material for internal finishes, electrical and plumbing installations, and landscaping of public and private open space areas. As the building

design develops and internal material choices are confirmed, this document is to be updated to help inform the occupants of expected running and maintenance costs for their units, and to aid in the accurate scheduling of works and ongoing maintenance required.

Sections 5.2, 5.3 and 5.7 of the "*Design Manual for Quality Housing*" relates to quality through economic design which is vital at the early design stage to provide for long-lasting high-quality accommodation which is affordable to construct. It is seen as good practice to develop a building lifecycle report, which in turn includes an assessment of long-term running and maintenance costs, as well as demonstrating what measures have been specifically considered by the proposer to effectively manage and reduce the costs for the benefit of residents.

1.3 Site Location & Description

The site is located at Knocklyon townland and along Knocklyon Road in Dublin 16. To the north is Churchtown and to the southeast is Dundrum. The site is bounded by residential areas on all sides, with Knocklyon Road to the west. The site is divided from the M50 to the west by Knocklyon playing fields.

The subject site is 843 sq m or 0.0843 Ha in size and is located to the rear of existing residential development. The immediate vicinity of the subject site is predominantly suburban in nature with a strip of community facilities and open space between the subject site and the M50 motorway.

The proposed development consists of the construction of residential accommodation in the form of 4 no. houses as set out above. The site is a greenfield site and covered in grass with some low trees/plants along the western, northern and southern boundaries.

Access to the site will be via the Knocklyon Road entrance. Any damage to adjacent public roads will be repaired and made good if damaged as a result of the works.



Figure 1.1 – Proposed Site Location. Site Outlined in Red.

1.4 Proposed Development Layout

The development layout takes account of the surrounding landscaping and existing boundary walls on the site. The design minimises the amount of excavation that will be required at the construction stage while also providing a high-quality development. Figure 1.2 indicates the site layout which includes the appropriate green open space within the curtilage of the individual sites.

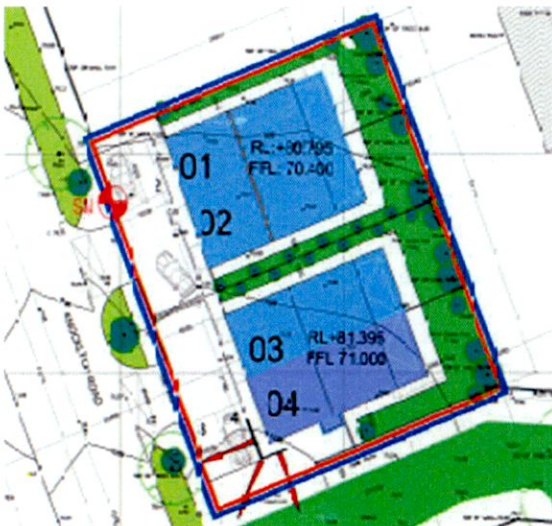


Figure 1.2 – Proposed Development Layout

Section 2 - Assessment of Long-Term Running & Maintenance Costs

2.1 Property Management of Common Areas of the Development

The units have been designed to provide three individual site units which eliminate common areas and the need for a management company. This also eliminates any areas to be taken in charge by the council which prevents any ongoing operation or maintenance costs for the council. The site is bounded by a grassed verge and public footpath to the west and south which will remain in the control of the local authority.

2.2 Service Charge Budget

A service charge budget normally 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 of common areas in accordance with the MUD Act 2011. This scheme has been designed to eliminate the need for a service charge budget. Owners of the individual units will be individually responsible for the maintenance of the areas within their curtilage. The scheme has been designed with privacy and visual appearance in mind and as such, robust materials have been used along public boundaries so that the scheme appears visually appealing into the future with minimal maintenance required.

Section 3 – Measures to Manage & Reduce Costs

3.1 Energy and Carbon Emissions

The following are an illustration of the energy measures 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. All units will have an energy rating of A1 or A2.	Higher BER ratings reduce energy consumption and running costs.
Fabric Energy Efficiency	The U-Values being investigated will be in line with the requirements set out by the current regulatory requirements of Technical Guidance Document Part L, "Conservation of Fuel and Energy Buildings other than dwellings". Thermal bridging at junctions will be detailed post-planning.	Lower U-values and improved airtightness is being considered to help minimise heat losses through the building fabric, lower energy consumption and thus minimise carbon emissions to the environment.
Energy Labelled White Goods	The white goods 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 following appliance standards will be provided: Oven- A+ Fridge Freezer- A+ Dishwasher- AAA Washer/ Dryer- B	The provision of high-rated appliances in turn reduces the amount of electricity required for occupants.

The following are low-energy technologies that are being considered for development during the design stage. The specific combination from the list below will be decided upon and then implemented to achieve an A2 BER rating or better:

Measure	Description	Benefit
Condensing boilers	Condensing boilers are being investigated as they have higher operating efficiency, typically over 90% than standard boilers and have the benefit of lower fuel consumption resulting from the higher operating efficiencies.	Higher BER ratings reduce energy consumption and running costs.
Air Source Heat Pumps	Air source heat pumps (ASHPs) are being considered as a heating source for houses. It utilises grid-supplied electricity to extract thermal energy from a heat source, in this case, the external ambient air.	Certified seasonal efficiencies of some models can exceed 500% meaning that the use of this technology can easily deliver compliance with current Part L requirements.
Mechanical Ventilation Heat Recovery	Mechanical heat recovery ventilation will be considered to provide ventilation with low energy usage.	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	<p>PV solar panels are included in the site plans.</p> <p>They are being considered and convert the electricity produced by the PV system (which is DC) into AC electricity.</p> <p>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.</p>	<p>PV solar panels offer the benefit of reducing fossil fuel consumption and carbon emissions to the environment.</p> <p>They also reduce the overall requirement to purchase electricity from the grid.</p>

3.2 NZEB

In line with new regulations in Part L which came into effect in 2021 and the Energy Performance in Buildings Directive (EPBD), all new residential buildings will have a requirement to be “*Nearly Zero Energy Buildings*”(NZEB). This is achieved by meeting certain benchmarks which are essentially using a lower amount of energy, having lower carbon emissions and implementing renewable energy solutions. The NZEB standard represents a 70% reduction in energy demand compared to the regulations from 2005 and as a result, alternative sources of energy for dwellings are a requirement. The current A2 BER rating typically required for NZEB compliance is a 70% improvement in carbon emission levels on the emission levels of buildings from 2005. The new NZEB requirements are typically also a 20% improvement on the 2011 Part L revisions. The table below indicates the comparative primary energy for dwellings in Ireland over the last 50 years. A building energy rating (BER) certificate will be provided for each dwelling in the proposed development which will provide detail of the energy performance of the dwellings. A BER is calculated through energy use for space and hot water heating, ventilation and lighting and occupancy.

3.3 Commentary from Mechanical and Electrical

All dwellings in the proposed development will be required to minimise overall energy use and to incorporate an adequate proportion of renewable energy in accordance with Building Regulations Part L, Conservation of Energy & Fuel (hereinafter referred to as Part L) and anticipated future revisions.

Based on the current design (as outlined below), all of the proposed units are expected to comply with the requirements of Part L. Preliminary calculations have been completed using the DEAP 4.2 software tools released by the SEAI and these indicate that the units will meet the new standard. The BER calculations that have been prepared indicate that all dwellings will achieve an A1/A2 rating.

Proposed Heating systems:

Air source heat pumps (ASHPs) utilise grid-supplied electricity to extract thermal energy from a heat source. The electricity consumed is not a renewable resource, however, the efficiency at which a heat pump operates allows a significant portion of the heat

delivered to be considered renewable. The amount of heat considered to be renewable is determined by the efficiency of the heat pump and the “*primary energy conversion factor*” for grid-supplied electricity. Typically, approximately 40% to 50% of the heat supplied is considered to be renewable energy

In recent years, the design of ASHPs has improved, bringing about higher efficiencies and reduced costs. This, in turn, has led to increased use of this technology in large-scale housing developments. Certified seasonal efficiencies of some models can exceed 500% in heating mode and 250% to 300% in hot water mode meaning that the use of this technology can deliver compliance with Part L 2019 requirements.

Typically, air-source heat pumps require an indoor and an outdoor component however a particular type of air-source heat pump has been developed for apartments which do not require any outdoor component, and which can extract the thermal energy from the exhaust air from bathrooms and kitchens within the apartment. These will operate on the same principle as the air source heat pumps but will generally have a smaller capacity making them suitable for use in apartments.

Proposed Ventilation System:

Mechanical Extract Ventilation (MEV) systems will be provided in each house. The system will extract air from all wet rooms (bathrooms, en suites, kitchens and utility rooms) using a central extract fan which runs continuously with supply air to the dwelling being provided through trickle vents in each habitable room. Where exhaust air heat pumps are specified, the extract fan for the MEV system is incorporated into the heat pump, allowing the heat from the exhaust air to be recovered prior to it being expelled from the building. This approach to the design of a domestic ventilation system minimises energy consumption by retaining close control of the ventilation rates thereby minimising heat loss by infiltration.

Proposed Lighting:

All lighting installed in the dwellings will include LED-type luminaires. LED light fittings typically use 50% less energy than compact fluorescent fittings and produce a superior

quality of lighting in the dwelling. LED fittings have a life expectancy of 10 years which reduces the volume of waste produced and further reduces the overall carbon footprint.

3.4 Materials

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

3.5 Building Elements

The 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 specifications are applied to both the apartment units and the common parts of the building and specific measures taken include:

Measure Description	Benefit
Daylighting to circulation areas	Avoids the requirement for continuous artificial lighting.
External paved and landscaped areas	All of these require low/ minimal maintenance.
Brick boundary walls	Require no ongoing maintenance or painting.

3.6 Material Specification

The following demonstrates how the materials used comply with building standards and help to provide for long-term durability and lower maintenance costs.

Measure Description	Benefit
Consideration is given to the requirements of the building regulations and includes reference to BS 7543:2015, “ <i>Guide to Durability of Buildings and Building Elements, Products and Components</i> ”, which guides the durability, design life and predicted service life of buildings and their parts.	This ensures that the long-term durability and maintenance of materials is an integral part of the design and specification of the proposed development.

Use of brickwork and pigmented render systems to envelope	Requires no ongoing maintenance
Powder-coated steel railings and gates	Requires no ongoing maintenance

3.8 Landscaping

The following details how the completion of landscaped areas will bring about benefits.

Element	Measure Description	Benefit
Paving materials	Use of robust, high-quality paving with robust proven details	Requires minimal power washing every 5 years or so.
Planter materials	Sustainable, robust materials, with high strength, to be used for planting and raised to enable easy maintenance.	Robust materials and elements reduce the frequency of required repair and maintenance.
Site Layout and Design	Generous and high-quality mature landscaping and native hedgerows. Any trees removed as part of construction to be replaced in greater numbers.	Provides natural attenuation and leads to biodiversity net gain.

3.9 Waste Management

Adequate bin storage areas are available to the side and rear of each unit. Rear access is available for all units for ease when placing bins at the roadside for collection.

Measure	Description	Benefit
Storage of Non-Recyclable Waste and Recyclable	Domestic waste management strategy - Grey, brown and green bin distinction.	Helps reduce potential waste charges.
Composting	Organic waste bins to be provided throughout.	Helps reduce potential waste charges.
Bulky waste collection	Nearby facilities in the area..	This will prevent the bin stores from becoming clogged with

		bulky items and eliminates illegal dumping.
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3.10 Human Health and Wellbeing

The following describes how the application has taken account of the health and well-being of residents in the design.

Measure	Description	Benefit
Natural daylight	The design, separation distances and layout of the blocks have been designed to optimize the ingress of natural daylight/sunlight to the proposed dwellings to provide good levels of natural light.	Reduces reliance on artificial lighting, thereby reducing costs.
Accessibility	All units will comply with the requirements of 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 storage to the rear of units behind a gated entrance • Overlooked communal walkways to the front and side of the site 	Helps to reduce potential security issues.

3.11 Home Owner Guide

Once a purchaser completes their sale, a homeowner box will be provided which will include a Homeowner Manual. This will provide important information for the purchaser on the details of the property. Typically, it includes details of the property such as MPRN, utility services and communication providers. Contact details for all relevant suppliers and user instructions for appliances and devices on the property are also included. The contact details for any operational issues and warranty timeframes are also outlined.

3.12 Mobility Management and Transport

The following is a summary of the public transport and mobility management steps considered in the development of this application. Please refer to section 6.2 of MKO Planning Report for additional information.

Measure	Description	Benefit
Access to Public Transport (Luas & Bus Services)	Various route options starting from within 3 minutes walk of the site.	Availability, proximity, and ease of access to high-quality public transport services contribute to reducing the reliance on private motor vehicle for all journey types.
Public Road	Existing public footpaths bound the site.	Ease of access 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 reduces the reliance on private motor vehicles. Secure sight parking is available at the rear of each unit.

3.13 Air Tightness Construction

The building will be designed to ensure it will achieve compliance and also exceed the airtightness requirements outlined in the Part L (2021) TGD document. The current proposal for airtightness in the Part L document is set to a maximum value of 5.0 m³/hr/m² @50Pa.

3.14 Thermal Bridging

The limitation of thermal bridging will be achieved in accordance with the guidance outlined in the Technical Guidance Document Part L (2021) regulations. To account for

thermal bridging performance from Part L, this should be achieved by adherence to the BR Part L acceptable construction details and monitoring during the construction.

3.15 Lighting

The provision of natural daylight in modern buildings helps to create a better internal environment for occupants and helps to assist in the well - being of the inhabitants. All light fittings are to be based on LED type (A+ Rated bulb) located throughout each occupiable space, such as bedroom, lobby, living/dining etc. A significant reduction in electrical energy usage may therefore be achievable through the use of high-efficiency lights.

3.16 Water Conservation

The requirements for low-flow sanitary ware (circa 6 ltrs/min) in each dwelling shall be considered in the detailed design. This is a water conservation initiative and reduces waste by restricting water flow rates to a shower within the dwelling. The showerhead fittings could be provided with a reduced flow to allow for the conservation of water use as well as reducing energy used to heat hot water.

Section 4 Conclusion

4.1 Conclusion

Through the implementation of the material, infrastructure and design choices outlined in this document the proposed buildings will be developed to current standards and provide for affordable development in the long term.

