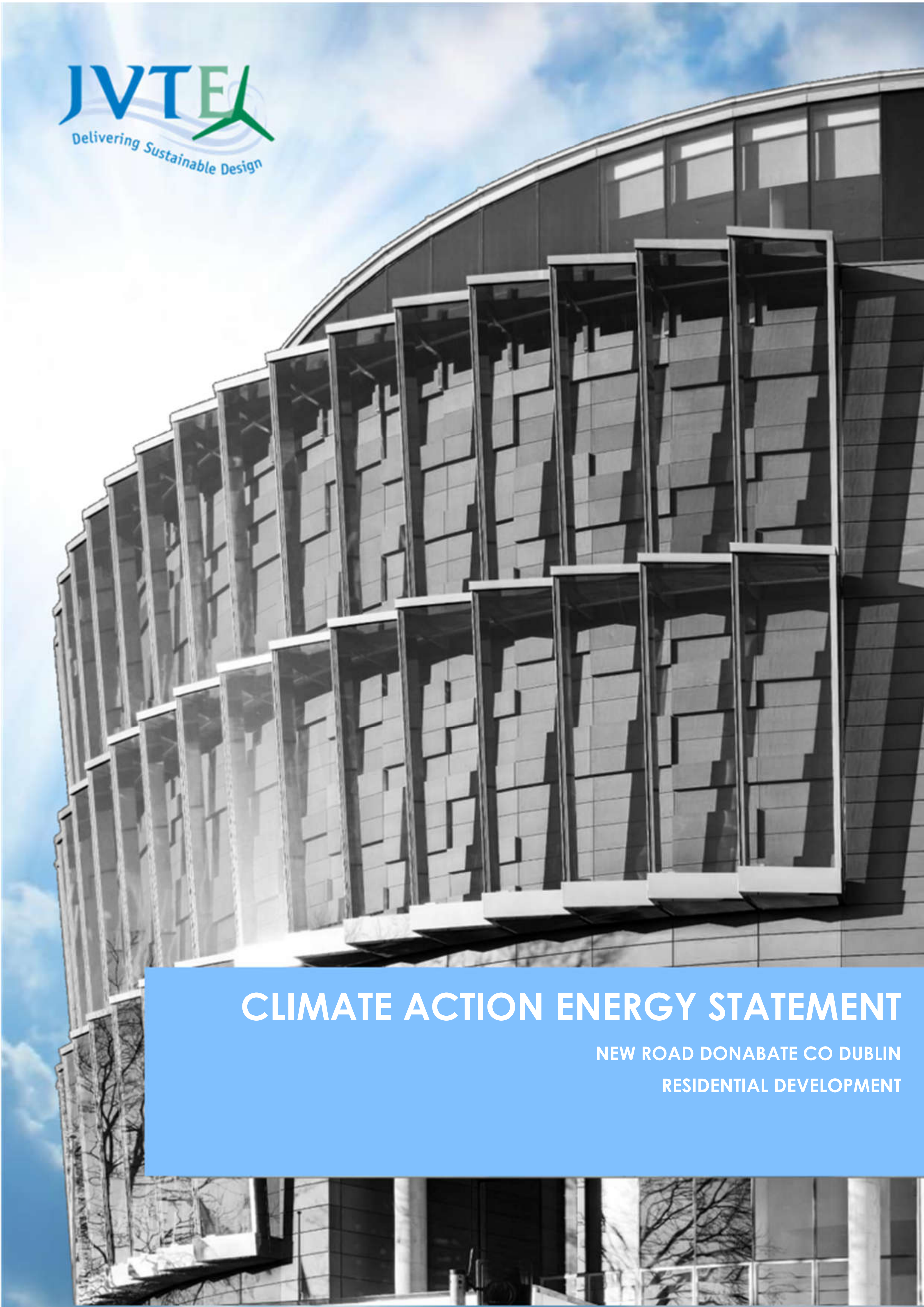


CLIMATE ACTION ENERGY STATEMENT

NEW ROAD DONABATE CO DUBLIN

RESIDENTIAL DEVELOPMENT

NEW ROAD DONABATE

RESIDENTIAL DEVELOPMENT

Climate Action and Energy Statement

Rev:	Issue Date:	Prepared By:	Checked By:
02	04/04/2024	EB	RB

Contents

1. Executive Summary

The preliminary Dwelling Energy Assessment Procedure (DEAP) assessment for the proposed residential development at New Road, Donabate reviewed a typical mid-floor 2 bedroom apartment and typical 2 -bed house which both demonstrate EPC, CPC and RER compliance buildings in accordance with the Part L of the Building Regulations 2022 and have an indicative Building Energy Rating (BER) of A2 (Refer to Appendix 1F for further details).

Table 1 - Part L Compliance Summary

Category	**APARTMENT 2 BED**	**House 2 BED**
EPC RATING	0.286	0.215
CPC RATING	0.282	0.21
BER RATING	A2	A2
RER RATING	0.29	0.39
PRIMARY ENERGY (kWh/m^2/yr)	38.10	27.02
CARBON DIOXIDE EMISSIONS (CO_2/m^2/yr)	7.49	5.31

2. Introduction

Fingal County Council plan to carry out a 'housing development' at New Road, Donabate, Co. Dublin on a site of 4.72 hectares at New Road, Donabate, Co. Dublin. The site is generally bound by: a site which is currently being developed to the north; Lanestown View residential development to the east; New Road and existing residential dwellings fronting same to the south; and Saint Patrick's Park residential development to the west. The site includes: part of New Road for road junction, cycle track, footpath and water service connection works; and part of the site to the north for water service connection works.

The proposed development will principally comprise the construction of 175 No. residential dwellings (123 No. houses and 52 No. apartments) and a single-storey crèche of 365 sq m (with outdoor play area and external stores). The 123 No. houses, which are part-1-/part-2-storey and 2-storey in height, include 30 No. 2-bed units, 82 No. 3-bed units and 11 No. 4-bed units. The 52 No. apartments include 26 No. 1-bed units, 20 No. 2-bed units and 6 No. 3-bed units and are contained in a single block ranging in height from 1 No. to 4 No. storeys.

The development will also include the following: 2 No. new multi-modal entrances/exits at New Road; 2 No. multi-modal connections to existing and under construction residential developments to the east and north respectively; cycle track and footpath along New Road; 139 No. car parking spaces; 4 No. set down bays; 6 No. motorcycle parking spaces; cycle parking; hard and soft landscaping, including public open space, communal amenity space and private amenity spaces (which include gardens, balconies and terraces facing all directions); boundary treatments; 1 No. sub-station; bin stores; lighting; PV panels atop houses; green roofs, PV panels, lift overruns and plant atop the apartment block; green roofs and PV panels atop the crèche building; and all associated works above and below ground

This Climate Action and Energy Statement for the proposed New Road Donabate development site has been developed to meet Fingal County Council 's (FCC) Development Plan 2023-2029 climate action policy CAP12 which states *"All new developments involving 15 residential units and/or more than 1,000sq.m. of commercial floor space, or as otherwise required by the Planning Authority, will be required to submit a Climate Action Energy Statement as part of the overall Design Statement to demonstrate how low carbon energy and heating solutions, have been considered as part of the overall design and planning of the proposed development"* (Fingal City Council).

As part of the Climate Action Energy Statement, a sustainability strategy has been developed to address FCC's climate action policies CAP10 'Climate Mitigation Actions in the Built Environment' and CAP11 'Climate Adaptation Actions in the Built Environment'.

Therefore, the sustainable and energy strategy for the New Road Donabate development site will employ an approach that will demonstrate how the proposed new residential development can achieve NZEB compliance based on the Part L 2022 Building Regulations. Part L sets out the definition of a Near Zero Energy Building (NZEB):

"Nearly Zero Energy Building means a building that has a very high energy performance, as determined in accordance with Annex I of the EU Energy Performance of Buildings Directive Recast (EPBD Recast) 2010/31/EU of 19 May 2010. The nearly zero or very low amount of energy required should be covered to a very significant

extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby".

The strategy to sustainable and energy-efficient design for the development at the New Road Donabate site will use efficient passive and active measures coupled with the appropriate renewable technology to deliver a robust, cost-effective, energy-efficient, and healthy living environment within the apartment and housing development site. The New Road Donabate development site will provide an opportunity to create environmentally sound and energy-efficient apartments and houses using an integrated design, planning, and construction approach. Sustainable development promotes resource conservation of our limited natural resources while catering for climate change impacts.

The design strategies employed will include a whole life cycle approach (See Figure 1) to management and planning, energy efficiency with specific focus on reducing the carbon footprint through a design that meets the requirements of the Near Zero Energy Building (NZEB) standard, material selection, waste management, improved transportation and non-polluting modes of transport and enhancing the ecological value of the site.

There are several increasingly significant drivers for sustainable and energy-efficient design which are;

- The rapidly increasing costs required to provide services, such as energy and water.
- Stricter energy and carbon emissions targets set under the Building Regulations through the introduction of the NZEB Standard now and into the future.
- The desire to provide energy efficient building development to demonstrate energy awareness, low carbon design and efficiency of use in line with FCC Climate Action Policies CAP 10 and CAP11.
- Requirements for building lifecycle considerations for all new developments.
- Fingal County Council's (FCC) Climate Change Action Plan 2019-2024 to reduce carbon emissions over the life of the Plan.
- FCC Development Plan 2023-2029 objectives regarding Climate Change and Energy Efficiency.
- The Government's plan to continue to decarbonise the built environment through the enactment of the Climate Action and Low Carbon Development Amendment) Act 2021.

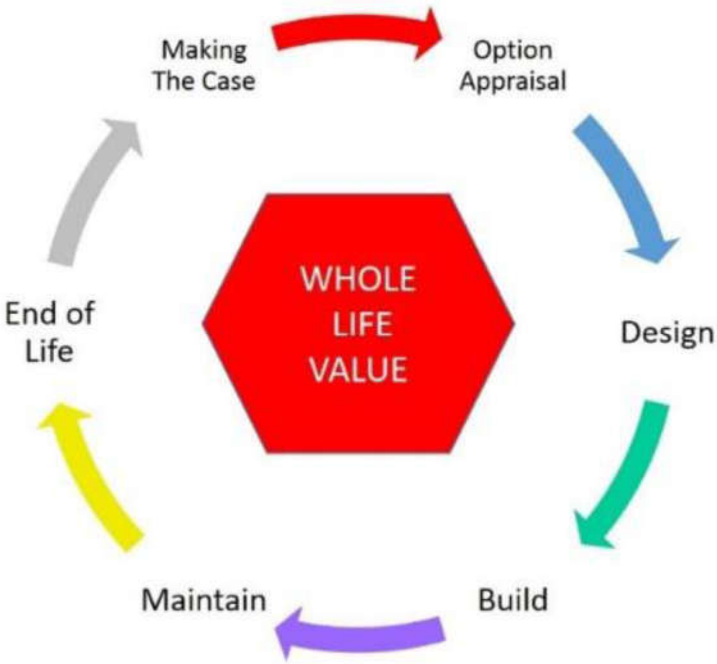


Figure 1 - Whole Life Cycle Design Consideration

3. Sustainability Strategy Approach

In developing the vision for the 'Sustainable and Energy Strategy' for the development at the New Road Donabate development, the incorporation of sustainable strategies into the project deliverables will encourage the commitment to sustainable design at a very early stage with the Client and Design Team to ensure a 'best in class' development. This approach will ensure that the development meets the principles of the Government's 'National Climate Change Policy', FCC Development Plan 2023 -2029 objectives regarding Climate Change and Energy Efficiency, that it exceeds the requirements of the Building Regulations Part L 2022 and maximises the reduction in Carbon Dioxide (CO_2) emissions thus demonstrating the Client's commitment to climate change.

The sustainable strategy will seek to incorporate appropriate and effective economic and environmental measures. In this respect, consideration will be given to the following:

- Development of a flexible design to enhance the developments longevity.
- Maximising the use of passive design measures such as the façade, to take advantage of the site constraints/orientation, use of enhanced fabric u-values in excess of Part L 2022 with the delivery of an excellent air permeability rate.
- Targeting natural daylight levels that meet European, CIBSE and BRE Guidelines and FCC objective DMSO22. Good natural daylight creates a positive living environment and contributes to the well-being of the occupants and the provision of high-performance glazing on the elevations that maximises the use of natural daylight that will enhance the visual comfort for the occupants.
- Carrying out Façade studies in conjunction with the Architect using computer modelling techniques to maximise the daylight factors, ventilation and solar benefits specific to the New Road Donabate development site.
- Extend the sustainable approach from the Building to the Site throughout the construction and handover process.
- Reduce, Reuse and Recycle throughout the design, construction and operational phases of the development.
- Use of Dynamic Thermal and Energy Simulation techniques to confirm a low energy and carbon footprint design for the development. The design will incorporate all apartment and housing areas that will operate under natural ventilation principles and these areas will be checked for compliance with Part L of the Building Regulations for the impact of overheating. Additionally, the

spaces will also be checked for the impact of Climate Change using the 2020/2050 CIBSE accredited weather files and the spaces will be confirmed to meet the compliance criteria.

- Energy efficient M&E systems and plant including HVAC, Lighting (LED efficiency), Triple E registered products, etc. that minimises the consumption of energy and maximises the air quality within the apartment and housing buildings using the following measures:
    - Efficient use of natural light to offset the use of artificial light.
    - Elimination of the use of fossil fuel heating systems by specifying high efficiency heating systems with a low carbon footprint e.g., Using Heat Pump technology.
    - Use of High efficiency light fittings, LED lights, etc. for dimming, presence detection, daylighting.
    - Lighting Management Plan that uses daylight control and presence detection in areas which are intermittently occupied e.g. Common Landlord areas.
    - Use of renewable technologies to off-set Primary Energy consumption and carbon emissions where economically and technically feasible. For example, the introduction of heat pump technology and a PV Panel Array at roof level could assist in increasing the development's impact on the carbon footprint.
- Incorporation of the above design measures to maximise the Building Energy Rating (BER) for the apartments and houses to meet an 'A Rated' target for the development. This will demonstrate that the buildings have been designed to ensure energy efficiency and provide the user with a degree of certainty over their energy and carbon footprint into the future.

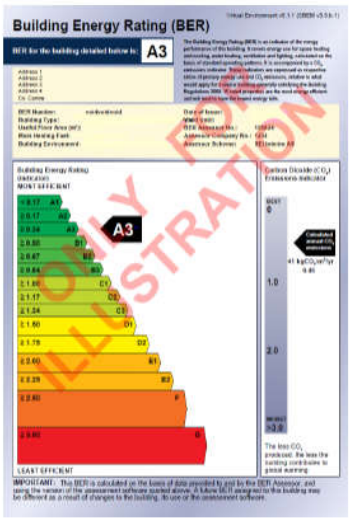


Figure 2 - Example BER Cert

- An integrated Water Management and Conservation approach that incorporates the use of low water consumption equipment in the apartments and houses to ensure the minimal use of potable water, efficient sanitary appliances (low water WC cisterns, push spray taps, etc), Landlord water consumption and leak detection linked to a Building Management System (BMS).
- Encouraging the use of public transport by using the principles of environmental assessment methodologies to reduce the reliance on cars and encourage a shift to more carbon-lowering modes of transport.
- Installing Electric Vehicle charging facilities in line with Policy CAP27 and Part L 2022 regulations to encourage a shift from fossil fuel cars.
- Whole life cycle approach to the selection of materials/ plant used in the building with specific regard to the impact on the carbon footprint. Designing out of MEP where possible to reduce Embodied Carbon of plant and services. Avoidance of plant with a high weight and selection of materials based on their environmental merit. Mitigation of refrigerant impact through low refrigerant GWP and leakage rates.

Figure 3 - Material Selection Lifecycle

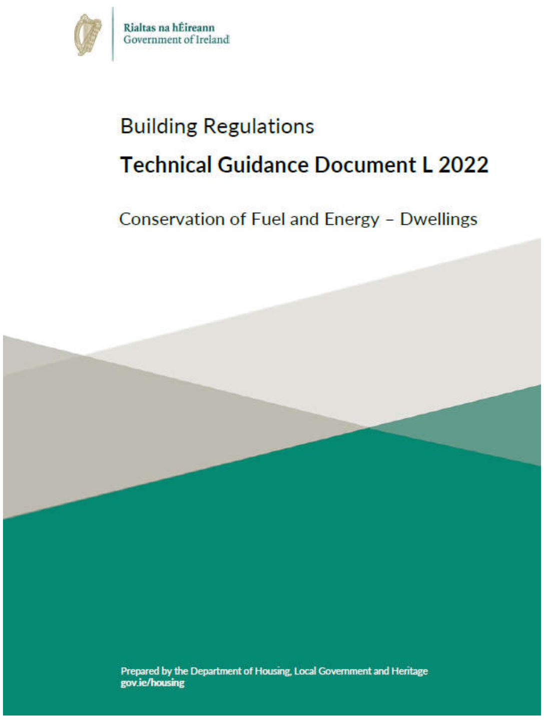
The additional investment required to deliver a sustainable design in line with the Fingal Development Plan 2023 – 2029 will add long term value for the building users. These benefits will require less energy due to the achievement of the Part L 2022 standards, less services and therefore less resources to operate than is required for existing developments. This will make the new apartments and houses more energy and environmentally efficient and will ensure that it is a more sustainable development into the future.

APPENDIX 1: Energy Approach

A. Introduction

This report outlines a preliminary design stage assessment for the New Road Donabate residential development. The development consists of the delivery of new apartments and houses assessed under Part L 2022. A sustainable energy approach to buildings offers an opportunity to create environmentally sound and energy-efficient apartments and houses using an integrated design, planning and construction approach. Sustainable development promotes resource conservation of our limited natural resources, which includes energy efficiency, renewable energy, water conservation, waste minimisation and considers the environmental impact of the operation of an apartment/house building for its entire "life cycle".

The process to maximise the environmental performance of the New Road Donabate development project is driven by a holistic and fully coordinated approach to achieve sustainable and flexible facilities. The apartments and houses are designed to exceed the provisions of the Building Regulations Part L 2022 (See Figure 4) and will offer a sustainable and adaptable design to meet future provisions to these standards.


Rialtas na hÉireann
Government of Ireland

Building Regulations

Technical Guidance Document L 2022

Conservation of Fuel and Energy – Dwellings

Prepared by the Department of Housing, Local Government and Heritage
gov.ie/housing

Figure 4 - Building Design Standards Part L 2022

The strategy approach to the design of the facilities is firstly, where feasible, to maximise the passive measures of the apartments and houses (improved insulation, air tightness, solar gains, daylight, etc) and then apply the most efficient active measures (Heat Pumps, LED lighting controls and power density, etc). Only following this, can renewable technologies that are deemed environmentally and economically viable be applied.

The following key elements will be included in the design parameters:

- Maximise the passive elements of the design (where feasible) in the first instance by:
  - Specifying building fabric insulation u-values better than the Part L 2022 standards applicable to new dwelling buildings.
  - Targeting the air permeability to be < $3m^3/(hr.m^2)$ @ 50Pa.
  - Using dynamic thermal modelling to optimise the façade design using differing glazing u-values, light transmittance and solar gain ('g' values).
  - Ensuring particular detailing of linear thermal bridging.
  - Ensuring the maximum number of spaces are naturally ventilated.
- Maximising the Active elements of the design by:
  - Specifying lighting designs that deliver > 90 lumen/ circuit watt
  - Specifying lighting systems with occupancy and daylight controls for the landlord areas.
  - High-efficiency Heating system using latest low carbon technology e.g. Exhaust Air Heat Pumps
  - Minimise the specific fan power where applicable.
- Utilise renewable technology to target the highest primary energy factor with technologies such as Solar PV, Heat Pumps, etc.

B. Renewable Options Considered

Fingal County Council 's (FCC) Development Plan 2023-2029 climate action policy CAP12 statement asks '. *to demonstrate how low carbon energy and heating solutions, have been considered as part of the overall design and planning of the proposed development'*.

Therefore, the following renewable energy sources will be considered in line with FCC Policies CAP 13(Energy from Renewable Sources) and CAP19 (Support for District Heating) for the proposed development during the detailed design stages to assist in reducing the carbon footprint if deemed technically, environmentally, and economically feasible.

Table 1 - GSHP Feasibility

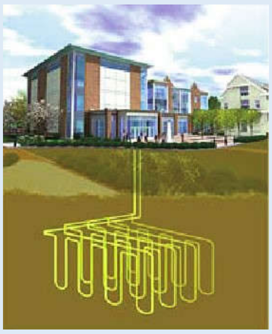
Technology	Feasibility			Comments
	Low	Medium	High	
Ground Source Heat Pumps (GSHP) Closed Loop 		✓		GSHP technology uses seasonal differences between ground and air temperatures to provide heating in winter and cooling in summer. GSHP provides low-temperature heating and high-temperature cooling suitable for underfloor heating or chilled beams. Site restrictions may be a consideration with vertical borehole being the most practical but also more capital-intensive. Impact on the Primary Energy Factor can be significant with Heat Pumps, but the additional capital and area requirement can be a constraint.

Table 2 - ASHP Feasibility

Technology	Feasibility			Comments
	Low	Medium	High	
Air Source Heat Pump (ASHP) 			✓	ASHP technology uses seasonal differences between external air temperatures and refrigerant temperatures to provide heating in winter and cooling in summer. As most of the energy is taken from the air, they produce less greenhouse gas than a conventional heating system over the heating season. Most efficient when used as a pre-heat mechanism as the COP remains high and therefore has a major impact on the energy efficiency criteria. ASHP can be utlised in conjunction with conventional heating systems such as boilers or standalone, as a centralised system to provide heating and hot water.

Table 3 - CHP Feasibility

Technology	Feasibility			Comments
	Low	Medium	High	
Combined Heat & Power (CHP) 	✓			Combined heat and power (CHP) refer to the local simultaneous generation of electricity and heat. CHP works best in areas that have a constant "round the clock" heating demand. CHP systems typically run on oil or gas, with biomass also used. Key to a CHP installation is to ensure that the demand load for heating and electricity usage are utilized, i.e. to size the unit correctly on a base load. The objective of this development is to be low carbon user therefore it is not intended to use a CHP plant to run on natural gas.

Table 4 - Solar PV Feasibility

Technology	Feasibility			Comments
	Low	Medium	High	
Solar Photovoltaic 			✓	Solar PV collectors absorb the sun's energy to convert it into electricity. PV Panels can be discrete roof-mounted units or embedded in conventional facades, etc. The ideal location for locating PV systems is facing a southerly direction. Good impact from a Primary Energy perspective.

Table 5 - Solar Thermal Feasibility

Technology	Feasibility			Comments
	Low	Medium	High	
Solar Thermal 		✓		Solar Thermal collectors absorb the sun's energy and provide energy for space heating and hot water generation. The ideal location for locating solar systems is facing a southerly direction. Solar thermal systems are usually designed to meet only a portion of the heating load. The available roof area is better utilised with Solar PV which provides are a greater impact to Primary Energy.

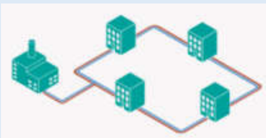
Table 6 - Biomass Heating Feasibility

Technology	Feasibility			Comments
	Low	Medium	High	
Biomass Heating 	✓			Biomass boilers combust wood chips or pellets and are considered to have a very low carbon impact. The technology requires significant plant space and ongoing maintenance. The impact on the Primary Energy factor is not significant.

Table 7 - Small Scale Wind Power Feasibility

Technology	Feasibility			Comments
	Low	Medium	High	
Small Scale Wind Power 	✓			Micro wind turbines can be fitted to roofs but do not supply much energy. Full-scale turbines need open space and are capital-intensive but deliver large energy savings. There is considerable health and safety issues associated with wind turbines, especially in an urban environment. Good impact from a Primary Energy perspective.

Table 8 - District Heating Feasibility

Technology	Feasibility			Comments
	Low	Medium	High	
District Heating 			✓	A centralised district heating system is one where a common energy centre is used to provide heating/cooling to multiple buildings. Such a scheme works best when an input source of heat in the locality can be utilized, such as waste heat from a data centre or waste incinerator facility. Sharing the cost of the capital equipment and increasing diversity of use are the main advantages of this option. However, energy losses below and above ground, inflexibility surrounding billing options for tenants, inflexibility surrounding separate ownership of the building within the one scheme and plant space requirements must be considered. As the scheme is utilizing heat pump technology on an individual apartment basis the building will not be *'District Heating Enabled'*.

C. Embodied Energy Impacts

Embodied energy is the concept that the materials and processes involved in construction of a building consume vast amounts of energy and therefore emit carbon, which is also known as "Embodied Carbon". To date, embodied energy/carbon is not currently regulated in Ireland and focus has always been towards "Operational Energy" through the use of compliance with Part L of the Building Regulations.

However, the following points related to Embodied Carbon will be considered for the development:

- Reduce the weight of equipment. Specify products that can be demounted and reused. Specify products with long lifespans.
- Mitigate refrigerant impact through low refrigerant Global Warming Potential (GWP) and leakage rates.
- Plant that should be easily accessible for inspection, maintenance and replacement.
- Design with adaptation in mind.
- Less is more, design out MEP where feasible.
- Source local materials where possible.
- Source materials with an Environmental Product Declaration (EPD) where possible.

D. Part L Energy Building Procedure

The performance of buildings to achieve Part L compliance will be checked during the design stage using the most current DEAP methodology. To assess whether a building achieves the Part L performance, it is necessary to first calculate the performance of the building being designed using the DEAP software with the parameters from TGD Part L 2022 for domestic buildings. The Dwelling Energy Assessment Procedure (DEAP) is a software tool and manual which calculates energy consumption and carbon dioxide emissions. It considers space heating, ventilation, water heating, and lighting in a dwelling. The apartments and houses are being designed to incorporate the necessary specification details to achieve compliance with the NZEB Standard.

E. Domestic Energy Assessment Procedure (DEAP)

DEAP Procedure (source: www.seai.ie).

The following outlines the DEAP Procedure

Tab	Main user entry actions	Visible calculated outcome and other comments
Start	Administrative details of the dwelling and BER assessment including electricity Meter Point Reference Number (MPRN), new/existing dwelling, TGD L version, construction date and dwelling type.	As entered
Property and assessor details	Details of property, client and Assessor	As entered
Dimensions	Area and height of each storey, area of living room, number of storeys.	› Total floor area, dwelling volume and living area fraction. › Total energy usage is divided by the dwelling floor area to determine the Building Energy Rating. › All dimensions in DEAP are internal – this is a standard convention in UK and other EU member states. Irish Building Regulations Part L work to internal dimensions.
Ventilation	Openings (e.g. chimneys), structural leakage and mechanical ventilation systems.	› Ventilation heat loss (components and total), electricity for fans, heat gain from fans. Air permeability compliance check with Building Regulations 2008 and 2011 TGD L requirements. › Number of openings (such as chimneys, permanently open wall/window vents) is likely to have a significant bearing on the BER. If using mechanical ventilation, it is best to use test data from SAP Appendix Q rather than default data.
Building elements: › Floors › Walls › Roofs › Doors	Heat loss building element dimensions and U-values. Default U-values may be used for existing dwellings.	› Total Area*U-value for each element type. U-value is the rate of heat loss per m^2 surface area per degree. E.g. a U-value of 1, with a temperature inside of 21 and outside of 11 on a $1m^2$ wall area has a rate of heat loss of 10W. › Best to use actual calculated U-values instead of defaults, but supporting evidence must be acquired from survey or dwelling specifications (such as insulation type, thickness, area, certified test data). Certified data from Agrement certs or accredited data gives insulation thermal conductivity. The DEAP Manual details the applicable European U-value calculation standards (such as EN6946 for walls and roofs). › Adding insulation to a poorly insulated building element will have a significant bearing on the BER.
Building elements: Windows	Window and glazed door dimensions, orientations, U-values and shading characteristics. Defaults may be used for new or existing dwellings.	› Glazed area, heat loss, effective area for solar gain, glazing ratio for daylight gain, summer heat gain. › Window orientation is important. Actual U-values and solar transmittance should be used where available from certified data (to relevant European standards such as EN10077-1;2).

Tab	Main user entry actions	Visible calculated outcome and other comments
Building elements: Heat loss results	Thermal bridging factor	› Tab calculates fabric heat loss, total heat loss coefficient and heat loss parameter for the dwelling. Compliance check with Building Regulations fabric insulation requirements (for Building Regulations 2005 - 2011 TGD L as appropriate for the dwelling) is also carried out. › Obtain more beneficial thermal bridging factor from certified calculations or use of Acceptable Construction Details for new dwellings as published by DECLG. › Dimensions are internal as per TGD L. Thermal bridging heat losses are added to the fabric plane elements heat losses. › A supporting spreadsheet to calculate actual Thermal Bridging heat loss as per TGD L 2011 is available on www.seai.ie
Water heating	Water heating system characteristics, including supplementary electric water heating in summer and solar water heating	› Tab calculates the hot water heating demand, solar hot water output, solar hot water pump consumption, primary circuit loss, internal heat gains from hot water, distribution losses. › Hot water storage insulation and improved hot water storage controls (time and thermostatic) are commonly used to improve the BER.
Lighting and internal gains	Proportion of fixed lighting outlets which are low energy	› Annual energy use for lighting, internal seasonal heat gains from lighting and other internal heat gains. › Installation of low energy light bulbs (CFLs, LEDs and fluorescent tubes) is a cost effective way to improve the BER.
Net space heat demand	Thermal mass category	› Mean internal temperature, annual 'useful' space heat demand from monthly calculations allowing for intermittency, solar gains and internal heat gain utilisation.
Distribution system losses and gains	Heating system control category, responsiveness category, heat emission characteristics, pumps and fans	› Annual space heat demand allowing for control, responsiveness, heat emission and equipment heat gain characteristics. › Electrical power consumed by pumps (e.g. central heating pumps) calculated. › Use of thermostats, zoning, TRVs and programmers along with other control improvements can have a significant bearing on the BER. Central heating pumps with high efficiency labels will also decrease energy consumption in DEAP.

Tab	Main user entry actions	Visible calculated outcome and other comments
Energy requirements: Individual heating system	Individual heating systems: Space and water heating appliance efficiency and fuel characteristics. Combined heat and power plant characteristics. Secondary heating (e.g. fireplace) is also considered.	› Annual delivered fuel consumption for space and water heating, CO_2 emissions. › Improved heat source efficiency is critical to obtaining a better BER. Data is preferably taken from www.seai.ie/HARP. The Home-heating Appliance Register of Performance (HARP) lists efficiencies based on accredited test data to the standards and calculation methods specified in DEAP. › Replacing an open fire with a stove and flue will reduce ventilation losses and improve the secondary heating system efficiency. Heating system efficiencies are based on Gross Calorific Values and generally are a seasonal value as calculated in the DEAP Appendices. The test data are derived from European standards (e.g. EN14511 for heat pumps).
Energy requirements: Group heating	Community/ group heating schemes: Space and water heating appliance efficiency and fuel characteristics. Combined heat and power plant characteristics.	› Annual fuel consumption for space and water heating, CO_2 emissions. › Heating system efficiency, controls and pipework should all be considered to reduce energy consumption for all dwellings heated by the group system.
Summer internal temperature	Effective air change rate of dwelling	› Optional tab › Calculates threshold internal temperature and provides approximate indication of overheating risk

Results	None	› Annual delivered energy
		› Annual primary energy and CO_2 emissions. DEAP derives these values by multiplying the delivered energy for each fuel by the associated primary energy and CO_2 factors for those fuels.
		› The BER grade ranging between A1 and G.
		› Building Regulations Compliance checking for new dwellings:
		  › Energy and CO_2 emissions compared to TGD L reference dwelling.
		  › Renewables conformance requirements checking as per TGD L
		  › Fabric insulation levels as per TGD L
		  › Air tightness checking against TGD L performance levels

F. Apartment/House Performance Specification

The design is based on the following outline specifications:

External wall area weighted average U-value – ≤ 0.18 W/m^2.K

Ground floor area weighted average U-value – ≤ 0.12 W/m^2.K

External roof area weighted average U-value – ≤ 0.14 W/m^2.K

Window area average U-value (incl. frame) – ≤ 1.40 W/m^2.K

Door area average U-value – 1.0 W/m^2.K

Vertical glazing total solar transmittance (g-value) – ≤ 0.6 (Typical value assumed)

Glazing light transmittance – 70% (Typical value assumed – to be confirmed by architect and window manufacturer)

Air permeability/Tightness – ≤2.5 (m^3/ ($hr.m^2$)) at 50 Pa.

Mechanical & Electrical Services

- Mechanical System Type:
  - Space Heating – Exhaust Air Heat Pump
  - DHW System – Exhaust Air Heat Pump
  - Fuel Type – Electricity
- Electrical Power factor correction ≥0.95
- Energy metering for lights

Renewable Technologies

- System – Exhaust Source Heat Pump
- Fuel Type – Electricity
- Heat Pump Heating Efficiency – sCOP >3.5
- Space heating – Exhaust Air Heat Pumps
- DHW Supplied by Heat Pump – Exhaust Air Heat Pumps
- PV Panels – As Required for Part L Compliance

DEAP results for 2 -Bedroom Mid-Floor Apartment:

Results

	Delivered energy [kWh/y]	Primary energy [kWh/y]	CO_2 emissions [kg/y]
Space heating - main	257	535	105
Space heating - secondary	0	0	0
Water heating - main	811	1,687	332
Water heating - supplementary	0	0	0
Pumps, fans, etc.	109	227	45
Energy for lighting	211	439	86
CHP input (individual heating systems only)	0	0	0
CHP electrical output (individual heating sys	0	0	0
Photovoltaic/ Wind Turbine	0	0	0
Type 1	0	0	0
Type 2 -	0	0	0
Type 3 -	0	0	0
Total	1,388	2,888	568
per m^2 floor area	18.3	38.10	7.49
		[kWh/m^2 y]	
Building Energy Rating		38	A2

Check conformity with MPEPC, MPCPC and RER requirements in TGD L

Relevant for new-build.

	Primary energy [kWh/y]	CO2 emissions [kg/y]	Renewable Energy Ratio
Totals for reference dwelling	10,102	2,012	
	EPC	CPC	RER
Performance coefficients	0.286	0.282	0.29
Maximum permitted	0.300	0.350	0.20
	Complies	Complies	Complies

DEAP results for 2 -Bedroom Mid-Floor House:

Results

	Delivered energy [kWh/y]	Primary energy [kWh/y]	CO_2 emissions [kg/y]
Space heating - main	331	688	135
Space heating - secondary	0	0	0
Water heating - main	982	2,042	401
Water heating - supplementary	0	0	0
Pumps, fans, etc.	121	251	49
Energy for lighting	270	561	110
CHP input (individual heating systems only)	0	0	0
CHP electrical output (individual heating sys	0	0	0
Photovoltaic/ Wind Turbine	0	0	0
Type 1	-400	-832	-164
Type 2 -	0	0	0
Type 3 -	0	0	0
Total	1,303	2,710	533
per m^2 floor area	13.0	27.02	5.31
		[kWh/m^2 y]	
Building Energy Rating		27	A2

Check conformity with MPEPC, MPCPC and RER requirements in TGD L

Relevant for new-build.

	Primary energy [kWh/y]	CO2 emissions [kg/y]	Renewable Energy Ratio
Totals for reference dwelling	12,602	2,538	
	EPC	CPC	RER
Performance coefficients	0.215	0.210	0.39
Maximum permitted	0.300	0.350	0.20
	Complies	Complies	Complies

G. Conclusion

The New Road Donabate development will be designed to comply with all relevant environmental and sustainable regulations. Building design and analysis will be conducted in conjunction with all relevant design team disciplines to ascertain the most suitable pathway taking consideration of building fabric, lighting, HVAC, material selection and building operation & maintenance.

Signed:

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Rory Burke, Chartered Engineer

Managing Director

J.V.T.E..

Date: 04/04/2024