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CLIMATE ACTION & ENERGY STATEMENT
FOR THE
KISHOGE PART 10 APPLICATION
AT
SITE 3, KISHOGE,
CLONBURRIS, LUCAN, CO. DUBLIN

Document No: KSG3-MAE-XX-XX-ME-RPT-1000

Issue: PL1 (Planning)

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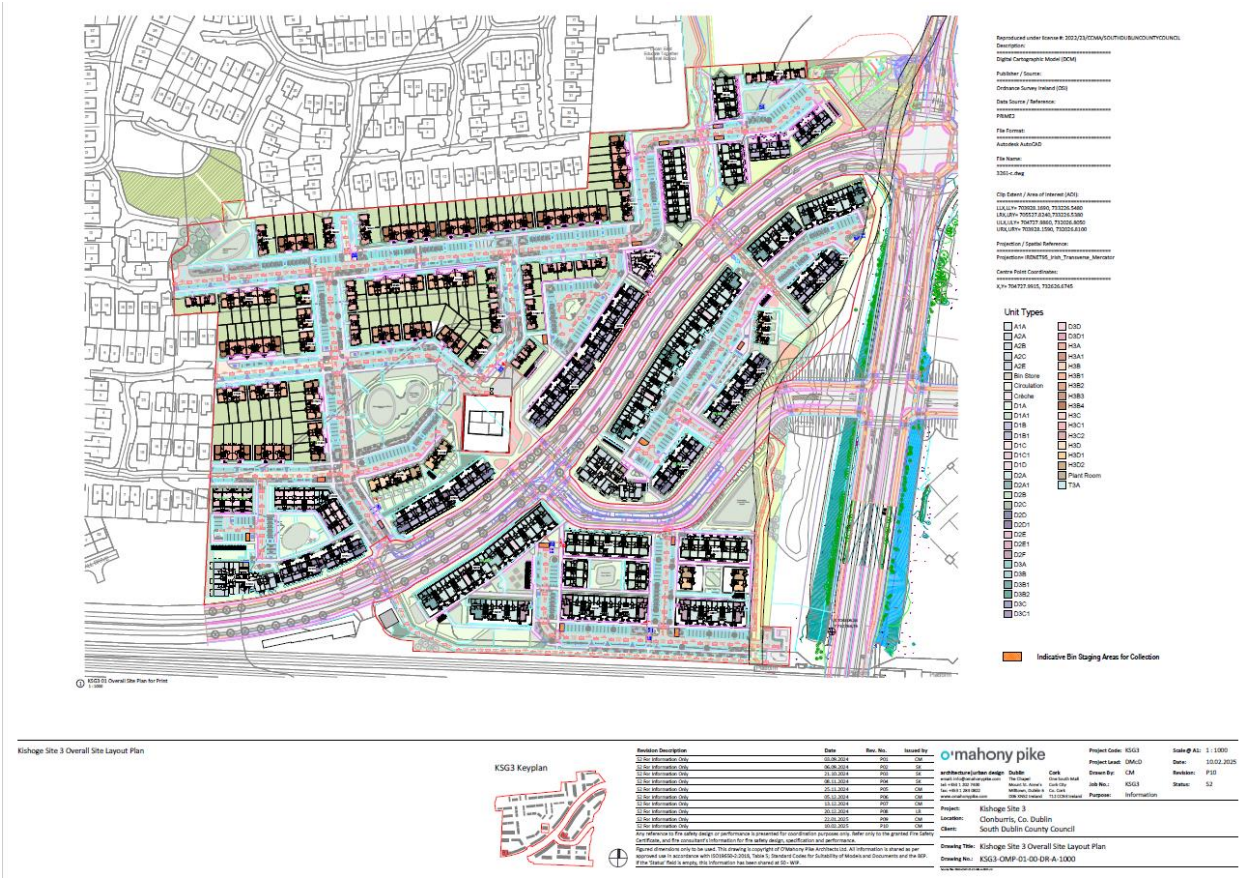
1.0 INTRODUCTION

The following Sustainability / Energy Statement (Incl. Energy Efficiency and Climate Adaptation Statement) has been prepared to accompany a planning application, for a residential development, as detailed below. The purpose of this statement is to demonstrate how low carbon energy and heating solutions have been considered as part of the overall design and planning of the proposed development.

The proposed development comprises 580no. residential units in a mix of house, apartment, duplex and triplex units comprising 1-bedroom, 2-bedroom and 3-bedroom typologies; 2-storey childcare facility; All associated and ancillary site development and infrastructural works including surface level car parking, bicycle parking, hard and soft landscaping and boundary treatment works, including public, communal and private open space, public lighting, bin stores and foul and water services. Vehicular access to the site will be from Adamstown Avenue and the Northern Link Street, proposed under permitted application Reg. Ref. SDZ24A/0033W.



Pic.1.1 Site 3 Site Location

2.0 ENERGY & CARBON EMISSIONS STRATEGY

This report outlines the energy performance of the proposed new development and compare the standards prescribed in the building regulations TGD Part L. As part of the development's efforts to further reduce energy consumption, the residential units shall target a BER energy rating of 'A2'/'A3'.

The built environment has been designed to maximise the quality of life within the development, with the health and wellbeing of the user in mind. Generous open spaces surrounding the apartment development have been defined and orientated for this purpose.

The external landscape design for the scheme is integral to the health and wellbeing of both people living in and visitors to the development and has been maximized in specific areas, where possible.

Passive surveillance has been incorporated into the design of the proposed development. This reduces the risk of crime to all residents within the scheme, littering, and loitering of green spaces.

The proposed development has been designed to meet the requirements outlined in the Sustainable Residential Development in Urban Areas Guidelines for Planning Authorities; Urban Development and Building Heights Guidelines for Planning Authorities and the "Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities".

The dwellings shall include several energy conservation measures to achieve a high energy rating for each dwelling:

- High-performance thermal envelope with low U-values for the fabric
- Low thermal bridging construction details
- Airtight construction
- Energy efficient ventilation system
- Energy efficient heating and hot water generation system
- Energy efficient lighting to be used throughout.
- On-site energy generation (where required)

Buildings should be designed to minimise resource consumption, reduce waste, conserve water, promote efficient energy use and use appropriate renewable technologies.

3.1 CLIMATE ACTION PLAN 2021

The government is creating and implementing policies and strategies to achieve its long-term goal of transitioning to a low-carbon, climate resilient and environmentally sustainable economy by 2050.

By 2030, the government aims to achieve the following.

- Cutting greenhouse gas emissions by at least 30%
- Reaching a target of at least 32.5% energy efficiency
- Delivering 70% renewable electricity

The climate action and low carbon development act 2021 sets Ireland on the path to a 51% reduction in emissions by the end of the decade and to net-zero emissions no later than 2050.

This will require the introduction of a range of further measures, in addition to those already committed to in the 2019 Climate Action Plan, including:

- Improving the fabric and energy efficiency of our existing buildings
- Rolling out zero-carbon heating solutions, predominantly heat pumps and district heating networks.
- Planning for a full phase out of fossil fuels in buildings by 2050
- Progressive strengthening of building standards for all types of buildings
- Promoting the use of lower carbon alternatives in construction
- Promoting behavioural change in how households use energy.

The sustainable design of the proposed development ensures that each dwelling in the development performs efficiently and complies with the NZEB criteria.

3.4 SOUTH DUBLIN COUNTY COUNCIL – DEVELOPMENT PLAN 2022-2028

The development is subject to the South Dublin County Council development plan 2022-2028. The following council policies have been considered as part of the proposed Energy strategy:

Climate Change

It is the **policy** of South Dublin County Council:
▪ CA1: To support the implementation of national objectives on climate change including the 'Climate Action Plan 2021: Securing Our Future' (including any subsequent updates to or replacement thereof), the 'National Adaptation Framework' 2018 and the 'National Energy and Climate Plan for Ireland 2021-2030' and other relevant policy and legislation.

▪ CA2: To prioritise and implement measures to address climate change by way of both effective mitigation and adaptation responses in accordance with available guidance and best practice.

It is an **objective** of South Dublin County Council:
▪ CAO1: To implement South Dublin County Council's 2019 Climate Change Action Plan in consultation and partnership with stakeholders including the Dublin Metropolitan Climate Action Regional Office (CARO), Codema, residents and elected representatives.

Sustainable Energy / Renewable Energy

It is the **policy** of South Dublin County Council:
▪ CC11: To support, encourage and facilitate the production of energy from renewable sources, such as from solar energy, hydro energy, wave/tidal energy, geothermal, wind energy, combined heat and power (CHP), heat energy distribution such as district heating/cooling systems, and any other renewable energy sources, subject to normal planning and environmental considerations.

District heating and waste

It is the **policy** of South Dublin County Council:

▪ CA15: To actively encourage the development of low carbon and highly efficient district heating and decentralised energy systems across the city utilising low carbon heat sources such as renewable energy and waste heat recovery and to promote the connection of new developments to district heating networks where such systems exist/can be developed in a given area.

▪ CA17: To support, encourage and facilitate the potential of district heating, all Climate Action Energy Statements submitted to the Council (see Policy CA10) shall include an assessment of the technical, environmental, and economic feasibility of district or block heating or cooling, particularly where it is based entirely, or partially on energy from renewable and waste heat sources.

In addition:

- Climate Action Energy Statements for significant new residential and commercial developments in Strategic Development and Regeneration Areas (SDRAs), will assess the feasibility of making the development 'district heating enabled' in order to facilitate a connection to an available or developing district heating network in the area.

- Climate Action Energy Statements for significant new residential and commercial developments in the Docklands SDRA will assess the feasibility of making the development 'district heating enabled' in order to facilitate a connection to the Dublin District Heating System.

▪ CA18: To encourage proposed and existing developments and facilities (such as data centres) to capture and utilise otherwise wasted heat, and use waste heat either on-site, or in an adjoining, and nearby sites, in compliance with all relevant Energy Efficiency Regulations.

Sustainable Building Design/Quality

It is the **policy** of South Dublin County Council:
▪ CA8: To require low carbon development in the city which will seek to reduce carbon dioxide emissions, and which will meet the highest feasible environmental standards during construction and occupation, see Section 15.7.1 when dealing with development proposals.
New development should generally demonstrate/ provide for:

a. building layout and design which maximises daylight, natural ventilation, active transport and public transport use.

b. sustainable building/services/site design to maximise energy efficiency.

c. sensitive energy efficiency improvements to existing buildings.

d. energy efficiency, energy conservation, and the increased use of renewable energy in existing and new developments.

e. on-site renewable energy infrastructure and renewable energy.

f. minimising the generation of site and construction waste and maximising reuse or recycling.

g. the use of construction materials that have low to zero embodied energy and CO2 emissions.

h. connection to (existing and planned) decentralised energy networks including the Dublin District Heating System where feasible.

Energy Efficiency and the Built Environment

It is the **policy** of South Dublin County Council:

- CA3: To support the transition to a low carbon, climate resilient city by seeking sustainable settlement patterns, urban forms, and mobility in accordance with the National Planning Framework 2018 and the Regional Spatial and Economic Strategy 2019.

- CC4: To support retrofitting of existing built-up areas with measures which will contribute to their meeting the objective of a low-carbon city, such as reopening closed walking and cycling links or providing new links between existing areas.

- CC5: To ensure that all new development including in Strategic Development and Regeneration Areas integrate appropriate climate mitigation and adaptation measures. See also Section 15.4.3. Sustainability and Climate Action and Section 15.7.3 Climate Action and Energy Statement.

It is an **objective** of South Dublin County Council:

- CCO12: To support and implement the forthcoming Regional Strategy for Electric Vehicle (EV) charging over the lifetime of the plan to facilitate the transition to low carbon vehicles required to achieve 2030 national targets.

3.0 BUILDING REGULATIONS – PART D

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

The proposed dwellings are designed in accordance with the Building Regulations, in particular Part D 'Materials and Workmanship', which includes all elements of the construction.

3.1 BUILDING REGULATIONS – PART L

The current edition of the Building Regulations Technical Guidance Document Part L – Conservation of Fuel and Energy – Dwellings sets out the requirements for the minimum fabric and air permeability requirements, maximum primary energy use and carbon dioxide (CO2) emissions as well as the minimum amount of energy derived from renewable sources, as calculated using the Domestic Energy Assessment Procedure (DEAP) methodology.

Three design aspects demonstrate compliance:
1. The quality of building fabric
2. The limitation of primary energy use and CO_2 emissions
3. The use of energy from renewable sources

The table below outline the maximum fabric U value for each element as outlined in the Building Regulations TGD-L:

Maximum Building Fabric U-values

Building Fabric Element	TGD-L-2022 / NZEB U-value (W/m^{2}K)
Pitched Roof	0.16
Flat Roof	0.20
External Walls	0.18
Ground Floor / Exposed Floor	0.18
External doors, Windows, Rooflights	1.40
Air Permeability (Air Tightness)	5.0 m^3/h m^2 @ 50Pa

The table below outline the minimum energy values for the dwelling as outlined in the Building Regulations TGD-L:

Energy / Carbon Performance Limits and Renewable Energy Target

Element	TGD-L-2022 / NZEB	Reduction vs Reference building
Maximum Permitted Energy Performance Coefficient (MPEPC)	0.30	70%
Maximum Permitted Carbon Performance Coefficient (MPCPC)	0.35	65%
Minimum Amount of Energy from Renewable Sources	0.20	-

4.0 SUITABILITY OF ENERGY TECHNOLOGIES

To provide energy in a resource efficient manner, various low energy and zero carbon technologies have been assessed to determine suitability for the proposed development.

4.1 District Heat Networks

District heat networks use a combination of excess heat generated from large-scale commercial, industrial, or medical processes and heat generated from a centralised source to heat building connected to the network.

At present there are two large district heating schemes available in the Greater Dublin Area:

- District Heating Scheme in Tallaght, Dublin 24, associated with large data centre in the area, utilising waste energy to heat some offices, local library, with a possibility of future extension to heat affordable dwellings in the area. This system is of a limited scale and it is unlikely it would be extended to reach the proposed development to suit the programme for the residential development.

- Dublin District Heating Project (DDHP) associated with the waste incinerator in Ringsend, Dublin 2, with a potential to heat up to 80,000 homes. The project is at the development stage and has yet to become operational. Due to its nature, it is likely to start locally near the source and grow organically. According to South Dublin County Council website, there are plans for the DDHP to reach the Docklands.

After consultation, the design team reviewed the practicalities required to connect Site 3 to the nearest district heating system e.g. crossing the existing railway track and existing public road network and it was concluded that individual highly efficient heat pump solutions would be subject to further assessment at the detailed design stage.

For the above reason District Heat networks is not feasible for the proposed development.

4.2 Communal Heat Network

Communal heat networks use heat generated from a centralised source to heat dwellings connected to the network.

It requires relatively large plant room, heat distribution pipework, heat metering and billing arrangements. The additional investment and the operational requirements do not seem to be sufficiently offset by energy savings, when compared to individual heating systems.

For the above reason Combined Heat at Power is not feasible for the proposed development.

4.3 Combined Heat and Power

Combined Heat & Power (CHP) is a system that utilises an internal combustion engine to mechanically drive an electric generator and produce electricity. At the same time the waste heat emitted from the engine is utilised for space or hot water heating purposes, resulting in an improved overall energy efficiency over a traditional electricity generation in power plants. Generally suitable for communal / district heating schemes only.

Requires large heat demand to operate effectively and requires large plant room for CHP and back up boilers.

For the above reason Combined Heat at Power is not feasible for the proposed development.

4.4 Ground Source Heat Pump

Ground Source Heat Pump (GSHP) utilised the natural heat of the ground. A refrigeration cycle is used to draw energy from the low-temperature medium (ground) and heat the higher-temperature medium (heating water). The amount of energy transferred is much higher than the amount of energy required to power the system.

The energy efficiency of a GSHP is generally higher than that of an ASHP especially during the coldest weather, however the additional capital cost required to install the ground energy collector typically cannot be offset by the higher efficiency and lower running cost, given that spells of cold weather are not very often occurrence in the relatively mild climate in Ireland.

For the above reason Ground Source Heat Pump is not feasible for the proposed development

4.5 Air Source Heat Pump

Air Source Heat Pump (ASHP) utilise the natural heat of the ambient air. A refrigeration cycle is used to draw energy from the low-temperature medium (air) and heat the higher-temperature medium (heating water). The amount of energy transferred is much higher than the amount of energy required to power the system. The energy efficiency of an ASHP is generally lower than that of a GSHP especially during the coldest weather, and it may require supplementation with electric heater at peak heat demand times, however such occurrences are not very often in the relatively mild climate in Ireland.

For the above reason Air Source Heat Pumps appear to be feasible for the proposed development.

It is proposed to consider the use of Air Source Heat Pump units in individual heating systems subject to further assessment at the detailed design stage.

4.6 Exhaust Air Source Heat Pump

Exhaust Air Heat Pump (EAHP) is a certain type of an ASHP which draws energy from the air being extracted from the house through the ventilation system. As the temperature of this air is constant throughout the year, the output and energy efficiency of an EAHP also stays constant, i.e. it is not affected by low ambient air temperatures. Another advantage of an EAHP is that it can help in ventilating the house with its constantly running fan. The downside of EAHPs is the limited output that is related to the ventilation requirements of the house – EAHPs are deemed suitable for relatively small and well insulated houses or apartments.

For the above reason Exhaust Air Heat Pumps appear to be feasible for the proposed development

It is proposed to consider the use of Exhaust Air Heat Pump (EAHP) units in individual heating systems subject to further assessment at the detailed design stage.

4.7 Wind Turbines

A mast mounted wind turbine can generate significant amounts of electrical energy. However, due to the physical size and clearances required from buildings or trees, they are suitable for sites with large open areas. Also not deemed suitable for a suburban location due to size, aesthetical and noise implications.

For the above reason wind turbines is not feasible for the proposed development.

4.8 Electric heaters + Indoor Air Source Heat Pump

With the progressing decarbonisation of the national electricity grid and the falling energy demand to heat dwellings, electric room heaters combined with an ASHP to generate hot water appear to be a viable alternative that can deliver the currently required energy and carbon emissions targets. However, the effectiveness of this solution varies from development to development as it seems to be best suited for small apartments with low heat losses. In less-than-ideal conditions this system may need to be supplemented with on-site energy generation.

For the above reason Electric Heaters & Indoor Air source Heat Pumps appear to be feasible for the proposed development

It is proposed to consider the use of Electric Heaters & Indoor Air source Heat Pumps with roof solar PV panels in individual heating systems subject to further assessment at the detailed design stage.

4.9 Solar Photovoltaic

Solar Photovoltaic (PV) collectors convert the energy of the sun into electricity that can be used within the household reducing the amount of electricity imported from the grid. PV collectors can be installed on the roof or integrated with external walls. While only up to 20% of the sun irradiation available is recovered, this energy form (electricity) comes with the flexibility of being suitable for many uses.

For the above reason Solar PV collectors are feasible for the proposed development as required.

It is proposed to use Solar PV collectors for this project subject to further assessment at the detailed design stage.

5.0 BUILDING DESIGN

High-performance building fabric elements are being considered and selected to minimise unnecessary heat loss from the internal spaces.

In addition to the reduction in energy consumption and associated carbon emissions for space heating and ventilation through a high performance fabric, high efficiency heating systems are being proposed for use throughout the development, minimising heat losses through the buildings fabric as well as a lower then required air permeability rate, helps to ensure lower energy consumption rates and associated carbon emissions are achieved throughout the year thus reduces the overall cost of heating for the end user.

The buildings will be designed and constructed in accordance with the building regulations and best practices and can be summarised as follows:

Fabric Insulation

The following target U-values have been adopted for the project:

Building Fabric Element	Backstop (max.) U-value TGD-L 2022	Target U-value for this project
Floor	0.18W/m^{2}K	0.18W/m^{2}K
External walls	0.18W/m^{2}K	0.18W/m^{2}K
Flat roof	0.20W/m^{2}K	0.16W/m^{2}K
External doors	1.40W/m^{2}K	1.40W/m^{2}K
Windows & rooflights	1.40W/m^{2}K	1.40W/m^{2}K

Air permeability

The level of air permeability should be achievable by adherence to the BR Part L 2022 Acceptable Construction Details and monitoring during the construction.

	Backstop (max.) value TGD-L 2022	Target value for this project
Air permeability @ 50Pa	5.0m^3/h/m^2	3.0m^3/h/m^2

Thermal bridging

The adherence to the Building Regulations TGD Part L Acceptable Construction Details, adequate design considerations and monitoring during the construction stage will reduce thermal bridging.

6.0 BUILDING SERVICES SYSTEMS DESIGN

Energy technologies for this development shall be selected on the following basis:

- Compliance with the Building Regulations – Part L 2022 (NZEB)
- Operation strategy: individual
- Life-cycle cost

The selection of technologies will be confirmed at the detailed design stage. Based on our experience we would deem the following combinations to be suitable:

Heating system

A number of heat source solutions are being currently considered for this development:

1. Individual Air Source Heat Pumps OR
2. Individual Exhaust Air Heat Pump OR
3. Electric radiant panel heaters

The final selection will be confirmed post planning stage subject to design and the life-cycle cost analysis.

The apartments shall be heated by means of either underfloor heating or low temperature radiators / fan coil units. Heating controls in the apartments consists of a heating zone with individual time and temperature controls.

Domestic hot water

Domestic hot water shall be generated in every apartment with individual time and temperature controls. Preferably the heat source shall be shared with that powering the heating system.

Ventilation

The ventilation solutions considered for the development are as follows:

i. Natural Ventilation + Intermittent Extract Fans. This is the least preferred solution as it is not fully compatible with low air permeability targets for the apartments.

ii. Continuous (Centralised or Decentralised) Mechanical Extract Ventilation (CMEV) or demand control ventilation (DCV), which operates by extracting warm, stale air from dwelling wet rooms either centrally or decentralised. Wall vents in the habitable rooms shall be provided and acoustically treated as required.

iii. Balanced Whole House Mechanical Ventilation (with or without Heat Recovery) as a whole dwelling approach with ‘mechanical ventilation with heat recovery system (MVHR). The unit works by extracting warm, stale air from ‘wet rooms’ (kitchen, utility, bathroom, etc.), and extracting the embodied energy (heat) from this exhaust air and re-introducing this captured energy into the incoming fresh air.

iv. Mechanical cooker extract hood ducted to the outside shall be installed in the Kitchen irrespective of the ventilation system type.

Water Conservation Measures

The requirements for low flow sanitary ware (water restrictors) in each dwelling shall be considered during the detailed design stage. This is a water conservation initiative and reduces waste by restricting water flowrates to a shower within the dwelling.

The shower head 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.

Lighting

Provision for natural daylight in modern buildings helps to create a better internal environment for occupants and helping to assist in the well-being of the inhabitants.

All light fittings are to be based on LED type (A+ Rated light bulb) located throughout each occupiable space, such as bedroom, lobby, living/dining etc. A significant reduction in electrical energy usage shall also be realised using high efficiency lights.

External Lighting shall be energy efficient and provided with LED type with photocell technology as outlined in the proposed public lighting layouts.

Renewable Technologies

To demonstrate the compliance with the Building Regulations Part L, each dwelling is required to have a portion of its energy requirements provided from a source of renewable energy.

In addition to heat pumps, additional Solar PV panels on the roof of the apartment buildings will be considered to ensure building regulation compliance subject to detailed design.

7.0 CLIMATE / ENERGY IMPACT CALCULATIONS

The below calculations are based on the results of DEAP assessment for typical dwellings and building other than dwellings, extrapolated for the entire development based on the floor area.

The DEAP & NEAP assessment results for the typical unit are available in Appendix A.

Typical apartment: Area, m^2: 79.5 BER: A2

Element	Reference Building Performance	Target			Achieved		
		Total	per m^2	Performance Coefficient	Total	per m^2	Performance Coefficient
Primary Energy, kWh/a	11,748	3,525	44.33	0.3	3,278	41.23	0.279
Carbon Dioxide, kg/a	2,269	794	9.99	0.35	420	5.28	0.185
Renewable Energy, kWh/a	-	656	8.25	0.2	1,242	15.63	0.379

Table 7.1

Typical house / duplex: Area, m^2: 105.8 BER: A2

Element	Reference Building Performance	Target			Achieved		
		Total	per m^2	Performance Coefficient	Total	per m^2	Performance Coefficient
Primary Energy, kWh/a	15,680	4,704	44.46	0.3	4,531	42.83	0.289
Carbon Dioxide, kg/a	3,100	1,085	10.26	0.35	580	5.48	0.187
Renewable Energy, kWh/a	-	906	8.57	0.2	1,921	18.16	0.424

Table 7.2

Non-dwellings (Creche): Area, m^2: 504 BER: A3

Element	Reference Building Performance	Target			Achieved		
		Total	per m^2	Performance Coefficient	Total	per m^2	Performance Coefficient
Primary Energy, kWh/a	53,576	53,576	106.30	1	23,038	45.71	0.43
Carbon Dioxide, kg/a	8,424	9,688	19.22	1.15	2,948	5.85	0.35
Renewable Energy, kWh/a	-	4,608	9.14	0.2	5,299	10.51	0.230

Table 7.3

Overall apartments: Area, m^2: 6,652

Element	Reference Building Performance	Target			Achieved		
		Total	per m^2	Performance Coefficient	Total	per m^2	Performance Coefficient
Primary Energy, kWh/a	983,018	294,905	44.33	0.3	274,262	41.23	0.279
Carbon Dioxide, kg/a	189,852	66,448	9.99	0.35	35,123	5.28	0.185
Renewable Energy, kWh/a	-	54,852	8.25	0.2	103,945	15.63	0.379

Table 7.4

Overall houses & duplexes: Area, m^2: 49,116

Element	Reference Building Performance	Target			Achieved		
		Total	per m^2	Performance Coefficient	Total	per m^2	Performance Coefficient
Primary Energy, kWh/a	7,279,031	5,196,477	44.46	0.3	2,103,640	42.83	0.289
Carbon Dioxide, kg/a	1,439,336	1,198,794	10.26	0.35	269,156	5.48	0.187
Renewable Energy, kWh/a	-	1,001,188	8.57	0.2	891,943	18.16	0.424

Table 7.5

Overall non-dwellings: Area, m^2: 504

Element	Reference Building Performance	Target			Achieved		
		Total	per m^2	Performance Coefficient	Total	per m^2	Performance Coefficient
Primary Energy, kWh/a	53,576	53,576	106.30	1	23,038	45.71	0.43
Carbon Dioxide, kg/a	8,424	9,688	19.22	1.15	2,948	5.85	0.35
Renewable Energy, kWh/a	-	4,608	9.14	0.2	5,299	10.51	0.230

Table 7.6

Overall improvement:

Primary Energy, kWh/a	-5,914,685	Reduction by	71%
Carbon Dioxide, kg/a	-1,330,385	Reduction by	81%
Renewable Energy, kWh/a	1,001,187	Contribution of	42%

Table 7.7

8.0 CONCLUSION

The compliance with TGD Part L 2022 of the Building Regulations should be demonstrated by observing minimum parameters for the building fabric as well as reducing the primary energy consumption (EPC not exceeding MPEPC), reducing the carbon dioxide emissions (CPC not exceeding MPCPC) and providing at least 20% of energy from renewable sources.

As demonstrated in this document, the proposed development shall be constructed to high building standards and will provide a sustainable, energy efficient dwellings for the occupants.

Appendix A

Preliminary Part L Compliance Reports for Typical Units:

The following preliminary Part L compliance check was carried out by MandE Consulting Engineers for a typical unit (Apartment, House, Creche) in the development.

The provisional inputs used are subject to confirmation at detail design stage.

Part L Specification

BER IS NOT PUBLISHED

Property Details

Dwelling Type	Top-floor apartment	**Type of BER rating**	New Dwelling - Provisional
Address line 1	Typical Apartment	**Year of Construction**	2023
Address line 2	Kishoge Site 3	**Date of Assessment**	20/02/2025
Address line 3	Clonburris	**Date of Plans**	04/09/2024
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2019 TGD L
BER Number		**MPRN No.**	0
Purpose of Rating	New dwelling for owner occupation	**Is MPRN shared with another dwelling?**	N/A
Assessor Name	Eamonn Brown	**Assessor Number**	106085
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m²]	Height [m]	Volume [m³]
Ground Floor	79.50	2.50	198.75
First Floor	0.00	0.00	0.00
Second Floor	0.00	0.00	0.00
Third and other floors	0.00	0.00	0.00
Room in roof	0.00	0.00	0.00
Total Floor Area	79.50		198.75

Living Area [m²]	32.50	**Living area percentage [%]**	40.88
No of Storeys	1		

Ventilation Details

	Number		
Chimneys	0	**Has permeability test been carried out?**	Yes
Open Flues	0	**Structure type**	N/A
Fans & Vents	1	**Is there a suspended wooden ground floor?**	No
Number of flueless combustion room heaters	0	**Percentage windows/doors draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	Yes	**Number of sides sheltered**	3
Ventilation method	Exhaust Air Heat Pump	**Mechanical Ventilation Manufacturer**	N/A
Specific fan power [W/(L/s)]	0.260	**Mechanical Ventilation Model Name**	N/A
Heat exchanger efficiency [%]	N/A	**How many wetrooms (incl. kitchen)?**	N/A

Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m^{2}K]	Area [m^2]
Non-Heat Loss Floor		N/A	0	79.5

Building Elements - Roof Details

Type	Description	U-Value [W/m^{2}K]	Area [m^2]
Flat Roof		0.2	79.5

Building Elements - Wall Details

Type	Description	U-Value [W/m^{2}K]	Area [m^2]
Unknown		0.18	33.2

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m^{2}K]	Area [m^2]

Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, argon filled	Yes	1.400	5.500
Double-glazed, argon filled	Yes	1.400	5.500

Other Details

Thermal bridging factor [W/m²k]	0.1500	**Thermal mass category of dwelling**	Medium

Heating System - Solar Water Heating

Solar Water Heating Present?	No	**Aperture area of solar collector [m²]**	N/A
Type, manufacturer, model	N/A		
Zero loss collector efficiency, n0	N/A	**Collector heat loss coefficient, a1 [W/m²>K]**	N/A
Annual Solar Radiation [kWh/m²] (Refer to Appendix H in DEAP)	N/A	**Overshading factor**	N/A
Dedicated storage volume [Litres]	N/A	**Combined Cylinder**	N/A
Solar fraction [%]	0.000		

Heating System - Hot Water System

Distribution Losses	261.44	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	180
Hot water storage manufacturer and model name	NIBE S735-4E	**Declared loss factor [kWh/d]**	1.35
Temperature factor unadjusted	0.6	**Temperature Factor Multiplier**	0.9
Primary Circuit loss type	Boiler / heat pump and thermal store within a single casing (cylinder thermostat present)		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	N/A
Insulation thickness [mm]	N/A		

Heating System - Dist. system losses and gains

Temperature adjustment [°C]	0	**Control Category**	2	**Responsiveness category**	1
Central heating pumps	1	**Oil Boiler Pump**	0	**Oil boiler pump inside dwelling**	No
Gas boiler flue fan	0	**Warm air heating or fan coil radiators present**	No		

Heating System - Energy Requirements (Individual)

Main space heating system efficiency [%]	377.74	**Space heating efficiency adjustment factor**	1.0000	**Main space heating fuel**	Electricity
Main water heating system efficiency [%]	226.34	**Water heating efficiency adjustment factor**	1.0000	**Main water heating fuel**	Electricity
Secondary heating system efficiency [%]	N/A	**Fraction of heating from secondary heating system**	N/A	**Secondary space heating system fuel**	None
Fraction of main space and water heat from CHP	N/A	**Electrical efficiency of CHP**	N/A	**Heat efficiency of CHP**	N/A
CHP Fuel type	N/A				

Summary for Part L Conformance (Applies to TGD L 2008/2011/2019 for new dwellings only)

BER Number		**Building Regulations**	**2019 TGD L**
BER Result	A2	**Energy Value kWh/m^2/yr**	**41.23**
CO_2 emissions [kg/m^2/yr]	5.28		
EPC	0.279	**EPC Pass/Fail**	**Pass**
CPC	0.185	**CPC Pass/Fail**	**Pass**

Part L Conformance - Fabric

Conformity with Maximum avg U-value requirements	**U-value [W/m^{2}K]**	**Pass/Fail**	**Conformity with Maximum U-value requirements**	**U-Value [W/m^{2}K]**	**Pass/Fail**
Pitched roof insulated on ceiling	0.00	Pass	**Roofs**	0.2	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.18	Pass
Flat Roof	0.2	Pass	**Floors**	0	Pass
Floors with no underfloor heat	0.00	Pass	**External doors / windows / rooflights**	1.40	Pass
Floors with underfloor heat	0.00	Pass			
Walls	0.18	Pass			
Percentage of opening areas [%]	13.84				
Average U value of openings	1.40	Pass			
Permeability test carried out and meets guidelines in TGD L				0.25 | Pass	

Part L Conformance - Renewables (applies to TGD L 2019)

	Source	Renewables Primary Energy	Total Primary Energy	RER
+ Delivered energy	PV/Wind	0.00	0.00	
+ Delivered energy	Other	0.00	0.00	
+ Delivered energy	Solar	0.00	0.00	
+ Delivered energy	Biomass	0.00	0.00	
+ Delivered energy	Biodiesel	0.00	0.00	
+ Delivered energy	Bioethanol	0.00	0.00	
+ Environmental energy	HP	2002.51	2002.51	
+ Saved energy	CHP	0.00	0.00	
+ District heating	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	3278.06	
+ Delivered energy	Thermal	0.00	0.00	
SUBTOTAL		2002.51	5280.57	0.38 - Pass
Energy not used in Regulated Loads	PV/Wind/CHP	0.00	0.00	
TOTAL		2002.51	5280.57	0.38

Energy Requirements: Individual Heating Systems

	Fuel Type	Electricity Fuel Factors Date	Primary energy conversion factor	CO_2 emission factor
Main space heating system	Electricity	Current	1.75	0.224
Secondary space heating system	None	Current	0.00	0.000
Main water heating system	Electricity	Current	1.75	0.224
Cooling System	None	Current	0.00	0.000
Pumps, fans	Electricity	Current	1.75	0.224
Energy for lighting	Electricity	Current	1.75	0.224

Part L Specification

BER IS NOT PUBLISHED

Property Details

Dwelling Type	Semi-detached house	**Type of BER rating**	New Dwelling - Provisional
Address line 1	Typical House	**Year of Construction**	2025
Address line 2	Kishoge Site 3	**Date of Assessment**	20/02/2025
Address line 3	Clonburris	**Date of Plans**	04/09/2024
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2019 TGD L
BER Number		**MPRN No.**	0
Purpose of Rating	New dwelling for owner occupation	**Is MPRN shared with another dwelling?**	No
Assessor Name	Eamonn Brown	**Assessor Number**	106085
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m²]	Height [m]	Volume [m³]
Ground Floor	52.90	2.40	126.96
First Floor	52.90	2.70	142.83
Second Floor	0.00	0.00	0.00
Third and other floors	0.00	0.00	0.00
Room in roof	0.00	0.00	0.00
Total Floor Area	105.80		269.79

Living Area [m²]	20.00	**Living area percentage [%]**	18.90
No of Storeys	2		

Ventilation Details

	Number		
Chimneys	0	**Has permeability test been carried out?**	Yes
Open Flues	0	**Structure type**	N/A
Fans & Vents	1	**Is there a suspended wooden ground floor?**	No
Number of flueless combustion room heaters	0	**Percentage windows/doors draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	No	**Number of sides sheltered**	1
Ventilation method	Whole-house extract ventilation	**Mechanical Ventilation Manufacturer**	N/A
Specific fan power [W/(L/s)]	0.180	**Mechanical Ventilation Model Name**	N/A
Heat exchanger efficiency [%]	N/A	**How many wetrooms (incl. kitchen)?**	N/A

Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m^{2}K]	Area [m^2]
Ground Floor - Solid		No	0.18	52.9
Non-Heat Loss Floor		N/A	0	52.9

Building Elements - Roof Details

Type	Description	U-Value [W/m^{2}K]	Area [m^2]
Pitched Roof - Insulated on Ceiling		0.16	52.5

Building Elements - Wall Details

Type	Description	U-Value [W/m^{2}K]	Area [m^2]
Unknown		0.18	89

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m^{2}K]	Area [m^2]
	1	1.4	2.100

Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, argon filled	Yes	1.400	0.700
Double-glazed, argon filled	Yes	1.400	5.600
Double-glazed, argon filled	Yes	1.400	4.100
Double-glazed, argon filled	Yes	1.400	0.500
Double-glazed, argon filled	Yes	1.400	3.700

Other Details

Thermal bridging factor [W/m²k]	0.0800	**Thermal mass category of dwelling**	Medium

Heating System - Solar Water Heating

Solar Water Heating Present?	No	**Aperture area of solar collector [m²]**	N/A
Type, manufacturer, model	N/A		
Zero loss collector efficiency, n0	N/A	**Collector heat loss coefficient, a1 [W/m²>K]**	N/A
Annual Solar Radiation [kWh/m²] (Refer to Appendix H in DEAP)	N/A	**Overshading factor**	N/A
Dedicated storage volume [Litres]	N/A	**Combined Cylinder**	N/A
Solar fraction [%]	0.000		

Heating System - Hot Water System

Distribution Losses	283.84	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	210
Hot water storage manufacturer and model name	evocyl uk.ekhwsu200je/t	**Declared loss factor [kWh/d]**	1.49
Temperature factor unadjusted	0.6	**Temperature Factor Multiplier**	0.9
Primary Circuit loss type	Boiler / heat pump with insulated primary pipework and with cylinder thermostat		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	N/A
Insulation thickness [mm]	N/A		

Heating System - Dist. system losses and gains

Temperature adjustment [°C]	0	**Control Category**	3	**Responsiveness category**	1
Central heating pumps	1	**Oil Boiler Pump**	0	**Oil boiler pump inside dwelling**	No
Gas boiler flue fan	0	**Warm air heating or fan coil radiators present**	No		

Heating System - Energy Requirements (Individual)

Main space heating system efficiency [%]	376.01	**Space heating efficiency adjustment factor**	1.0000	**Main space heating fuel**	Electricity
Main water heating system efficiency [%]	184.8	**Water heating efficiency adjustment factor**	1.0000	**Main water heating fuel**	Electricity
Secondary heating system efficiency [%]	N/A	**Fraction of heating from secondary heating system**	N/A	**Secondary space heating system fuel**	None
Fraction of main space and water heat from CHP	N/A	**Electrical efficiency of CHP**	N/A	**Heat efficiency of CHP**	N/A
CHP Fuel type	N/A				

Summary for Part L Conformance (Applies to TGD L 2008/2011/2019 for new dwellings only)

BER Number		**Building Regulations**	**2019 TGD L**
BER Result	A2	**Energy Value kWh/m^2/yr**	**42.83**
CO_2 emissions [kg/m^2/yr]	5.48		
EPC	0.289	**EPC Pass/Fail**	**Pass**
CPC	0.187	**CPC Pass/Fail**	**Pass**

Part L Conformance - Fabric

Conformity with Maximum avg U-value requirements	**U-value [W/m^{2}K]**	**Pass/Fail**	**Conformity with Maximum U-value requirements**	**U-Value [W/m^{2}K]**	**Pass/Fail**
Pitched roof insulated on ceiling	0.16	Pass	**Roofs**	0.16	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.18	Pass
Flat Roof	0	Pass	**Floors**	0.18	Pass
Floors with no underfloor heat	0.18	Pass	**External doors / windows / rooflights**	1.40	Pass
Floors with underfloor heat	0.00	Pass			
Walls	0.18	Pass			
Percentage of opening areas [%]	15.78				
Average U value of openings	1.40	Pass			
Permeability test carried out and meets guidelines in TGD L				0.25 | Pass	

Part L Conformance - Renewables (applies to TGD L 2019)

	Source	Renewables Primary Energy	Total Primary Energy	RER
+ Delivered energy	PV/Wind	0.00	0.00	
+ Delivered energy	Other	0.00	0.00	
+ Delivered energy	Solar	0.00	0.00	
+ Delivered energy	Biomass	0.00	0.00	
+ Delivered energy	Biodiesel	0.00	0.00	
+ Delivered energy	Bioethanol	0.00	0.00	
+ Environmental energy	HP	3334.68	3334.68	
+ Saved energy	CHP	0.00	0.00	
+ District heating	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	4531.76	
+ Delivered energy	Thermal	0.00	0.00	
SUBTOTAL		3334.68	7866.43	0.42 - Pass
Energy not used in Regulated Loads	PV/Wind/CHP	0.00	0.00	
TOTAL		3334.68	7866.43	0.42

Energy Requirements: Individual Heating Systems

	Fuel Type	Electricity Fuel Factors Date	Primary energy conversion factor	CO_2 emission factor
Main space heating system	Electricity	Current	1.75	0.224
Secondary space heating system	None	Current	0.00	0.000
Main water heating system	Electricity	Current	1.75	0.224
Cooling System	None	Current	0.00	0.000
Pumps, fans	Electricity	Current	1.75	0.224
Energy for lighting	Electricity	Current	1.75	0.224

BRIRL Output Document

Compliance Assessment with the Building Regulations (Ireland) TGD-Part L 2017

This report demonstrates compliance with specific aspects of Part L of the Building Regulations. Compliance with all aspects of Part L is a legal requirement. Demonstration of how compliance with every aspect is achieved may be sought from the Building Control Authority.

Creche at Kishoge Site 3

Date: Thu Feb 20 12:06:24 2025

Administrative information

Building Details

Address: Creche, Kishoge Site 3, Cloburris, Co. Dublin, D12 R8C6

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.6.a.0

Interface to calculation engine: G-ISBEM

Interface to calculation engine version: v26.0

BRIRL compliance check version: v5.6.a.0

Client Details

Name:

Telephone number:

Address:

Energy Assessor Details

Name: MS / MandE Consulting Engineers Ltd.

Telephone number: 01 450 8485

Email: info@mande.ie

Address: Unit 4, Oak Close, Western Business Park, Dublin 12, Dublin 12, D12 R8C6

Primary Energy Consumption, CO2 Emissions, and Renewable Energy Ratio

The compliance criteria in the TGD-L have been met.

Calculated CO2 emission rate from Reference building	8.8 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	5.9 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	**0.67**
Maximum Permitted Carbon Performance Coefficient (MPCPC)	**1.15**
Calculated primary energy consumption rate from Reference building	53.8 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	45.7 kWh/m2.annum
Energy Performance Coefficient (EPC)	**0.85**
Maximum Permitted Energy Performance Coefficient (MPEPC)	**1**
Renewable Energy Ratio (RER)	**0.23**
Minimum Renewable Energy Ratio	**0.1**

Heat Transmission through Building Fabric

Element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Limit}$	$U_{i\text{-}Calc}$	Surface with maximum U-value*
Walls**	0.21	0.21	0.6	0.21	z1/1stFlr1_A/s
Floors (ground and exposed)	0.21	0.14	0.6	0.21	z0/GrndFlr1_E/f
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.14	0.3	0.2	z0/GrndFlr1_G/c
Windows, roof windows, and rooflights	1.6	1.32	3	1.6	z0/GrndFlr1_A/s/g.1
Personnel doors	1.6	1.6	3	1.6	z0/GrndFlr1_I/w/d
Vehicle access & similar large doors	1.5	-	3	-	"No ext. vehicle access doors"
High usage entrance doors	3	-	3	-	"No ext. high usage entrance doors"

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m2K)]
$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m2K)]
$U_{i\text{-}Limit}$ = Limiting individual element U-values [W/(m2K)]
$U_{i\text{-}Calc}$ = Calculated individual element U-values [W/(m2K)]

* There might be more than one surface with the maximum U-value. ** Automatic U-value check by the tool does not apply to curtain walls whose area-weighted average and individual limiting standards are 1.8 and 3 W/m2K, respectively.

Air Permeability	Upper Limit	This Building's Value
m3/(h.m2) at 50 Pa	5	5

Building Services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Building Regulations documents for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- A.S.H.P

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	3.13	-	-	-	-
Standard value	2.75	N/A**	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
** No automatic check on chiller efficiency has been performed by the tool in this case. Refer to Building Regulations documents for limiting efficiency.					

2- A.C.

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	4.9	7.2	-	-	-
Standard value	2.75	4.14**	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
** Standard shown is for split and multi-split air conditioners <6 kW. For systems 6-12 kW, limiting efficiency is 3.87.					

1- MAIN

	Water heating efficiency	**Storage loss factor [kWh/litre per day]**
This building	3.7	0.004
Standard value	0.8*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

Local mechanical ventilation, exhaust, and terminal units

ID	**System type in Building Regulations documents**
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	**SFP [W/(l/s)]**									**HR efficiency**	
ID of system type	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**		
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	**Zone**	**Standard**
z1/1stFlr1_A	0.3	-	-	1.5	-	-	-	-	-	0.84	N/A
z0/GrndFlr1_B	0.3	-	-	1.5	-	-	-	-	-	0.84	N/A
z0/GrndFlr1_D	-	-	-	1.5	-	-	-	-	-	0.84	N/A
z0/GrndFlr1_E	0.3	-	-	1.5	-	-	-	-	-	0.84	N/A
z1/1stFlr1_C	-	-	-	1.5	-	-	-	-	-	0.84	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
z0/GrndFlr1_G	0.3	-	-	1.5	-	-	-	-	-	0.84	N/A
z0/GrndFlr1_H	0.3	-	-	1.5	-	-	-	-	-	0.84	N/A
z0/GrndFlr1_I	-	-	-	1.5	-	-	-	-	-	0.84	N/A
z0/GrndFlr1_J	-	-	-	1.5	-	-	-	-	-	0.84	N/A
z0/GrndFlr1_A	-	-	-	1.5	-	-	-	-	-	0.84	N/A
z0/GrndFlr1_C	-	-	-	1.5	-	-	-	-	-	0.84	N/A
z1/1stFlr1_B	-	-	-	1.5	-	-	-	-	-	0.84	N/A
z1/1stFlr1_D	-	-	-	1.5	-	-	-	-	-	0.84	N/A
z1/1stFlr1_E	-	-	-	1.5	-	-	-	-	-	0.84	N/A
z1/1stFlr1_F	-	-	-	1.5	-	-	-	-	-	0.84	N/A
z0/GrndFlr1_K	-	-	-	1.5	-	-	-	-	-	0.84	N/A
z0/GrndFlr1_L	-	-	-	1.5	-	-	-	-	-	0.84	N/A

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
z1/1stFlr1_A	-	100	-	71
z0/GrndFlr1_B	-	100	-	79
z0/GrndFlr1_D	50	-	-	162
z0/GrndFlr1_E	-	100	-	58
z1/1stFlr1_C	-	100	-	74
z0/GrndFlr1_F	50	-	-	12
z0/GrndFlr1_G	-	100	-	105
z0/GrndFlr1_H	-	100	-	63
z0/GrndFlr1_I	-	100	-	94
z0/GrndFlr1_J	-	100	-	29
z0/GrndFlr1_A	50	-	-	278
z0/GrndFlr1_C	50	-	-	273
z1/1stFlr1_B	50	-	-	391
z1/1stFlr1_D	50	-	-	51
z1/1stFlr1_E	50	-	-	375
z1/1stFlr1_F	50	-	-	54
z0/GrndFlr1_K	50	-	-	128
z0/GrndFlr1_L	50	-	-	69

Solar Gain in Summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
z1/1stFlr1_A	N/A	N/A
z0/GrndFlr1_B	N/A	N/A
z0/GrndFlr1_D	NO (-52.8%)	NO
z0/GrndFlr1_E	N/A	N/A
z1/1stFlr1_C	N/A	N/A
z0/GrndFlr1_F	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
z0/GrndFlr1_G	N/A	N/A
z0/GrndFlr1_H	N/A	N/A
z0/GrndFlr1_I	N/A	N/A
z0/GrndFlr1_J	N/A	N/A
z0/GrndFlr1_A	NO (-67.1%)	NO
z0/GrndFlr1_C	NO (-33.8%)	NO
z1/1stFlr1_B	NO (-82.8%)	NO
z1/1stFlr1_D	NO (-66.6%)	NO
z1/1stFlr1_E	NO (-66.3%)	NO
z1/1stFlr1_F	NO (-53.9%)	NO
z0/GrndFlr1_K	N/A	N/A
z0/GrndFlr1_L	NO (-89.1%)	NO

Overheating

Zone	Risk of overheating
z1/1stFlr1_A	High risk
z0/GrndFlr1_B	High risk
z0/GrndFlr1_D	High risk
z0/GrndFlr1_E	High risk
z1/1stFlr1_C	Significant risk
z0/GrndFlr1_F	Low risk
z0/GrndFlr1_G	Moderate risk
z0/GrndFlr1_H	High risk
z0/GrndFlr1_I	Significant risk
z0/GrndFlr1_J	Significant risk
z0/GrndFlr1_A	N/A
z0/GrndFlr1_C	N/A
z1/1stFlr1_B	N/A
z1/1stFlr1_D	N/A
z1/1stFlr1_E	N/A
z1/1stFlr1_F	N/A
z0/GrndFlr1_K	N/A
z0/GrndFlr1_L	N/A

Primary Energy Contributions to RER

Technology	kWh/annum
Photovoltaic systems	1752
Wind turbines	0
Solar thermal for water heating	0
Biomass for space and/or water heating	0
Biogas for space and/or water heating	0
Heat pumps for space and/or water heating	5063.1
CHP generators for space and/or water heating	0
District heating for space and/or water heating	0
Process energy	0
Total for renewables	**6815.1**
Total for renewables & non-renewables	**29687.4**

Technical Data Sheet (Actual vs. Reference Building)

Building Global Parameters

	Actual	Reference
Area (m2)	504	504
External area (m2)	957	957
Weather	DUB	DUB
Infiltration (m3/hm2 @ 50Pa)	5	3
Average conductance (W/K)	246.87	368.1
Average U-value (W/m2K)	0.26	0.38
Alpha value* (%)	27.28	22.63

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% area	Building Type
	Retail/Financial and Professional services
	Restaurants and Cafes/Drinking Est./Takeaways
	Offices and Workshop businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Inst.: Hospitals and Care Homes
	Residential Inst.: Residential Primary schools
	Residential Inst.: Universities and colleges
	Secure Residential Inst.
	Residential spaces
37	**Non-residential Inst.: Community/Day Centre**
	Non-residential Inst.: Libraries, Museums, and Galleries
63	**Non-residential Inst.: Primary Education**
	Non-residential Inst.: Primary Health Care Building
	Non-residential Inst.: Law Courts
	General Assembly and Leisure, Night Clubs and Theatres
	Others: Passenger terminals
	Others: Emergency services
	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
	Others - Stand alone utility block
	Non-residential Inst.: Post-primary Education
	Residential Inst.: Residential Post-primary schools

HVAC Systems Performance

System Type		Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Central heating using water: radiators, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
	Actual	11.6	51.9	1.2	0	10.4	2.79	0	3.13	0
	Reference	65.9	47.3	22.4	0	6.6	0.82	0	----	----
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
	Actual	15.6	54.2	0.9	2.9	4.9	4.57	5.11	4.9	7.2
	Reference	31	66.2	10.5	5.1	3.8	0.82	3.6	----	----

Key to terms

Alpha value (%)	= percentage of the building's average heat transfer coefficient which is due to thermal bridging
Heat dem (MJ/m2)	= Heating energy demand
Cool dem (MJ/m2)	= Cooling energy demand
Heat con (kWh/m2)	= Heating energy consumption
Cool con (kWh/m2)	= Cooling energy consumption
Aux con (kWh/m2)	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type