



NZEB COMPLIANCE REPORT

for the

DALGUISE HOUSE DEVELOPEMENT

at

**MONKSTOWN
CO. DUBLIN**

for

GEDV MONKSTOWN OWNER LIMITED

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EXECUTIVE SUMMARY

In March 2022, METEC Consulting Engineers carried out a Preliminary Building Energy Rating (BER) & NZEB calculations for the proposed Dalguise House development at the Dalguise House, Monkstown, Co. Dublin which consists of 11 blocks of residential accommodation, 3 new houses located in the north west corner of the site, and 3 existing structures undergoing major renovation totalling to 493 no. units and shared amenity spaces. This report provides the NZEB compliance strategy for the proposed new buildings.

The basis upon the NZEB/BER calculations to date are as follows;

1. The geometry of the building was constructed as per the latest Architectural drawings (provided by Reddy A+U Architecture);
2. The buildings fabric thermal performance has been based on the current best practice and is in line with the NZEB (Nearly Zero Energy Buildings) standard;
3. The glazing performance has been based on the current best practice to comply with all aspects of TGD (Technical Guidance Document) Part L (2022) of the building regulations and with the NZEB (Nearly Zero Energy Buildings) recommended glazing performance;
4. The M&E services and in particular the HVAC (Heating, Ventilation and Air Conditioning) and lighting performance parameters are based on "Best Practice" and the plant efficiency values are "Best in Class". This achieves significant improvements within the overall Building Energy Rating.

BRIRL COMPLIANCE RESULTS

	EPC	CPC	RER	NZEB COMPLIANT
Phase 1 Block A	1.00	1.04	0.23	Yes
Phase 1 Block B	0.90	0.92	0.15	Yes
Phase 1 Block C	0.90	0.92	0.16	Yes
Phase 1 Block D	0.82	0.82	0.10	Yes
Phase 1 Block E	1.00	1.03	0.21	Yes
Phase 1 Block F	0.80	0.80	0.10	Yes
Phase 1 Block G	0.80	0.80	0.10	Yes
Phase 1 Block H	0.85	0.86	0.10	Yes
Phase 1 Block I1	0.90	0.92	0.20	Yes
Phase 1 Block I2	0.90	0.92	0.20	Yes
Phase 1 Block J	0.99	1.02	0.24	Yes

Table 0.1 NZEB Calculation Results

RENEWABLE REQUIREMENTS (PV PANELS)

Element	UNIT 01
RER (PV Panels) Block A	0.23 ≥ 21 PV Panels ≥ 6.1 kW _p <i>(based on 300 Watts peak power per panel)</i>
RER (PV Panels) Block B	0.15 ≥ 7 PV Panels ≥ 2.0 kW _p <i>(based on 300 Watts peak power per panel)</i>
RER (PV Panels) Block C	0.16 ≥ 7 PV Panels ≥ 2.1 kW _p <i>(based on 300 Watts peak power per panel)</i>
RER (PV Panels) Block D	0.10 ≥ 15 PV Panels ≥ 4.4 kW _p <i>(based on 300 Watts peak power per panel))</i>
RER (PV Panels) Block E	0.21 ≥ 48 PV Panels ≥ 14.4 kW _p <i>(based on 300 Watts peak power per panel)</i>
RER (PV Panels) Block F	0.10 ≥ 18 PV Panels ≥ 5.4 kW _p <i>(based on 300 Watts peak power per panel)</i>

<p>RER (PV Panels) Block G</p>	<p>0.10</p> <p>≥ 18 PV Panels ≥ 5.2 kW_p <i>(based on 300 Watts peak power per panel)</i></p>
<p>RER (PV Panels) Block H</p>	<p>0.10</p> <p>≥ 6 PV Panels ≥ 1.7 kW_p <i>(based on 300 Watts peak power per panel)</i></p>
<p>RER (PV Panels) Block I1</p>	<p>0.20</p> <p>≥ 4 PV Panels ≥ 1.2 kW_p <i>(based on 300 Watts peak power per panel)</i></p>
<p>RER (PV Panels) Block I2</p>	<p>0.20</p> <p>≥ 4 PV Panels ≥ 1.2 kW_p <i>(based on 300 Watts peak power per panel)</i></p>
<p>RER (PV Panels) Block J</p>	<p>0.24</p> <p>≥ 9 PV Panels ≥ 2.5 kW_p <i>(based on 300 Watts peak power per panel)</i></p>

Table 0.2 NZEB Renewable Requirements Results

1.0 INTRODUCTION

METEC Consulting Engineers were commissioned by our client GEDV Monkstown Owner Limited in March 2022 to investigate the Architectural, Mechanical & Electrical requirements to achieve the NZEB standard for the proposed new Dalguise House Development at Dalguise House, Monkstown, Co. Dublin. The development will consist of 11 blocks of residential accommodation, 3 new houses located in the north west corner of the site, and 3 existing structures undergoing major renovation ranging from 4 to 9 levels and totalling to 493 no. units and shared amenity spaces.

A summary of the project details are below;

Project Name: Dalguise House Development

Address: Dalguise House, Monkstown

Client: GEDV Monkstown Owner Limited

MEP Engineer: METEC Consulting Engineers.

Architect: Reddy A+U Architects

The proposed building consists of several single and multi-bedroom apartments, amenity spaces, lifts, stairs, circulation areas and plant rooms.

Energy efficiency shall be a critical part of the design, therefore in conjunction to the energy efficient façade, intelligent HVAC and lighting systems shall also be specified for this project. The building shall comply with the NZEB standard and the initial calculation demonstrates a minimum of A3 BER for landlord areas shall be achieved.

The NZEB requirements & BER are calculated using NEAP (Non-Domestic Energy Assessment Procedure). NEAP is the official procedure for the calculation of energy performance of non-domestic buildings in Ireland for the purpose of producing Building Energy Ratings (BERs). The software which was used was iSBEMie v5.5h, within the IES VE interface which is approved by the Sustainable Energy Authority of Ireland (SEAI) for carrying out Part L compliance checks and calculating BER's.

2.0 WHAT IS THE NZEB STANDARD

The European Energy Performance of Buildings Directive Recast (EPBD) requires all new buildings to be Nearly Zero Energy Buildings (NZEB) by 31st December 2020.

“Nearly Zero–Energy Buildings’ means a building that has a very high energy performance, Annex 1 of the Directive and in which “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”.

To achieve NZEB standard the actual building is compared to a predefined reference building following the performance specification as outlined in Appendix C of TGD Part L 2022. These performance parameters represent an improvement in the order of 60% across all buildings with a 20% renewable energy contribution. This represents the Nearly Zero Energy Building performance.

The following criteria must then be met:

- The EPC (Energy Performance Coefficient) of the actual building must be equal to or less than 1.0 when compared to a NZEB reference building
- The CPC (Carbon Dioxide Performance Coefficient) of the actual building must be equal to or less than 1.15 when compared to NZEB reference building
- A RER (Renewable Energy Ratio) of 0.20 or 0.10 depending on the overall building performance. (see Note 1)

Note 1:

Where an MPEPC of 1.0 and MPCPC of 1.15 is achieved an RER of 0.20 represents a very significant level of energy provision from renewable energy technologies.

Where an MPEPC of 0.9 and MPCPC of 1.04 is achieved an RER of 0.10 represents a very significant level of energy provision from renewable energy technologies.

MPEPC: Maximum Permitted Energy Performance Coefficient

MPCPC: Maximum Permitted Carbon Performance Coefficient

Mandatory Renewable Energy Requirements under the Building Regulations required for NZEB	Renewable Energy Ratio
Where the MPEPC of 1.0 and MPCPC of 1.15 is achieved	0.2 (20%)
Where the MPEPC of 0.9 and MPCPC of 1.04 is achieved i.e. the energy performance of the building is reduced by 10% below the maximum permitted values	0.1 (10%)
As an alternative to providing a 0.2 RER (Renewable Energy Ratio) the use of a CHP system which contributes to the space and water heating would also be acceptable.	CHP Energy Savings = RER of 0.2 / 0.1

“Renewable energy technologies’ means technology, products or equipment that supply energy derived from renewable energy sources, e.g. solar thermal systems, on-site solar photovoltaic systems, biomass systems, systems using biofuels, heat pumps, combined heat and power, aerothermal, geothermal, hydrothermal, wind, biomass and biogases; and other on-site renewables”. (Source: TGD Part L, Section 1.2.1, page 22).

In addition to the above TGD Part L 2022 includes provisions for electric vehicle charging points:

A building other than a dwelling which has more than 10 car parking spaces, that is:

- (i) new,
- or
- (ii) undergoing major renovation.

Shall have installed at least one recharging point and ducting infrastructure (consisting of conduits for electric cables) for at least one in every 5 car parking spaces to enable the subsequent installation of recharging points for electric vehicles. Non-residential buildings both new and building undergoing major renovation with more than 10 parking spaces must install at least one EV charging point.

The requirements shall apply to a building undergoing major renovation where:

- (i) in a case where the car park is located inside the building, the renovations concerned include the car park or the electrical infrastructure of the building;
or
- (ii) in a case where the car park is physically adjacent to the building, the renovations concerned include the car park or the electrical infrastructure of the car park.

The above points apply to projects where the submission of a notice has been made on or after 11th March 2022. Please refer section 1.4.7 of Technical Guidance Document L 2022- Buildings other than dwellings for further guidance.

3.0 SPECIFICATION REQUIREMENTS / APPLYING THE NZEB STANDARD TO THESE BUILDINGS

Many of the design parameters for these proposed buildings have been specified to achieve at least an A3 BER for landlord areas and to achieve NZEB compliance.

The basis upon which this NZEB/BER assessment has been calculated to date is as follows;

5. The geometry of the building was constructed as per the latest Architectural drawings (provided by Reddy A+U Architects).
6. The buildings fabric thermal performance for the building has been based on the current best practice and is also exceeds the NZEB (Nearly Zero Energy Buildings) recommended fabric performance.
7. The glazing performance has been based on the current best practice to comply with all aspects of TGD (Technical Guidance Document) Part L 2022 of the building regulations and with the NZEB (Nearly Zero Energy Buildings) recommended glazing performance.
8. The M&E services and in particular the HVAC (Heating, Ventilation and Air Conditioning) and lighting performance parameters are based on "Best Practice" and the plant efficiency values are "Best in Class". This achieves significant improvements within the overall Building Energy Rating.

Based on the fabric and M&E design parameters contained within this report the calculated EPC, CPC, and RER are compliant with NZEB.

It should be noted that the NZEB calculations to date are entirely desk top based and are informed by the current architect's drawings and mechanical and electrical specifications. In order for a final BER certificate to be issued a non-invasive survey of the completed building must be carried out to gather photographic and documentary evidence to back up the software inputs. The BER model will be updated periodically as the design for the building develops.

4.0 RENEWABLE ENERGY TECHNOLOGY

A combination of thermal energy from photovoltaics panels and heat pumps has been identified as the optimal renewable energy sources for the proposed building. The photovoltaic panels will be utilised to provide a supply of electricity to the building as the electrical load profile of a residential building is compatible with the energy generated from a photovoltaic panel system. The heat pumps will provide an efficient heat source that also serves as a renewable energy. Other renewable energy technologies were ruled out for the following reasons:

- Wind generation is not suitable because the development is located in a built-up area, they require significant maintenance, and they would be a health and safety risk.
- Combined Heat and Power (CHP) is not suitable because of the imbalance between the electrical load and heating load of the development. To be viable, a good base load for electrical demand and heat demand must exist.
- Geothermal heating, to be efficient, must be operated using night rate electricity. Thus, just like with the electrical night rate storage heaters of old, this heat must be generated during the night and stored for distribution during the course of the day. This is more suited to an underfloor heating strategy which is not in line with the design intent for this project.

5.0 IESVE SIMULATION MODEL IMAGES

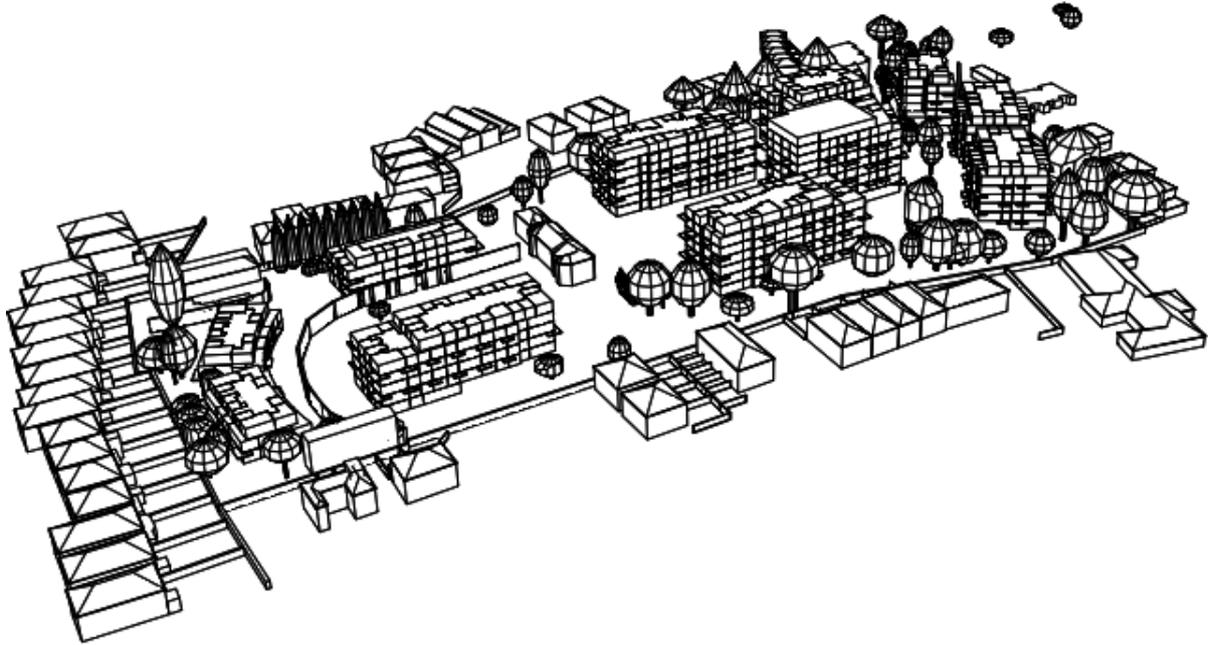


Fig. 5.1 Model as viewed from the South-East

6.0 BUILDING FABRIC PERFORMANCE

6.1 OPAQUE BUILDING ELEMENTS

Element	Default/Target U – Value (W/m ² °K)	Thermal Capacity Km (kJ m ² °K)	Comments
Exposed Roof	0.15	13.35	Part L / NZEB Reference Building U-value. Thermal Capacity is a default value from SBEM.
External Wall	0.18	129	Part L / NZEB Reference Building U-value. Thermal Capacity is a default value from SBEM.
Floor Slab and Exposed Floors	0.15	36	Part L / NZEB Reference Building U-value. Thermal Capacity is a default value from SBEM.
Internal Partition	0.48	11.7	Part L / NZEB Reference Building U-value. Thermal Capacity is a default value from SBEM.
Internal Ceiling/Floor	1.4	12	Part L / NZEB Reference Building U-value. Thermal Capacity is a default value from SBEM.

The km value is the effective thermal capacity of an element (wall, floor, ceiling, etc.), given in kJ/m².K.

For the purposes of carrying out this BER calculation the default thermal bridging factors have been used.

These improved building fabric performance parameters are specified in order to future-proof the building and also to comply with TGD Part L 2022 Standard for Non-Domestic Buildings.

All u-value calculations are to be in accordance with TGD Part L 2022

Appendix A.

6.2 GLAZED ELEMENTS

Element	U – Value (W/m ² °K)	G-Value (%) (EN 410)	Light Transmittance Value (%)
Target Glazing Performance	<1.3 (including complete frame assembly)	35-40	70

These improved glazing performance parameters are specified in order to future-proof the building and also to comply with TGD Part L 2022 Standard for Non-Domestic Buildings.

All u-value calculations are to be in accordance with TGD Part L 2022 Appendix A.

6.3 BUILDING AIR PERMEABILITY

Element	Target Air Permeability (m ³ /h.m ² @50Pa)	Comments
Air Permeability	≤3.0	Target Test Result. Lower result may be possible.
Certification Standards	EN ISO 9972: 2015 CIBSE TM23 Individuals/Organisation to be registered under one of: NSAI Air Tightness Testers Scheme; Irish National Accreditation Board (INAB); or accreditation to ISO /IEC 17025: "General Requirements for the Competence of Testing and Calibration Laboratories"	

7.0 MECHANICAL AND ELECTRICAL PLANT PERFORMANCE

MECHANICAL PLANT PERFORMANCE

Heating System 1		
	SBEM Inputs	Comments
Heat Source	VRF System (Split/Multi-split system)	Serving common areas
Fuel Type	N/A	
SCOP	3.5	To be certified to appropriate test standard (EU eco design directive 813/2013)

Heating System 2		
	SBEM Inputs	Comments
Heat Source	Electric Heater	Serving apartment and circulation areas
Fuel Type	Electricity	
SCOP	1.0	To be certified to appropriate test standard (EU eco design directive 813/2013)

Cooling System		
	SBEM Inputs	Comments
Heat Source	VRF System (Split/Multi-split system)	Serving common areas
Fuel Type	Electricity	
SEER	4.5	To be certified to appropriate test standard (EN 14825:2013)

Ductwork & AHU Leakage	SBEM Inputs		Documentation Required
Will the Ductwork be Leakage Tested	No		Copy of Test Certificates required, test must be carried out to CEN standards.
What CEN Classification Shall The Ductwork Leakage Achieve	No		Copy of Test Certificates required, test must be carried out to CEN standards.
Will the AHU be Leakage Tested	No		Copy of Test Certificates required, test must be carried out to CEN standards.
What CEN Classification Shall The AHU Leakage Achieve	No		Test data in compliance IS EN 1886:2007. Specifications in compliance with EN standards such as IS EN 1886:2007

Specific Fan Power	SBEM Inputs	Units	Documentation Required
MVHR SFP _e	1.20	W/l/s	EN 13779:2007 EN 16798-3:2017
Extract SFP	0.15	W/l/s	Must be calculated in accordance with EN 16798-3: 2017

Ventilation Heat Recovery	SBEM Inputs	Documentation Required
Heat Recovery Device	Plate Heat Exchanger (Recuperator)	
Heat Recovery Seasonal Efficiency (Dry)	73%	EU 1253/2014

Domestic Hot Water	SBEM Inputs Units	Documentation Required
DHW Generator Type	Electric Instantaneous	
DHW Generator SCOP	1.0	To be certified to appropriate test standard (EU eco design directive 813/2013 814/2013)
DHW Storage Volume per unit	N/A	Technical data sheets from operational and maintenance manuals
Daily Storage Losses	N/A	Copies of technical data sheets from operational and maintenance manuals; As Built drawings and specifications Design drawings and specifications Heat Losses from pipework in compliance with relevant standards.
Secondary Circulation Losses	N/A	In order to comply with TGD Part L 2017 – Buildings Other than Dwellings pipework should be insulated to Table G.1 of the TGD L document with the exception of where heat can be demonstrated as “always useful”.
DHW Loop Length	N/A	Loop length = $\sqrt{\text{Area served}} \times 4.0$
DHW Pump Power	N/A	$(0.25 * \text{Loop length} + 42) / 500$
DHW Pump Time Switch Present	N/A	Technical data sheets from operational and maintenance manuals;
Will the Metering Warn “Out Of Range Values”	No	Not Necessary for NZEB

HVAC Metering	SBEM Inputs	Units	Comments
Will the HVAC system be sub metered	No		Not Necessary for NZEB
Will the Metering Warn "Out Of Range Values"	No		Not Necessary for NZEB

ELECTRICAL PLANT PERFORMANCE

Electric Power Factor	SBEM Inputs	Documentation Required
Electric Power Factor	0.9 - 0.95	For a new building, detail of installed power factor correction equipment or a signed report from a suitably qualified electrical engineer.

Lighting		Documentation Required
Is the lighting separately sub-metered?	Yes	Copy of As Built electrical schematics showing meters for Copy of Design electrical schematics showing meters for Letter from an electrical contractor advising that they have checked the system in the last 12 months and confirming that it is separately metered.
Lighting M&T with alarm for "out of range" values?	No	The evidence required is details of M&T system from operational and maintenance manuals. Review the BMS to ensure that the system is in operation or review records for previous 12 months. Specification of the BMS/ BEMS should be provided demonstrating

Space	Design Lux	Design Total Lumens/Circuit Watt	Daylighting Controls	Occupancy Controls	Parasitic Power of Sensors (W/m ²)
Stair/Lift Core	500	100	None	None	0.10
Apartments	200	100	None	None	None
Toilet	200	100	None	None	0.10
Dining Areas	300	100	Yes	Auto-on-off FOC = 0.90	0.10
Circulation	200	100	None	None	0.10
Gym	500	100	Yes	Auto-on-off FOC = 0.90	0.10
Office/Lobby	500	100	Yes	Auto-on-off FOC = 0.90	0.10
Plant	200	100	None	None	0.10
Lounge	200	100	Yes	Auto-on-off FOC = 0.90	0.10

LIGHTING DESIGN

Lighting parameters contained within the table above are subject to changes as the design develops. The values shown are representative of typical target values for the project.

8.0 DOMESTIC NZEB COMPLIANCE STRATEGY

The vast majority of the units being developed on site are new-build. These must comply with new-build TGDL 2022 regulations. Please see below a summary of inputs to achieve compliance for all units across the development.

 21044 Dalguise House, Sample BER Result Block D REV 00 Victorium Compact, W 35 Exhaust Air Heat Pump for Space heating, Water heating and Ventilation This is a sample specification for compliance with TGDL 2021 only. No Final BER has been issued alongside this specification and it should be taken as guidance only. 28/03/2022										
Address	Specification Highlights	Floor Area m ²	Primary Energy kWh/m ² /yr	kg/CO ₂ /m ² /yr	EPC	CPC	RER	BER		
Dalguise House, Block D Sample, Top Floor Apartment	Victorium Compact, W 35 Exhaust Air Heat Pump for Space heating, Water heating and Ventilation.	61.14	51.92	10.21	0.296	0.288	0.342	A3		
		61.14	51.92	10.21	0.30	0.29	0.34			
INPUTS INTO DEAP 4.2.1										
Fabric Element		U-Value (W/m ² .K)								
External Walls		0.18								
Floors		0.15								
Flat Roofs		0.15								
New Doors		1.30								
New Glazing Units (Solar Transmittance 0.35)		1.30								
Other Elements		Input / Comment								
Airtightness		3 m ³ /(hr.m ²) @ 50 Pa. (With an exhaust air heat-pump installed, less than 3 m ³ /(hr.m ²) @ 50 Pa is recommended)								
Ventilation		Victorium Compact W 35 Exhaust Air Heat Pump. Separate Kitchen Extr								
Factor for Thermal Bridging		0.15 W/m ² .K, Signed Acceptable Construction Details Are Not Required								
Space Heating		Victorium Compact W 35 Exhaust Air Heat Pump. (Operating For 24 hrs a day with a design flow temperature of 55 Degrees, heat emitters are radiators)								
DHW		Victorium Compact W 35 Exhaust Air Heat Pump. (Operating For 24 hrs a day with a design flow temperature of 55 Degrees, heat emitters are radiators)								
Water Storage		200 lr Victorium Compact W 35 Exhaust Air Heat Pump. (Heat Loss 2.06								
Heating Controls		2 Time & Temp Controlled Heating Zones as a minimum with a separate water heating zone								
Lighting		LED Throughout								
Shower Flow Restriction		Yes								
Shower Waste Water Heat Recovery		No								
Weather Compensator		Yes								
PV		No								
Circulation Spaces		All circulation spaces which form a party wall to the apartment dwelling must be heated.								

A NOTE ON TGD 2022 MAJOR RENOVATION REQUIREMENTS

According to TGD 2022, where more than 25% of the surface envelope of the building undergoes a renovation, the building must be upgraded to a B2 energy rating which represents an energy performance of 125 kWh/m²/yr when calculated in DEAP. Both The Coach house and The White Lodge both fall into this category. It is recommended to create a separate compliance strategy for these structures to ensure that they will meet the B2 renovation requirements.

TGD 2022 also states the requirement for electric car infrastructure as follows. A building (containing one, or more than one, dwelling), which has more than 10 car parking spaces, that is: (i) new; or (ii) subject to subparagraph (g), undergoing major renovation, shall have installed ducting infrastructure (consisting of conduits for electric cables) for each car parking space to enable the subsequent installation of recharging points for electric vehicles.

A NOTE ON PROTECTED STRUCTURES

As a protected structure or structure of historical architectural interest Dalguise House is exempt from the major renovation requirement

APPENDIX A PRELIMINARY BUILDING ENERGY RATING BLOCK A

Virtual Environment 7.0.13 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is:

A3

The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO₂ emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO₂ emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

BER Number: voidvoidvoid	Date of Issue: 07 Apr 2022
Useful Floor Area (m ²): 924.8	Valid Until: 06 Apr 2024
Main Heating Fuel: Grid Supplied Electricity	BER Assessor No.: 123456
Building Environment: Heating and Natural Ventilation	Assessor Company No.: 123456
	Assessor Scheme: SEAI
Building Type: Residential spaces	

Building Energy Rating (Indicator)

MOST EFFICIENT

< 0.17	A1
≥ 0.17	A2
≥ 0.34	A3
≥ 0.50	B1
≥ 0.67	B2
≥ 0.84	B3
≥ 1.00	C1
≥ 1.17	C2
≥ 1.34	C3
≥ 1.50	D1
≥ 1.75	D2
≥ 2.00	E1
≥ 2.25	E2
≥ 2.50	F
≥ 3.00	G

LEAST EFFICIENT

Carbon Dioxide (CO₂) Emissions Indicator

BEST	0
1.0	
2.0	
WORST	>3.0

Calculated annual CO₂ emissions

8 kgCO₂/m²/yr
0.39

The less CO₂ produced, the less the building contributes to global warming.

IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

PRELIMINARY BUILDING ENERGY RATING BLOCK B

Virtual Environment 7.0.13 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is:

A2

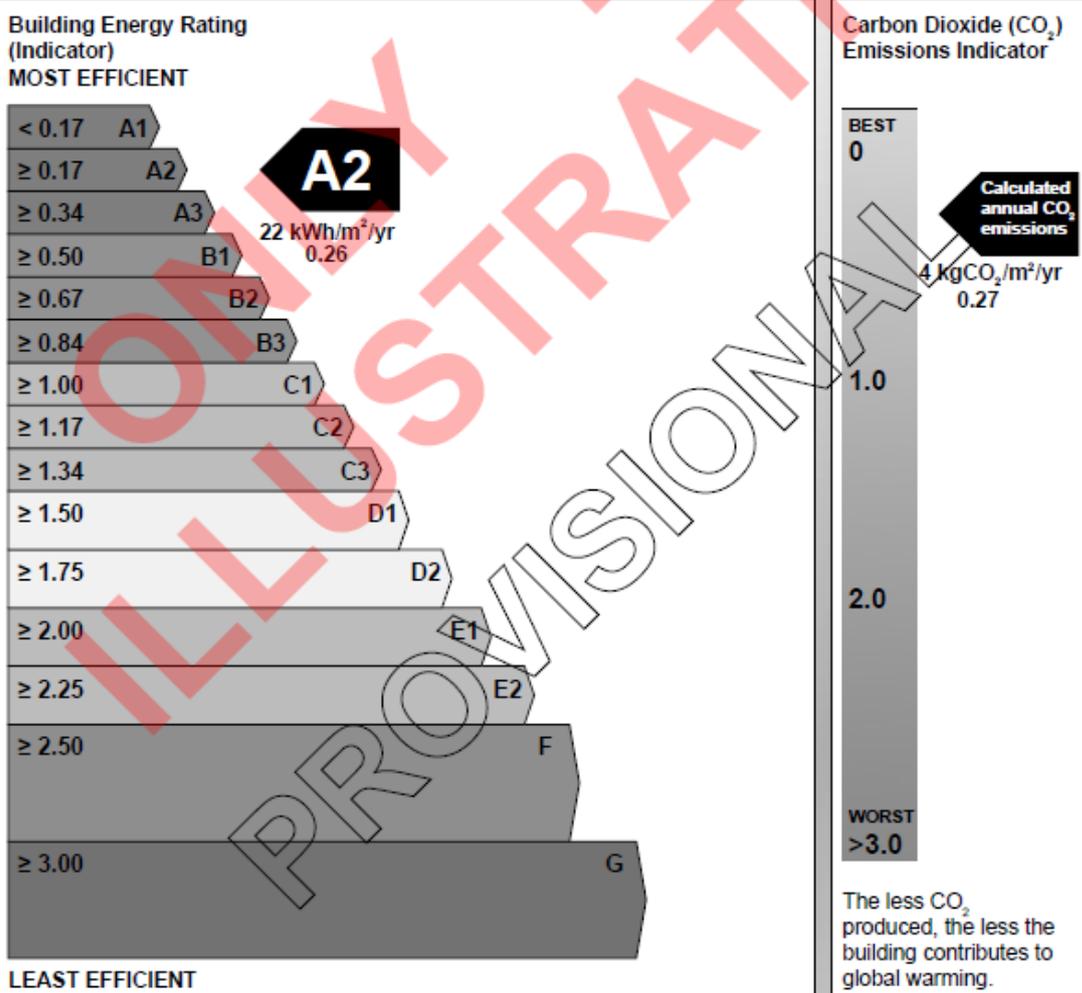
The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO₂ emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO₂ emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

Address 1
Address 2
Address 3
Co. Carlow
Eiroode

BER Number: voidvoidvoid
Useful Floor Area (m²): 582
Main Heating Fuel: Grid Supplied Electricity
Building Environment: Heating and Natural Ventilation

Date of Issue: 25 Apr 2022
Valid Until: 24 Apr 2024
BER Assessor No.: 123456
Assessor Company No.: 123456
Assessor Scheme: SEAI

Building Type: Residential spaces



IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

PRELIMINARY BUILDING ENERGY RATING BLOCK C

Virtual Environment 7.0.13 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is:

A2

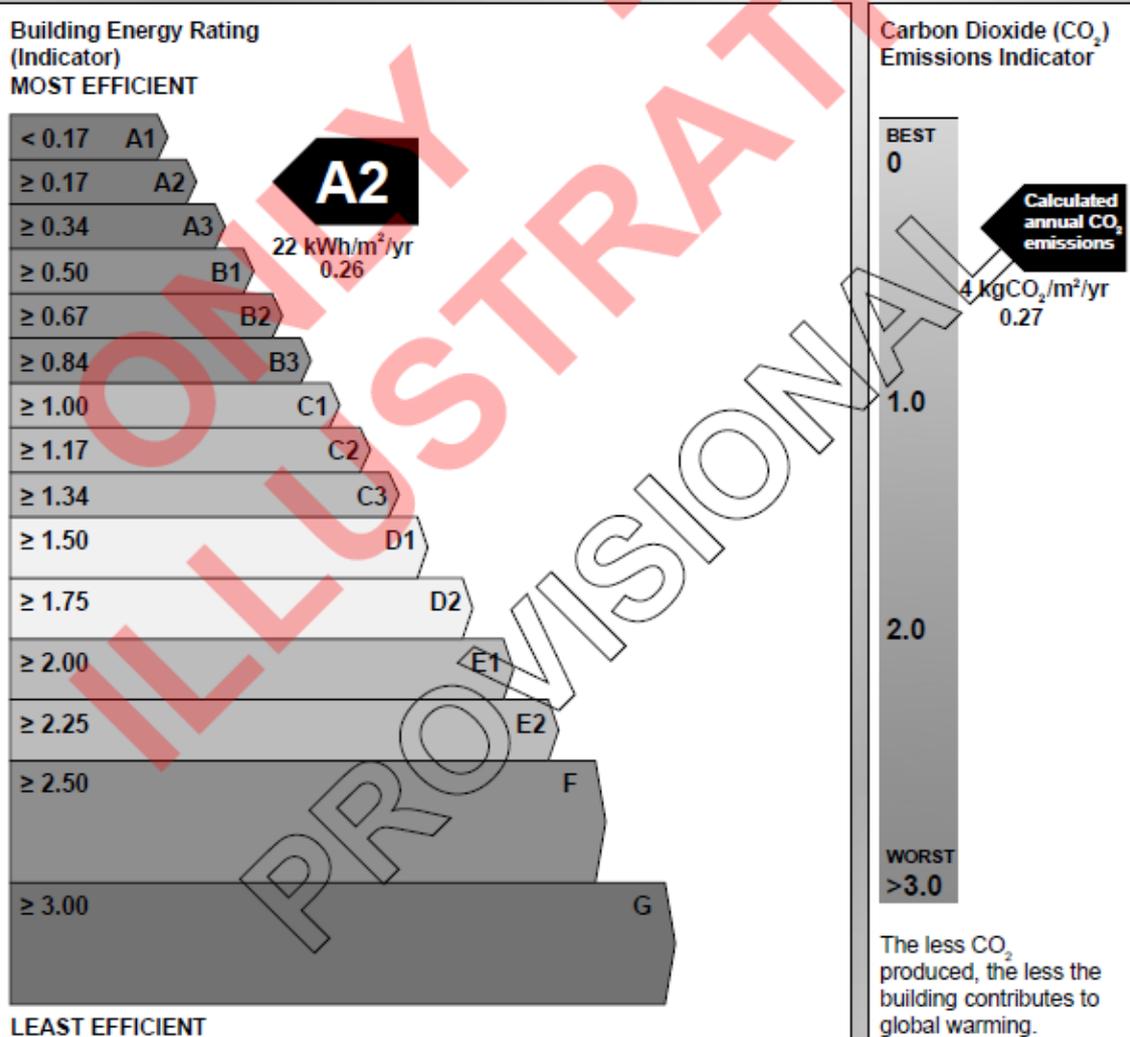
The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO₂ emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO₂ emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

Address 1
Address 2
Address 3
Co. Carlow
Eircode

BER Number: voidvoidvoid
Useful Floor Area (m²): 582.1
Main Heating Fuel: Grid Supplied Electricity
Building Environment: Heating and Natural Ventilation

Date of Issue: 25 Apr 2022
Valid Until: 24 Apr 2024
BER Assessor No.: 123456
Assessor Company No.: 123456
Assessor Scheme: SEAI

Building Type: Residential spaces



IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

PRELIMINARY BUILDING ENERGY RATING BLOCK D

Virtual Environment 7.0.13 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is:

A2

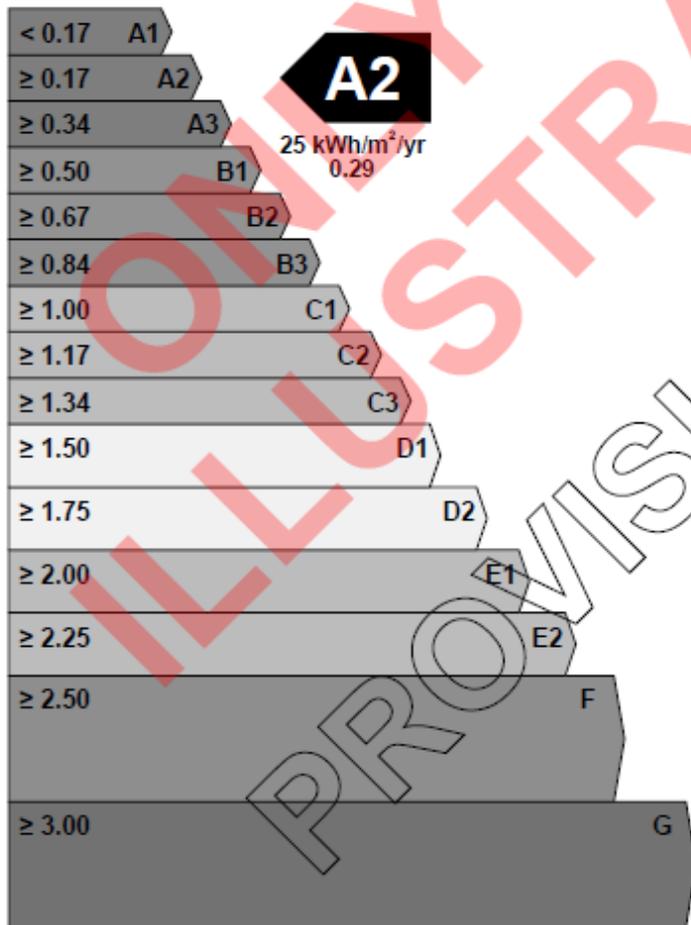
The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO₂ emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO₂ emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

Address 1
 Address 2
 Address 3
 Co. Carlow
 Eircode

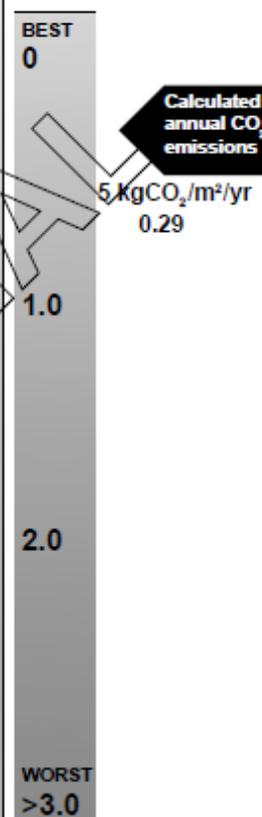
BER Number: voidvoidvoid
 Useful Floor Area (m²): 1945
 Main Heating Fuel: Grid Supplied Electricity
 Building Environment: Heating and Natural Ventilation
 Building Type: Residential spaces

Date of Issue: 25 Apr 2022
 Valid Until: 24 Apr 2024
 BER Assessor No.: 123456
 Assessor Company No.: 123456
 Assessor Scheme: SEAI

Building Energy Rating (Indicator)
 MOST EFFICIENT



Carbon Dioxide (CO₂) Emissions Indicator



The less CO₂ produced, the less the building contributes to global warming.

IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

PRELIMINARY BUILDING ENERGY RATING BLOCK E

Virtual Environment 7.0.13 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is:

A3

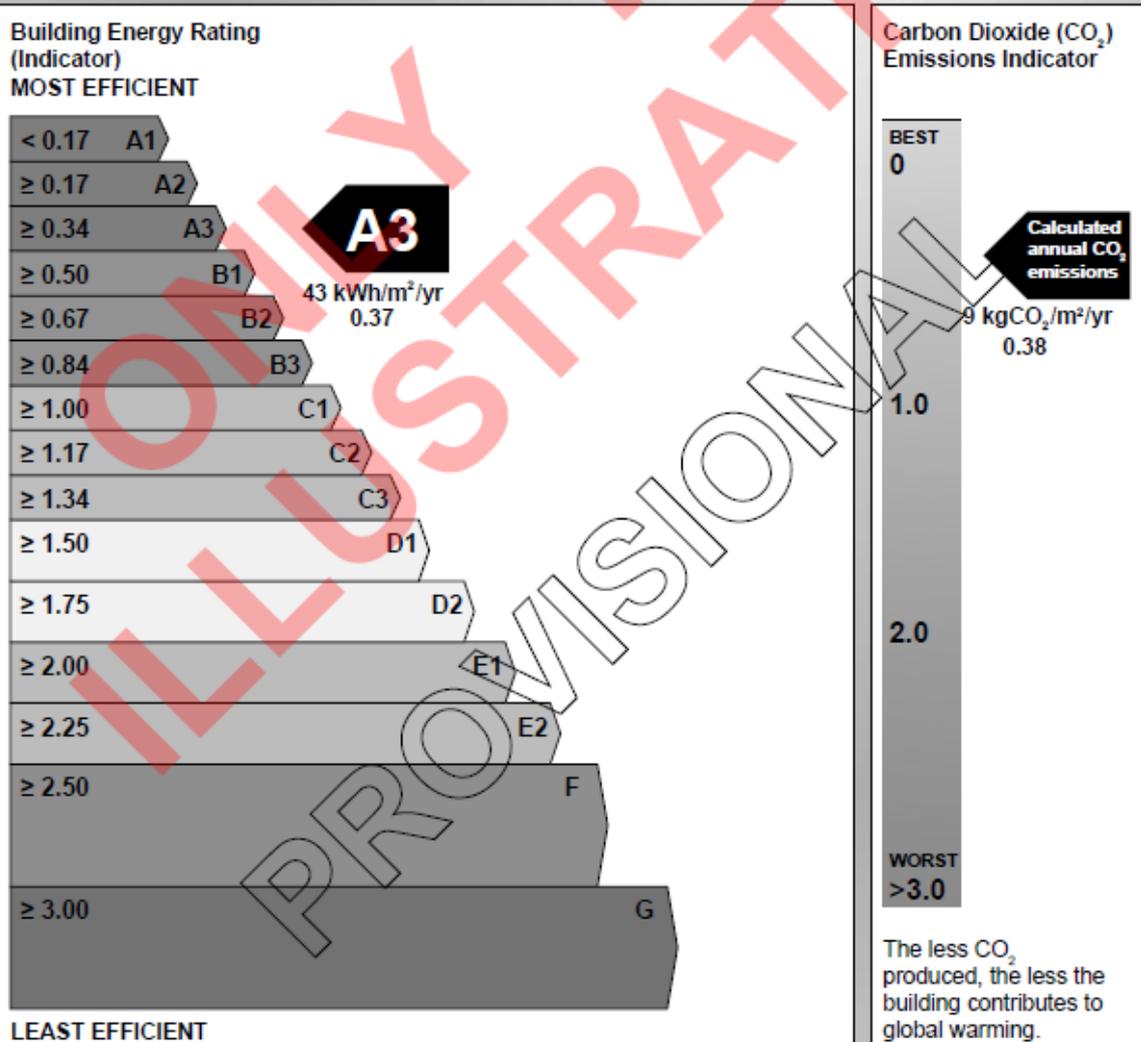
The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO₂ emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO₂ emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

Address 1
 Address 2
 Address 3
 Co. Carlow
 Eiroode

BER Number: voidvoidvoid
 Useful Floor Area (m²): 3038.5
 Main Heating Fuel: Grid Supplied Electricity
 Building Environment: Air Conditioning

Date of Issue: 25 Apr 2022
 Valid Until: 24 Apr 2024
 BER Assessor No.: 123456
 Assessor Company No.: 123456
 Assessor Scheme: SEAI

Building Type: Residential spaces



IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

PRELIMINARY BUILDING ENERGY RATING BLOCK F

Virtual Environment 7.0.13 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is:

A2

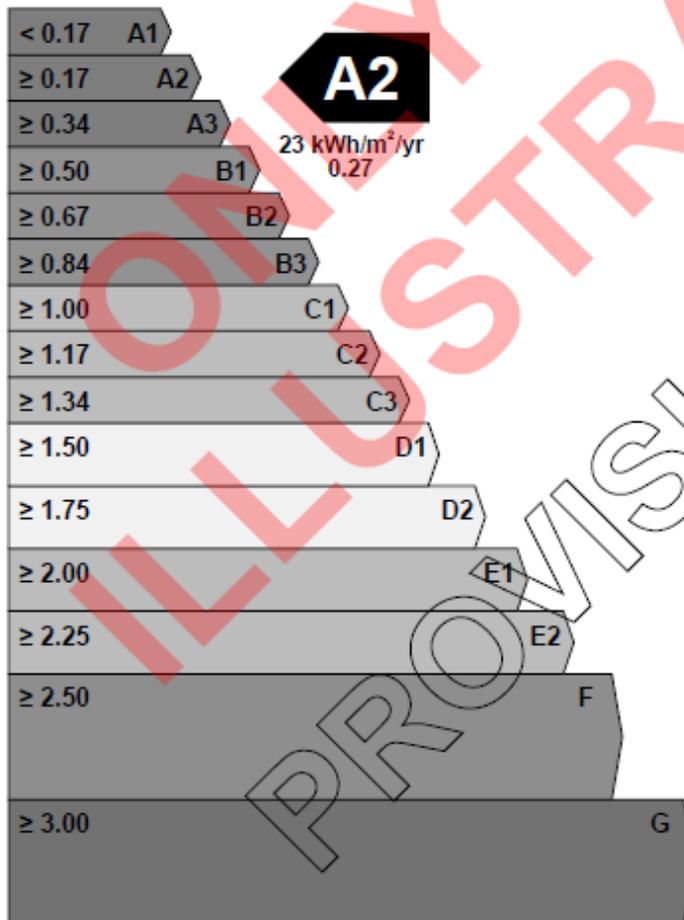
The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO₂ emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO₂ emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

Address 1
Address 2
Address 3
Co. Carlow
Eircode

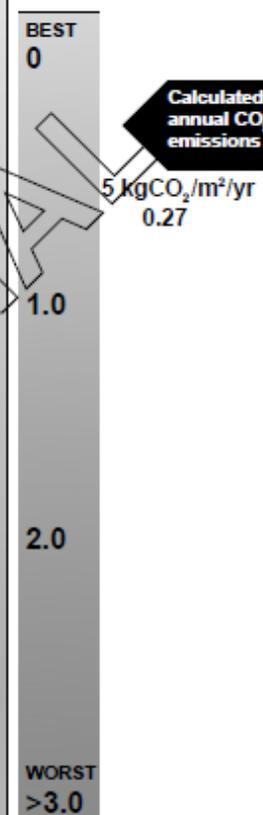
BER Number: voidvoidvoid
Useful Floor Area (m²): 2573.1
Main Heating Fuel: Grid Supplied Electricity
Building Environment: Heating and Natural Ventilation
Building Type: Residential spaces

Date of Issue: 25 Apr 2022
Valid Until: 24 Apr 2024
BER Assessor No.: 123456
Assessor Company No.: 123456
Assessor Scheme: SEAI

Building Energy Rating (Indicator)
MOST EFFICIENT



Carbon Dioxide (CO₂) Emissions Indicator



The less CO₂ produced, the less the building contributes to global warming.

IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

PRELIMINARY BUILDING ENERGY RATING BLOCK G

Virtual Environment 7.0.13 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is:

A2

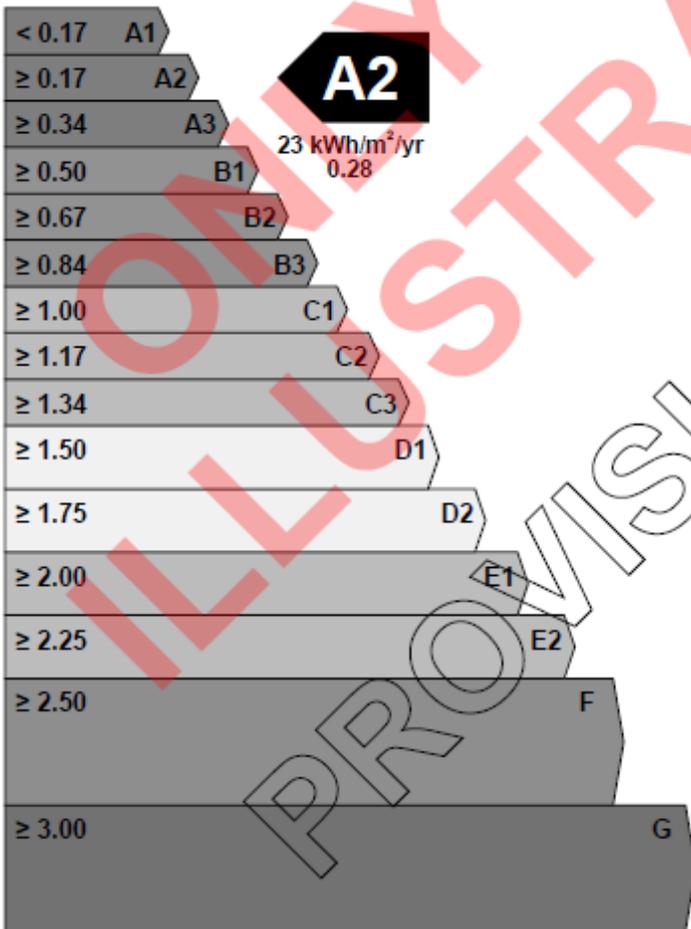
The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO₂ emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO₂ emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

Address 1
 Address 2
 Address 3
 Co. Carlow
 Eircode

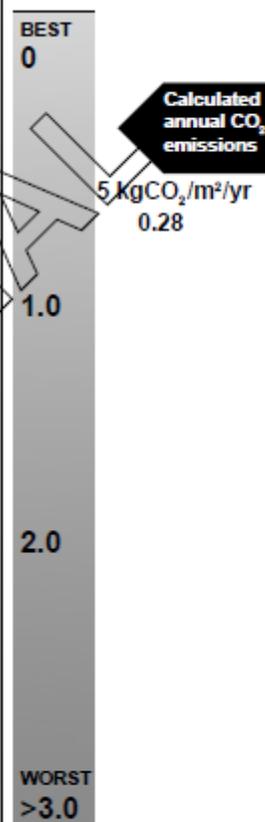
BER Number: voidvoidvoid
 Useful Floor Area (m²): 2505.6
 Main Heating Fuel: Grid Supplied Electricity
 Building Environment: Heating and Natural Ventilation
 Building Type: Residential spaces

Date of Issue: 25 Apr 2022
 Valid Until: 24 Apr 2024
 BER Assessor No.: 123456
 Assessor Company No.: 123456
 Assessor Scheme: SEAI

Building Energy Rating (Indicator)
 MOST EFFICIENT



Carbon Dioxide (CO₂) Emissions Indicator



The less CO₂ produced, the less the building contributes to global warming.

IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

PRELIMINARY BUILDING ENERGY RATING BLOCK H

Virtual Environment 7.0.13 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is:

A2

The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO₂ emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO₂ emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

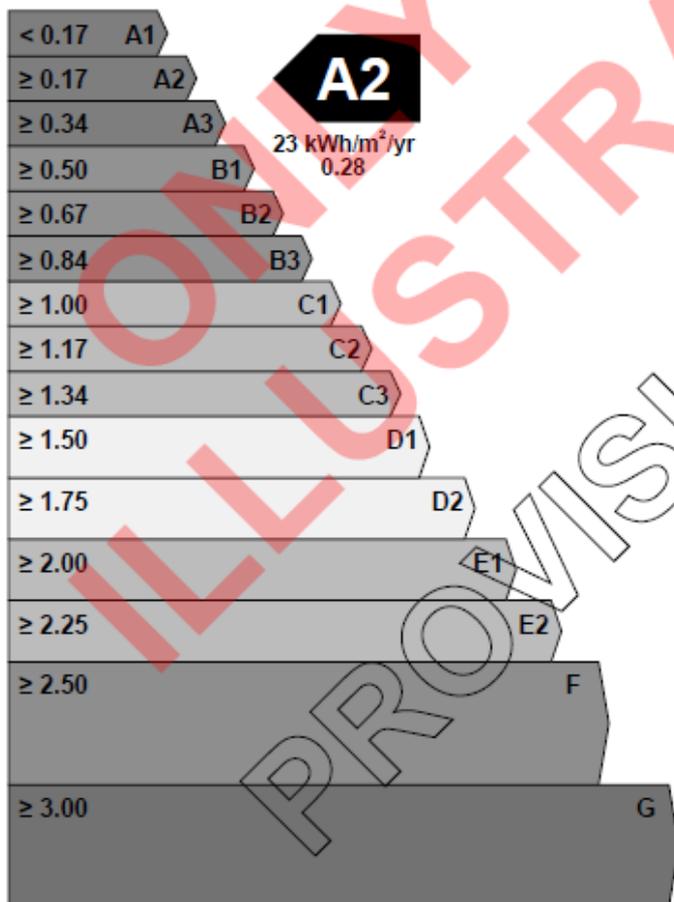
Address 1
Address 2
Address 3
Co. Carlow
Eircode

BER Number: voidvoidvoid
Useful Floor Area (m²): 804.4
Main Heating Fuel: Grid Supplied Electricity
Building Environment: Heating and Natural Ventilation

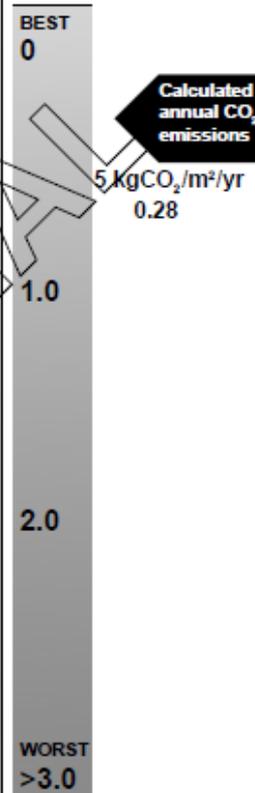
Date of Issue: 25 Apr 2022
Valid Until: 24 Apr 2024
BER Assessor No.: 123456
Assessor Company No.: 123456
Assessor Scheme: SEAI

Building Type: Residential spaces

Building Energy Rating (Indicator)
MOST EFFICIENT



Carbon Dioxide (CO₂) Emissions Indicator



The less CO₂ produced, the less the building contributes to global warming.

IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

PRELIMINARY BUILDING ENERGY RATING BLOCK I1

Virtual Environment 7.0.13 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is:

A2

The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO₂ emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO₂ emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

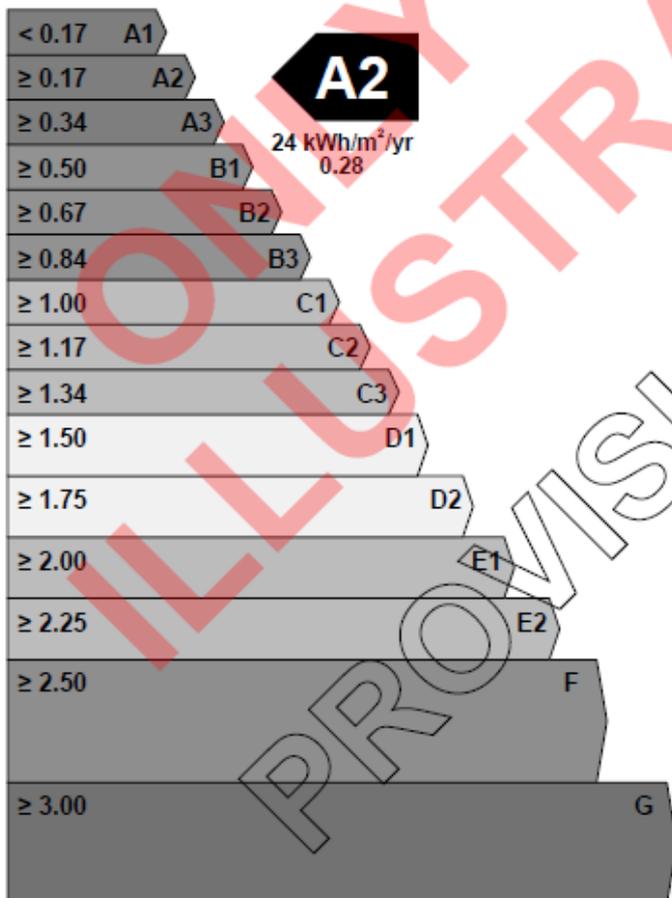
Address 1
 Address 2
 Address 3
 Co. Carlow
 Eircode

BER Number: voidvoidvoid
 Useful Floor Area (m²): 218.5
 Main Heating Fuel: Grid Supplied Electricity
 Building Environment: Heating and Natural Ventilation

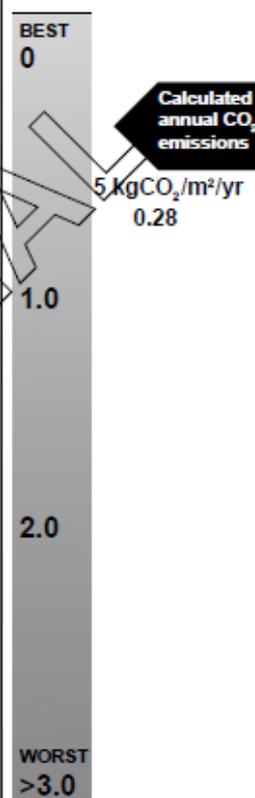
Date of Issue: 25 Apr 2022
 Valid Until: 24 Apr 2024
 BER Assessor No.: 123456
 Assessor Company No.: 123456
 Assessor Scheme: SEAI

Building Type: Residential spaces

Building Energy Rating (Indicator)
 MOST EFFICIENT



Carbon Dioxide (CO₂) Emissions Indicator



The less CO₂ produced, the less the building contributes to global warming.

IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

PRELIMINARY BUILDING ENERGY RATING BLOCK I2

Virtual Environment 7.0.13 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is:

A2

The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO₂ emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO₂ emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

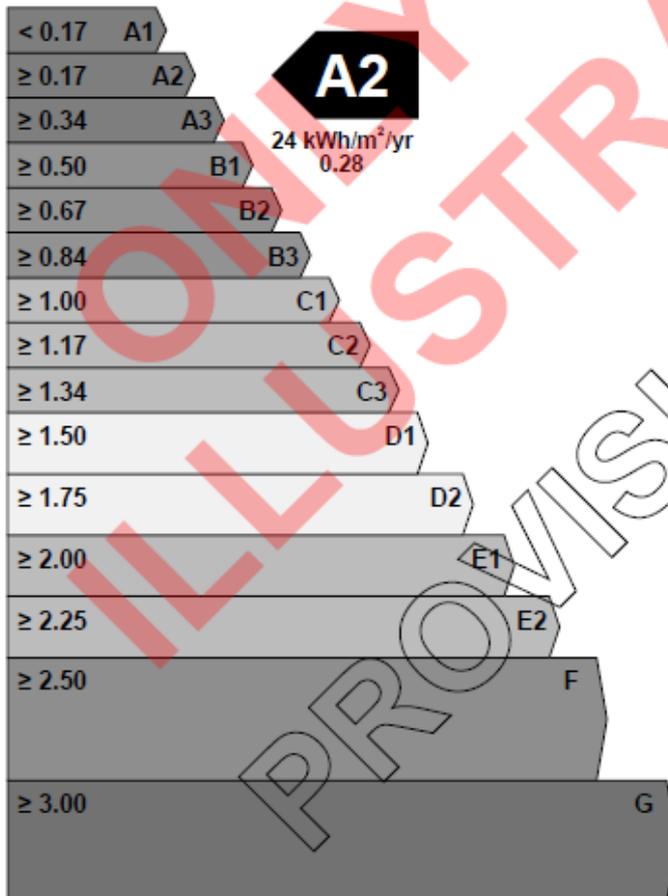
Address 1
Address 2
Address 3
Co. Carlow
Eircode

BER Number: voidvoidvoid
Useful Floor Area (m²): 218.5
Main Heating Fuel: Grid Supplied Electricity
Building Environment: Heating and Natural Ventilation

Date of Issue: 25 Apr 2022
Valid Until: 24 Apr 2024
BER Assessor No.: 123456
Assessor Company No.: 123456
Assessor Scheme: SEAI

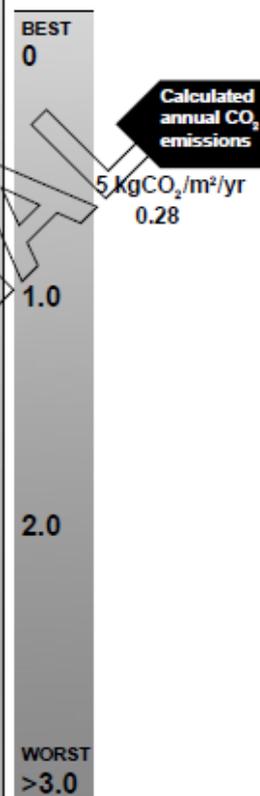
Building Type: Residential spaces

Building Energy Rating (Indicator)
MOST EFFICIENT



A2
24 kWh/m²/yr
0.28

Carbon Dioxide (CO₂) Emissions Indicator



Calculated annual CO₂ emissions
5 kgCO₂/m²/yr
0.28

The less CO₂ produced, the less the building contributes to global warming.

IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

PRELIMINARY BUILDING ENERGY RATING BLOCK J

Virtual Environment 7.0.13 (SBEMIE v5.5.h.2)

Provisional Building Energy Rating (BER)

Provisional BER for the building detailed below is:

A3

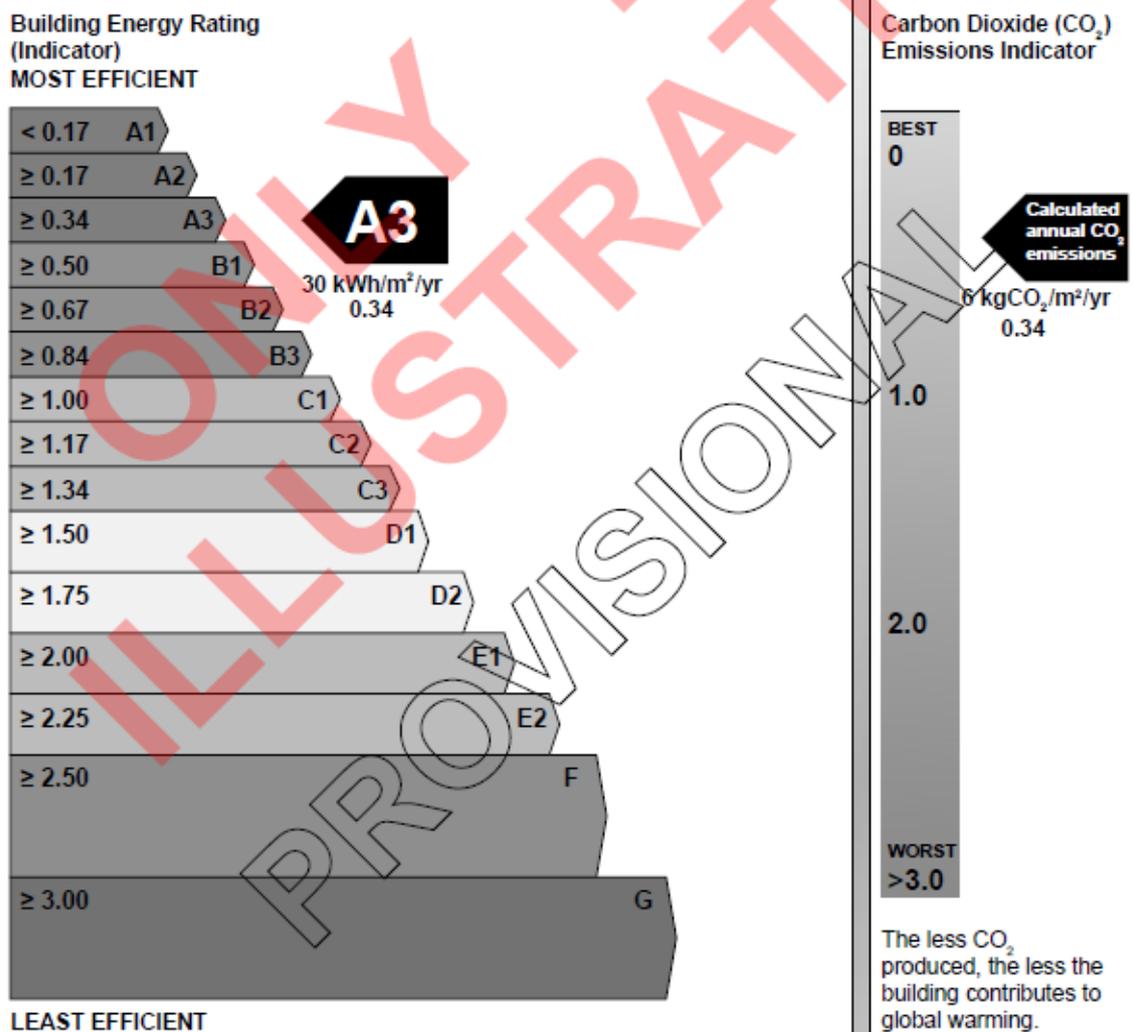
The Building Energy Rating (BER) is an indicator of the energy performance of this building. It covers energy use for space heating and cooling, water heating, ventilation and lighting, calculated on the basis of standard operating patterns. It is accompanied by a CO₂ emissions indicator. These indicators are expressed as respective ratios of primary energy use and CO₂ emissions, relative to what would apply for a similar building generally satisfying the Building Regulations 2005. 'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

Address 1
Address 2
Address 3
Co. Carlow
Eiroode

BER Number: voidvoidvoid
Useful Floor Area (m²): 304.5
Main Heating Fuel: Grid Supplied Electricity
Building Environment: Heating and Natural Ventilation

Building Type: Residential spaces

Date of Issue: 25 Apr 2022
Valid Until: 24 Apr 2024
BER Assessor No.: 123456
Assessor Company No.: 123456
Assessor Scheme: SEAI



IMPORTANT: This provisional BER is calculated on the basis of pre-construction plans and specifications provided to the BER assessor, and using the version of the assessment software quoted above. The BER assigned to this building on completion may be different, in the event of changes to those plans or specifications, or to the assessment software.

APPENDIX B BRIRL COMPLIANCE DOCUMENT BLOCK A

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.

21044 Dalguise House Part

Date: Thu Apr 07 12:08:03 2022

Administrative information

Building Details

Address: Address 1, Address 2, Address 3, Address 4, Co. Carlow, Eircode

NEAP

Calculation engine: SBEMIE
Calculation engine version: v5.5.h.2
Interface to calculation engine: Virtual Environment
Interface to calculation engine version: 7.0.13
BRIRL compliance check version: v5.5.h.2

Client Details

Name: Name
Telephone number: Phone
Address: Street Address, Co. Carlow, Eircode

Energy Assessor Details

Name: Name
Telephone number: Phone
Email: you@yourISP
Address: Street Address, Co. Carlow, Eircode

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	7.9 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	8.2 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	1.04
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	41.6 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	41.8 kWh/m2.annum
Energy Performance Coefficient (EPC)	1
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.23
Minimum Renewable Energy Ratio	0.2

Heat Transmission through Building Fabric

Element	U _{s-Limit}	U _{s-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.18	0.6	0.18	BL00002E_W1
Floors (ground and exposed)	0.21	0.15	0.6	0.15	BL00002F_F
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.15	0.3	0.15	BL000060_C
Windows, roof windows, and rooflights	1.6	1.4	3	1.4	BL00002F_W1_O0
Personnel doors	1.6	1.6	3	1.6	BL00017E_W1_O0
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_{s-Limit} = Limiting area-weighted average U-values [W/(m2K)]
U_{s-Calc} = Calculated area-weighted average U-values [W/(m2K)]

U_{i-Limit} = Limiting individual element U-values [W/(m2K)]
U_{i-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	3

BRIRL COMPLIANCE DOCUMENT BLOCK B

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.

21044 Dalguise House Part

Date: Mon Apr 25 09:06:22 2022

Administrative information

Building Details

Address: Address 1, Address 2, Address 3, Address 4, Co. Carlow, Eircode

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.5.h.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: 7.0.13

BRIRL compliance check version: v5.5.h.2

Client Details

Name: Name

Telephone number: Phone

Address: Street Address, Co. Carlow, Eircode

Energy Assessor Details

Name: Name

Telephone number: Phone

Email: you@yourISP

Address: Street Address, Co. Carlow, Eircode

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	4.8 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	4.4 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.92
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	24.6 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	22.1 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.9
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.15
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.18	0.6	0.18	BL000032_W1
Floors (ground and exposed)	0.21	0.15	0.6	0.15	BL000032_F
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.15	0.3	0.15	BL00010F_C
Windows, roof windows, and rooflights	1.6	1.4	3	1.4	BL000032_W1_O0
Personnel doors	1.6	1.6	3	1.6	BL000180_W4_O0
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-Limit} = Limiting area-weighted average U-values [W/(m2K)] U _{a-Calc} = Calculated area-weighted average U-values [W/(m2K)] U _{i-Limit} = Limiting individual element U-values [W/(m2K)] U _{i-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	3

BRIRL COMPLIANCE DOCUMENT BLOCK C

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.

21044 Dalguise House Part

Date: Mon Apr 25 09:08:56 2022

Administrative information

Building Details

Address: Address 1, Address 2, Address 3, Address 4, Co. Carlow, Eircode

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.5.h.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: 7.0.13

BRIRL compliance check version: v5.5.h.2

Client Details

Name: Name

Telephone number: Phone

Address: Street Address, Co. Carlow, Eircode

Energy Assessor Details

Name: Name

Telephone number: Phone

Email: you@yourISP

Address: Street Address, Co. Carlow, Eircode

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	4.8 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	4.4 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.92
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	24.6 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	22.2 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.9
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.16
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.18	0.6	0.18	BL000125_W1
Floors (ground and exposed)	0.21	0.15	0.6	0.15	BL000125_F
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.15	0.3	0.15	BL00013A_C
Windows, roof windows, and rooflights	1.6	1.4	3	1.4	BL000125_W1_O0
Personnel doors	1.6	1.6	3	1.6	BL000183_W4_O0
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"
<small>U_{a-Limit} = Limiting area-weighted average U-values [W/(m2K)] U_{a-Calc} = Calculated area-weighted average U-values [W/(m2K)] U_{i-Limit} = Limiting individual element U-values [W/(m2K)] U_{i-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.</small>					

Air Permeability	Upper Limit	This Building's Value
m3/(h.m2) at 50 Pa	5	3

BRIRL COMPLIANCE DOCUMENT BLOCK D

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.

21044 Dalguise House Part

Date: Mon Apr 25 09:44:18 2022

Administrative information

Building Details

Address: Address 1, Address 2, Address 3, Address 4, Co. Carlow, Eircode

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.5.h.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: 7.0.13

BRIRL compliance check version: v5.5.h.2

Client Details

Name: Name

Telephone number: Phone

Address: Street Address, Co. Carlow, Eircode

Energy Assessor Details

Name: Name

Telephone number: Phone

Email: you@yourISP

Address: Street Address, Co. Carlow, Eircode

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	6 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	4.9 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.82
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	30.4 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	25 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.82
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.1
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.21	0.6	0.48	LW000010_W2_AD
Floors (ground and exposed)	0.21	0.15	0.6	0.15	BL000018_F_AD
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.15	0.3	0.15	BL0000CF_C
Windows, roof windows, and rooflights	1.6	1.4	3	1.4	BL000038_W1_O0
Personnel doors	1.6	1.6	3	1.6	LW000003_W-1_O0
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-Limit} - Limiting area-weighted average U-values [W/(m2K)] U _{a-Calc} - Calculated area-weighted average U-values [W/(m2K)] U _{i-Limit} - Limiting individual element U-values [W/(m2K)] U _{i-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	3

BRIRL COMPLIANCE DOCUMENT BLOCK E

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.

21044 Dalguise House Part

Date: Mon Apr 25 09:11:44 2022

Administrative information

Building Details

Address: Address 1, Address 2, Address 3, Address 4, Co. Carlow, Eircode

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.5.h.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: 7.0.13

BRIRL compliance check version: v5.5.h.2

Client Details

Name: Name

Telephone number: Phone

Address: Street Address, Co. Carlow, Eircode

Energy Assessor Details

Name: Name

Telephone number: Phone

Email: you@yourISP

Address: Street Address, Co. Carlow, Eircode

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	8.3 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	8.5 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	1.03
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	43.1 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	43.3 kWh/m2.annum
Energy Performance Coefficient (EPC)	1
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.21
Minimum Renewable Energy Ratio	0.2

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.18	0.6	0.18	BL000179_W1
Floors (ground and exposed)	0.21	0.15	0.6	0.15	BL000179_F_A0
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.15	0.3	0.15	BL00011B_C
Windows, roof windows, and rooflights	1.6	1.4	3	1.4	BL000179_W3_O0
Personnel doors	1.6	1.6	3	1.6	BL000040_W1_O0
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-Limit} = Limiting area-weighted average U-values [W/(m2K)] U _{a-Calc} = Calculated area-weighted average U-values [W/(m2K)] U _{i-Limit} = Limiting individual element U-values [W/(m2K)] U _{i-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	3

BRIRL COMPLIANCE DOCUMENT BLOCK F

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.

21044 Dalguise House Part

Date: Mon Apr 25 09:59:21 2022

Administrative information

Building Details

Address: Address 1, Address 2, Address 3, Address 4, Co. Carlow, Eircode

NEAP

Calculation engine: SBEMIE
Calculation engine version: v5.5.h.2
Interface to calculation engine: Virtual Environment
Interface to calculation engine version: 7.0.13
BRIRL compliance check version: v5.5.h.2

Client Details

Name: Name
Telephone number: Phone
Address: Street Address, Co. Carlow, Eircode

Energy Assessor Details

Name: Name
Telephone number: Phone
Email: you@yourISP
Address: Street Address, Co. Carlow, Eircode

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	5.7 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	4.5 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.8
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	29 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	23.1 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.8
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.1
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.18	0.6	0.18	BL00013E_W1
Floors (ground and exposed)	0.21	0.15	0.6	0.15	BL000155_F_A1
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.15	0.3	0.15	BL00015F_C
Windows, roof windows, and rooflights	1.6	1.4	3	1.4	BL00013E_W1_O0
Personnel doors	1.6	-	3	-	"No ext. personnel doors"
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-Limit} = Limiting area-weighted average U-values [W/(m2K)] U _{a-Calc} = Calculated area-weighted average U-values [W/(m2K)] U _{i-Limit} = Limiting individual element U-values [W/(m2K)] U _{i-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	3

BRIRL COMPLIANCE DOCUMENT BLOCK G

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.

21044 Dalguise House Part

Date: Mon Apr 25 10:05:32 2022

Administrative information

Building Details

Address: Address 1, Address 2, Address 3, Address 4, Co. Carlow, Eircode

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.5.h.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: 7.0.13

BRIRL compliance check version: v5.5.h.2

Client Details

Name: Name

Telephone number: Phone

Address: Street Address, Co. Carlow, Eircode

Energy Assessor Details

Name: Name

Telephone number: Phone

Email: you@yourISP

Address: Street Address, Co. Carlow, Eircode

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	5.6 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	4.5 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.8
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	28.6 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	23 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.8
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.1
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.18	0.6	0.18	BL000028_W1
Floors (ground and exposed)	0.21	0.15	0.6	0.15	BL000049_F_A1
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.15	0.3	0.15	BL000087_C
Windows, roof windows, and rooflights	1.6	1.4	3	1.4	BL000028_W1_O0
Personnel doors	1.6	-	3	-	"No ext. personnel doors"
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-Limit} - Limiting area-weighted average U-values [W/(m2K)]
 U_{a-Calc} - Calculated area-weighted average U-values [W/(m2K)]
 U_{i-Limit} - Limiting individual element U-values [W/(m2K)]
 U_{i-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	3

BRIRL COMPLIANCE DOCUMENT BLOCK H

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.

21044 Dalguise House Part

Date: Mon Apr 25 09:15:26 2022

Administrative information

Building Details

Address: Address 1, Address 2, Address 3, Address 4, Co. Carlow, Eircode

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.5.h.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: 7.0.13

BRIRL compliance check version: v5.5.h.2

Client Details

Name: Name

Telephone number: Phone

Address: Street Address, Co. Carlow, Eircode

Energy Assessor Details

Name: Name

Telephone number: Phone

Email: you@yourISP

Address: Street Address, Co. Carlow, Eircode

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	5.3 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	4.6 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.86
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	27.1 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	23.1 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.85
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.1
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.18	0.6	0.18	BL00004E_W1
Floors (ground and exposed)	0.21	0.15	0.6	0.15	BL00004E_F_A2
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.15	0.3	0.15	BL000097_C
Windows, roof windows, and rooflights	1.6	1.4	3	1.4	BL00004E_W3_O0
Personnel doors	1.6	-	3	-	"No ext. personnel doors"
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-Limit} - Limiting area-weighted average U-values [W/(m2K)] U _{a-Calc} - Calculated area-weighted average U-values [W/(m2K)] U _{i-Limit} - Limiting individual element U-values [W/(m2K)] U _{i-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	3

BRIRL COMPLIANCE DOCUMENT BLOCK I1

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.

21044 Dalguise House Part

Date: Mon Apr 25 09:16:36 2022

Administrative information

Building Details

Address: Address 1, Address 2, Address 3, Address 4, Co. Carlow, Eircode

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.5.h.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: 7.0.13

BRIRL compliance check version: v5.5.h.2

Client Details

Name: Name

Telephone number: Phone

Address: Street Address, Co. Carlow, Eircode

Energy Assessor Details

Name: Name

Telephone number: Phone

Email: you@yourISP

Address: Street Address, Co. Carlow, Eircode

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	5.2 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	4.7 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.92
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	26.7 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	24.1 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.9
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.2
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.18	0.6	0.18	BL0000D7_W1
Floors (ground and exposed)	0.21	0.15	0.6	0.15	BL000023_F
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.15	0.3	0.15	BL0000D9_C
Windows, roof windows, and rooflights	1.6	1.4	3	1.4	BL000023_W1_O0
Personnel doors	1.6	-	3	-	"No ext. personnel doors"
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-Limit} - Limiting area-weighted average U-values [W/(m2K)] U _{a-Calc} - Calculated area-weighted average U-values [W/(m2K)] U _{i-Limit} - Limiting individual element U-values [W/(m2K)] U _{i-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	3

BRIRL COMPLIANCE DOCUMENT BLOCK I2

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.

21044 Dalguise House Part

Date: Mon Apr 25 09:16:36 2022

Administrative information

Building Details

Address: Address 1, Address 2, Address 3, Address 4, Co. Carlow, Eircode

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.5.h.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: 7.0.13

BRIRL compliance check version: v5.5.h.2

Client Details

Name: Name

Telephone number: Phone

Address: Street Address, Co. Carlow, Eircode

Energy Assessor Details

Name: Name

Telephone number: Phone

Email: you@yourISP

Address: Street Address, Co. Carlow, Eircode

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	5.2 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	4.7 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	0.92
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	26.7 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	24.1 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.9
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.2
Minimum Renewable Energy Ratio	0.1

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.18	0.6	0.18	BL0000D7_W1
Floors (ground and exposed)	0.21	0.15	0.6	0.15	BL000023_F
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.15	0.3	0.15	BL0000D9_C
Windows, roof windows, and rooflights	1.6	1.4	3	1.4	BL000023_W1_O0
Personnel doors	1.6	-	3	-	"No ext. personnel doors"
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-Limit} - Limiting area-weighted average U-values [W/(m2K)] U _{a-Calc} - Calculated area-weighted average U-values [W/(m2K)] U _{i-Limit} - Limiting individual element U-values [W/(m2K)] U _{i-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	3

BRIRL COMPLIANCE DOCUMENT BLOCK J

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.

21044 Dalguise House Part

Date: Mon Apr 25 09:17:52 2022

Administrative information

Building Details

Address: Address 1, Address 2, Address 3, Address 4, Co. Carlow, Eircode

NEAP

Calculation engine: SBEMIE

Calculation engine version: v5.5.h.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: 7.0.13

BRIRL compliance check version: v5.5.h.2

Client Details

Name: Name

Telephone number: Phone

Address: Street Address, Co. Carlow, Eircode

Energy Assessor Details

Name: Name

Telephone number: Phone

Email: you@yourISP

Address: Street Address, Co. Carlow, Eircode

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	5.9 kgCO2/m2.annum
Calculated CO2 emission rate from Actual building	6 kgCO2/m2.annum
Carbon Performance Coefficient (CPC)	1.02
Maximum Permitted Carbon Performance Coefficient (MPCPC)	1.15
Calculated primary energy consumption rate from Reference building	30.6 kWh/m2.annum
Calculated primary energy consumption rate from Actual building	30.3 kWh/m2.annum
Energy Performance Coefficient (EPC)	0.99
Maximum Permitted Energy Performance Coefficient (MPEPC)	1
Renewable Energy Ratio (RER)	0.24
Minimum Renewable Energy Ratio	0.2

Heat Transmission through Building Fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Limit}	U _{i-Calc}	Surface with maximum U-value*
Walls**	0.21	0.18	0.6	0.18	BL00004C_W1
Floors (ground and exposed)	0.21	0.15	0.6	0.15	BL00004D_F
Pitched roofs	0.16	-	0.3	-	"No heat loss pitched roofs"
Flat roofs	0.2	0.15	0.3	0.15	BL0000D6_C
Windows, roof windows, and rooflights	1.6	1.4	3	1.4	BL00004C_W1_O0
Personnel doors	1.6	-	3	-	"No ext. personnel doors"
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-Limit} - Limiting area-weighted average U-values [W/(m2K)] U _{a-Calc} - Calculated area-weighted average U-values [W/(m2K)] U _{i-Limit} - Limiting individual element U-values [W/(m2K)] U _{i-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	3

APPENDIX C DEAP ANALYSIS INPUT REPORTS



Part L Specification

BER IS NOT PUBLISHED

Property Details

Dwelling Type	Top-floor apartment	Type of BER rating	New Dwelling - Provisional
Address line 1	Dalguise House Apartments	Year of Construction	2022
Address line 2	Block D Unit 5	Date of Assessment	17/05/2022
Address line 3	Top Floor Sample	Date of Plans	
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	Seán Coffey	Assessor Number	107442
Comment		BER number assigned to shared dwelling	N/A

Dimension Details

	Area [m ²]	Height [m]	Volume [m ³]	
Ground Floor	61.14	2.75	168.13	
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	61.14		168.13	
Living Area [m ²]	29.43			Living area percentage [%] 48.14
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	2
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 - Window Details

Glazing type	User defined u-value	U-Value [W/m ² K]	Area [m ²]
Double-glazed, argon filled (low-E, en = 0.15, hard coat)	Yes	1.300	22.630
Double-glazed, argon filled (low-E, en = 0.15, hard coat)	Yes	1.300	8.590

Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m ² K]	Area [m ²]
Non-Heat Loss Floor		N/A	0	61.137

Building Elements - Roof Details

Type	Description	U-Value [W/m ² K]	Area [m ²]
Flat Roof	0.15 U-value	0.15	61.137

Building Elements - Wall Details

Type	Description	U-Value [W/m ² K]	Area [m ²]
Unknown	External Walls (U = 0.18 W/m ² K)	0.18	12.854

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m ² K]	Area [m ²]
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Other Details

Thermal bridging factor [W/m ² k]	0.1500	Thermal mass category of dwelling	Medium
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Heating System - Solar Water Heating

Solar Water Heating Present?	No	Aperture area of solar collector [m ²]	NA
Type, manufacturer, model	N/A		
Zero loss collector efficiency, n0	N/A	Collector heat loss coefficient, a1 [W/m ² >K]	NA
Annual Solar Radiation [kWh/m ²] (Refer to Appendix H in DEAP)	N/A	Overshading factor	NA
Dedicated storage volume [Litres]	N/A	Combined Cylinder	NA
Solar fraction [%]	0.000		

Heating System - Hot Water System

Distribution Losses	231.94	Combi boiler present?	No
Supplementary electric water heating	N/A	Water Storage Volume [L]	200
Hot water storage manufacturer and model name	Joule Victorum Exhaust Air to Water Heat-pump	Declared loss factor [kWh/d]	2.06
Temperature factor unadjusted	0.89	Temperature Factor Multiplier	0.81
Primary Circuit loss type	Boiler and thermal store within a single casing (cylinder thermostat present)		
Is hot water storage indoors or in group heating system?	Yes	Insulation type	None
Insulation thickness [mm]	0		

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 [%]	554.22	Space heating efficiency adjustment factor	1.0000	Main space heating fuel	Electricity
Main water heating system efficiency [%]	296.86	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	A3	Energy Value kWh/m ² /yr	51.92
CO ₂ emissions [kg/m ² /yr]	10.21		
EPC	0.296	EPC Pass/Fail	Pass
CPC	0.288	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	0.15	Pass
Pitched roof insulated on slope	0	Pass	Walls	0.18	Pass
Flat Roof	0.15	Pass	Floors	0	Pass
Floors with no underfloor heat	0.00	Pass	External doors / windows / rooflights	1.30	Pass
Floors with underfloor heat	0.00	Pass			
Walls	0.18	Pass			
Percentage of opening areas [%]	51.07				
Average U value of openings	1.30	Pass			

Permeability test carried out and meets guidelines in TGD L

0.15 | 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	1649.40	1649.40	
+ Saved energy	CHP	0.00	0.00	
+ District heating	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	3174.21	
+ Delivered energy	Thermal	0.00	0.00	
SUBTOTAL		1649.40	4823.60	0.34 - Pass
Energy not used in Regulated Loads	PV/Wind/CHP	0.00	0.00	
TOTAL		1649.40	4823.60	0.34

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Property details

MPRN	0	Shared MPRN	
BER Number	N/A	BER number assigned to shared dwelling	N/A
Address line 1	Dalguise House Apartments	Type of Rating	New Dwelling - Provisional
Address line 2	Block D Unit 5	Purpose of Rating	New dwelling for owner occupation
Address line 3	Top Floor Sample	Building Regulations	2019 TGD L
County	Co. Dublin	Planning Reference	
Eircode		Date of Plans	
Dwelling Type	Top-floor apartment	Assessor Name	Seán Coffey
Year of construction	2022	Assessor Number	107442
Dwelling Extension	N/A	Date of Assessment	17/05/2022
Storeys	1	Assessor Comments	
		Assessor Description	

Dimension details

	Area [m ²]	Height [m]	Volume [m ³]
Ground floor	61.14	2.75	168.13
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
Totals	61.14		168.13
Living Area	29.43 m ²	Living Area Percentage	48.14 %

Ventilation details

		Number	Air Change Rate [ac/h]
Chimneys		0	0.00
Open Flues		0	0.00
Fans & vents		1	10.00
Flueless combustion room heaters		0	0.00
Has a permeability test been carried out	Yes	Is there a draught lobby on main entrance?	Yes
Infiltration rate due to structure [ac/h]	0.15	Draught lobby air change [ac/h]	0.00
Intermediate infiltration rate	0.21	Openings infiltration [ac/h]	0.06
Number of sides sheltered	2	Structure type	N/A
Adjusted infiltration rate [ac/h]	0.18	Is there a suspended wooden ground floor?	No
Effective air change rate [ac/h]	0.64	Windows/doors/attic hatches draught stripped [%]	N/A
Ventilation heat loss [W/K]	35.45	Ventilation method	Exhaust Air Heat Pump
Adjusted result of air permeability test [ac/h]	0.15		
Exhaust air flow rate [m ³ /h]	155.00	How many wetrooms (inc. kitchen)? Is the vent. ducting flexible/rigid/both?	N/A
Manufacturer and Model name	N/A	Is MVHR ducting uninsulated where outside of insulated envelope?	N/A
Specific fan power [W/(l/s)]	0.26	Adjusted heat exchanger efficiency	0.00
Heat exchanger efficiency [%]	0.00		
Electricity for ventilation fans [Kwh/y]	67.97		
Heat gains from ventilation fans [W]	0.00		

Building Elements - Floors

Type	Description	U/F Heating	Include in compliance check	In Roof	Age Band	Exposed Perimeter [m]	Area [m ²]	U-Value [W/m ² K]	Heat Loss (AU) [W/K]
Non-Heat Loss Floor		N/A	No	No	2010 onwards	N/A	61.14	0.00	0.00
Total area [m²]									61.14

Building Elements - Roofs

Type	Description	Include in compliance check	Insulation Thickness [mm]	Age Band	Area [m ²]	U-Value [W/m ² K]	Heat Loss (AU) [W/K]
Flat Roof	0.15 U-value	Yes		2010 onwards	61.14	0.15	9.17
Total area [m²]							61.14

Building Elements - Walls

Type	Description	Wall is semi-exposed	Include in compliance check	Age Band	Area [m ²]	U-Value [W/m ² K]	Heat Loss (AU) [W/K]
Unknown	External Walls (U = 0.18 W/m ² K)	No	Yes	2010 onwards	12.85	0.18	2.31
Total area [m²]							12.85

Building Elements - Doors

Count	Type	Description	Draught Stripped	Area [m ²]	U-Value [W/m ² K]	Heat Loss (AU) [W/K]
Total area [m ²]						0.00

Building Elements - Windows

Count	Glazing Type	Frame Type	Frame Factor	Solar Transm.	In Roof	Over shading	Orient.	Area [m ²]	U-value [W/m ² K]
1	Double-glazed, argon filled (low-E, en = 0.15, hard coat)	Metal 4mm thermal Break	0.800	0.350	No	Average or Unknown	West	22.63	1.30
1	Double-glazed, argon filled (low-E, en = 0.15, hard coat)	Metal 4mm thermal Break	0.800	0.350	No	Average or Unknown	South	8.59	1.30
Total area [m ²]									31.22

Heat loss details

Total glazed area [m ²]	31.22	Glazing ratio	0.24
Total glazed heat loss [W/K]	38.58	Summer solar gain [W/m ²]	784.01
Total effective collection area [m ²]	6.06	Total element area [m ²]	105.211
Total plane heat loss [W/K]	50.06	Thermal bridging factor [W/m ² K]	0.1500
Fabric heat loss [W/K]	65.85		
Total heat loss [W/K]	101.30	Per m2	1.66

Lighting and Internal Gains

Lighting Design Calculation Method	Bulb type only	Average Efficacy [lm/W]	66.90
Fixed lighting provision [klmh/y]	2320.62	Top up lighting requirement [klmh/y]	0.00
Energy required for fixed lighting [kWh/y]	61.88	Energy required for top up lighting [kWh/y]	0.00
Energy required for portable lighting [kWh/y]	97.17		
Basic energy consumption for lighting [kWh/y]	577.50	Water heating (In watts [W])	108.19
Annual energy used for lighting [kWh/y]	159.05	Occupants (In watts [W])	100.68
Internal gains from lighting during heating season [kWh/hs] (In watts [W])	121.67 (20.86)	Mechanical ventilation (In watts [W])	0.00
Lighting (In watts [W])	20.86	Heat loss to the cold water network (In watts [W])	-32.12
Appliance and cooking (In watts [W])	148.62	Net internal gains (In watts [W])	346.23

Lights

Count	Name	Description	Type	Efficiency	Power [W]
10	Default LED/CFL		LED/CFL	66.90	

Water heating details

Are there distribution losses?	Yes	Is supplementary electric water heating used in summer?	N/A
Are there storage losses?	Yes	Is there a combi boiler?	No
Is there a solar water heating system?	No	Total hot water demand [kWh/y]	1546.25
Standard number of occupants	2.01	Temperature factor unadjusted	0.89
Number of mixer showers	1	Temperature Factor Multiplier	0.81
Number of electric showers	0	Hot water storage loss factor [kWh/l d]	0.00
Number of baths	1	Volume factor	0.00
Daily hot water use [Litres/d]	98.61	Combi-boiler electricity consumption [kWh/y]	0.00
Hot water energy reqs. at taps [kWh/y]	1314.31	Adjusted storage loss [kWh/y]	542.04
Distribution losses [kWh/y]	231.94	Adjusted primary circuit loss [kWh/y]	0.00
Water storage volume [Litres]	200.00	Heat gains from water heating system [W]	108.19
Is manufacturers declared loss factor available?	Yes	Output from supplementary heater [kWh/y]	0.00
Declared loss factor [kWh/d]	2.06		
Manufacturer and Model name	Joule Victorium Exhaust Air to Water Heat-pump		
Insulation type	None		
Insulation thickness [mm]	0		

Type of mixer shower	Flow restriction	Flow rate [l/min]	HW usage [l/day]	WWHRS Manufacturer/Model	WWHRS efficiency	WWHRS Utilisation Factor	Energy Savings [kWh/yr]
Unvented hot water system	Yes	6.000		Any / Any			
Total :			40.31				0.00

Combi-boiler Type	None	Output from main water heater [kWh/y]	2088.29
Combi-boiler loss [kWh/y]	0.00	Annual Heat gains from water heating system [kWh/y]	947.76
Keep Hot facility	None	WWHRS input to main system [kWh/y]	0.00
Storage Loss	542.04	WWHRS input to supplementary system [kWh/y]	0.00
Storage Type	Integrated thermal store and gas-fired CPSU		
Primary Circuit loss type	Boiler and thermal store within a single casing (cylinder thermostat present)		
Primary circuit loss [kWh/y]	0.00	Heat Pump Type of DHW	Integral Hot Water Storage
Is hot water storage indoors or in group heating system	Yes		

Net space heat demand

Required temp. during heated hours	21.00	Length of one unheated period [h]	8
Required temperature rest of dwelling	18.00	Unheated periods per week	14
Living area percentage	48.14	Heat use during heating season [kWh/y]	2630.51
Required mean internal temperature [C]	19.44	Heat use for full year [kWh/y]	2702.31
Thermal mass category of dwelling	Medium		

	Utilisation factor	Intermittent heating
Internal heat capacity of dwelling [per m ²]	0.20	0.11
Internal heat capacity [MJ/K]	12.23	6.73

Space heat demand details

Month	Mean Ext. Temp [C]	Adj. Int. Temp [C]	Heat Loss [W]	Heat Use [kWh]	Gain/Loss Ratio	Utilisation Factor	Heat Use [W]	Useful Gains [W]	Solar Gain [W]
January	5.3	17.67	1253	564	0.41	0.97	758	494	165
February	5.5	17.69	1235	425	0.52	0.94	633	602	295
March	7.0	17.88	1102	308	0.71	0.87	415	687	441
April	8.3	18.04	987	181	0.95	0.78	251	736	595
May	11.0	18.38	748	67	1.43	0.61	90	658	726
June	13.5	18.70	526	21	2.02	0.47	29	498	716
July	15.5	18.95	349	5	2.91	0.34	7	342	670
August	15.2	18.91	376	8	2.60	0.37	11	365	631
September	13.3	18.67	544	38	1.59	0.57	52	492	520
October	10.4	18.31	801	167	0.90	0.80	224	577	371
November	7.5	17.94	1058	386	0.53	0.94	537	521	210
December	6.0	17.75	1191	531	0.41	0.97	714	477	148

Space Heating

Manufacturer & Model	Type	Space Heating Standard	Fuel	Design flow temp[°C]	Daily Operation [h]	SH Seasonal eff.	WH Seasonal eff.	Heats water
Joule, Victorium Compact W 35 Exhaust Air Heat Pump	Heat pumps	I.S. EN 14825	Electricity	55	24	554.22	296.86	Yes

Heating System Test data: I.S. EN 14825

Heat Pump Type Exhaust Air to Water

Test Condition - Low (35°C)

	A (88%) -7°C	B (54%) 2°C	C (35%) 7°C	D (15%) 12°C	E* (100%) TOL
Source	A-7	A2	A7	A12	A-10
Sink	W34	W30	W27	W24	W35
Heating Capacity (kW)	1.84	1.85	1.85	1.80	1.84
Coefficient of Performance (kW/kW)	5.53	5.74	5.78	5.81	5.53

Test Condition - High (55°C) *

	A (88%) -7°C	B (54%) 2°C	C (35%) 7°C	D (15%) 12°C	E* (100%) TOL
Source	A-7	A2	A7	A12	A-10
Sink	W52	W42	W36	W30	W55
Heating Capacity (kW)	1.59	1.58	1.59	1.60	1.59
Coefficient of Performance (kW/kW)	3.88	4.17	4.44	4.68	3.88

Heating System Test data: I.S. EN 16147

Source of Data Water heating energy efficiency, nwh [%]

Co-efficient of Performance [kW/kW] 0.00

Water heating energy efficiency, nwh [%] 139.00

Reference Hot water Temperature [°C] 53.89

Capacity of Heat Pump [kW] 1.60

Declared load profile L

Standby Heat Loss [kWh/day] 2.06

Volume of DHW accounted for in test [litre] 200

Heat Pump Type Exhaust Air to Water

Dist. System Losses and Gains

Temperature adjustment [C]	0	Additional heat emissions due to non ideal control and responsiveness [kWh/y]	0.00
Heating system control category	3	Gross heat emission to heated space [kWh/y]	2630.51
Heating system responsiveness category	1	Mean internal temperature [C]	17.96
Mean internal temperature during heating hours [C]	19.44		

	Number present	Boiler controlled by thermostat	Inside dwelling	Electricity consumption [kWh/y]	Heat gain [W]
Central heating pumps	1	Yes	Yes	130	10
Oil boiler pumps	0	No	No	0	0
Gas boiler flue fan	0			0	
Warm air heating or fan coil radiators present	No			0	0
Totals				130	10

Note: Wet central heating systems are likely to have one or more central heating pumps.

Gains from fans and pumps associated with space heating system	58	Is there underfloor heating on the ground floor?	No
Average utilisation factor, October to May	0.86	U-Value of ground floor [W/m ² K]	0.00
Useful net gain [kWh/y]	50	Fraction of heating system output from ground floor	1.00
Net heat emission to heated space [kWh/y]	2580	Additional heat loss via envelope element	0.00
		Annual space heating requirement [kWh/y]	2580

Energy Requirements: Individual Heating Systems

Efficiency of main heating system [%]	554.22	Fraction of heat from secondary system	N/A
Manufacturer name	Joule	Efficiency of secondary system [%]	N/A
Model name	Victorium Compact W 35 Exhaust Air Heat Pump	Energy required for main heating system [kWh/y]	465.58
		Energy required for secondary heating system [kWh/y]	0
Efficiency adjustment factor	1.00		
Adjusted efficiency of main heating system [%]	554.22		

Fraction of main space and water heat from CHP	N/A	Efficiency adjustment factor	1.0000
Heat demand from CHP	0.0	Adj. efficiency of main water heating system [%]	296.86
Efficiency of main water heating system [%]	296.86	Water Heating Efficiency, η_{wh}	139
Manufacturer name	Joule	Energy req. for main water heater [kWh/y]	1463.20
Model name	Victorium Compact W 35 Exhaust Air Heat Pump	Energy req. for secondary water heater [kWh/y]	0.00
Heat Pump Type	Exhaust Air to Water	Water Heating Standard	I.S. EN 16147

	Fuel Type	Primary energy conversion factor	CO ₂ emission factor
Main space heating system	Electricity	2.08	0.409
Secondary space heating system	None	0.00	0.000
Main water heating system	Electricity	2.08	0.409
Cooling System	None	0.00	0.000
Pumps, fans	Electricity	2.08	0.409
Energy for lighting	Electricity	2.08	0.409

CHP data

Heat output from CHP [kWh/y]	0.00	CHP Fuel type	N/A
Electrical efficiency of CHP		Energy delivered to CHP [kWh/y]	0
Heat efficiency of CHP		Electrical output from CHP [kWh/y]	0

Summer internal gains

Dwelling volume [m ³]	168.127	Total gains in summer [W]	1130.24
Effective air change rate for summer period [ac/h]		Temperature increment due to gains [C]	17.17
Ventilation heat loss coefficient [W/K]	0.00	Summer mean external temperature [C]	15
Fabric heat loss coefficient [W/K]	65.85	Heat capacity parameter	0.20
Heat loss coefficient under summer conditions [W/K]	65.85	Temperature increment related to thermal mass [C]	0.60
Total Solar Gains from Summer Period	784.01	Threshold internal temperature [C]	32.77
Internal gains [W]	346.23		

Results

	Delivered energy [kWh/y]	Primary energy [kWh/y]	CO ₂ emissions [kgCO ₂ /y]
Main space heating system	466	968	190
Secondary space heating system	0	0	0
Main water heating system	703	1463	288
Supplementary water heating system	0	0	0
Cooling	0	0	0
Pumps and fans	198	412	81
Energy for lighting	159	331	65
CHP input (individual heating systems only)	0	0	0
CHP electric output (individual heating systems only)	0	0	0
Renewable and energy saving technologies			
Energy produced and saved	0	0	0
Energy consumed by the technology	0	0	0
Total	1526	3174	624
Per m² floor area	24.96	51.92	10.21
Energy Rating	A3		