Climate Action Energy Statement

SDCC Rathcoole

South Dublin County Council
Part 10 Submission

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1. Introduction

The proposed development comprises of a new Rathcoole Housing Project in South County Dublin together with associated external works, access, landscaping and public realm improvements. The site comprises of a greenfield lands located to the south and south-east of Rathcoole Village, adjoining established residential areas, with Rathcoole Park located immediately to the north.

The development will include a new housing project, pedestrian and cycle routes, vehicular access, a car park area, a proposed roadway and improved connections to the surrounding footpath network. The external work will include landscaping, seating, cycle stands, and permeable paving. Existing trees and selected site features will be retained and protected as appropriate.

Overall, the development will provide a modern leisure and community facility with improved recreational amenities, accessibility and landscaping while integrating with the existing surrounding facilities and landscape.

1.1 Outline Description of Development

The proposed development comprises 130 new residential units, including 34 one-bed, 45 two-bed, 47 three-bed and four four-bed homes, arranged across a mix of apartment, duplex and house typologies. The scheme incorporates 60 apartments within four blocks, 20 duplex units within three blocks, 43 two-storey houses, and seven single-storey age-friendly houses together with an age-friendly consultation room. The tenure mix comprises 66 affordable purchase homes and 64 social homes. The social housing provision includes age-friendly units, Traveller-specific accommodation, and a range of three- and four-bedroom terraced houses, duplexes and apartments. The affordable homes comprise a combination of three-bedroom terraced houses, duplexes and apartments. Eleven of the 130 units are age-friendly, comprising seven single-storey houses and four duplex apartments.

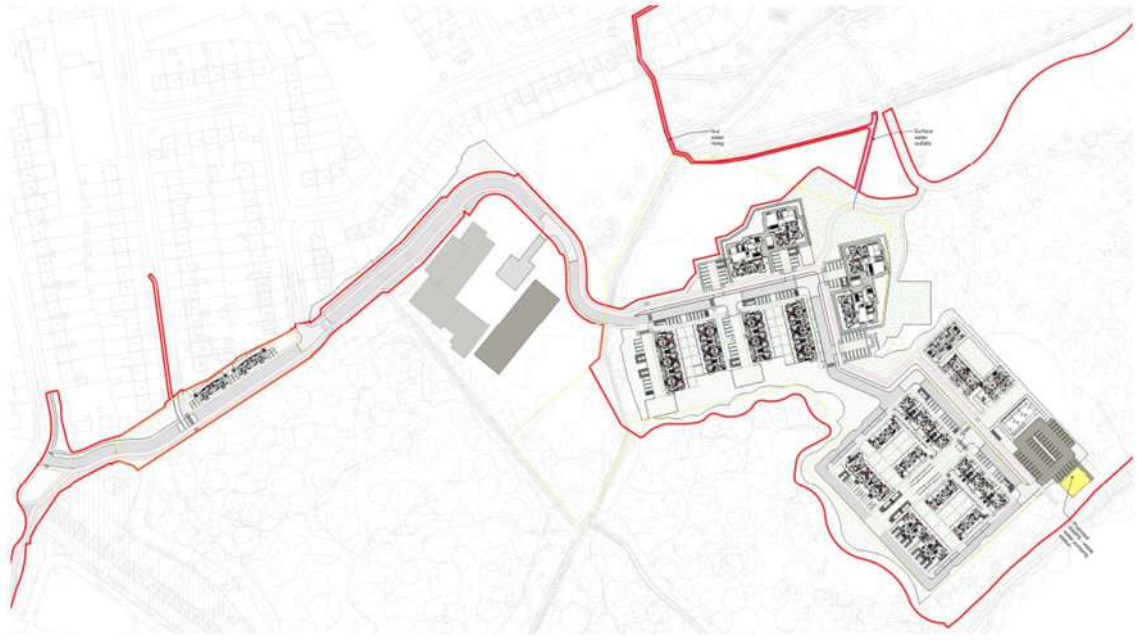


Figure 1: Proposed Development

2. Design Basis and Approach

Building energy efficiency and sustainability involves all designers and stakeholders from the start of the design process. The most successful sustainable sites are those which keep energy efficiency and sustainability at the core of project from design through to construction.

The four main principles to achieve energy efficient buildings are:

Reduce: Reduce energy consumption by passive and active means, for example, improving building fabric and utilising low energy equipment.

Reuse: Reuse energy & materials where possible by recovering waste energy, where possible.

Renewables: Utilise renewable technologies to offset energy from fossil fuel technologies.

Rethink: Constantly rethink and refine the energy & sustainability strategy and approach.

The potential strategies outlined in this report are based around these principles.

The development will be designed to meet Part L of the Building Regulations (Conservation of Fuel and Energy – Dwellings) 2022, incorporating Nearly Zero Energy Building (NZEB) standards and the South Dublin County Development Plan 2022 to 2028.

3. South Dublin County Development Plan 2022-2028

The points below represent the energy related objectives and policies within the South Dublin County Council Development Plan 2022-2028. .

3.1 Chapter 10 - E2 Objective 1

"To seek to reduce the reliance on fossil fuels in the County by reducing the energy demand of existing and new development"

No fossils fuels will be used in any building in the Rathcoole development.

3.2 Chapter 10 - E2 Objective 2

"To promote the generation and supply of low carbon and renewable energy alternatives, having regard to the opportunities offered by the settlement hierarchy of the County and the built environment."

Heat pumps and photovoltaics will be providing renewable energy on the Rathcoole development.

3.3 Chapter 10 – Policy E3

"Support high levels of energy conservation, energy efficiency and the use of renewable energy sources in new and existing buildings including the retrofitting of energy efficiency measures in the existing building stock in accordance with relevant building regulations, national policy and guidance and the targets of the National and South Dublin Climate Change Action Plans."

As per above Heat pumps and photovoltaics will be providing renewable energy on the Rathcoole development.

3.4 Chapter 10 – Policy E4 Electric Vehicles

"Promote the delivery of EV charging facilities in accordance with relevant regulations and national and regional policy and guidance."

Dedicated electric vehicle charging points are being provided throughout the development.

4. Energy Conservation Approach

4.1 Passive Energy Reduction

The first step to implementing a low energy design for the Rathcoole Development will be to reduce the energy required to heat the building by adopting passive measures. For the new building, this will include the specification of a high-performance building fabric with u-values exceeding that of the backstop values in Part L of the Building Regulations – Conservation of Fuel & Energy (Dwellings) 2022. Air tightness and thermal bridge details will be carefully designed to limit heat loss. Glazing will be specified to reduce solar gain, while still providing adequate daylight. A provisional fabric specification is included in section 5, this will be subject to further design development at the next stage of the design.

4.2 Heating and Renewable Energy Strategy

During the early stage of the design a community heating system was investigated, and it was deemed unsuitable for the development for the following reasons.

1. The number of apartments, spread across multiple buildings and building types across the site and across a relatively high number of blocks, is not conducive to maximising the potential of a community heating scheme.
2. Waste heat would significantly enhance the potential of a district heating scheme. However, no waste is available in the vicinity of the site.
3. At present there are no plans to develop any district heating schemes local to Rathcoole. The closest district heating system is Tallaght District Heating Scheme (TDHS) which is approximately 9 km from Rathcoole
4. The plant area required for a community heating system would reduce the number of units, and thus density, of the site.

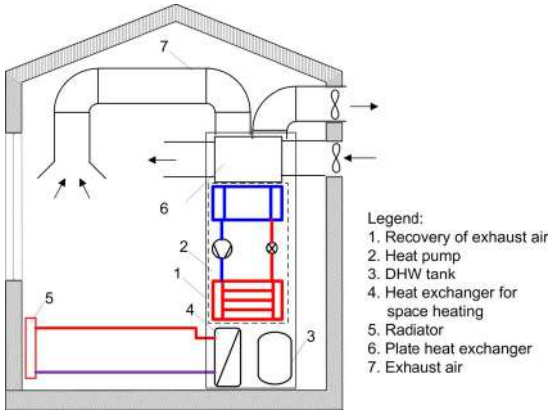
Therefore, a decentralised heating system will provide both space and domestic hot water heating for the Rathcoole Residential Development. Several decentralised heating solutions have been considered, as outlined in the following sections.

4.2.1 (Exhaust) Air to Water Heat Pump for Space Heating and DHW

Outline Description

An integrated air to water heat pump provides heating and domestic hot water for apartments via an integrated, packaged unit located in the apartment. Exhaust air from wet rooms is used in the heat pump to generate hot water, thus also providing the mechanical ventilation requirements of the apartment. The hot water is used for space heating via water-based outlets *(e.g. radiators or underfloor heating*) and for DHW generation.

For this option, exhaust air heat pumps would also provide ventilation as a Continuous Mechanical Extract Ventilation (CMEV) system. In this application the unit extracts air from wet rooms on a continual basis for use in the heat pump. For the CME system to be compliant with Part F of the Building Regulations (*Ventilation*) permanent background ventilation *(e.g. wall or trickle vents)* would be required.





Advantages

1. Packaged, integrated unit providing heating, DHW and ventilation
2. High efficiency and low running costs when installed in conjunction with a low heat loss fabric
3. Provides renewable space heating and DHW.

Disadvantages

1. Relies on trickle vents to be open to operate which can increase noise and air pollution (*This can be mitigated by providing an additional ventilation unit*)

Plant and Service Distribution Allocations

1. 800x800mm full height service closet required for heat pump in each apartment
2. LTHW F&R distribution pipework in ceiling / wall voids and wall mounted radiators or underfloor heating
3. Intake and discharge grilles in external walls and duct routes to / from the heat pump are required

4.2.2 Electric Space Heating, DHW Air to Water Heat Pump and Photovoltaics

Outline Description

Space heating would be provided by wall mounted electric radiators. DHW would be generated by an exhaust or outside air heat pump. These systems use packaged heat pumps integrated with calorifiers to generate DHW. Electric immersions are provided for back up and sterilisation. The heat pumps can use exhaust air (*and provide some / all of the ventilation requirements*) or outside air. Smart storage heaters could also be used to maximise the renewable energy of the grid (*note that there is currently no benefit to this approach in the Building Regulations compliance calculations*).



Advantages

1. Simple to install, maintain and operate
2. Some provision of renewable energy via heat pump
3. The space heating will become less carbon intensive as the carbon intensity of the gird reduces over time
4. Lower embodied carbon
5. Heating can be installed post decoration

Disadvantages

1. More expensive to run than other options which incorporate renewable energy for space heating. No renewable space heating.
2. Most carbon intensive space heating option - additional PVs required to offset this
3. Highest electrical demand capacity *(Maximum Import Capacity)* as space heating is direct electric

4. Maintenance is required in the apartments
5. May require a higher fabric specification to achieve Part L compliance

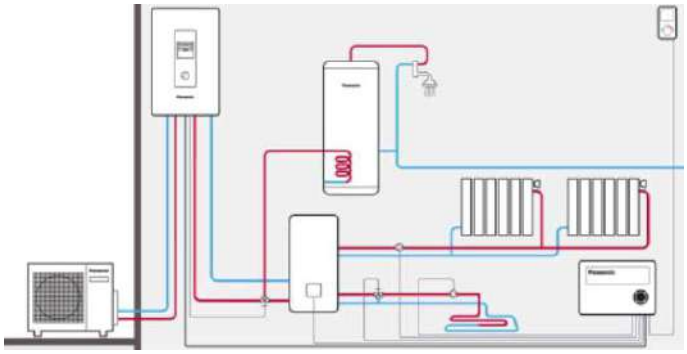
Plant and Service Distribution Allocations

1. Least impact option as no heating distribution is required
2. Potentially larger electrical rooms are required due to the increased electrical load
3. Slightly larger electrical distribution routes are required

4.2.3 External Air to Water Heat Pump providing heating and DHW

Outline Description

A split or mono block air to water heat pump would provide heating and domestic hot water for apartments via a system, incorporating an indoor unit located in the apartment and an external condenser. The heat pump would generate hot water which would be used for space heating via water-based outlets *(e.g. radiators or underfloor heating*) and for DHW generation.







Advantages

1. Provides renewable space heating and DHW
2. Higher efficiency vs. exhaust air heat pumps
3. Higher capacities available (*generally not required for apartment developments*)
4. Most widely used air to water heat pump system – multiple manufacturers available

Disadvantages

1. Space for external condenser required on balcony.
2. External condenser will blow cold air across the balcony when in use.
3. External condensers on balconies will be unsightly.
4. Noise from external unit may cause nuisance.
5. Drainage from external condenser required between each balcony.

Plant and Service Distribution Allocations

1. 800x800 full height service closet required for heat pump in each apartment
2. LTHW F&R distribution pipework in ceiling / wall voids and wall mounted radiators or underfloor heating
3. Intake and discharge grilles in external walls and duct routes to / from the heat pump are required
4. Space for external condenser required on balcony.

4.2.4 Air to Air Heat Pump providing heating, DHW and ventilation

Outline Description

An air-to-air heat pump would provide space heating, domestic hot water and ventilation via a packaged indoor heat pump unit. Mechanical ventilation is provided via integral Mechanical Ventilation with Heat Recovery, with ventilation air used to drive the heat pump. Space heating is generally provided via warm air supplied into the apartment from the heat pump via a network of ductwork and diffusers. Supplementary electric heating may be required in some rooms. The unit also generates and stores domestic hot water.







Advantages

1. Higher efficiency vs. other decentralised heating options
2. No wet heating (*e.g. pipework & radiators*) required
3. No requirement for opening / trickle vents in fabric
4. No external plant required

Disadvantages

1. Requires fabric performance to be more carefully considered, due to capacity constraints / method of heating
2. May require supplementary electric heating in some rooms
3. Larger internal space required vs. other decentralised heating options
4. Limited supply chain

Plant and Service Distribution Allocations

1. 1200x800 full height service closet required for heat pump in each apartment
2. Supply, return, fresh and discharge air distribution ductwork in ceiling
3. Wall mounted electric radiators may be required in some rooms
4. Intake and discharge grilles in external walls and duct routes to / from the heat pump are required

4.2.5 Conclusion

An (Exhaust) Air to Water Heat Pump system is considered to be the best option for the Rathcoole Development as;

1. An electric space heating solution would place significant constraints on the electrical infrastructure serving the site and is not a renewable space heating solution.
2. An external air to water heat pump would be visually intrusive.
3. An air-to-air heat pump is not a tried and test solution at this scale.
4. The acoustic issues associated with exhaust air heat pumps can be mitigated by providing a supplementary ventilation unit.

4.3 Ventilation Strategy

Continuous Mechanical Extract Ventilation (CMEV) will be provided in each apartment in accordance with the requirements of Part F of the Building Regulations. Air will be extracted from all wet rooms and discharged to outside on a continuous basis. Intake air will be via wall or trickle vents. The (Exhaust) Air to Water Heat Pump will provide the continuous mechanical extract ventilation, with the extract used for the air to water heat pump.

As noted in section 4.2, a supplementary ventilation unit could be installed to supply tempered air to each habitable room. This would negate the requirement for wall or trickle vents and mitigate against any noise issues or vents being closed by occupants. This will be considered in more detail at the next stage of the design.

A central control and monitoring panel will be provided in a central, visible location of the apartments to provide a visual indication of the status of the ventilation system in accordance with the requirements of Part F of the Building Regulations.

4.4 On Site Renewable Energy Generation

Common areas within the thermal envelope, e.g. circulation lobbies, stair cores and associated corridors, will be heated via direct electric radiators. To meet the renewable energy requirements of Part L of the Building Regulations – Conservation of Fuel and Energy (Buildings other than Dwellings) 2022, a roof mounted photovoltaic (PV) array will be provided. The exact size and specification of the proposed PV array will be confirmed at the next stage of the design. Energy from the PV array will be utilised on site for lighting and other parasitic loads.

Micro-wind generation was considered was considered during the early design stages, but was discounted due to the urban residential location and the associated noise and visual impact of micro wind generation.

4.5 Lighting

Lighting will account for a significant proportion of the energy consumption of the Rathcoole Development. The strategies that will be employed in the design of the to reduce the energy consumption from lighting will be:

- Careful lighting design in all areas to provide adequate lux levels while eliminating over provision / over design of lighting
- Selection and specification of low energy use light fittings through including LED’s where practical
- Careful specification of lighting controls including occupancy sensing in all common areas and photocells on external lighting.

4.6 Domestic Water Usage

The design for the Rathcoole Residential will seek to reduce hot water consumption insofar as possible. Circulation losses will be minimised through the provision of high levels of insulation. Low use fittings, in line with HPI requirements, will be provided in each apartment.

4.7 Controls

The use of smart building technologies can significantly reduce the energy consumption of buildings. The latest proposals from the EU for the revised Energy Performance of Buildings Directive (EPBD) recognise this and the revised EPBD will place much more emphasis on smart building technologies into the future. The use of smart building technologies will be considered where practical for the Rathcoole Residential Development.

4.8 Other Active Measures

Other energy conservation measures that will be employed on the Rathcoole Development include:

- Variable speed drives will be provided on all motors greater than 1kW.
- Low / zero Global Warming Potential (GWP) refrigerants will be used on Heat Pumps.
- Lifts with regenerative drives will be used where feasible.
- Materials with low or zero volatile organic compound (VOC) content will be used to maximise Indoor Air Quality (IAQ).

4.9 Building Energy Rating

All new build apartments will meet a minimum BER of A.

5. Part L Calculations

5.1 Dwellings

5.1.1 Calculation Methodology

Compliance to Part L regulation for dwelling is demonstrated using the Dwelling Energy Assessment Procedure (DEAP) published by SEAI. The Rathcoole compliance calculations have been completed using DEAP version 4, the latest web-based software version.

7nr apartment variants have been selected as a representative sample of all apartments in each block, with detailed DEAP calculations completed on each of these variants. Typical apartment units for each accommodation type of 1-bed, 2-bed and 3-bed duplex units have been used in the DEAP study.

Where possible mid floor, middle units have been chosen as typical unit and the orientation of the typical unit is adjusted so that the largest glazed area faces North, as these provide the worst-case scenario for compliance.

These results have then been applied to each apartment to determine the average EPC and CPC for each apartment block. The apartment variants selected for each apartment block are as outlined in the table below.

Table 1: DEAP Compliance Calculations – Apartment Variations

Apartment Variant	Type	Position	Block
1 Bed 2 Person GF	UT09	Apartment Block, Ground Floor	Block D2
2 Bed 4 Person GF	UT07	Apartment Block, Ground Floor	Block D1
3 Bed 5 Person GF & 1st	UT03	Duplex. Ground & First Floor	Block A3
3 Bed 5 Person GF & 1st	HT2	House	Block C2

The information regarding dimensions was taken from the architectural layouts, and input int DEAP along with fabric data, ventilation, heating, hot water and lighting specification.

5.1.2 Heating and Ventilation specification

For each apartment the following heating and ventilation specification is used in the DEAP study:

- Exhaust air heat pump (EAHP) generating space heating, hot water and extracting air from wet rooms.
- A supplementary ventilation fan unit providing supply air, heated by hot water coil.
- Radiators as heat emitters
- Ventilation method is Exhaust air heat pump, with warm air heating fan included to account for energy use by the supplementary ventilation fan unit.
- Data provided by the manufacturer is inputted for the ventilation specific fan power, volume and used within DEAP to calculate the space heating and hot water efficiencies. The efficiencies are in the order of 285% for space heating and 252% for domestic hot water generation.
- Renewable provision is from the EAHP.

5.1.3 Fabric Specification

Part L compliance for each block can be achieved using the below fabric specification:

Table 2: Fabric specification

Item	Specification	Unit
Air tightness	3	m3/m2/hr @ 50Pa
Thermal bridge factor[1]	0.08	-
Roof U value	0.11	W/m^2. K
Floor U value	0.11	W/m^2. K
Wall U value	0.17	W/m^2. K
Door U value (Opaque)	1.4	W/m^2. K
Glazing U value	1.22	W/m^2. K
Glazing Shading Coefficient	0.75	-
Glazing Frame Factor	0.7	-

[1] A thermal bridge factor of 0.08 may be used if 'Acceptable Construction Details, Technical Guidance Document Part L' are used or equivalent other compliance methods are followed as outlined in TGD Part L. It is recognised that for this development Acceptable Construction Details will not be appropriate, however as required thermal modelling of junctions will be carried out to demonstrate compliance with this factor.

It should be noted that all of the specifications outlined above are preliminary for the purposes of demonstrating capacity to comply with the Building Regulations. The exact specifications will be developed at detailed design stage.

5.2 Part L (Non-Dwelling Landlord Areas)

5.2.1 Calculation Methodology

To demonstrate compliance with Part L for building other than dwellings, the calculated performance of the actual building should not exceed the maximum permitted EPC of 1 and maximum permitted CPC of 1.15, with RER of 0.2 representing significant level of energy provision from renewable sources. If the energy performance of the actual building exceeds that of the reference building by 10% (EPC of 0.9 and CPC of 1.04), a lower renewable energy of 10% is permitted.

5.2.2 Geometry

The non-dwellng landlord spaces include the apartment block corridors, the GAA Sports Pavillion and the Age Friendly Consultation Rooms. Common facilities such as lifts, external bike store, plant rooms are treated as buffer areas as they are generally unheated and outside the building's thermal insulation.

5.2.3 Activity Profiles

Activity profiles for occupancy, equipment, other internal heat gains and plant loads were applied to each zone as per the functional area e.g. (Common circulation areas, toilets, store, changing rooms, lobbies, consultation rooms).

Table 3. Part L 2022 (Buildings other than Dwellings) Compliant Specification

Fabric Specification

Item	Specification	Unit
Air tightness	3	m3/m2/hr @ 50Pa
Thermal Bridging values	Conservative Psi values as per SEAI guidance	
Roof U value	0.11	W/m^2. K
Floor U value	0.11	W/m^2. K
Wall U value	0.17	W/m^2. K
Door U value (Opaque)	1.4	W/m^2. K

Item	Specification	Unit
Glazing U value	1.22	W/m^2. K
Visible Light Transmittance	71%	-
G value	0.4	-
Frame Factor	10%	-

HVAC, Lighting and Renewables Specification

Heating Type 1

System	LTHW Radiators
Heat source	Exhaust Air Heat Pump
Meter	Electricity via Heat Pump
Seasonal Space Heating Efficiency (Ns)	149%
Spaces served	GAA Sports Pavillion & Age Friendly Consultation Rooms

Heating Type 2

System	Local room heater unfanned
Heat source	Direct or storage heater
Meter	Electricity
Seasonal Space Heating Efficiency (Ns)	100%
Spaces served	Apartment Block Common Corridors & Duplex Common Corridors

Hot Water Type 1

Hot water system	Instantaneous hot water only
Meter	Electricity
Seasonal Efficiency	1
Storage	No
Serving	Apartment Block Cleaners Stores

Hot Water Type 2

Hot water system	Exhaust Air Heat Pump
Meter	Electricity
Seasonal Efficiency	118%
Storage	Yes
Serving	GAA Sports Pavillion & Age Friendly Consultation Rooms

Ventilation – GAA Sports Pavillion & Age Friendly Consultation Rooms

Mechanical supply	Yes
SFP (W/(l/s))	0.3
Heat recovery	Plate heat exchanger
HR efficiency	65%
Demand control ventilation	Yes, based on gas sensors Speed Control

Ventilation – Local exhaust

Mechanical exhaust	UAWC, Store, Cleaner store, Refuse Store
SFP (W/(l/s))	0.3
Extract Flow rate (ac/hr)	UAWC – 10 Store, Cleaner Store – 3 Refuse Store – 6

Lighting

Efficiency (lm/cw)	100
Light Output Ratio	1
Photoelectric options	Yes, Switching, standalone Time switch - yes
Parasitic power (W/m2)	0.3
Occupancy sensing	MAM-ON-AUTO-OFF where available Time switch – yes
Parasitic power (W/m2)	0.3

Other Renewables

Type	Photovoltaic panels to support electric radiators
Orientation, position	South, 30º, Strongly ventilated modules

5.3 Results

5.3.1 DEAP Results

Results summary for typical apartments is given in the table below.

Table 4: Results - Typical units

Typical unit	Type	EPC	CPC	RER	Energy Value (kWh/m^2/yr)
1 Bed 2 Person GF	UT09	0.288	0.178	0.289	52.31
2 Bed 4 Person GF	UT07	0.263	0.161	0.3131	41.06
3 Bed 5 Person GF & 1st	UT03	0.241	0.149	0.305	31.25
3 Bed 5 Person GF & 1st	HT2	0.248	0.153	0.294	30

These results are applied to each block to obtain an area weighted average to comply with Part L requirements of maximum permitted EPC of 0.27 (*when EU Taxonomy is applied*) and a CPC of 0.35. A summary table is provided below:

5.3.2 Conclusion

The proposed residential apartments and communal spaces are shown to comply to the Part L regulations using respective DEAP methodology detailed in this report.

It should be noted that all specifications outlined above are preliminary for the purposes of demonstrating capacity to comply with the Building Regulations. The exact specifications will be developed at detailed design stage.

6. Embodied Carbon

The use of construction products leads to a wide range of environmental and social impacts across the life cycle through initial procurement, wastage, maintenance and replacement. Taken together, construction products make a highly significant contribution to the overall life cycle impacts of a building. In some cases, they may even outweigh operational impacts (such as energy consumption). The introduction and development of Part L into the building regulations has led to significant reductions in the operational energy consumption of buildings, and these regulations are being progressively tightened. As a result, greenhouse gas emissions from other aspects of buildings, such as embodied emissions, are becoming increasingly important in terms of reducing the overall emissions that lead to climate change and arise from the procurement, maintenance and replacement of construction products over the building's lifetime. In addition to climate change, there are several other embodied environmental impacts associated with construction products and the processes that occur during and after construction that should be considered during design, for example corporate social responsibility and other regulatory obligations.

In this context, the selection of materials for the Rathcoole Residential Development will aim to reduce the burden on the environment from construction products by recognising and encouraging measures to optimise construction product consumption efficiency and the selection of products with a low environmental impact (including embodied carbon), over the life cycle of the building.

Where possible locally produced products will be used thus minimising the embodied carbon associated with transport. Where timber products are specified only products with the Forest Stewardship Council's (FSC) Trademark or other label from an equivalent internationally recognised, globally applicable, independent certification system for good forest management will be used. Metrics for recycling waste during construction will also be set.

7. Other Sustainability Features

For details of the proposed Sustainable Urban Drainage Systems (SuDS) refer to the Civil Engineering report.

For details of the proposed sustainable and active travel measures refer to the Traffic and Transport Assessment.

For details of the biodiversity measures refer to the Landscape report.

A.1 Appendix A – DEAP Reports

Part L Specification

BER IS NOT PUBLISHED

Property Details

Dwelling Type	Ground-floor apartment	**Type of BER rating**	New Dwelling - Provisional
Address line 1	Rathcoole Block D1 GF Apartment	**Year of Construction**	2026
Address line 2		**Date of Assessment**	09/09/2026
Address line 3		**Date of Plans**	
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2022 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	N/A		
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m^2]	Height [m]	Volume [m^3]
Ground Floor	50.22	2.40	120.53
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	50.22		120.53

Living Area [m^2]	23.00	**Living area percentage [%]**	45.80
No of Storeys	1		

Ventilation Details

	Number		
Chimneys	0	**Has an air 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 of windows/doors/attic hatches draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	No	**Number of sides sheltered**	1
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

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Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m²K]	Area [m²]
Ground Floor - Solid		No	0.11	50.22

Building Elements - Roof Details

Type	Description	U-Value [W/m²K]	Area [m²]
Flat Roof		0.11	50.2

Building Elements - Wall Details

Type	Description	U-Value [W/m²K]	Area [m²]
300mm Cavity		0.17	25.8

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m²K]	Area [m²]
	1	1.4	2.200

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Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, air filled	Yes	1.220	3.070
Double-glazed, air filled	Yes	1.220	3.070

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Other Details

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

Heating System - Solar Water Heating

Solar Water Heating Present?	No	**Aperture area of solar collector [m²]**	N/A
Type, manufacturer, model	N/A		
Orientation	N/A	**Overshading description**	N/A
Tilt in degrees from horizontal [°]	N/A	**Collector heat loss coefficient, a1 [W/m²>K]**	N/A
Zero loss collector efficiency, n0	N/A	**Dedicated storage volume [Litres]**	N/A
Horizontal solar radiation [kWh/m²]	N/A	**Solar fraction [%]**	0.000
Combined Cylinder	N/A		

Heating System - Hot Water System

Distribution Losses	211.95	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	170.0
Hot water storage manufacturer and model name	ComfortZone EX35	**Declared loss factor [kWh/d]**	1.15
Temperature factor unadjusted	0.89	**Temperature Factor Multiplier**	0.89
Primary Circuit loss type	Boiler / heat pump and thermal store within a single casing (cylinder thermostat present)		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	N/A
Insulation thickness [mm]	N/A	**Solar input to main system [kWh/y]**	0.00
Solar input to supplementary system [kWh/y]	0.00		

Heating System - Dist. system losses and gains

Temperature adjustment [°C]	0.0	**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	**Is the heat distribution system inside the dwelling able to work at low or more efficient temperature levels?**	No

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Heating System - Energy Requirements (Individual)

Main space heating system efficiency [%]	254.18	**Space heating efficiency adjustment factor**	1.0000	**Main space heating fuel**	Electricity
Main water heating system efficiency [%]	251.86	**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				

Heat Pump Details - Space Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Heat Pump Details - Water Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Summary for Part L Conformance (Applies to TGD L 2008/2011/2019/2022 for new dwellings only)

BER Number		**Building Regulations**	**2022 TGD L**
BER Result	A	**Energy Value [kWh/(m^2.y)]**	**52.31**
CO_2eq Emissions [kgCO_2eq/(m^2.y)]	5.88		
EPC	0.288	**EPC Pass/Fail**	**Pass**
CPC	0.178	**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**	0.11	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.17	Pass
Flat Roof	0.11	Pass	**Floors**	0.11	Pass
Floors with no underfloor heat	0.11	Pass	**External doors / windows / rooflights**	1.40	Pass
Floors with underfloor heat	0.00	Pass	**Walls**	0.17	Pass
Percentage of opening areas [%]	16.61		**Average U value of openings**	1.27	Pass
Permeability test carried out and meets guidelines in TGD L				0.15	Pass

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Part L Conformance - Renewables (applies to TGD L 2019/2022)

	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	1067.04	1067.04	
+ Saved energy	CHP	0.00		
+ Delivered energy	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	2626.91	
+ Delivered energy	Thermal	0.00	0.00	
TOTAL STEP A		1067.04	3693.95	0.29
- Electricity exported	PV/Wind	0.00	0.00	
Including exported electricity	PE from grid			
	PE from renewables	1067.04		
	Total PE (incl. export)		3693.95	0.29 - Pass
Including renewable portion of the grid	FF PE from grid			
	Carbon free PE (grid + renewables)	2643.18		
	Total PE (incl. export)		3693.95	0.72

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Energy Requirements: Individual Heating Systems

	Fuel Type	Electricity Fuel Factors Date	Primary energy conversion factor	CO_2eq Emissions Factor [kg/kWh]
Main space heating system	Electricity	Current	1.50	0.169
Secondary space heating system	None	Current	0.00	0.000
Main water heating system	Electricity	Current	1.50	0.169
Cooling System	None	Current	0.00	0.000
Pumps, fans	Electricity	Current	1.50	0.169
Energy for lighting	Electricity	Current	1.50	0.169

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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	Rathcoole Block D1 GF Apartment	**Type of Rating**	New Dwelling - Provisional
Address line 2		**Purpose of Rating**	New dwelling for owner occupation
Address line 3		**Building Regulations**	2022 TGD L
County	Co. Dublin	**Planning Reference**	
Eircode		**Date of Plans**	
Dwelling Type	Ground-floor apartment	**Assessor Name**	N/A
Year of construction	2026	**Date of Assessment**	09/09/2026
Dwelling Extension	N/A	**Assessor Comments**	
Storeys	1	**Assessor Description**	2026 - Rathcoole - UT09 Apt 1B2P D1

Dimension details

	Area [m^2]	Height [m]	Volume [m^3]
Ground floor	50.22	2.40	120.53
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	50.22		120.53

Living Area	23.00 m^2
Living Area Percentage	45.80 %

Ventilation details

	Number	Air Change Rate [m3/h]
Chimneys	0	0.00
Open Flues	0	0.00
Fans & vents	1	10.00
Flueless combustion room heaters	0	0.00

Manufacturer	N/A
Model	N/A

Has an air permeability test been carried out?	Yes	**Is there a draught lobby on main entrance?**	No
Infiltration rate due to structure [ac/h]	0.15	**Draught lobby air change [ac/h]**	0.05
Intermediate infiltration rate	0.28	**Openings infiltration [ac/h]**	0.13
Number of sides sheltered	1	**Structure type**	N/A
Adjusted infiltration rate [ac/h]	0.26	**Is there a suspended wooden ground floor?**	No
Effective air change rate [ac/h]	1.01	**Number of openings**	0
Ventilation heat loss [W/K]	40.11	**Number of draught stripped openings**	0
Adjusted result of air permeability test [ac/h]	0.15	**Windows/doors/attic hatches draught stripped [%]**	N/A
Exhaust air flow rate [m^3/h]	180.00	**Ventilation method**	Exhaust Air Heat Pump
Specific fan power [W/(l/s)]	0.26	**How many wetrooms (inc. kitchen)? Is the vent. ducting flexible/rigid/both?**	N/A
Heat exchanger efficiency [%]	0.00		
Electricity for ventilation fans [Kwh/y]	76.90	**Is MVHR ducting uninsulated where outside of insulated envelope?**	N/A
Heat gains from ventilation fans [W]	0.00	**Adjusted heat exchanger efficiency**	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^2K]	Heat Loss (AU) [W/K]
Ground Floor - Solid		No	Yes	No	2014 onwards	N/A	50.22	0.11	5.52
Total area [m^2]									50.22

Building Elements - Roofs

Type	Description	Include in compliance check	Insulation Thickness [mm]	Age Band	Area [m^2]	U-Value [W/m^2K]	Heat Loss (AU) [W/K]
Flat Roof		Yes		2014 onwards	50.20	0.11	5.52
Total area [m^2]							50.20

Building Elements - Walls

Type	Description	Wall is semi-exposed	Include in compliance check	Age Band	Area [m^2]	U-Value [W/m^2K]	Heat Loss (AU) [W/K]
300mm Cavity		No	Yes	2014 onwards	25.80	0.17	4.39
Total area [m^2]							25.80

Building Elements - Doors

Count	Type	Description	Area [m^2]	U-Value [W/m^2K]	Heat Loss (AU) [W/K]
1	Solid semi-exposed door between apt and unheated space		2.20	1.40	3.08
Total area [m^2]					2.20

Building Elements - Windows

Count	Glazing Type	Frame Type	Frame Factor	Solar Transm.	In Roof	Over shading	Orient.	Area [m^2]	U-value [W/m^2K]
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	South	3.07	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	South	3.07	1.22
Total area [m^2]									6.14

Heat loss details

Total glazed area [m^2]	6.14	**Glazing ratio**	0.06
Total glazed heat loss [W/K]	7.14	**Summer solar gain [W/m^2]**	301.72
Total effective collection area [m^2]	2.9	**Total element area [m^2]**	134.56
Total plane heat loss [W/K]	25.65	**Thermal bridging factor [W/m^2K]**	0.0800
Fabric heat loss [W/K]	36.42	**Total heat loss [W/K]**	76.53
Per m2	1.52		

Lighting and Internal Gains

Lighting Design Calculation Method	Bulb type only	**Average Efficacy [lm/W]**	85.00
Fixed lighting provision [klmh/y]	2070.33	**Top up lighting requirement [klmh/y]**	0.00
Energy required for fixed lighting [kWh/y]	43.45	**Energy required for top up lighting [kWh/y]**	0.00
Energy required for portable lighting [kWh/y]	86.69		
Basic energy consumption for lighting [kWh/y]	485.52	**Water heating (In watts [W])**	84.05
Annual energy used for lighting [kWh/y]	130.14	**Occupants (In watts [W])**	84.83
Internal gains from lighting during heating season [kWh/hs] (In watts [W])	99.56 (17.07)	**Mechanical ventilation (In watts [W])**	0.00
Lighting (In watts [W])	17.07	**Heat loss to the cold water network (In watts [W])**	-29.27
Appliance and cooking (In watts [W])	129.50	**Net internal gains (In watts [W])**	286.18

Lights

Name	Description	Type	Efficiency
Default LED/CFL		LED/CFL	85.00

Water heating details

Are there distribution losses?	Yes
Are there storage losses?	Yes
Is there a solar water heating system?	No
Standard number of occupants	1.70
Number of mixer showers	0
Number of electric showers	0
Number of baths	1
Daily hot water use [Litres/d]	90.11
Hot water energy reqs. at taps [kWh/y]	1201.07
Distribution losses [kWh/y]	211.95
Water storage volume [Litres]	170.00
Is manufacturers declared loss factor available?	Yes
Declared loss factor [kWh/d]	1.15
Manufacturer and Model name	ComfortZone EX35
Insulation type	N/A
Insulation thickness [mm]	N/A

Is supplementary electric water heating used in summer?	N/A
Is there a combi-boiler?	No
Total hot water demand [kWh/y]	1413.02
Temperature factor unadjusted	0.89
Temperature Factor Multiplier	0.89
Hot water storage loss factor [kWh/l d]	0.00
Volume factor	0.00
Combi-boiler electricity consumption [kWh/y]	0.00
Adjusted storage loss [kWh/y]	333.06
Adjusted primary circuit loss [kWh/y]	0.00
Heat gains from water heating system [W]	84.05
Output from supplementary heater [kWh/y]	0.00
Solar input to main system [kWh/y]	0.00
Solar input to supplementary system [kWh/y]	0.00

Combi-boiler Type	None
Combi-boiler loss [kWh/y]	0.00
Keep Hot facility	None
Storage Loss	333.06
Storage Type	Heat pump with integral hot water storage / Integrated thermal store and gas-fired CPSU

Output from main water heater [kWh/y]	1746.09
Annual Heat gains from water heating system [kWh/y]	736.28
WWHRS input to main system [kWh/y]	0.00
WWHRS input to supplementary system [kWh/y]	0.00

Primary Circuit loss type	Boiler / heat pump and thermal store within a single casing (cylinder thermostat present)

Primary circuit loss [kWh/y]	0.00
Is hot water storage indoors or in group heating system	Yes

Heat Pump Type of DHW	Integral Hot Water Storage

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	45.80	**Heat use during heating season [kWh/y]**	1880.98
Required mean internal temperature [°C]	19.37	**Heat use for full year [kWh/y]**	1957.30
Thermal mass category of dwelling	Medium-low		

	Utilisation factor	Intermittent heating
Internal heat capacity of dwelling [per m^2]	0.14	0.09
Internal heat capacity [MJ/K]	7.03	4.52

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	5.8	17.49	894	382	0.46	0.93	514	381	123
February	6.0	17.51	881	286	0.58	0.89	426	455	226
March	6.8	17.63	828	270	0.65	0.86	363	466	254
April	8.4	17.85	723	183	0.81	0.80	255	468	298
May	11.5	18.28	519	78	1.22	0.65	105	414	348
June	13.7	18.58	374	36	1.57	0.55	49	324	301
July	16.2	18.93	209	6	2.82	0.34	8	201	304
August	15.8	18.88	235	9	2.50	0.38	12	223	304
September	14.3	18.67	334	25	1.77	0.50	35	299	307
October	11.8	18.32	499	90	1.08	0.70	121	378	252
November	8.5	17.86	716	240	0.61	0.88	333	383	151
December	6.6	17.60	842	351	0.47	0.93	472	370	113

Space Heating

Type	Space Heating Standard	Fuel	Design flow temp[°C]	Daily Operation [h]	SH Seasonal eff.	WH Seasonal eff.	Heats water	Source
Heat pumps	I.S. EN 14825	Electricity	55	24	254.18	251.86	Yes	Assessor

Heating System	Exhaust air-to-water heat pump		
Model	EX35		
Manufacturer	Comfortzone		
Back Up Space Heater Fuel	Electricity	**Back Up Space Heater Efficiency [%]**	100.00
Back Up Water Heater Fuel	Electricity	**Back Up Water Heater Efficiency [%]**	100.00

Space Heating - Space Heating Test Data

Space Heating Standard I.S. EN 14825 **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]	3.50	2.30	1.55	1.30	3.10
Coefficient of Performance [kW/kW]	3.20	4.55	5.60	5.70	3.10

Test Condition Medium (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]	3.60	2.50	1.65	1.50	3.20
Coefficient of Performance [kW/kW]	2.40	3.20	4.10	4.40	2.30

Space Heating - Water Heating Test Data

Water Heating Standard I.S. EN 16147

Source of Data	Water heating energy efficiency [%]
Co-efficient of Performance [kW/kW]	0.00
Water heating energy efficiency [%]	118.00
Reference Hot water Temperature [°C]	53.60
Hot water Rated Heat output P_{rated} [kW]	3.50
Declared load profile	L
Standing heat loss of test storage tank [kWh/day]	1.15
Volume of DHW accounted for in test [litre]	170
Heat Pump Type	Exhaust Air to Water

Water Heating - Water Heating Test Data

Water Heating Standard	I.S. EN 16147
Source of Data	Water heating energy efficiency [%]
Co-efficient of Performance [kW/kW]	0.00
Water heating energy efficiency [%]	118.00
Reference Hot water Temperature [°C]	53.60
Hot water Rated Heat output P_{rated} [kW]	3.50
Declared load profile	L
Standing heat loss of test storage tank [kWh/day]	1.15
Volume of DHW accounted for in test [litre]	170
Heat Pump Type	Exhaust Air to Water

Water Heating - Space Heating Test Data

Space Heating Standard I.S. EN 14825 **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]	3.50	2.30	1.55	1.30	3.10
Coefficient of Performance [kW/kW]	3.20	4.55	5.60	5.70	3.10

Test Condition Medium (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]	3.60	2.50	1.65	1.50	3.20
Coefficient of Performance [kW/kW]	2.40	3.20	4.10	4.40	2.30

Dist. System Losses and Gains

Temperature adjustment [°C]	0.0	**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]**	1880.98
Heating system responsiveness category	1	**Is the heat distribution system inside the dwelling able to work at low or more efficient temperature levels?**	No
Mean internal temperature during heating hours [°C]	19.37		
Mean internal temperature [°C]	17.82		

	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 [kWh/y]	58	**Is there underfloor heating on the ground floor?**	No
Average utilisation factor, October to May	0.83	**U-Value of ground floor [W/m^{2}K]**	0.00
Useful net gain [kWh/y]	48	**Fraction of heating system output from ground floor**	1.00
Net heat emission to heated space [kWh/y]	1833	**Additional heat loss via envelope element [kWh/y]**	0.00
Annual space heating requirement [kWh/y]	1833		

Energy Requirements: Individual Heating Systems

Manufacturer name	Comfortzone
Model name	EX35
Brand name	N/A
Model Qualifier	N/A
Indoor unit identifier	N/A
Outdoor unit identifier	N/A

Efficiency of main heating system [%]	254.18	**Fraction of heat from secondary system**	N/A
Efficiency adjustment factor	1.00	**Efficiency of secondary system [%]**	N/A
Adjusted efficiency of main heating system [%]	254.18	**Energy required for main heating system [kWh/y]**	720.96
Product index number	N/A	**Energy required for secondary heating system [kWh/y]**	0
Manufacturer's reference number	N/A	**Low temperature test condition (35°C)**	N/A
Appliance ID	N/A	**Intermediate temperature test condition (45°C)**	N/A
Rated air flow rate [m^3/h]	0	**Medium temperature test condition (55°C)**	N/A
		High temperature test condition (65°C)	N/A

Heat Pump Details - Space Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Heat Pump Details - Water Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

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 [%]**	251.86
Efficiency of main water heating system [%]	118	**Water Heating Efficiency [%]**	118
Manufacturer name	Comfortzone	**Energy req. for main water heater [kWh/y]**	1039.92
Model name	EX35	**Energy req. for secondary water heater [kWh/y]**	0.00
Heat Pump Type	Exhaust Air to Water	**Back Up Water Heating Fuel**	Electricity
Water Heating Standard	I.S. EN 16147	**Back up Water Heating Efficiency [%]**	100.00

	Fuel Type	Primary energy conversion factor	CO_2eq Emissions Factor [kg/kWh]
Main space heating system	Electricity	1.50	0.169
Secondary space heating system	None	0.00	0.000
Main water heating system	Electricity	1.50	0.169
Supplementary water heating system	Electricity	0.00	0.000
Cooling System	None	0.00	0.000
Pumps, fans	Electricity	1.50	0.169
Energy for lighting	Electricity	1.50	0.169

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]	120.528
Effective air change rate for summer period [ac/h]	
Ventilation heat loss coefficient [W/K]	0.00
Fabric heat loss coefficient [W/K]	36.42
Heat loss coefficient under summer conditions [W/K]	36.42
Total Solar Gain for Summer Period [W]	301.72
Internal gains [W]	286.18
Total gains in summer [W]	587.90
Temperature increment due to gains [°C]	16.14
Summer mean external temperature [°C]	15
Heat capacity parameter	0.14
Temperature increment related to thermal mass [°C]	1.02
Threshold internal temperature [°C]	32.16

Zero Emissions Building (ZEB)

Check of whether primary energy use is covered by carbon free sources

%of grid electricity generated by carbon free sources	80
PE associated with regulated energy uses [kWh/yr]	2,364.219
Of which electricity [kWh/yr]	2,364.219
Amount covered by on-site renewables and consumed on-site [kWh/yr]	0
Amount of electricity supplied by the grid [kWh/yr]	2,364.219
Amount of electricity supplied by the grid using fossil fuels [kWh/yr]	472.844
Difference between PE and ZEB threshold [kWh/yr]	-254.979
Exported renewables energy [kWh/yr]	0
Amount covered by energy from carbon free grid sources [kWh/yr]	1,891.375
Amount covered by efficient district heating and cooling systems [kWh/yr]	0
Net primary energy use [kWh/yr]	472.844

ZEB Compliance Check

	Value	Threshold / Requirement	Compliance Status
Total Primary Energy Use [kWh/(m^2.y)]	52.31	<=42.00	Non Compliant
Primary energy use covered by carbon free sources?	No	Yes	Non Compliant
Operational GHG Emissions [kgCO_2eq/(m^2.y)]	5.88	<=5.00	Non Compliant
Fossil fuel used on site?	No	No	Compliant
Ability to accept external signals?	No	Yes	Non Compliant
Achieves NZEB?	Yes	Yes	Compliant
Overall ZEB Compliant?	-	-	Non Compliant

NZEB Compliance Check

	Value	Threshold / Requirement	Compliance Status
EPC	0.29	<=0.30	Compliant
CPC	0.18	<=0.35	Compliant
RER	0.29	>=0.20	Compliant
Overall NZEB Compliant?	-	-	Compliant

Global Warming Potential (GWP)

Value of GWP [kgCO_2eq/(m^2.y)] N/A

Renewable Energy Ratio (RER)

	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	1067.04	1067.04	
+ Saved energy	CHP	0.00		
+ Delivered energy	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	2626.91	
+ Delivered energy	Thermal	0.00	0.00	
TOTAL STEP A		1067.04	3693.95	0.29
- Electricity exported	PV/Wind	0.00	0.00	
Including exported electricity	PE from grid			
	PE from renewables	1067.04		
	Total PE (incl. export)		3693.95	0.29 - Pass
Including renewable portion of the grid	FF PE from grid			
	Carbon free PE (grid + renewables)	2643.18		
	Total PE (incl. export)		3693.95	0.72

Results

	Delivered energy [kWh/y]	Primary energy [kWh/y]	CO_2eq emissions [kgCO_2eq/(m^2.y)]
Main space heating system	721	1081	121
Secondary space heating system	0	0	0
Network distribution loss (group heating systems only)			
Main water heating system	693	1040	117
Supplementary water heating system	0	0	0
Cooling	0	0	0
Pumps and fans	207	310	35
Energy for lighting	130	195	22
CHP input (individual heating systems only)	0	0	0
CHP electrical output used on site	0	0	0
CHP electrical output exported to grid	0	0	0
Photovoltaic / Wind Turbine used on site	0	0	0
Photovoltaic / Wind Turbine exported to grid	0	0	0
Thermal Renewables - energy produced or saved	0	0	0
Thermal Renewables - energy consumed	0	0	0
Total	1751	2627	295
Per m^2 floor area	34.87	52.31	5.88
Energy Rating	A		

Part L Specification

BER IS NOT PUBLISHED

Property Details

Dwelling Type	Mid-terrace house	**Type of BER rating**	New Dwelling - Provisional
Address line 1	Rathcoole Block D1 Apartment	**Year of Construction**	2026
Address line 2		**Date of Assessment**	09/09/2026
Address line 3		**Date of Plans**	
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2022 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	N/A		
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m^2]	Height [m]	Volume [m^3]
Ground Floor	76.75	2.40	184.20
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	76.75		184.20

Living Area [m^2]	30.20	**Living area percentage [%]**	39.35
No of Storeys	1		

Ventilation Details

	Number		
Chimneys	0	**Has an air 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 of windows/doors/attic hatches draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	No	**Number of sides sheltered**	1
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

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Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m²K]	Area [m²]
Ground Floor - Solid		No	0.11	76.75

Building Elements - Roof Details

Type	Description	U-Value [W/m²K]	Area [m²]
Flat Roof	Roof	0.11	76.75

Building Elements - Wall Details

Type	Description	U-Value [W/m²K]	Area [m²]
300mm Cavity		0.17	29.5

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m²K]	Area [m²]

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Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, air filled	Yes	1.220	5.050
Double-glazed, air filled	Yes	1.220	2.670
Double-glazed, air filled	Yes	1.220	2.670
Double-glazed, air filled	Yes	1.220	2.520

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Other Details

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

Heating System - Solar Water Heating

Solar Water Heating Present?	No	**Aperture area of solar collector [m²]**	N/A
Type, manufacturer, model	N/A		
Orientation	N/A	**Overshading description**	N/A
Tilt in degrees from horizontal [°]	N/A	**Collector heat loss coefficient, a1 [W/m²>K]**	N/A
Zero loss collector efficiency, n0	N/A	**Dedicated storage volume [Litres]**	N/A
Horizontal solar radiation [kWh/m²]	N/A	**Solar fraction [%]**	0.000
Combined Cylinder	N/A		

Heating System - Hot Water System

Distribution Losses	259.55	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	170.0
Hot water storage manufacturer and model name	ComfortZone EX35	**Declared loss factor [kWh/d]**	1.15
Temperature factor unadjusted	0.89	**Temperature Factor Multiplier**	0.89
Primary Circuit loss type	Boiler / heat pump and thermal store within a single casing (cylinder thermostat present)		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	N/A
Insulation thickness [mm]	N/A	**Solar input to main system [kWh/y]**	0.00
Solar input to supplementary system [kWh/y]	0.00		

Heating System - Dist. system losses and gains

Temperature adjustment [°C]	0.0	**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	**Is the heat distribution system inside the dwelling able to work at low or more efficient temperature levels?**	No

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Heating System - Energy Requirements (Individual)

Main space heating system efficiency [%]	283.64	**Space heating efficiency adjustment factor**	1.0000	**Main space heating fuel**	Electricity
Main water heating system efficiency [%]	251.86	**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				

Heat Pump Details - Space Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Heat Pump Details - Water Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Summary for Part L Conformance (Applies to TGD L 2008/2011/2019/2022 for new dwellings only)

BER Number		**Building Regulations**	**2022 TGD L**
BER Result	A	**Energy Value [kWh/(m^2.y)]**	**41.06**
CO_2eq Emissions [kgCO_2eq/(m^2.y)]	4.61		
EPC	0.263	**EPC Pass/Fail**	**Pass**
CPC	0.161	**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**	0.11	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.17	Pass
Flat Roof	0.11	Pass	**Floors**	0.11	Pass
Floors with no underfloor heat	0.11	Pass	**External doors / windows / rooflights**	1.22	Pass
Floors with underfloor heat	0.00	Pass	**Walls**	0.17	Pass
Percentage of opening areas [%]	16.82		**Average U value of openings**	1.22	Pass
Permeability test carried out and meets guidelines in TGD L				0.15	Pass

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Part L Conformance - Renewables (applies to TGD L 2019/2022)

	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	1434.13	1434.13	
+ Saved energy	CHP	0.00		
+ Delivered energy	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	3151.43	
+ Delivered energy	Thermal	0.00	0.00	
TOTAL STEP A		1434.13	4585.56	0.31
- Electricity exported	PV/Wind	0.00	0.00	
Including exported electricity	PE from grid			
	PE from renewables	1434.13		
	Total PE (incl. export)		4585.56	0.31 - Pass
Including renewable portion of the grid	FF PE from grid			
	Carbon free PE (grid + renewables)	3324.99		
	Total PE (incl. export)		4585.56	0.73

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Energy Requirements: Individual Heating Systems

	Fuel Type	Electricity Fuel Factors Date	Primary energy conversion factor	CO_2eq Emissions Factor [kg/kWh]
Main space heating system	Electricity	Current	1.50	0.169
Secondary space heating system	None	Current	0.00	0.000
Main water heating system	Electricity	Current	1.50	0.169
Cooling System	None	Current	0.00	0.000
Pumps, fans	Electricity	Current	1.50	0.169
Energy for lighting	Electricity	Current	1.50	0.169

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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	Rathcoole Block D1 Apartment	**Type of Rating**	New Dwelling - Provisional
Address line 2		**Purpose of Rating**	New dwelling for owner occupation
Address line 3		**Building Regulations**	2022 TGD L
County	Co. Dublin	**Planning Reference**	
Eircode		**Date of Plans**	
Dwelling Type	Mid-terrace house	**Assessor Name**	N/A
Year of construction	2026	**Date of Assessment**	09/09/2026
Dwelling Extension	N/A	**Assessor Comments**	
Storeys	1	**Assessor Description**	2026 - Rathcoole - UT07 Apt 2B4P D1

Dimension details

	Area [m^2]	Height [m]	Volume [m^3]
Ground floor	76.75	2.40	184.20
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	76.75		184.20

Living Area	30.20 m^2
Living Area Percentage	39.35 %

Ventilation details

	Number	Air Change Rate [m3/h]
Chimneys	0	0.00
Open Flues	0	0.00
Fans & vents	1	10.00
Flueless combustion room heaters	0	0.00

Manufacturer	N/A
Model	N/A

Has an air permeability test been carried out?	Yes	**Is there a draught lobby on main entrance?**	No
Infiltration rate due to structure [ac/h]	0.15	**Draught lobby air change [ac/h]**	0.05
Intermediate infiltration rate	0.25	**Openings infiltration [ac/h]**	0.10
Number of sides sheltered	1	**Structure type**	N/A
Adjusted infiltration rate [ac/h]	0.24	**Is there a suspended wooden ground floor?**	No
Effective air change rate [ac/h]	0.72	**Number of openings**	0
Ventilation heat loss [W/K]	44.00	**Number of draught stripped openings**	0
Adjusted result of air permeability test [ac/h]	0.15	**Windows/doors/attic hatches draught stripped [%]**	N/A
Exhaust air flow rate [m^3/h]	180.00	**Ventilation method**	Exhaust Air Heat Pump
Specific fan power [W/(l/s)]	0.26	**How many wetrooms (inc. kitchen)? Is the vent. ducting flexible/rigid/both?**	N/A
Heat exchanger efficiency [%]	0.00		
Electricity for ventilation fans [Kwh/y]	84.35	**Is MVHR ducting uninsulated where outside of insulated envelope?**	N/A
Heat gains from ventilation fans [W]	0.00	**Adjusted heat exchanger efficiency**	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^2K]	Heat Loss (AU) [W/K]
Ground Floor - Solid		No	Yes	No	2014 onwards	N/A	76.75	0.11	8.44
Total area [m^2]									76.75

Building Elements - Roofs

Type	Description	Include in compliance check	Insulation Thickness [mm]	Age Band	Area [m^2]	U-Value [W/m^2K]	Heat Loss (AU) [W/K]
Flat Roof	Roof	Yes		2014 onwards	76.75	0.11	8.44
Total area [m^2]							76.75

Building Elements - Walls

Type	Description	Wall is semi-exposed	Include in compliance check	Age Band	Area [m^2]	U-Value [W/m^2K]	Heat Loss (AU) [W/K]
300mm Cavity		No	Yes	2014 onwards	29.50	0.17	5.02
Total area [m^2]							29.50

Building Elements - Doors

Count	Type	Description	Area [m^2]	U-Value [W/m^2K]	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^2K]
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	North	5.05	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	North	2.67	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	North	2.67	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	West	2.52	1.22
Total area [m^2]									12.91

Heat loss details

Total glazed area [m^2]	12.91	**Glazing ratio**	0.08
Total glazed heat loss [W/K]	15.02	**Summer solar gain [W/m^2]**	371.65
Total effective collection area [m^2]	6.1	**Total element area [m^2]**	195.91
Total plane heat loss [W/K]	36.92	**Thermal bridging factor [W/m^2K]**	0.0800
Fabric heat loss [W/K]	52.59	**Total heat loss [W/K]**	96.59
Per m2	1.26		

Lighting and Internal Gains

Lighting Design Calculation Method	Bulb type only	**Average Efficacy [lm/W]**	85.00
Fixed lighting provision [klmh/y]	2821.21	**Top up lighting requirement [klmh/y]**	0.00
Energy required for fixed lighting [kWh/y]	59.21	**Energy required for top up lighting [kWh/y]**	0.00
Energy required for portable lighting [kWh/y]	118.13		
Basic energy consumption for lighting [kWh/y]	698.08	**Water heating (In watts [W])**	96.09
Annual energy used for lighting [kWh/y]	177.34	**Occupants (In watts [W])**	119.92
Internal gains from lighting during heating season [kWh/hs] (In watts [W])	135.66 (23.26)	**Mechanical ventilation (In watts [W])**	0.00
Lighting (In watts [W])	23.26	**Heat loss to the cold water network (In watts [W])**	-35.58
Appliance and cooking (In watts [W])	174.67	**Net internal gains (In watts [W])**	378.35

Lights

Name	Description	Type	Efficiency
Default LED/CFL		LED/CFL	85.00

Water heating details

Are there distribution losses?	Yes
Are there storage losses?	Yes
Is there a solar water heating system?	No
Standard number of occupants	2.40
Number of mixer showers	0
Number of electric showers	0
Number of baths	1
Daily hot water use [Litres/d]	110.35
Hot water energy reqs. at taps [kWh/y]	1470.76
Distribution losses [kWh/y]	259.55
Water storage volume [Litres]	170.00
Is manufacturers declared loss factor available?	Yes
Declared loss factor [kWh/d]	1.15
Manufacturer and Model name	ComfortZone EX35
Insulation type	N/A
Insulation thickness [mm]	N/A

Is supplementary electric water heating used in summer?	N/A
Is there a combi-boiler?	No
Total hot water demand [kWh/y]	1730.30
Temperature factor unadjusted	0.89
Temperature Factor Multiplier	0.89
Hot water storage loss factor [kWh/l d]	0.00
Volume factor	0.00
Combi-boiler electricity consumption [kWh/y]	0.00
Adjusted storage loss [kWh/y]	333.06
Adjusted primary circuit loss [kWh/y]	0.00
Heat gains from water heating system [W]	96.09
Output from supplementary heater [kWh/y]	0.00
Solar input to main system [kWh/y]	0.00
Solar input to supplementary system [kWh/y]	0.00

Combi-boiler Type	None
Combi-boiler loss [kWh/y]	0.00
Keep Hot facility	None
Storage Loss	333.06
Storage Type	Heat pump with integral hot water storage / Integrated thermal store and gas-fired CPSU

Output from main water heater [kWh/y]	2063.37
Annual Heat gains from water heating system [kWh/y]	841.78
WWHRS input to main system [kWh/y]	0.00
WWHRS input to supplementary system [kWh/y]	0.00

Primary Circuit loss type	Boiler / heat pump and thermal store within a single casing (cylinder thermostat present)

Primary circuit loss [kWh/y]	0.00
Is hot water storage indoors or in group heating system	Yes

Heat Pump Type of DHW	Integral Hot Water Storage

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	39.35	**Heat use during heating season [kWh/y]**	2575.19
Required mean internal temperature [°C]	19.18	**Heat use for full year [kWh/y]**	2639.67
Thermal mass category of dwelling	Medium-low		

	Utilisation factor	Intermittent heating
Internal heat capacity of dwelling [per m^2]	0.14	0.09
Internal heat capacity [MJ/K]	10.75	6.91

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	5.8	17.60	1140	527	0.39	0.96	709	431	69
February	6.0	17.63	1123	420	0.47	0.94	625	498	149
March	6.8	17.72	1055	376	0.57	0.91	506	549	222
April	8.4	17.91	919	221	0.80	0.83	307	611	358
May	11.5	18.27	654	68	1.38	0.62	92	563	527
June	13.7	18.53	467	25	1.88	0.49	34	433	498
July	16.2	18.83	254	3	3.39	0.29	4	250	482
August	15.8	18.78	288	7	2.70	0.36	9	279	400
September	14.3	18.61	416	30	1.63	0.55	42	374	301
October	11.8	18.31	629	136	0.89	0.80	183	445	181
November	8.5	17.92	910	342	0.51	0.93	475	435	88
December	6.6	17.70	1072	484	0.41	0.96	650	422	61

Space Heating

Type	Space Heating Standard	Fuel	Design flow temp[°C]	Daily Operation [h]	SH Seasonal eff.	WH Seasonal eff.	Heats water	Source
Heat pumps	I.S. EN 14825	Electricity	55	24	283.64	251.86	Yes	Assessor

Heating System			Exhaust air-to-water heat pump
Model			EX35
Manufacturer			Comfortzone
Back Up Space Heater Fuel	Electricity	**Back Up Space Heater Efficiency [%]**	100.00
Back Up Water Heater Fuel	Electricity	**Back Up Water Heater Efficiency [%]**	100.00

Space Heating - Space Heating Test Data

Space Heating Standard I.S. EN 14825 **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]	3.50	2.30	1.55	1.30	3.10
Coefficient of Performance [kW/kW]	3.20	4.55	5.60	5.70	3.10

Test Condition Medium (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]	3.60	2.50	1.65	1.50	3.20
Coefficient of Performance [kW/kW]	2.40	3.20	4.10	4.40	2.30

Space Heating - Water Heating Test Data

Water Heating Standard I.S. EN 16147

Source of Data	Water heating energy efficiency [%]
Co-efficient of Performance [kW/kW]	0.00
Water heating energy efficiency [%]	118.00
Reference Hot water Temperature [°C]	53.60
Hot water Rated Heat output P_{rated} [kW]	3.50
Declared load profile	L
Standing heat loss of test storage tank [kWh/day]	1.15
Volume of DHW accounted for in test [litre]	170
Heat Pump Type	Exhaust Air to Water

Water Heating - Water Heating Test Data

Water Heating Standard	I.S. EN 16147
Source of Data	Water heating energy efficiency [%]
Co-efficient of Performance [kW/kW]	0.00
Water heating energy efficiency [%]	118.00
Reference Hot water Temperature [°C]	53.60
Hot water Rated Heat output P_{rated} [kW]	3.50
Declared load profile	L
Standing heat loss of test storage tank [kWh/day]	1.15
Volume of DHW accounted for in test [litre]	170
Heat Pump Type	Exhaust Air to Water

Water Heating - Space Heating Test Data

Space Heating Standard I.S. EN 14825 **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]	3.50	2.30	1.55	1.30	3.10
Coefficient of Performance [kW/kW]	3.20	4.55	5.60	5.70	3.10

Test Condition Medium (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]	3.60	2.50	1.65	1.50	3.20
Coefficient of Performance [kW/kW]	2.40	3.20	4.10	4.40	2.30

Dist. System Losses and Gains

Temperature adjustment [°C]	0.0	**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]**	2575.19
Heating system responsiveness category	1	**Is the heat distribution system inside the dwelling able to work at low or more efficient temperature levels?**	No
Mean internal temperature during heating hours [°C]	19.18		
Mean internal temperature [°C]	17.88		

	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 [kWh/y]	58	**Is there underfloor heating on the ground floor?**	No
Average utilisation factor, October to May	0.87	**U-Value of ground floor [W/m^{2}K]**	0.00
Useful net gain [kWh/y]	51	**Fraction of heating system output from ground floor**	1.00
Net heat emission to heated space [kWh/y]	2524	**Additional heat loss via envelope element [kWh/y]**	0.00
Annual space heating requirement [kWh/y]	2524		

Energy Requirements: Individual Heating Systems

Manufacturer name	Comfortzone
Model name	EX35
Brand name	N/A
Model Qualifier	N/A
Indoor unit identifier	N/A
Outdoor unit identifier	N/A

Efficiency of main heating system [%]	283.64	**Fraction of heat from secondary system**	N/A
Efficiency adjustment factor	1.00	**Efficiency of secondary system [%]**	N/A
Adjusted efficiency of main heating system [%]	283.64	**Energy required for main heating system [kWh/y]**	890.02
Product index number	N/A	**Energy required for secondary heating system [kWh/y]**	0
Manufacturer's reference number	N/A	**Low temperature test condition (35°C)**	N/A
Appliance ID	N/A	**Intermediate temperature test condition (45°C)**	N/A
Rated air flow rate [m^3/h]	0	**Medium temperature test condition (55°C)**	N/A
		High temperature test condition (65°C)	N/A

Heat Pump Details - Space Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Heat Pump Details - Water Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

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 [%]**	251.86
Efficiency of main water heating system [%]	118	**Water Heating Efficiency [%]**	118
Manufacturer name	Comfortzone	**Energy req. for main water heater [kWh/y]**	1228.88
Model name	EX35	**Energy req. for secondary water heater [kWh/y]**	0.00
Heat Pump Type	Exhaust Air to Water	**Back Up Water Heating Fuel**	Electricity
Water Heating Standard	I.S. EN 16147	**Back up Water Heating Efficiency [%]**	100.00

	Fuel Type	Primary energy conversion factor	CO_2eq Emissions Factor [kg/kWh]
Main space heating system	Electricity	1.50	0.169
Secondary space heating system	None	0.00	0.000
Main water heating system	Electricity	1.50	0.169
Supplementary water heating system	Electricity	0.00	0.000
Cooling System	None	0.00	0.000
Pumps, fans	Electricity	1.50	0.169
Energy for lighting	Electricity	1.50	0.169

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]	184.200
Effective air change rate for summer period [ac/h]	
Ventilation heat loss coefficient [W/K]	0.00
Fabric heat loss coefficient [W/K]	52.59
Heat loss coefficient under summer conditions [W/K]	52.59
Total Solar Gain for Summer Period [W]	371.65
Internal gains [W]	378.35
Total gains in summer [W]	750.01
Temperature increment due to gains [°C]	14.26
Summer mean external temperature [°C]	15
Heat capacity parameter	0.14
Temperature increment related to thermal mass [°C]	1.02
Threshold internal temperature [°C]	30.28

Zero Emissions Building (ZEB)

Check of whether primary energy use is covered by carbon free sources

%of grid electricity generated by carbon free sources	80
PE associated with regulated energy uses [kWh/yr]	2,836.291
Of which electricity [kWh/yr]	2,836.291
Amount covered by on-site renewables and consumed on-site [kWh/yr]	0
Amount of electricity supplied by the grid [kWh/yr]	2,836.291
Amount of electricity supplied by the grid using fossil fuels [kWh/yr]	567.258
Difference between PE and ZEB threshold [kWh/yr]	387.209
Exported renewables energy [kWh/yr]	0
Amount covered by energy from carbon free grid sources [kWh/yr]	2,269.033
Amount covered by efficient district heating and cooling systems [kWh/yr]	0
Net primary energy use [kWh/yr]	567.258

ZEB Compliance Check

	Value	Threshold / Requirement	Compliance Status
Total Primary Energy Use [kWh/(m^2.y)]	41.06	<=42.00	Compliant
Primary energy use covered by carbon free sources?	Yes	Yes	Compliant
Operational GHG Emissions [kgCO_2eq/(m^2.y)]	4.61	<=5.00	Compliant
Fossil fuel used on site?	No	No	Compliant
Ability to accept external signals?	No	Yes	Non Compliant
Achieves NZEB?	Yes	Yes	Compliant
Overall ZEB Compliant?	-	-	Non Compliant

NZEB Compliance Check

	Value	Threshold / Requirement	Compliance Status
EPC	0.26	<=0.30	Compliant
CPC	0.16	<=0.35	Compliant
RER	0.31	>=0.20	Compliant
Overall NZEB Compliant?	-	-	Compliant

Global Warming Potential (GWP)

Value of GWP [kgCO_2eq/(m^2.y)] N/A

Renewable Energy Ratio (RER)

	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	1434.13	1434.13	
+ Saved energy	CHP	0.00		
+ Delivered energy	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	3151.43	
+ Delivered energy	Thermal	0.00	0.00	
TOTAL STEP A		1434.13	4585.56	0.31
- Electricity exported	PV/Wind	0.00	0.00	
Including exported electricity	PE from grid			
	PE from renewables	1434.13		
	Total PE (incl. export)		4585.56	0.31 - Pass
Including renewable portion of the grid	FF PE from grid			
	Carbon free PE (grid + renewables)	3324.99		
	Total PE (incl. export)		4585.56	0.73

Results

	Delivered energy [kWh/y]	Primary energy [kWh/y]	CO_2eq emissions [kgCO_2eq/(m^2.y)]
Main space heating system	890	1335	150
Secondary space heating system	0	0	0
Network distribution loss (group heating systems only)			
Main water heating system	819	1229	138
Supplementary water heating system	0	0	0
Cooling	0	0	0
Pumps and fans	214	322	36
Energy for lighting	177	266	30
CHP input (individual heating systems only)	0	0	0
CHP electrical output used on site	0	0	0
CHP electrical output exported to grid	0	0	0
Photovoltaic / Wind Turbine used on site	0	0	0
Photovoltaic / Wind Turbine exported to grid	0	0	0
Thermal Renewables - energy produced or saved	0	0	0
Thermal Renewables - energy consumed	0	0	0
Total	2101	3151	354
Per m^2 floor area	27.37	41.06	4.61
Energy Rating	A		

Part L Specification

BER IS NOT PUBLISHED

Property Details

Dwelling Type	Ground-floor apartment	**Type of BER rating**	New Dwelling - Provisional
Address line 1	Rathcoole Block A3 Duplex	**Year of Construction**	2026
Address line 2		**Date of Assessment**	08/09/2026
Address line 3	02	**Date of Plans**	
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2022 TGD L
BER Number		**MPRN No.**	0
Purpose of Rating	Social housing letting	**Is MPRN shared with another dwelling?**	N/A
Assessor Name	N/A		
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m^2]	Height [m]	Volume [m^3]
Ground Floor	50.29	2.40	120.70
First Floor	46.76	2.40	112.22
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	97.05		232.92

Living Area [m^2]	34.73	**Living area percentage [%]**	35.79
No of Storeys	2		

Ventilation Details

	Number		
Chimneys	0	**Has an air 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 of windows/doors/attic hatches draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	No	**Number of sides sheltered**	1
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

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Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m²K]	Area [m²]
Ground Floor - Solid		No	0.11	50.29
Non-Heat Loss Floor		N/A	0	46.76

Building Elements - Roof Details

Type	Description	U-Value [W/m²K]	Area [m²]

Building Elements - Wall Details

Type	Description	U-Value [W/m²K]	Area [m²]
300mm Cavity		0.17	88.19

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m²K]	Area [m²]
	1	1.4	2.310

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Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, air filled	Yes	1.220	1.940
Double-glazed, air filled	Yes	1.220	0.740
Double-glazed, air filled	Yes	1.220	5.000
Double-glazed, air filled	Yes	1.220	1.620
Double-glazed, air filled	Yes	1.220	2.520
Double-glazed, air filled	Yes	1.220	2.520
Double-glazed, air filled	Yes	1.220	0.750
Double-glazed, air filled	Yes	1.220	2.700

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Other Details

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

Heating System - Solar Water Heating

Solar Water Heating Present?	No	**Aperture area of solar collector [m²]**	N/A
Type, manufacturer, model	N/A		
Orientation	N/A	**Overshading description**	N/A
Tilt in degrees from horizontal [°]	N/A	**Collector heat loss coefficient, a1 [W/m²>K]**	N/A
Zero loss collector efficiency, n0	N/A	**Dedicated storage volume [Litres]**	N/A
Horizontal solar radiation [kWh/m²]	N/A	**Solar fraction [%]**	0.000
Combined Cylinder	N/A		

Heating System - Hot Water System

Distribution Losses	280.72	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	170.0
Hot water storage manufacturer and model name	ComfortZone EX35	**Declared loss factor [kWh/d]**	1.15
Temperature factor unadjusted	0.89	**Temperature Factor Multiplier**	0.89
Primary Circuit loss type	Boiler / heat pump and thermal store within a single casing (cylinder thermostat present)		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	N/A
Insulation thickness [mm]	N/A	**Solar input to main system [kWh/y]**	0.00
Solar input to supplementary system [kWh/y]	0.00		

Heating System - Dist. system losses and gains

Temperature adjustment [°C]	0.0	**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	**Is the heat distribution system inside the dwelling able to work at low or more efficient temperature levels?**	No

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Heating System - Energy Requirements (Individual)

Main space heating system efficiency [%]	273.94	**Space heating efficiency adjustment factor**	1.0000	**Main space heating fuel**	Electricity
Main water heating system efficiency [%]	251.86	**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				

Heat Pump Details - Space Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Heat Pump Details - Water Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Summary for Part L Conformance (Applies to TGD L 2008/2011/2019/2022 for new dwellings only)

BER Number		**Building Regulations**	**2022 TGD L**
BER Result	A	**Energy Value [kWh/(m^2.y)]**	**31.25**
CO_2eq Emissions [kgCO_2eq/(m^2.y)]	3.51		
EPC	0.241	**EPC Pass/Fail**	**Pass**
CPC	0.149	**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	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.17	Pass
Flat Roof	0	Pass	**Floors**	0.11	Pass
Floors with no underfloor heat	0.11	Pass	**External doors / windows / rooflights**	1.40	Pass
Floors with underfloor heat	0.00	Pass	**Walls**	0.17	Pass
Percentage of opening areas [%]	20.71		**Average U value of openings**	1.24	Pass
Permeability test carried out and meets guidelines in TGD L				0.15	Pass

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Part L Conformance - Renewables (applies to TGD L 2019/2022)

	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	1330.18	1330.18	
+ Saved energy	CHP	0.00		
+ Delivered energy	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	3032.50	
+ Delivered energy	Thermal	0.00	0.00	
TOTAL STEP A		1330.18	4362.68	0.30
- Electricity exported	PV/Wind	0.00	0.00	
Including exported electricity	PE from grid			
	PE from renewables	1330.18		
	Total PE (incl. export)		4362.68	0.30 - Pass
Including renewable portion of the grid	FF PE from grid			
	Carbon free PE (grid + renewables)	3149.68		
	Total PE (incl. export)		4362.68	0.72

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Energy Requirements: Individual Heating Systems

	Fuel Type	Electricity Fuel Factors Date	Primary energy conversion factor	CO_2eq Emissions Factor [kg/kWh]
Main space heating system	Electricity	Current	1.50	0.169
Secondary space heating system	None	Current	0.00	0.000
Main water heating system	Electricity	Current	1.50	0.169
Cooling System	None	Current	0.00	0.000
Pumps, fans	Electricity	Current	1.50	0.169
Energy for lighting	Electricity	Current	1.50	0.169

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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	Rathcoole Block A3 Duplex	**Type of Rating**	New Dwelling - Provisional
Address line 2		**Purpose of Rating**	Social housing letting
Address line 3	02	**Building Regulations**	2022 TGD L
County	Co. Dublin	**Planning Reference**	
Eircode		**Date of Plans**	
Dwelling Type	Ground-floor apartment	**Assessor Name**	N/A
Year of construction	2026	**Date of Assessment**	08/09/2026
Dwelling Extension	N/A	**Assessor Comments**	
Storeys	2	**Assessor Description**	2026 - Rathcoole - 3 Bed Duplex GF/FF

Dimension details

	Area [m^2]	Height [m]	Volume [m^3]
Ground floor	50.29	2.40	120.70
First floor	46.76	2.40	112.22
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	97.05		232.92

Living Area	34.73 m^2
Living Area Percentage	35.79 %

Ventilation details

	Number	Air Change Rate [m3/h]
Chimneys	0	0.00
Open Flues	0	0.00
Fans & vents	1	10.00
Flueless combustion room heaters	0	0.00

Manufacturer	N/A
Model	N/A

Has an air permeability test been carried out?	Yes	**Is there a draught lobby on main entrance?**	No
Infiltration rate due to structure [ac/h]	0.15	**Draught lobby air change [ac/h]**	0.05
Intermediate infiltration rate	0.24	**Openings infiltration [ac/h]**	0.09
Number of sides sheltered	1	**Structure type**	N/A
Adjusted infiltration rate [ac/h]	0.22	**Is there a suspended wooden ground floor?**	No
Effective air change rate [ac/h]	0.61	**Number of openings**	10
Ventilation heat loss [W/K]	46.97	**Number of draught stripped openings**	10
Adjusted result of air permeability test [ac/h]	0.15	**Windows/doors/attic hatches draught stripped [%]**	N/A
Exhaust air flow rate [m^3/h]	180.00	**Ventilation method**	Exhaust Air Heat Pump
Specific fan power [W/(l/s)]	0.26	**How many wetrooms (inc. kitchen)? Is the vent. ducting flexible/rigid/both?**	N/A
Heat exchanger efficiency [%]	0.00		
Electricity for ventilation fans [Kwh/y]	90.05	**Is MVHR ducting uninsulated where outside of insulated envelope?**	N/A
Heat gains from ventilation fans [W]	0.00	**Adjusted heat exchanger efficiency**	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^2K]	Heat Loss (AU) [W/K]
Ground Floor - Solid		No	Yes	No	2014 onwards	N/A	50.29	0.11	5.53
Non-Heat Loss Floor		N/A	No	No	2014 onwards	N/A	46.76	0.00	0.00
Total area [m^2]									97.05

Building Elements - Roofs

Type	Description	Include in compliance check	Insulation Thickness [mm]	Age Band	Area [m^2]	U-Value [W/m^2K]	Heat Loss (AU) [W/K]
Total area [m^2]							0.00

Building Elements - Walls

Type	Description	Wall is semi-exposed	Include in compliance check	Age Band	Area [m^2]	U-Value [W/m^2K]	Heat Loss (AU) [W/K]
300mm Cavity		No	Yes	2014 onwards	88.19	0.17	14.99
Total area [m^2]							88.19

Building Elements - Doors

Count	Type	Description	Area [m^2]	U-Value [W/m^2K]	Heat Loss (AU) [W/K]
1	Front Door		2.31	1.40	3.23
Total area [m^2]					2.31

Building Elements - Windows

Count	Glazing Type	Frame Type	Frame Factor	Solar Transm.	In Roof	Over shading	Orient.	Area [m^2]	U-value [W/m^2K]
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	Northeast	1.94	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	Northeast	0.74	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	Southwest	5.00	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	Southwest	1.62	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	Northeast	2.52	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	Northeast	2.52	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	Southwest	0.75	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	Southwest	2.70	1.22
Total area [m^2]									17.79

Heat loss details

Total glazed area [m^2]	17.79	**Glazing ratio**	0.09
Total glazed heat loss [W/K]	20.69	**Summer solar gain [W/m^2]**	573.97
Total effective collection area [m^2]	8.41	**Total element area [m^2]**	158.58
Total plane heat loss [W/K]	44.45	**Thermal bridging factor [W/m^2K]**	0.0800
Fabric heat loss [W/K]	57.14	**Total heat loss [W/K]**	104.11
Per m2	1.07		

Lighting and Internal Gains

Lighting Design Calculation Method	Bulb type only	**Average Efficacy [lm/W]**	85.00
Fixed lighting provision [klmh/y]	3320.13	**Top up lighting requirement [klmh/y]**	0.00
Energy required for fixed lighting [kWh/y]	69.68	**Energy required for top up lighting [kWh/y]**	0.00
Energy required for portable lighting [kWh/y]	139.02		
Basic energy consumption for lighting [kWh/y]	826.04	**Water heating (In watts [W])**	101.45
Annual energy used for lighting [kWh/y]	208.70	**Occupants (In watts [W])**	135.52
Internal gains from lighting during heating season [kWh/hs] (In watts [W])	159.65 (27.38)	**Mechanical ventilation (In watts [W])**	0.00
Lighting (In watts [W])	27.38	**Heat loss to the cold water network (In watts [W])**	-38.39
Appliance and cooking (In watts [W])	204.96	**Net internal gains (In watts [W])**	430.92

Lights

Name	Description	Type	Efficiency
Default LED/CFL		LED/CFL	85.00

Water heating details

Are there distribution losses?	Yes
Are there storage losses?	Yes
Is there a solar water heating system?	No
Standard number of occupants	2.71
Number of mixer showers	0
Number of electric showers	0
Number of baths	1
Daily hot water use [Litres/d]	119.35
Hot water energy reqs. at taps [kWh/y]	1590.74
Distribution losses [kWh/y]	280.72
Water storage volume [Litres]	170.00
Is manufacturers declared loss factor available?	Yes
Declared loss factor [kWh/d]	1.15
Manufacturer and Model name	ComfortZone EX35
Insulation type	N/A
Insulation thickness [mm]	N/A

Is supplementary electric water heating used in summer?	N/A
Is there a combi-boiler?	No
Total hot water demand [kWh/y]	1871.46
Temperature factor unadjusted	0.89
Temperature Factor Multiplier	0.89
Hot water storage loss factor [kWh/l d]	0.00
Volume factor	0.00
Combi-boiler electricity consumption [kWh/y]	0.00
Adjusted storage loss [kWh/y]	333.06
Adjusted primary circuit loss [kWh/y]	0.00
Heat gains from water heating system [W]	101.45
Output from supplementary heater [kWh/y]	0.00
Solar input to main system [kWh/y]	0.00
Solar input to supplementary system [kWh/y]	0.00

Combi-boiler Type	None
Combi-boiler loss [kWh/y]	0.00
Keep Hot facility	None
Storage Loss	333.06
Storage Type	Heat pump with integral hot water storage / Integrated thermal store and gas-fired CPSU

Output from main water heater [kWh/y]	2204.52
Annual Heat gains from water heating system [kWh/y]	888.71
WWHRS input to main system [kWh/y]	0.00
WWHRS input to supplementary system [kWh/y]	0.00

Primary Circuit loss type	Boiler / heat pump and thermal store within a single casing (cylinder thermostat present)

Primary circuit loss [kWh/y]	0.00
Is hot water storage indoors or in group heating system	Yes

Heat Pump Type of DHW	Integral Hot Water Storage

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	35.79	**Heat use during heating season [kWh/y]**	2012.54
Required mean internal temperature [°C]	19.07	**Heat use for full year [kWh/y]**	2033.26
Thermal mass category of dwelling	Medium-low		

	Utilisation factor	Intermittent heating
Internal heat capacity of dwelling [per m^2]	0.14	0.09
Internal heat capacity [MJ/K]	13.59	8.73

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	5.8	17.71	1240	480	0.51	0.95	645	595	196
February	6.0	17.74	1222	326	0.67	0.90	485	737	390
March	6.8	17.82	1147	265	0.82	0.85	356	791	505
April	8.4	17.98	997	129	1.14	0.72	179	819	704
May	11.5	18.30	708	28	1.94	0.49	38	670	943
June	13.7	18.52	502	9	2.57	0.38	12	490	861
July	16.2	18.78	269	1	4.76	0.21	1	268	848
August	15.8	18.74	306	2	3.88	0.26	2	304	757
September	14.3	18.58	446	9	2.42	0.40	13	433	647
October	11.8	18.33	680	69	1.30	0.66	93	587	454
November	8.5	17.99	988	277	0.68	0.89	384	604	245
December	6.6	17.80	1166	439	0.52	0.95	591	575	177

Space Heating

Type	Space Heating Standard	Fuel	Design flow temp[°C]	Daily Operation [h]	SH Seasonal eff.	WH Seasonal eff.	Heats water	Source
Heat pumps	I.S. EN 14825	Electricity	55	24	273.94	251.86	Yes	Assessor

Heating System			Exhaust air-to-water heat pump
Model			EX35
Manufacturer			Comfortzone
Back Up Space Heater Fuel	Electricity	**Back Up Space Heater Efficiency [%]**	100.00
Back Up Water Heater Fuel	Electricity	**Back Up Water Heater Efficiency [%]**	100.00

Space Heating - Space Heating Test Data

Space Heating Standard I.S. EN 14825 **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]	3.50	2.30	1.55	1.30	3.10
Coefficient of Performance [kW/kW]	3.20	4.55	5.60	5.70	3.10

Test Condition Medium (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]	3.60	2.50	1.65	1.50	3.20
Coefficient of Performance [kW/kW]	2.40	3.20	4.10	4.40	2.30

Space Heating - Water Heating Test Data

Water Heating Standard I.S. EN 16147

Source of Data	Water heating energy efficiency [%]
Co-efficient of Performance [kW/kW]	0.00
Water heating energy efficiency [%]	118.00
Reference Hot water Temperature [°C]	53.60
Hot water Rated Heat output P_{rated} [kW]	3.50
Declared load profile	L
Standing heat loss of test storage tank [kWh/day]	1.15
Volume of DHW accounted for in test [litre]	170
Heat Pump Type	Exhaust Air to Water

Water Heating - Water Heating Test Data

Water Heating Standard	I.S. EN 16147
Source of Data	Water heating energy efficiency [%]
Co-efficient of Performance [kW/kW]	0.00
Water heating energy efficiency [%]	118.00
Reference Hot water Temperature [°C]	53.60
Hot water Rated Heat output P_{rated} [kW]	3.50
Declared load profile	L
Standing heat loss of test storage tank [kWh/day]	1.15
Volume of DHW accounted for in test [litre]	170
Heat Pump Type	Exhaust Air to Water

Water Heating - Space Heating Test Data

Space Heating Standard I.S. EN 14825 **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]	3.50	2.30	1.55	1.30	3.10
Coefficient of Performance [kW/kW]	3.20	4.55	5.60	5.70	3.10

Test Condition Medium (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]	3.60	2.50	1.65	1.50	3.20
Coefficient of Performance [kW/kW]	2.40	3.20	4.10	4.40	2.30

Dist. System Losses and Gains

Temperature adjustment [°C]	0.0	**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]**	2012.54
Heating system responsiveness category	1	**Is the heat distribution system inside the dwelling able to work at low or more efficient temperature levels?**	No
Mean internal temperature during heating hours [°C]	19.07		
Mean internal temperature [°C]	17.96		

	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 [kWh/y]	58	**Is there underfloor heating on the ground floor?**	No
Average utilisation factor, October to May	0.80	**U-Value of ground floor [W/m^{2}K]**	0.00
Useful net gain [kWh/y]	47	**Fraction of heating system output from ground floor**	0.67
Net heat emission to heated space [kWh/y]	1966	**Additional heat loss via envelope element [kWh/y]**	0.00
Annual space heating requirement [kWh/y]	1966		

Energy Requirements: Individual Heating Systems

Manufacturer name	Comfortzone
Model name	EX35
Brand name	N/A
Model Qualifier	N/A
Indoor unit identifier	N/A
Outdoor unit identifier	N/A

Efficiency of main heating system [%]	273.94	**Fraction of heat from secondary system**	N/A
Efficiency adjustment factor	1.00	**Efficiency of secondary system [%]**	N/A
Adjusted efficiency of main heating system [%]	273.94	**Energy required for main heating system [kWh/y]**	717.62
Product index number	N/A	**Energy required for secondary heating system [kWh/y]**	0
Manufacturer's reference number	N/A	**Low temperature test condition (35°C)**	N/A
Appliance ID	N/A	**Intermediate temperature test condition (45°C)**	N/A
Rated air flow rate [m^3/h]	0	**Medium temperature test condition (55°C)**	N/A
		High temperature test condition (65°C)	N/A

Heat Pump Details - Space Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Heat Pump Details - Water Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

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 [%]**	251.86
Efficiency of main water heating system [%]	118	**Water Heating Efficiency [%]**	118
Manufacturer name	Comfortzone	**Energy req. for main water heater [kWh/y]**	1312.94
Model name	EX35	**Energy req. for secondary water heater [kWh/y]**	0.00
Heat Pump Type	Exhaust Air to Water	**Back Up Water Heating Fuel**	Electricity
Water Heating Standard	I.S. EN 16147	**Back up Water Heating Efficiency [%]**	100.00

	Fuel Type	Primary energy conversion factor	CO_2eq Emissions Factor [kg/kWh]
Main space heating system	Electricity	1.50	0.169
Secondary space heating system	None	0.00	0.000
Main water heating system	Electricity	1.50	0.169
Supplementary water heating system	Electricity	0.00	0.000
Cooling System	None	0.00	0.000
Pumps, fans	Electricity	1.50	0.169
Energy for lighting	Electricity	1.50	0.169

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]	232.920
Effective air change rate for summer period [ac/h]	
Ventilation heat loss coefficient [W/K]	0.00
Fabric heat loss coefficient [W/K]	57.14
Heat loss coefficient under summer conditions [W/K]	57.14
Total Solar Gain for Summer Period [W]	573.97
Internal gains [W]	430.92
Total gains in summer [W]	1004.88
Temperature increment due to gains [°C]	17.59
Summer mean external temperature [°C]	15
Heat capacity parameter	0.14
Temperature increment related to thermal mass [°C]	1.02
Threshold internal temperature [°C]	33.61

Zero Emissions Building (ZEB)

Check of whether primary energy use is covered by carbon free sources

%of grid electricity generated by carbon free sources	80
PE associated with regulated energy uses [kWh/yr]	2,729.248
Of which electricity [kWh/yr]	2,729.248
Amount covered by on-site renewables and consumed on-site [kWh/yr]	0
Amount of electricity supplied by the grid [kWh/yr]	2,729.248
Amount of electricity supplied by the grid using fossil fuels [kWh/yr]	545.850
Difference between PE and ZEB threshold [kWh/yr]	1,346.852
Exported renewables energy [kWh/yr]	0
Amount covered by energy from carbon free grid sources [kWh/yr]	2,183.398
Amount covered by efficient district heating and cooling systems [kWh/yr]	0
Net primary energy use [kWh/yr]	545.850

ZEB Compliance Check

	Value	Threshold / Requirement	Compliance Status
Total Primary Energy Use [kWh/(m^2.y)]	31.25	<=42.00	Compliant
Primary energy use covered by carbon free sources?	Yes	Yes	Compliant
Operational GHG Emissions [kgCO_2eq/(m^2.y)]	3.51	<=5.00	Compliant
Fossil fuel used on site?	No	No	Compliant
Ability to accept external signals?	No	Yes	Non Compliant
Achieves NZEB?	Yes	Yes	Compliant
Overall ZEB Compliant?	-	-	Non Compliant

NZEB Compliance Check

	Value	Threshold / Requirement	Compliance Status
EPC	0.24	<=0.30	Compliant
CPC	0.15	<=0.35	Compliant
RER	0.30	>=0.20	Compliant
Overall NZEB Compliant?	-	-	Compliant

Global Warming Potential (GWP)

Value of GWP [$kgCO_2eq/(m^2.y)$] N/A

Renewable Energy Ratio (RER)

	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	1330.18	1330.18	
+ Saved energy	CHP	0.00		
+ Delivered energy	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	3032.50	
+ Delivered energy	Thermal	0.00	0.00	
TOTAL STEP A		1330.18	4362.68	0.30
- Electricity exported	PV/Wind	0.00	0.00	
Including exported electricity	PE from grid			
	PE from renewables	1330.18		
	Total PE (incl. export)		4362.68	0.30 - Pass
Including renewable portion of the grid	FF PE from grid			
	Carbon free PE (grid + renewables)	3149.68		
	Total PE (incl. export)		4362.68	0.72

Results

	Delivered energy [kWh/y]	Primary energy [kWh/y]	CO_2eq emissions [kgCO_2eq/(m^2.y)]
Main space heating system	718	1076	121
Secondary space heating system	0	0	0
Network distribution loss (group heating systems only)			
Main water heating system	875	1313	147
Supplementary water heating system	0	0	0
Cooling	0	0	0
Pumps and fans	220	330	37
Energy for lighting	209	313	35
CHP input (individual heating systems only)	0	0	0
CHP electrical output used on site	0	0	0
CHP electrical output exported to grid	0	0	0
Photovoltaic / Wind Turbine used on site	0	0	0
Photovoltaic / Wind Turbine exported to grid	0	0	0
Thermal Renewables - energy produced or saved	0	0	0
Thermal Renewables - energy consumed	0	0	0
Total	2022	3032	341
Per m^2 floor area	20.83	31.25	3.51
Energy Rating	A		

Part L Specification

BER IS NOT PUBLISHED

Property Details

Dwelling Type	Mid-terrace house	**Type of BER rating**	New Dwelling - Provisional
Address line 1	Rathcoole Block C2 House	**Year of Construction**	2026
Address line 2		**Date of Assessment**	08/09/2026
Address line 3		**Date of Plans**	
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2022 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	N/A		
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m^2]	Height [m]	Volume [m^3]
Ground Floor	52.91	2.40	126.98
First Floor	49.03	2.40	117.67
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	101.94		244.66

Living Area [m^2]	15.77	**Living area percentage [%]**	15.47
No of Storeys	2		

Ventilation Details

	Number		
Chimneys	0	**Has an air 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 of windows/doors/attic hatches draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	No	**Number of sides sheltered**	1
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

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Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m^{2}K]	Area [m^2]
Ground Floor - Solid		No	0.11	52.91
Non-Heat Loss Floor		N/A	0	49.03

Building Elements - Roof Details

Type	Description	U-Value [W/m^{2}K]	Area [m^2]
Pitched Roof - Insulated on Ceiling	Pitched Roof	0.11	49.03

Building Elements - Wall Details

Type	Description	U-Value [W/m^{2}K]	Area [m^2]
300mm Cavity		0.17	49.42

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m^{2}K]	Area [m^2]
	1	1.4	2.400

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Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, air filled	Yes	1.220	3.100
Double-glazed, air filled	Yes	1.220	0.660
Double-glazed, air filled	Yes	1.220	2.450
Double-glazed, air filled	Yes	1.220	4.840
Double-glazed, air filled	Yes	1.220	1.350
Double-glazed, air filled	Yes	1.220	1.260
Double-glazed, air filled	Yes	1.220	2.520

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Other Details

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

Heating System - Solar Water Heating

Solar Water Heating Present?	No	**Aperture area of solar collector [m²]**	N/A
Type, manufacturer, model	N/A		
Orientation	N/A	**Overshading description**	N/A
Tilt in degrees from horizontal [°]	N/A	**Collector heat loss coefficient, a1 [W/m²>K]**	N/A
Zero loss collector efficiency, n0	N/A	**Dedicated storage volume [Litres]**	N/A
Horizontal solar radiation [kWh/m²]	N/A	**Solar fraction [%]**	0.000
Combined Cylinder	N/A		

Heating System - Hot Water System

Distribution Losses	283.86	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	170.0
Hot water storage manufacturer and model name	ComfortZone EX35	**Declared loss factor [kWh/d]**	1.15
Temperature factor unadjusted	0.89	**Temperature Factor Multiplier**	0.89
Primary Circuit loss type	Boiler / heat pump and thermal store within a single casing (cylinder thermostat present)		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	N/A
Insulation thickness [mm]	N/A	**Solar input to main system [kWh/y]**	0.00
Solar input to supplementary system [kWh/y]	0.00		

Heating System - Dist. system losses and gains

Temperature adjustment [°C]	0.0	**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	**Is the heat distribution system inside the dwelling able to work at low or more efficient temperature levels?**	No

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Heating System - Energy Requirements (Individual)

Main space heating system efficiency [%]	260.44	**Space heating efficiency adjustment factor**	1.0000	**Main space heating fuel**	Electricity
Main water heating system efficiency [%]	251.86	**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				

Heat Pump Details - Space Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Heat Pump Details - Water Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Summary for Part L Conformance (Applies to TGD L 2008/2011/2019/2022 for new dwellings only)

BER Number		**Building Regulations**	**2022 TGD L**
BER Result	A	**Energy Value [kWh/(m^2.y)]**	**30.00**
CO_2eq Emissions [kgCO_2eq/(m^2.y)]	3.37		
EPC	0.248	**EPC Pass/Fail**	**Pass**
CPC	0.153	**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	0.11	Pass	**Roofs**	0.11	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.17	Pass
Flat Roof	0	Pass	**Floors**	0.11	Pass
Floors with no underfloor heat	0.11	Pass	**External doors / windows / rooflights**	1.40	Pass
Floors with underfloor heat	0.00	Pass	**Walls**	0.17	Pass
Percentage of opening areas [%]	18.23		**Average U value of openings**	1.24	Pass
Permeability test carried out and meets guidelines in TGD L				0.15	Pass

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Part L Conformance - Renewables (applies to TGD L 2019/2022)

	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	1274.40	1274.40	
+ Saved energy	CHP	0.00		
+ Delivered energy	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	3057.92	
+ Delivered energy	Thermal	0.00	0.00	
TOTAL STEP A		1274.40	4332.32	0.29
- Electricity exported	PV/Wind	0.00	0.00	
Including exported electricity	PE from grid			
	PE from renewables	1274.40		
	Total PE (incl. export)		4332.32	0.29 - Pass
Including renewable portion of the grid	FF PE from grid			
	Carbon free PE (grid + renewables)	3109.15		
	Total PE (incl. export)		4332.32	0.72

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Energy Requirements: Individual Heating Systems

	Fuel Type	Electricity Fuel Factors Date	Primary energy conversion factor	CO_2eq Emissions Factor [kg/kWh]
Main space heating system	Electricity	Current	1.50	0.169
Secondary space heating system	None	Current	0.00	0.000
Main water heating system	Electricity	Current	1.50	0.169
Cooling System	None	Current	0.00	0.000
Pumps, fans	Electricity	Current	1.50	0.169
Energy for lighting	Electricity	Current	1.50	0.169

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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	Rathcoole Block C2 House	**Type of Rating**	New Dwelling - Provisional
Address line 2		**Purpose of Rating**	New dwelling for owner occupation
Address line 3		**Building Regulations**	2022 TGD L
County	Co. Dublin	**Planning Reference**	
Eircode		**Date of Plans**	
Dwelling Type	Mid-terrace house	**Assessor Name**	N/A
Year of construction	2026	**Date of Assessment**	08/09/2026
Dwelling Extension	N/A	**Assessor Comments**	
Storeys	2	**Assessor Description**	2026 - Rathcoole - HT2 House 3B5P C2 Dual Aspect

Dimension details

	Area [m^2]	Height [m]	Volume [m^3]
Ground floor	52.91	2.40	126.98
First floor	49.03	2.40	117.67
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	101.94		244.66

Living Area	15.77 m^2
Living Area Percentage	15.47 %

Ventilation details

	Number	Air Change Rate [m3/h]
Chimneys	0	0.00
Open Flues	0	0.00
Fans & vents	1	10.00
Flueless combustion room heaters	0	0.00

Manufacturer	N/A
Model	N/A

Has an air permeability test been carried out?	Yes	**Is there a draught lobby on main entrance?**	No
Infiltration rate due to structure [ac/h]	0.15	**Draught lobby air change [ac/h]**	0.05
Intermediate infiltration rate	0.24	**Openings infiltration [ac/h]**	0.09
Number of sides sheltered	1	**Structure type**	N/A
Adjusted infiltration rate [ac/h]	0.22	**Is there a suspended wooden ground floor?**	No
Effective air change rate [ac/h]	0.59	**Number of openings**	0
Ventilation heat loss [W/K]	47.69	**Number of draught stripped openings**	0
Adjusted result of air permeability test [ac/h]	0.15	**Windows/doors/attic hatches draught stripped [%]**	N/A
Exhaust air flow rate [m^3/h]	180.00	**Ventilation method**	Exhaust Air Heat Pump
Specific fan power [W/(l/s)]	0.26	**How many wetrooms (inc. kitchen)? Is the vent. ducting flexible/rigid/both?**	N/A
Heat exchanger efficiency [%]	0.00		
Electricity for ventilation fans [Kwh/y]	91.43	**Is MVHR ducting uninsulated where outside of insulated envelope?**	N/A
Heat gains from ventilation fans [W]	0.00	**Adjusted heat exchanger efficiency**	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^2K]	Heat Loss (AU) [W/K]
Ground Floor - Solid		No	Yes	No	2014 onwards	N/A	52.91	0.11	5.82
Non-Heat Loss Floor		N/A	No	No	2014 onwards	N/A	49.03	0.00	0.00
Total area [m^2]									101.94

Building Elements - Roofs

Type	Description	Include in compliance check	Insulation Thickness [mm]	Age Band	Area [m^2]	U-Value [W/m^2K]	Heat Loss (AU) [W/K]
Pitched Roof - Insulated on Ceiling	Pitched Roof	Yes		2014 onwards	49.03	0.11	5.39
Total area [m^2]							49.03

Building Elements - Walls

Type	Description	Wall is semi-exposed	Include in compliance check	Age Band	Area [m^2]	U-Value [W/m^2K]	Heat Loss (AU) [W/K]
300mm Cavity		No	Yes	2014 onwards	49.42	0.17	8.40
Total area [m^2]							49.42

Building Elements - Doors

Count	Type	Description	Area [m^2]	U-Value [W/m^2K]	Heat Loss (AU) [W/K]
1	Front Door		2.40	1.40	3.36
Total area [m^2]					2.40

Building Elements - Windows

Count	Glazing Type	Frame Type	Frame Factor	Solar Transm.	In Roof	Over shading	Orient.	Area [m^2]	U-value [W/m^2K]
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	East	3.10	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	East	0.66	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	East	2.45	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	West	4.84	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	West	1.35	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	West	1.26	1.22
1	Double-glazed, air filled	Wood/PVC	0.700	0.750	No	Very Little	West	2.52	1.22
Total area [m^2]									16.18

Heat loss details

Total glazed area [m^2]	16.18	**Glazing ratio**	0.08
Total glazed heat loss [W/K]	18.82	**Summer solar gain [W/m^2]**	574.69
Total effective collection area [m^2]	7.65	**Total element area [m^2]**	169.94
Total plane heat loss [W/K]	41.80	**Thermal bridging factor [W/m^2K]**	0.0800
Fabric heat loss [W/K]	55.39	**Total heat loss [W/K]**	103.08
Per m2	1.01		

Lighting and Internal Gains

Lighting Design Calculation Method	Bulb type only	**Average Efficacy [lm/W]**	85.00
Fixed lighting provision [klmh/y]	3466.82	**Top up lighting requirement [klmh/y]**	0.00
Energy required for fixed lighting [kWh/y]	72.75	**Energy required for top up lighting [kWh/y]**	0.00
Energy required for portable lighting [kWh/y]	145.17		
Basic energy consumption for lighting [kWh/y]	852.18	**Water heating (In watts [W])**	102.25
Annual energy used for lighting [kWh/y]	217.92	**Occupants (In watts [W])**	137.84
Internal gains from lighting during heating season [kWh/hs] (In watts [W])	166.71 (28.59)	**Mechanical ventilation (In watts [W])**	0.00
Lighting (In watts [W])	28.59	**Heat loss to the cold water network (In watts [W])**	-38.81
Appliance and cooking (In watts [W])	211.71	**Net internal gains (In watts [W])**	441.56

Lights

Name	Description	Type	Efficiency
Default LED/CFL		LED/CFL	85.00

Water heating details

Are there distribution losses?	Yes
Are there storage losses?	Yes
Is there a solar water heating system?	No
Standard number of occupants	2.76
Number of mixer showers	0
Number of electric showers	0
Number of baths	1
Daily hot water use [Litres/d]	120.68
Hot water energy reqs. at taps [kWh/y]	1608.53
Distribution losses [kWh/y]	283.86
Water storage volume [Litres]	170.00
Is manufacturers declared loss factor available?	Yes
Declared loss factor [kWh/d]	1.15
Manufacturer and Model name	ComfortZone EX35
Insulation type	N/A
Insulation thickness [mm]	N/A

Is supplementary electric water heating used in summer?	N/A
Is there a combi-boiler?	No
Total hot water demand [kWh/y]	1892.38
Temperature factor unadjusted	0.89
Temperature Factor Multiplier	0.89
Hot water storage loss factor [kWh/l d]	0.00
Volume factor	0.00
Combi-boiler electricity consumption [kWh/y]	0.00
Adjusted storage loss [kWh/y]	333.06
Adjusted primary circuit loss [kWh/y]	0.00
Heat gains from water heating system [W]	102.25
Output from supplementary heater [kWh/y]	0.00
Solar input to main system [kWh/y]	0.00
Solar input to supplementary system [kWh/y]	0.00

Combi-boiler Type	None
Combi-boiler loss [kWh/y]	0.00
Keep Hot facility	None
Storage Loss	333.06
Storage Type	Heat pump with integral hot water storage / Integrated thermal store and gas-fired CPSU

Output from main water heater [kWh/y]	2225.45
Annual Heat gains from water heating system [kWh/y]	895.67
WWHRS input to main system [kWh/y]	0.00
WWHRS input to supplementary system [kWh/y]	0.00

Primary Circuit loss type Boiler / heat pump and thermal store within a single casing (cylinder thermostat present)

Primary circuit loss [kWh/y]	0.00
Is hot water storage indoors or in group heating system	Yes

Heat Pump Type of DHW	Integral Hot Water Storage

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	15.47	**Heat use during heating season [kWh/y]**	1910.80
Required mean internal temperature [°C]	18.46	**Heat use for full year [kWh/y]**	1922.03
Thermal mass category of dwelling	Medium-low		

	Utilisation factor	Intermittent heating
Internal heat capacity of dwelling [per m^2]	0.14	0.09
Internal heat capacity [MJ/K]	14.27	9.17

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	5.8	17.23	1179	465	0.49	0.96	625	554	137
February	6.0	17.25	1160	323	0.64	0.92	480	680	301
March	6.8	17.33	1086	248	0.81	0.85	334	752	438
April	8.4	17.49	937	108	1.18	0.71	150	786	660
May	11.5	17.79	648	19	2.08	0.46	26	623	907
June	13.7	18.00	443	5	2.87	0.34	7	437	831
July	16.2	18.24	211	0	5.97	0.17	0	210	817
August	15.8	18.21	248	1	4.68	0.21	1	247	719
September	14.3	18.06	388	6	2.64	0.37	8	380	581
October	11.8	17.82	620	60	1.30	0.67	80	540	366
November	8.5	17.50	927	265	0.67	0.91	368	560	175
December	6.6	17.31	1104	423	0.51	0.95	569	535	120

Space Heating

Type	Space Heating Standard	Fuel	Design flow temp[°C]	Daily Operation [h]	SH Seasonal eff.	WH Seasonal eff.	Heats water	Source
Heat pumps	I.S. EN 14825	Electricity	55	24	260.44	251.86	Yes	Assessor

Heating System	Exhaust air-to-water heat pump		
Model	EX35		
Manufacturer	Comfortzone		
Back Up Space Heater Fuel	Electricity	**Back Up Space Heater Efficiency [%]**	100.00
Back Up Water Heater Fuel	Electricity	**Back Up Water Heater Efficiency [%]**	100.00

Space Heating - Space Heating Test Data

Space Heating Standard I.S. EN 14825 **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]	3.50	2.30	1.55	1.30	3.10
Coefficient of Performance [kW/kW]	3.20	4.55	5.60	5.70	3.10

Test Condition Medium (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]	3.60	2.50	1.65	1.50	3.20
Coefficient of Performance [kW/kW]	2.40	3.20	4.10	4.40	2.30

Space Heating - Water Heating Test Data

Water Heating Standard I.S. EN 16147

Source of Data	Water heating energy efficiency [%]
Co-efficient of Performance [kW/kW]	0.00
Water heating energy efficiency [%]	118.00
Reference Hot water Temperature [°C]	53.60
Hot water Rated Heat output P_{rated} [kW]	3.50
Declared load profile	L
Standing heat loss of test storage tank [kWh/day]	1.15
Volume of DHW accounted for in test [litre]	170
Heat Pump Type	Exhaust Air to Water

Water Heating - Water Heating Test Data

Water Heating Standard	I.S. EN 16147
Source of Data	Water heating energy efficiency [%]
Co-efficient of Performance [kW/kW]	0.00
Water heating energy efficiency [%]	118.00
Reference Hot water Temperature [°C]	53.60
Hot water Rated Heat output P_{rated} [kW]	3.50
Declared load profile	L
Standing heat loss of test storage tank [kWh/day]	1.15
Volume of DHW accounted for in test [litre]	170
Heat Pump Type	Exhaust Air to Water

Water Heating - Space Heating Test Data

Space Heating Standard I.S. EN 14825 **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]	3.50	2.30	1.55	1.30	3.10
Coefficient of Performance [kW/kW]	3.20	4.55	5.60	5.70	3.10

Test Condition Medium (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]	3.60	2.50	1.65	1.50	3.20
Coefficient of Performance [kW/kW]	2.40	3.20	4.10	4.40	2.30

Dist. System Losses and Gains

Temperature adjustment [°C]	0.0	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]	1910.80
Heating system responsiveness category	1	Is the heat distribution system inside the dwelling able to work at low or more efficient temperature levels?	No
Mean internal temperature during heating hours [°C]	18.46		
Mean internal temperature [°C]	17.46		

	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 [kWh/y]	58	Is there underfloor heating on the ground floor?	No
Average utilisation factor, October to May	0.80	U-Value of ground floor [W/m^{2}K]	0.00
Useful net gain [kWh/y]	47	Fraction of heating system output from ground floor	0.67
Net heat emission to heated space [kWh/y]	1864	Additional heat loss via envelope element [kWh/y]	0.00
Annual space heating requirement [kWh/y]	1864		

Energy Requirements: Individual Heating Systems

Manufacturer name	Comfortzone
Model name	EX35
Brand name	N/A
Model Qualifier	N/A
Indoor unit identifier	N/A
Outdoor unit identifier	N/A

Efficiency of main heating system [%]	260.44	**Fraction of heat from secondary system**	N/A
Efficiency adjustment factor	1.00	**Efficiency of secondary system [%]**	N/A
Adjusted efficiency of main heating system [%]	260.44	**Energy required for main heating system [kWh/y]**	715.66
Product index number	N/A	**Energy required for secondary heating system [kWh/y]**	0
Manufacturer's reference number	N/A	**Low temperature test condition (35°C)**	N/A
Appliance ID	N/A	**Intermediate temperature test condition (45°C)**	N/A
Rated air flow rate [m^3/h]	0	**Medium temperature test condition (55°C)**	N/A
		High temperature test condition (65°C)	N/A

Heat Pump Details - Space Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

Heat Pump Details - Water Heating

Capacity [kW]	3.50	**Compressor control**	Inverter/modulating
Fuel type	Electricity	**Low temperature heat pump**	No
Space heating standard	I.S. EN 14825	**Water heating standard**	I.S. EN 16147

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 [%]**	251.86
Efficiency of main water heating system [%]	118	**Water Heating Efficiency [%]**	118
Manufacturer name	Comfortzone	**Energy req. for main water heater [kWh/y]**	1325.41
Model name	EX35	**Energy req. for secondary water heater [kWh/y]**	0.00
Heat Pump Type	Exhaust Air to Water	**Back Up Water Heating Fuel**	Electricity
Water Heating Standard	I.S. EN 16147	**Back up Water Heating Efficiency [%]**	100.00

	Fuel Type	Primary energy conversion factor	CO_2eq Emissions Factor [kg/kWh]
Main space heating system	Electricity	1.50	0.169
Secondary space heating system	None	0.00	0.000
Main water heating system	Electricity	1.50	0.169
Supplementary water heating system	Electricity	0.00	0.000
Cooling System	None	0.00	0.000
Pumps, fans	Electricity	1.50	0.169
Energy for lighting	Electricity	1.50	0.169

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]	244.656
Effective air change rate for summer period [ac/h]	
Ventilation heat loss coefficient [W/K]	0.00
Fabric heat loss coefficient [W/K]	55.39
Heat loss coefficient under summer conditions [W/K]	55.39
Total Solar Gain for Summer Period [W]	574.69
Internal gains [W]	441.56
Total gains in summer [W]	1016.25
Temperature increment due to gains [°C]	18.35
Summer mean external temperature [°C]	15
Heat capacity parameter	0.14
Temperature increment related to thermal mass [°C]	1.02
Threshold internal temperature [°C]	34.37

Zero Emissions Building (ZEB)

Check of whether primary energy use is covered by carbon free sources

%of grid electricity generated by carbon free sources	80
PE associated with regulated energy uses [kWh/yr]	2,752.126
Of which electricity [kWh/yr]	2,752.126
Amount covered by on-site renewables and consumed on-site [kWh/yr]	0
Amount of electricity supplied by the grid [kWh/yr]	2,752.126
Amount of electricity supplied by the grid using fossil fuels [kWh/yr]	550.425
Difference between PE and ZEB threshold [kWh/yr]	1,529.354
Exported renewables energy [kWh/yr]	0
Amount covered by energy from carbon free grid sources [kWh/yr]	2,201.701
Amount covered by efficient district heating and cooling systems [kWh/yr]	0
Net primary energy use [kWh/yr]	550.425

ZEB Compliance Check

	Value	Threshold / Requirement	Compliance Status
Total Primary Energy Use [kWh/(m^2.y)]	30.00	<=42.00	Compliant
Primary energy use covered by carbon free sources?	Yes	Yes	Compliant
Operational GHG Emissions [kgCO_2eq/(m^2.y)]	3.37	<=5.00	Compliant
Fossil fuel used on site?	No	No	Compliant
Ability to accept external signals?	No	Yes	Non Compliant
Achieves NZEB?	Yes	Yes	Compliant
Overall ZEB Compliant?	-	-	Non Compliant

NZEB Compliance Check

	Value	Threshold / Requirement	Compliance Status
EPC	0.25	<=0.30	Compliant
CPC	0.15	<=0.35	Compliant
RER	0.29	>=0.20	Compliant
Overall NZEB Compliant?	-	-	Compliant

Global Warming Potential (GWP)

Value of GWP [kgCO_2eq/(m^2.y)] N/A

Renewable Energy Ratio (RER)

	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	1274.40	1274.40	
+ Saved energy	CHP	0.00		
+ Delivered energy	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	3057.92	
+ Delivered energy	Thermal	0.00	0.00	
TOTAL STEP A		1274.40	4332.32	0.29
- Electricity exported	PV/Wind	0.00	0.00	
Including exported electricity	PE from grid			
	PE from renewables	1274.40		
	Total PE (incl. export)		4332.32	0.29 - Pass
Including renewable portion of the grid	FF PE from grid			
	Carbon free PE (grid + renewables)	3109.15		
	Total PE (incl. export)		4332.32	0.72

Results

	Delivered energy [kWh/y]	Primary energy [kWh/y]	CO_2eq emissions [kgCO_2eq/(m^2.y)]
Main space heating system	716	1073	121
Secondary space heating system	0	0	0
Network distribution loss (group heating systems only)			
Main water heating system	884	1325	149
Supplementary water heating system	0	0	0
Cooling	0	0	0
Pumps and fans	221	332	37
Energy for lighting	218	327	37
CHP input (individual heating systems only)	0	0	0
CHP electrical output used on site	0	0	0
CHP electrical output exported to grid	0	0	0
Photovoltaic / Wind Turbine used on site	0	0	0
Photovoltaic / Wind Turbine exported to grid	0	0	0
Thermal Renewables - energy produced or saved	0	0	0
Thermal Renewables - energy consumed	0	0	0
Total	2039	3058	344
Per m^2 floor area	20.00	30.00	3.37
Energy Rating	A		