PROJECT:	**RESIDENTIAL DEVELOPMENT, CARMELITE MONASTERY SITE, DELGANY**
SUBJECT:	**ENERGY & SUSTAINABILITY STATEMENT**
REFERENCE:	**20-061**
DATE:	**7th OCTOBER 2020**

Project Title:	Residential Development, Carmelite Monastery Site, Delgany	**Project No:** 20061	
Document Title:	Energy & Sustainability Statement	**Revision:** Issue 2	

Revision	Date	Description	Energy & Sustainability Statement		
2	07/10/2020		**Prepared by**	**Checked by**	**Approved by**
		Name:	Ryan Young	Scott Marshall	Michael O'Doherty
		Title:	Sustainability Engineer	Sustainability Engineer	Managing Director

Contents:

1.0 EXECUTIVE SUMMARY 3
2.0 PROPOSED DEVELOPMENT 4
3.0 ASSESSMENT CRITERIA 5
3.1 LIMITATION OF PRIMARY ENERGY USE AND CO2 EMISSIONS 5
3.2 RENEWABLE ENERGY TECHNOLOGIES 5
3.3 BUILDING FABRIC 6
3.4 BUILDING SERVICES 7
4.0 ENERGY STRATEGY 8
4.1 FABRIC SPECIFICATION 8
4.2 THERMAL BRIDGING 9
4.4 THERMAL COMFORT 10
4.5 SPACE HEATING & DOMESTIC HOT WATER 10
4.5.1 APARTMENTS 10
4.5.2 HOUSES 10
4.6 VENTILATION 10
4.7 LIGHTING 10
5.0 CONCLUSION 11
APPENDIX A 12

1.0 EXECUTIVE SUMMARY

The purpose of this report is to outline the fabric and services specification strategy for the proposed residential development at the Carmelite Monastery Site, Delgany to demonstrate compliance with Part L 2019. The development consists of 232 units across a mix of houses, duplexes and apartments.

The proposed development will be designed to meet Approved Document Part L 2019 nearly Zero Energy Buildings Standard (NZEB) which became the regulatory standard from November 2019.

The NZEB standard requires an overall improved energy performance for the fabric, services and lighting specification. The standard requires a Carbon Performance Coefficient level of <0.35 and an Energy Performance Coefficient level of <0.30. The NZEB also introduces a mandatory requirement for renewable energy sources, providing 20% of the primary energy use.

This report will outline target U-Values for each fabric element, air permeability and proposals for the space heating, hot water and ventilation..

Please note the specification and efficiencies outlined within this report are based on calculations and design information available at the time of writing. This analysis will be developed further at the next stage.

Figure 1: Site Plan – BBA Architects

2.0 PROPOSED DEVELOPMENT

Delap & Waller have been commissioned to prepare an energy and sustainability strategy for the proposed Carmelite Monastery Site, Delgany residential development in County Wicklow.

The proposed development consists of 232 residential dwellings in the form of both houses, duplexes and apartments. The development will also consist of car parking, roads, footpaths, waste stores, cycle spaces, landscaping and site services. Refer to figure 2 for the proposed site location plan.

Figure 2: Figure 2: Site Location Plan BBA Architects

The proposed development is located adjacent to a number of public transport links within walking distance, such as the Dublin Bus Routes 184, 184X and 84. Additionally the Greystones Train station with a DART line to Dublin is less than 3km from the development.

3.0 ASSESSMENT CRITERIA

Technical Guidance Document Part L Conservation of Fuel and Energy – Dwellings 2019, has been issued by the Department of Housing, Planning and Local Government. This document became the regulatory standard for all new dwellings from 1st November 2019, to achieve Nearly Zero Energy Building standard (NZEB).

A Nearly Zero-Energy Building means a building that has a very high energy performance, as determined in accordance with Annex I of the EU Energy Performance of Buildings Directive Recast. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby. This section of the report outlines the specific requirements with Technical Guidance Document Part L, that apply to the dwellings at Delgany.

3.1 LIMITATION OF PRIMARY ENERGY USE AND CO2 EMISSIONS

To demonstrate compliance with the requirements in relation to primary energy consumption and carbon emissions, the SEAI's "DEAP" methodology is used. The calculation is based on the energy balance taking into account a range of factors that contribute to annual energy usage and associated CO_2 emissions for the provision of space heating, cooling, water heating, ventilation and lighting of a dwelling.

The calculated primary energy consumption of the proposed dwelling is divided by that of the reference dwelling, the result being the energy performance certificate (EPC) of the proposed dwelling. To demonstrate that an acceptable primary energy consumption rate has been achieved, the calculated EPC of the dwelling being assessed should be no greater than the Maximum Permitted Energy Performance Coefficient (MPEPC). The MPEPC is 0.30, this coefficient represents the numerical indicator for the energy performance of Nearly Zero Energy Dwellings.

The calculated CO_2 emission rate of the proposed dwelling is divided by that of the reference dwelling, the result being the carbon performance coefficient (CPC) of the proposed dwelling. To demonstrate than an acceptable CO_2 emission rate has been achieved, the calculated CPC of the dwelling assessed should be no greater than the Maximum Permitted Carbon Performance Coefficient (MPCPC). The MPCPC is 0.35. This coefficient represents the numerical indicator for the CO_2 emissions rate for Nearly Zero Energy Dwellings.

3.2 RENEWABLE ENERGY TECHNOLOGIES

The NZEB also introduces a mandatory requirement for renewable energy sources, providing 20% of the primary energy use, known as the renewable energy ratio or (RER). Renewable Energy Ratio is the ratio of the primary energy from renewable energy technologies to total primary energy, as defined and calculated in DEAP. Renewable energy technologies means technology, products or equipment that supply energy derived from renewable energy sources, e.g. solar thermal systems, solar photovoltaic systems,

biomass systems, systems using biofuels, heat pumps, aerogenerators and other small scale renewable systems.

3.3 BUILDING FABRIC

In order to limit heat loss through the building fabric reasonable provision should be made to limit transmission heat loss by plane elements of the building fabric. Acceptable levels of thermal insulation for each of the plane elements of the building to achieve this are specified in terms of average area weighted U-value in Table 1 for each fabric element type. These values can be relaxed for individual elements or parts of elements where considered necessary for design or construction reasons. Maximum acceptable values for such elements or parts of elements are specified in Column 3 of Table 1.

	Area weighted average elemental U-Value	Individual element or section of element maximum U-Value
Ground Floor / Exposed Floor	0.18 W/m^{2}K	0.60 W/m^{2}K
External Walls	0.18 W/m^{2}K	0.60 W/m^{2}K
External Roof - Pitched	0.16 W/m^{2}K	0.30 W/m^{2}K
External Roof - Flat	0.20 W/m^{2}K	0.30 W/m^{2}K
Glazed Areas	1.40 W/m^{2}K	3.00 W/m^{2}K
Doors	1.40 W/m^{2}K	3.00 W/m^{2}K

Table 1: TGD Part L Maximum elemental U-value

To avoid excessive heat losses and local condensation problems, reasonable care should be taken to ensure continuity of insulation and to limit local thermal bridging at key junctions, e.g. around windows, doors and other wall openings and at junctions between elements. Any thermal bridge should not pose a risk of surface or interstitial condensation.

To avoid excess heat losses reasonable care should be taken to limit the air permeability of the envelope of each dwelling. High levels of infiltration can contribute to uncontrolled ventilation. Infiltration is unlikely to provide adequate ventilation as required in the correct location. It is critical, as air permeability is reduced that adequate ventilation is provided as per Technical Guidance Document F.

Reasonable provision should be taken to limit heat gains within the habitable rooms of the dwelling. This can be demonstrated through the DEAP calculation. Where an overheating risk is indicated in DEAP, further guidance is provided in CIBSE TM59 to ensure overheating is avoided for normally occupied naturally ventilated spaces.

3.4 BUILDING SERVICES

This section of the TGD Part L 2019 requires that space heating, water heating and ventilation systems in dwellings be energy efficient, with efficient heat sources and effective controls. For fully pumped hot water-based central heating systems utilising oil or gas, the boiler seasonal efficiency should be not less than 90%. Where a biomass independent boiler is used, the boiler seasonal efficiency should not be less than 77%.

Space and water heating systems should be effectively controlled so as to ensure the efficient use of energy, by limiting the provision of heat energy use to that required to that required to satisfy user requirements. The aim should be to provide:

- Automatic control of space heating on the basis of room temperature;
- Automatic control of heat input to stored hot water on the basis of stored water temperature;
- Separate and independent automatic time control of space heating and hot water;
- Shut down of boiler or other heat source when there is no demand for either space or water heating from that source.

A DEAP analysis has been completed for the proposed Carmelite Monastery Site, Delgany development to demonstrate it will achieve compliance with Part L 2019 Building Regulations.

As of 2006 all domestic buildings that were newly built and existing buildings that are for sale or rent require a BER (Building Energy Rating) certificate. The BER is based on the primary energy used for one year and is classified on a scale of A1 to G with A1 being the most energy efficient. It also gives the anticipated carbon emissions for a year's occupation based on the type of fuel that the systems use. In order to identify Primary energy consumption of the building, the BER assesses energy consumed based on; building type, orientation, thermal envelope, air permeability, heating system, ventilation system and efficiency, domestic hot water generation, lighting systems and renewable energy.

All dwellings within the proposed development achieve a BER rating of A2/A3 throughout. The Part L calculations for the dwellings at Delgany is outlined in Appendix A.

4.0 ENERGY STRATEGY

The design of the proposed Carmelite Monastery Site, Delgany development, will incorporate the principles of the energy hierarchy. The energy hierarchy consists of three key principles:

1. **Be Lean**
2. **Be Clean**
3. **Be Green**

The Be Lean stage encourages a passive strategy whereby space heating, cooling and lighting energy demand is minimised through a fabric first approach. A carefully designed fabric first approach will ensure a robust, efficient and sustainable design throughout the lifetime of the building, which is affordable to the developer. Furthermore, it reduces the reliance on technologies, which overtime will require maintenance or replacing.

The Be Clean stage encourages that energy supplied to the development, such as heating or domestic hot water is delivered efficiently through communal or highly efficient systems.

The Be Green stage ties in with the Renewable Energy Ratio requirement of Part L 2019, whereby any remaining requirements are addressed through on-site renewable energy.

4.1 FABRIC SPECIFICATION

The table below outlines the target u-values for the Carmelite Monastery Site, Delgany required to achieve compliance with Part L 2019 (NZEB). The values are compared with the Part L 2019 limiting values for new build developments.

	Proposed Fabric Design Houses	Proposed Fabric Design Apartments
Ground / Exposed Floor	0.12 W/m^{2}K	0.18 W/m^{2}K
External Walls	0.18 W/m^{2}K	0.16 W/m^{2}K
External Roof	0.11 W/m^{2}K	0.20 W/m^{2}K
Glazed Areas	1.20 W/m^{2}K	1.20 W/m^{2}K
	G Value = 0.50	G Value = 0.50
Doors	1.20 W/m^{2}K	1.20 W/m^{2}K
Air Permeability	3.0 m^3/h.m^3 at 50 Pa	3.0 m^3/h.m^3 at 50 Pa
Thermal Bridging	Y-Factor 0.05 – 0.07	Y-Factor 0.05 – 0.07

Table 2: Proposed fabric specification

To ensure energy use is minimised from the outset, where feasible the proposed development has been designed with regard to the principles of passive design including; orientation, location of openings, local shading to maximise the potential for solar gain and limit overheating.

The fabric specification has been optimised in order to strike a balance between maximising natural daylight benefits to reduce the use of artificial lighting, the provision of solar gains to reduce space heating demands during the winter months, whilst limiting summertime solar gains to reduce space cooling demands. This can be exhibited in the design window U-Value of 1.20 W/m^{2}K and the g-value of 0.50.

4.2 THERMAL BRIDGING

Heat loss via thermal bridging is a critical aspect of the energy performance, for the purposes of the Provisional BER analysis an indicative Y-Factor of 0.05 – 0.07 W/mK has been used. However, at detail design stage individual Y-Factor calculations will be carried out for each dwelling. Where architectural details are bespoke, a specific thermal modelling calculation will be carried out to ensure the Psi Value (φ) is within acceptable parameters. Refer to figure 3 below for examples of bespoke calculations for an intermediate floor and parapet roof detail.

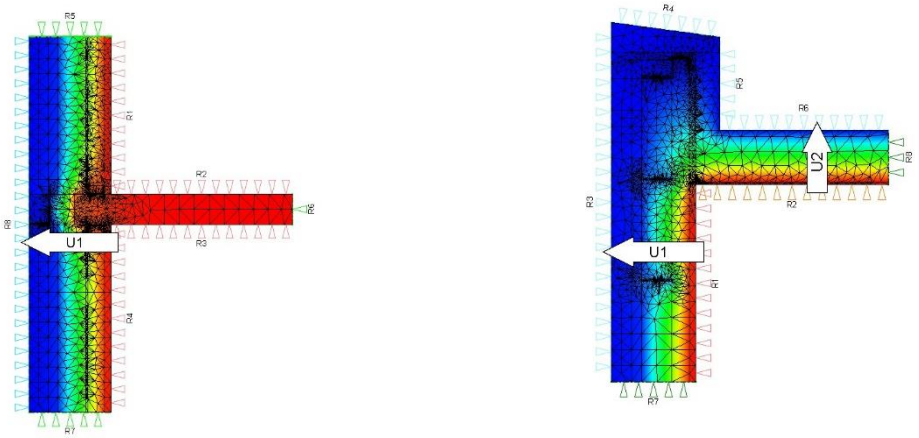

Figure 3: Example Thermal Bridging Details

4.3 AIR PERMEABILITY

Convective losses through drafts and junctions are another main source of heat loss within a dwelling. This is referred to Air Permeability or Infiltration. Part L 2019 outlines that an air permeability level of 5.00 m^3 (m^2.hr) @ 50 Pa represents a reasonable upper limit for air permeability. Therefore the dwellings at the proposed Delgany development are designed with an air permeability of 3.00 m^3 (m^2.hr) @ 50 Pa.

4.4 THERMAL COMFORT

Incremental changes to construction regulations and methodologies have introduced; greater thermal standards, high proportions of glazing, lightweight construction and inadequate ventilation strategies. This has led to an increasing number of occupants experiencing overheating. The dwellings at Delgany have been designed to achieve thermal comfort in accordance with CIBSE Technical Memorandum 59 (2017). This has been achieved through; reduced glazing solar transmission to control excessive solar gains, balconies for shading, openable windows for purge ventilation and mechanical ventilation to provide adequate air changes.

4.5 SPACE HEATING & DOMESTIC HOT WATER

A feasibility study was carried out to determine the most appropriate energy strategy for the development, the study took into consideration; energy demand, spatial requirements, end user requirements, maintenance, operational energy costs and planning implications.

4.5.1 APARTMENTS

It is proposed that a centralised plant with a hybrid high efficient air to water heat pump, gas fired boiler and combined heat and power plant, will be used to efficiently provide the space heating and domestic hot water requirements for the apartments . The air to water heat pump will have a COP of 3.50 and will address the renewable energy ratio requirement of Part L. The CHP system will generate electricity which will be used to power to air to water heat pump. This solution addresses both of the Be Clean and Be Green stages of the Energy Hierarchy.

4.5.2 HOUSES

It is proposed that an air to water heat pump will provide the space heating and domestic hot water requirements for the houses and duplexes. The heat pump will have a seasonal heating efficiency of 130% and a water heating efficiency of 127%.

4.6 VENTILATION

In order to ensure a consist supply of fresh air, maintain thermal comfort and minimise the space heating demand, mechanical ventilation with heat recovery (MVHR) has been proposed within the apartments. Demand control ventilation (DCV) is proposed within the houses and duplexes.

4.7 LIGHTING

The design intent is to achieve good levels of natural daylighting within each of the habitable spaces of the apartments, in order to minimise artificial lighting requirements. Energy efficient lighting is proposed in all areas throughout each dwelling.

5.0 CONCLUSION

The purpose of this report is to outline the fabric and services specification strategy for the proposed development at the Carmelite Monastery Site, Delgany, to demonstrate compliance with Part L 2019.

The proposed development has been designed to meet Approved Document Part L 2019 nearly Zero Energy Buildings Standard (NZEB). The NZEB standard requires an overall improved energy performance for the fabric, services and lighting specification. The standard requires a Carbon Performance Coefficient level of <0.35 and an Energy Performance Coefficient level of <0.30. The NZEB also introduces a mandatory requirement for renewable energy sources, providing 20% of the primary energy use.

The Be Lean, Be Clean, Be Green principles of the energy hierarchy have been incorporated throughout the design whereby space heating, cooling and lighting energy demand is minimized through a passive fabric first approach. This is exemplified through improved u-values, good thermal detailing, air tightness, high levels of natural daylight and a passive thermal comfort strategy. Space Heating and Domestic Hot Water for the apartments is efficiently provided through a Centralised Plant with a hybrid high efficient Air to Water Heat Pump, Gas fired boiler and CHP Plant. For the houses, the space heating and domestic hot water is efficiently provided through an air to water heat pump.

Using the fabric and energy strategy outlined within this report, the proposed residential development at Delgany, achieves compliance with Part L 2019 Nearly Zero Energy Building Standard. PBER calculations were carried out for the dwellings to demonstrate compliance, the results are summarised on the next page, with the Part L reports outlined in Appendix A.

APPENDIX A

Project Number	20-061
Project Name	Delgany
Date	17/09/2020
Title	PBER Summary Table

DELAP & WALLER

Type	Type	Total Floor Area	Ground Floor U-Value (W/m^2K)	Exposed Floor U-Value (W/m^2K)	External Wall 01 U-Value (W/m^2K)	External Wall 02 U-Value (W/m^2K)	Plane Ceiling U-Value (W/m^2K)	Flat Roof U-Value (W/m2K)	Flat Roof to Terrace U-Value (W/m2K)	Front Door U-Value (W/m^2K)	Windows U-Value (W/m^2K)	Thermal Bridging Y Value	EPC	CPC	RER	Energy Rating
G2A	Duplex	83.5	0.12		0.18				0.16	1.20	1.20	ACD's	0.272	0.261	0.442	A2
G2C	Duplex	128.32		0.15	0.18		0.11			1.20	1.20	ACD's	0.282	0.270	0.436	A2
I	House	140.59	0.12		0.18		0.11			1.20	1.20	ACD's	0.258	0.245	0.472	A2
B - 2 bed	GF - Apartment	73.8		0.15	0.16	0.18				1.20	1.20	ACD's	0.252	0.234	0.368	A2
A - 1 bed	Mid - Apartment	50.13			0.16	0.18				1.20	1.20	ACD's	0.290	0.275	0.376	A3
A - 2 bed	Top - Apartment	80.56			0.16	0.18		0.12		1.20	1.20	ACD's	0.287	0.269	0.364	A2

System	Description	Value	
Lighting	100% LED Lighting Throughout	80 Lm/W	
Ventilation [Apartments]	Mechanical Heat Recovery Ventialtion System such as Vent Axia Sentinel Kinetic Plus B	SFP	0.52-0.55 W/l/s
		Efficiency	92%
Ventilation [Houses & Duplexes]	Demand Control Ventialtion System such as Aereco V4A Premium	SFP	0.27-0.29 W/l/s
Space Heating & Domestic Hot Water [Apartments]	Centralised Plant Heating System	-	
Space Heating & Domestic Hot Water [Houses & Duplexes]	Air to Water Heat Pump System such as Panasonic WH-MDC07H3E5 Note: Any deviations from the heat pump specification must be verified by our BER assessor	η s	130%
		η wh	127%
Space Heating Controls	Time and Temperature Zone Control	-	
Water Heating controls [Apartments]	Cylinder Heated by Centralised Plant System having separate time control of DHW	-	
Water Heating controls [Houses & Duplexes]	Insulated Primary Pipework, Cylinder Thermostat & Individual Time Control	-	
Showers & baths [Apartments]	Showers & Baths to Have a Maximum Flow Rate of 8 Litres / minute	8 l/min	
Showers & baths Houses & Duplexes]	Showers & Baths to Have a Maximum Flow Rate of 7 Litres / minute	7 l/min	

Abbreviations:
DHW = Domestic Hot Water
ASHP = Air Source Heat Pump
EAHP = Exhaust Air Heat Pump
DCV = Demand Control Ventilation
MVHR = Mechanical Ventilation with Heat Recovery
PV = Photovoltaics

Part L Specification

Property Details

Dwelling Type	Ground-floor apartment	**Type of BER rating**	New Dwelling - Provisional
Address line 1	20061	**Year of Construction**	2020
Address line 2	Apt G2A - GF	**Date of Assessment**	16/09/2020
Address line 3	Delgany	**Date of Plans**	
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2019 TGD L
BER Number		**MPRN No.**	0
Purpose of Rating	Sale	**Is MPRN shared with another dwelling?**	N/A
Assessor Name			
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m^2]	Height [m]	Volume [m^3]
Ground Floor	83.50	2.70	225.45
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	83.50		225.45

Living Area [m^2]	20.34	**Living area percentage [%]**	24.36
No of Storeys	1		

Ventilation Details

	Number		
Chimneys	0	**Has permeability test been carried out?**	Yes
Open Flues	0	**Structure type**	N/A
Fans & Vents	1	**Is there a suspended wooden ground floor?**	No
Number of flueless combustion room heaters	0	**Percentage windows/doors draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	No	**Number of sides sheltered**	1
Ventilation method	Whole-house extract ventilation	**Mechanical Ventilation Manufacturer**	N/A
Specific fan power [W/(L/s)]	0.290	**Mechanical Ventilation Model Name**	N/A
Heat exchanger efficiency [%]	N/A	**How many wetrooms (incl. kitchen)?**	N/A

Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m²K]	Area [m²]
Ground Floor - Solid		No	0.12	83.5

Building Elements - Roof Details

Type	Description	U-Value [W/m²K]	Area [m²]
Flat Roof	To Terrace	0.16	27.4

Building Elements - Wall Details

Type	Description	U-Value [W/m²K]	Area [m²]
Other		0.18	56.45

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m²K]	Area [m²]
	1	1.2	2.300

Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	2.380
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	8.580
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	1.360

Other Details

Thermal bridging factor [W/m²k]	0.0600	**Thermal mass category of dwelling**	Medium-high

Heating System - Solar Water Heating

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

Heating System - Hot Water System

Distribution Losses	270.23	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	200
Hot water storage manufacturer and model name	Panasonic aquarea	**Declared loss factor [kWh/d]**	1.03
Temperature factor unadjusted	0.6	**Temperature Factor Multiplier**	0.9
Primary Circuit loss type	Boiler with insulated primary pipework and with cylinder thermostat		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	None
Insulation thickness [mm]	0		

Heating System - Dist. system losses and gains

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

Heating System - Energy Requirements (Individual)

Main space heating system efficiency [%]	539.99	**Space heating efficiency adjustment factor**	1.0000	**Main space heating fuel**	Electricity
Main water heating system efficiency [%]	219.72	**Water heating efficiency adjustment factor**	1.0000	**Main water heating fuel**	Electricity
Secondary heating system efficiency [%]	N/A	**Fraction of heating from secondary heating system**	N/A	**Secondary space heating system fuel**	None
Fraction of main space and water heat from CHP	N/A	**Electrical efficiency of CHP**	N/A	**Heat efficiency of CHP**	N/A
CHP Fuel type	N/A				

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

BER Number		**Building Regulations**	**2019 TGD L**
BER Result	A2	**Energy Value kWh/m²/yr**	**46.58**
CO_2 emissions [kg/m²/yr]	9.16		
EPC	0.272	**EPC Pass/Fail**	**Pass**
CPC	0.261	**CPC Pass/Fail**	**Pass**

Part L Conformance - Fabric

Conformity with Maximum avg U-value requirements	U-value [W/m²K]	Pass/Fail	Conformity with Maximum U-value requirements	U-Value [W/m²K]	Pass/Fail
Pitched roof insulated on ceiling	0.00	Pass	**Roofs**	0.16	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.18	Pass
Flat Roof	0.16	Pass	**Floors**	0.12	Pass
Floors with no underfloor heat	0.12	Pass	**External doors / windows / rooflights**	1.20	Pass
Floors with underfloor heat	0.00	Pass			
Walls	0.18	Pass			
Percentage of opening areas [%]	17.51				
Average U value of openings	1.20	Pass			
Permeability test carried out and meets guidelines in TGD L				0.15 | Pass	

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

	Source	Renewables Primary Energy	Total Primary Energy	RER
+ Delivered energy	PV/Wind	0.00	0.00	
+ Delivered energy	Other	0.00	0.00	
+ Delivered energy	Solar	0.00	0.00	
+ Delivered energy	Biomass	0.00	0.00	
+ Delivered energy	Biodiesel	0.00	0.00	
+ Delivered energy	Bioethanol	0.00	0.00	
+ Environmental energy	HP	3084.00	3084.00	
+ Saved energy	CHP	0.00	0.00	
+ District heating	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	3889.35	
+ Delivered energy	Thermal	0.00	0.00	
SUBTOTAL		3084.00	6973.35	0.44 - Pass
Energy not used in Regulated Loads	PV/Wind/CHP	0.00	0.00	
TOTAL		3084.00	6973.35	0.44

Part L Specification

Property Details

Dwelling Type	Top-floor apartment	**Type of BER rating**	New Dwelling - Provisional
Address line 1	20061	**Year of Construction**	2020
Address line 2	Apt G2C - 1F/2F	**Date of Assessment**	16/09/2020
Address line 3	Delgany	**Date of Plans**	
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2019 TGD L
BER Number		**MPRN No.**	0
Purpose of Rating	Sale	**Is MPRN shared with another dwelling?**	N/A
Assessor Name			
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m²]	Height [m]	Volume [m³]
Ground Floor	63.16	2.60	164.22
First Floor	65.16	2.85	185.71
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	128.32		349.92

Living Area [m²]	42.86	**Living area percentage [%]**	33.40
No of Storeys	2		

Ventilation Details

	Number		
Chimneys	0	**Has permeability test been carried out?**	Yes
Open Flues	0	**Structure type**	N/A
Fans & Vents	1	**Is there a suspended wooden ground floor?**	No
Number of flueless combustion room heaters	0	**Percentage windows/doors draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	No	**Number of sides sheltered**	1
Ventilation method	Whole-house extract ventilation	**Mechanical Ventilation Manufacturer**	N/A
Specific fan power [W/(L/s)]	0.270	**Mechanical Ventilation Model Name**	N/A
Heat exchanger efficiency [%]	N/A	**How many wetrooms (incl. kitchen)?**	N/A

Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m²K]	Area [m²]
Non-Heat Loss Floor		N/A	0	63.16
Non-Heat Loss Floor		N/A	0	62.76
Exposed / Semi Exposed		No	0.15	2.4

Building Elements - Roof Details

Type	Description	U-Value [W/m²K]	Area [m²]
Pitched Roof - Insulated on Ceiling		0.11	65.6

Building Elements - Wall Details

Type	Description	U-Value [W/m²K]	Area [m²]
Other		0.18	103.6

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m²K]	Area [m²]
	1	1.2	2.300

Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	7.260
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	10.470
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	4.070

Other Details

Thermal bridging factor [W/m²k]	0.0600	**Thermal mass category of dwelling**	Medium-high

Heating System - Solar Water Heating

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

Heating System - Hot Water System

Distribution Losses	295.05	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	200
Hot water storage manufacturer and model name	Panasonic aquarea	**Declared loss factor [kWh/d]**	1.03
Temperature factor unadjusted	0.6	**Temperature Factor Multiplier**	0.9
Primary Circuit loss type	Boiler with insulated primary pipework and with cylinder thermostat		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	None
Insulation thickness [mm]	0		

Heating System - Dist. system losses and gains

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

Heating System - Energy Requirements (Individual)

Main space heating system efficiency [%]	411.46	**Space heating efficiency adjustment factor**	1.0000	**Main space heating fuel**	Electricity
Main water heating system efficiency [%]	219.72	**Water heating efficiency adjustment factor**	1.0000	**Main water heating fuel**	Electricity
Secondary heating system efficiency [%]	N/A	**Fraction of heating from secondary heating system**	N/A	**Secondary space heating system fuel**	None
Fraction of main space and water heat from CHP	N/A	**Electrical efficiency of CHP**	N/A	**Heat efficiency of CHP**	N/A
CHP Fuel type	N/A				

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

BER Number		**Building Regulations**	**2019 TGD L**
BER Result	A2	**Energy Value kWh/m²/yr**	**39.13**
CO_2 emissions [kg/m²/yr]	7.69		
EPC	0.282	**EPC Pass/Fail**	**Pass**
CPC	0.270	**CPC Pass/Fail**	**Pass**

Part L Conformance - Fabric

Conformity with Maximum avg U-value requirements	U-value [W/m²K]	Pass/Fail	Conformity with Maximum U-value requirements	U-Value [W/m²K]	Pass/Fail
Pitched roof insulated on ceiling	0.11	Pass	**Roofs**	0.11	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.18	Pass
Flat Roof	0	Pass	**Floors**	0.15	Pass
Floors with no underfloor heat	0.15	Pass	**External doors / windows / rooflights**	1.20	Pass
Floors with underfloor heat	0.00	Pass			
Walls	0.18	Pass			
Percentage of opening areas [%]	18.78				
Average U value of openings	1.20	Pass			

Permeability test carried out and meets guidelines in TGD L 0.15 | Pass

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

	Source	Renewables Primary Energy	Total Primary Energy	RER
+ Delivered energy	PV/Wind	0.00	0.00	
+ Delivered energy	Other	0.00	0.00	
+ Delivered energy	Solar	0.00	0.00	
+ Delivered energy	Biomass	0.00	0.00	
+ Delivered energy	Biodiesel	0.00	0.00	
+ Delivered energy	Bioethanol	0.00	0.00	
+ Environmental energy	HP	3886.83	3886.83	
+ Saved energy	CHP	0.00	0.00	
+ District heating	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	5021.58	
+ Delivered energy	Thermal	0.00	0.00	
SUBTOTAL		3886.83	8908.41	0.44 - Pass
Energy not used in Regulated Loads	PV/Wind/CHP	0.00	0.00	
TOTAL		3886.83	8908.41	0.44

Part L Specification

Property Details

Dwelling Type	Semi-detached house	**Type of BER rating**	New Dwelling - Provisional
Address line 1	20061	**Year of Construction**	2020
Address line 2	HT I - 4 Bed	**Date of Assessment**	16/09/2020
Address line 3	Delgany	**Date of Plans**	
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2019 TGD L
BER Number		**MPRN No.**	0
Purpose of Rating	Sale	**Is MPRN shared with another dwelling?**	N/A
Assessor Name			
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m²]	Height [m]	Volume [m³]
Ground Floor	72.45	2.70	195.62
First Floor	68.14	2.80	190.79
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	140.59		386.41

Living Area [m²]	20.34	**Living area percentage [%]**	14.47
No of Storeys	2		

Ventilation Details

	Number		
Chimneys	0	**Has permeability test been carried out?**	Yes
Open Flues	0	**Structure type**	N/A
Fans & Vents	1	**Is there a suspended wooden ground floor?**	No
Number of flueless combustion room heaters	0	**Percentage windows/doors draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	No	**Number of sides sheltered**	1
Ventilation method	Whole-house extract ventilation	**Mechanical Ventilation Manufacturer**	N/A
Specific fan power [W/(L/s)]	0.270	**Mechanical Ventilation Model Name**	N/A
Heat exchanger efficiency [%]	N/A	**How many wetrooms (incl. kitchen)?**	N/A

Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m²K]	Area [m²]
Ground Floor - Solid		No	0.12	72.45
Non-Heat Loss Floor		N/A	0	68.14

Building Elements - Roof Details

Type	Description	U-Value [W/m²K]	Area [m²]
Pitched Roof - Insulated on Ceiling	gf	0.13	4.31
Pitched Roof - Insulated on Ceiling		0.11	68.14

Building Elements - Wall Details

Type	Description	U-Value [W/m²K]	Area [m²]
Other		0.18	110.2

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m²K]	Area [m²]
	1	1.2	2.300

Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	0.740
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	8.600
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	3.890
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	10.070

Other Details

Thermal bridging factor [W/m²k]	0.0600	**Thermal mass category of dwelling**	Medium-high

Heating System - Solar Water Heating

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

Heating System - Hot Water System

Distribution Losses	296.94	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	200
Hot water storage manufacturer and model name	Panasonic aquarea	**Declared loss factor [kWh/d]**	1.03
Temperature factor unadjusted	0.6	**Temperature Factor Multiplier**	0.9
Primary Circuit loss type	Boiler with insulated primary pipework and with cylinder thermostat		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	None
Insulation thickness [mm]	0		

Heating System - Dist. system losses and gains

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

Heating System - Energy Requirements (Individual)

Main space heating system efficiency [%]	505.55	**Space heating efficiency adjustment factor**	1.0000	**Main space heating fuel**	Electricity
Main water heating system efficiency [%]	219.72	**Water heating efficiency adjustment factor**	1.0000	**Main water heating fuel**	Electricity
Secondary heating system efficiency [%]	N/A	**Fraction of heating from secondary heating system**	N/A	**Secondary space heating system fuel**	None
Fraction of main space and water heat from CHP	N/A	**Electrical efficiency of CHP**	N/A	**Heat efficiency of CHP**	N/A
CHP Fuel type	N/A				

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

BER Number		**Building Regulations**	**2019 TGD L**
BER Result	A2	**Energy Value kWh/m²/yr**	**36.21**
CO_2 emissions [kg/m²/yr]	7.12		
EPC	0.252	**EPC Pass/Fail**	**Pass**
CPC	0.240	**CPC Pass/Fail**	**Pass**

Part L Conformance - Fabric

Conformity with Maximum avg U-value requirements	U-value [W/m²K]	Pass/Fail	Conformity with Maximum U-value requirements	U-Value [W/m²K]	Pass/Fail
Pitched roof insulated on ceiling	0.11	Pass	**Roofs**	0.13	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.18	Pass
Flat Roof	0	Pass	**Floors**	0.12	Pass
Floors with no underfloor heat	**0.12**	Pass	**External doors / windows / rooflights**	1.20	Pass
Floors with underfloor heat	0.00	Pass			
Walls	0.18	Pass			
Percentage of opening areas [%]	18.21				
Average U value of openings	1.20	Pass			
Permeability test carried out and meets guidelines in TGD L				0.15 | Pass	

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

	Source	Renewables Primary Energy	Total Primary Energy	RER
+ Delivered energy	PV/Wind	0.00	0.00	
+ Delivered energy	Other	0.00	0.00	
+ Delivered energy	Solar	0.00	0.00	
+ Delivered energy	Biomass	0.00	0.00	
+ Delivered energy	Biodiesel	0.00	0.00	
+ Delivered energy	Bioethanol	0.00	0.00	
+ Environmental energy	HP	4659.66	4659.66	
+ Saved energy	CHP	0.00	0.00	
+ District heating	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	5090.37	
+ Delivered energy	Thermal	0.00	0.00	
SUBTOTAL		4659.66	9750.04	0.48 - Pass
Energy not used in Regulated Loads	PV/Wind/CHP	0.00	0.00	
TOTAL		4659.66	9750.04	0.48

Part L Specification

Property Details

Dwelling Type	Ground-floor apartment	**Type of BER rating**	New Dwelling - Provisional
Address line 1	20061	**Year of Construction**	2020
Address line 2	Block H1 - GF - HT B	**Date of Assessment**	16/09/2020
Address line 3	Delgany	**Date of Plans**	
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2019 TGD L
BER Number		**MPRN No.**	0
Purpose of Rating	Sale	**Is MPRN shared with another dwelling?**	N/A
Assessor Name			
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m^2]	Height [m]	Volume [m^3]
Ground Floor	73.80	2.70	199.26
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	73.80		199.26

Living Area [m^2]	30.11	**Living area percentage [%]**	40.80
No of Storeys	1		

Ventilation Details

	Number		
Chimneys	0	**Has permeability test been carried out?**	Yes
Open Flues	0	**Structure type**	N/A
Fans & Vents	1	**Is there a suspended wooden ground floor?**	No
Number of flueless combustion room heaters	0	**Percentage windows/doors draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	Yes	**Number of sides sheltered**	2
Ventilation method	Balanced whole-house mechanical ventilation with heat recovery	**Mechanical Ventilation Manufacturer**	Vent Axia
Specific fan power [W/(L/s)]	0.550	**Mechanical Ventilation Model Name**	Sentinel Kinetic Plus B
Heat exchanger efficiency [%]	92.00	**How many wetrooms (incl. kitchen)?**	K+2

Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m²K]	Area [m²]
Exposed / Semi Exposed		No	0.15	73.8

Building Elements - Roof Details

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

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

Building Elements - Wall Details

Other	Exposed Wall 01	0.16	46.66
Other	Exposed Wall 02	0.18	35.75

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m²K]	Area [m²]
	1	1.2	2.100

Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	12.070
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	2.880
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	3.000
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	2.400

Other Details

Thermal bridging factor [W/m²k]	0.0500	**Thermal mass category of dwelling**	Medium-high

Heating System - Solar Water Heating

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

Heating System - Hot Water System

Distribution Losses	273.62	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	2
Hot water storage manufacturer and model name		**Declared loss factor [kWh/d]**	N/A
Temperature factor unadjusted	1	**Temperature Factor Multiplier**	1
Primary Circuit loss type	Community heating		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	Factory Insulated
Insulation thickness [mm]	80		

Heating System - Dist. system losses and gains

Temperature adjustment [ºC]	0.000	**Control Category**		**Responsiveness category**	
Central heating pumps	1	**Oil Boiler Pump**	0	**Oil boiler pump inside dwelling**	No
Gas boiler flue fan	0	**Warm air heating or fan coil radiators present**	No		

Heating System - Energy Requirements (Group)

Charging based on heat consumed?	Yes	**Distribution loss factor**	1.05	**Fraction of heat from waste heat/CHP**	0.28
% of heat from secondary heating		**Efficiency of secondary heating [%]**		**Secondary heating fuel type**	N/A
Heating System 1 percentage of heat [%]	10	**Heating System 1 efficency [%]**	91	**Heating System 1 fuel type**	Mains Gas
Heating System 2 percentage of heat [%]	36	**Heating System 2 efficency [%]**	450	**Heating System 2 fuel type**	Electricity
Heating System 3 percentage of heat [%]	54	**Heating System 3 efficency [%]**	221	**Heating System 3 fuel type**	Electricity
Solar space heating percentage of heat [%]					
CHP electrical efficiency	0.27	**CHP thermal efficiency**	0.68	**CHP Fuel type**	Mains Gas

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

BER Number		**Building Regulations**	**2019 TGD L**
BER Result	A2	**Energy Value kWh/m²/yr**	**48.71**
CO_2 emissions [kg/m²/yr]	9.26		
EPC	0.252	**EPC Pass/Fail**	**Pass**
CPC	0.234	**CPC Pass/Fail**	**Pass**

Part L Conformance - Fabric

Conformity with Maximum avg U-value requirements	**U-value [W/m²K]**	**Pass/Fail**	**Conformity with Maximum U-value requirements**	**U-Value [W/m²K]**	**Pass/Fail**
Pitched roof insulated on ceiling	0.00	Pass	**Roofs**	0	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.18	Pass
Flat Roof	0	Pass	**Floors**	0.15	Pass
Floors with no underfloor heat	0.15	Pass	**External doors / windows / rooflights**	1.20	Pass
Floors with underfloor heat	0.00	Pass			
Walls	0.17	Pass			
Percentage of opening areas [%]	34.32				
Average U value of openings	1.20	Pass			
Permeability test carried out and meets guidelines in TGD L				0.15 | Pass	

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

	Source	Renewables Primary Energy	Total Primary Energy	RER
+ Delivered energy	PV/Wind	0.00	0.00	
+ Delivered energy	Other	0.00	0.00	
+ Delivered energy	Solar	0.00	0.00	
+ Delivered energy	Biomass	0.00	0.00	
+ Delivered energy	Biodiesel	0.00	0.00	
+ Delivered energy	Bioethanol	0.00	0.00	
+ Environmental energy	HP	696.64	696.64	
+ Saved energy	CHP	416.49	416.49	
+ District heating	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	347.75	
+ Delivered energy	Thermal	0.00	1565.16	
SUBTOTAL		1113.13	3026.03	0.37 - Pass
Energy not used in Regulated Loads	PV/Wind/CHP	0.00	0.00	
TOTAL		1113.13	3026.03	0.37

Part L Specification

Property Details

Dwelling Type	Mid-floor apartment	**Type of BER rating**	New Dwelling - Provisional
Address line 1	20061	**Year of Construction**	2020
Address line 2	Block H1 - 2F - HT A	**Date of Assessment**	16/09/2020
Address line 3	Delgany	**Date of Plans**	
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2019 TGD L
BER Number		**MPRN No.**	0
Purpose of Rating	Sale	**Is MPRN shared with another dwelling?**	N/A
Assessor Name			
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m^2]	Height [m]	Volume [m^3]
Ground Floor	50.13	2.70	135.35
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	50.13		135.35

Living Area [m^2]	25.80	**Living area percentage [%]**	51.47
No of Storeys	1		

Ventilation Details

	Number		
Chimneys	0	**Has permeability test been carried out?**	Yes
Open Flues	0	**Structure type**	N/A
Fans & Vents	1	**Is there a suspended wooden ground floor?**	No
Number of flueless combustion room heaters	0	**Percentage windows/doors draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	Yes	**Number of sides sheltered**	2
Ventilation method	Balanced whole-house mechanical ventilation with heat recovery	**Mechanical Ventilation Manufacturer**	Vent Axia
Specific fan power [W/(L/s)]	0.520	**Mechanical Ventilation Model Name**	Sentinel Kinetic Plus B
Heat exchanger efficiency [%]	92.00	**How many wetrooms (incl. kitchen)?**	K+1

Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m²K]	Area [m²]
Non-Heat Loss Floor		N/A	0	50.13

Building Elements - Roof Details

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

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

Building Elements - Wall Details

Other	Exposed Wall 01	0.16	8.87
Other	Exposed Wall 01	0.18	34.54

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m²K]	Area [m²]
	1	1.2	2.100

Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	9.910
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	2.880
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	3.000
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	1.200

Other Details

Thermal bridging factor [W/m²k]	0.0500	**Thermal mass category of dwelling**	Medium-high

Heating System - Solar Water Heating

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

Heating System - Hot Water System

Distribution Losses	227.21	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	2
Hot water storage manufacturer and model name		**Declared loss factor [kWh/d]**	N/A
Temperature factor unadjusted	1	**Temperature Factor Multiplier**	1
Primary Circuit loss type	Community heating		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	Factory Insulated
Insulation thickness [mm]	80		

Heating System - Dist. system losses and gains

Temperature adjustment [ºC]	0.000	**Control Category**		**Responsiveness category**	
Central heating pumps	1	**Oil Boiler Pump**	0	**Oil boiler pump inside dwelling**	No
Gas boiler flue fan	0	**Warm air heating or fan coil radiators present**	No		

Heating System - Energy Requirements (Group)

Charging based on heat consumed?	Yes	**Distribution loss factor**	1.05	**Fraction of heat from waste heat/CHP**	0.28
% of heat from secondary heating		**Efficiency of secondary heating [%]**		**Secondary heating fuel type**	N/A
Heating System 1 percentage of heat [%]	10	**Heating System 1 efficency [%]**	91	**Heating System 1 fuel type**	Mains Gas
Heating System 2 percentage of heat [%]	36	**Heating System 2 efficency [%]**	450	**Heating System 2 fuel type**	Electricity
Heating System 3 percentage of heat [%]	54	**Heating System 3 efficency [%]**	221	**Heating System 3 fuel type**	Electricity
Solar space heating percentage of heat [%]					
CHP electrical efficiency	0.27	**CHP thermal efficiency**	0.68	**CHP Fuel type**	Mains Gas

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

BER Number		**Building Regulations**	**2019 TGD L**
BER Result	A3	**Energy Value kWh/m²/yr**	**53.40**
CO_2 emissions [kg/m²/yr]	10.14		
EPC	0.290	**EPC Pass/Fail**	**Pass**
CPC	0.275	**CPC Pass/Fail**	**Pass**

Part L Conformance - Fabric

Conformity with Maximum avg U-value requirements	U-value [W/m²K]	Pass/Fail	Conformity with Maximum U-value requirements	U-Value [W/m²K]	Pass/Fail
Pitched roof insulated on ceiling	0.00	Pass	**Roofs**	0	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.18	Pass
Flat Roof	0	Pass	**Floors**	0	Pass
Floors with no underfloor heat	0.00	Pass	**External doors / windows / rooflights**	1.20	Pass
Floors with underfloor heat	0.00	Pass			
Walls	0.18	Pass			
Percentage of opening areas [%]	38.08				
Average U value of openings	1.20	Pass			
Permeability test carried out and meets guidelines in TGD L				0.15 | Pass	

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

	Source	Renewables Primary Energy	Total Primary Energy	RER
+ Delivered energy	PV/Wind	0.00	0.00	
+ Delivered energy	Other	0.00	0.00	
+ Delivered energy	Solar	0.00	0.00	
+ Delivered energy	Biomass	0.00	0.00	
+ Delivered energy	Biodiesel	0.00	0.00	
+ Delivered energy	Bioethanol	0.00	0.00	
+ Environmental energy	HP	527.91	527.91	
+ Saved energy	CHP	315.61	315.61	
+ District heating	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	216.38	
+ Delivered energy	Thermal	0.00	1186.06	
SUBTOTAL		843.52	2245.97	0.38 - Pass
Energy not used in Regulated Loads	PV/Wind/CHP	0.00	0.00	
TOTAL		843.52	2245.97	0.38

Part L Specification

Property Details

Dwelling Type	Top-floor apartment	**Type of BER rating**	New Dwelling - Provisional
Address line 1	20061	**Year of Construction**	2020
Address line 2	Block H1 - 3F - HT A	**Date of Assessment**	16/09/2020
Address line 3	Delgany	**Date of Plans**	
County	Co. Dublin	**Planning Reference**	
Eircode		**Building Regulations**	2019 TGD L
BER Number		**MPRN No.**	0
Purpose of Rating	Sale	**Is MPRN shared with another dwelling?**	N/A
Assessor Name			
Comment		**BER number assigned to shared dwelling**	N/A

Dimension Details

	Area [m²]	Height [m]	Volume [m³]
Ground Floor	80.56	2.70	217.51
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	80.56		217.51

Living Area [m²]	30.68	**Living area percentage [%]**	38.08
No of Storeys	1		

Ventilation Details

	Number		
Chimneys	0	**Has permeability test been carried out?**	Yes
Open Flues	0	**Structure type**	N/A
Fans & Vents	1	**Is there a suspended wooden ground floor?**	No
Number of flueless combustion room heaters	0	**Percentage windows/doors draught stripped [%]**	N/A
Is there a draught lobby on main entrance?	Yes	**Number of sides sheltered**	2
Ventilation method	Balanced whole-house mechanical ventilation with heat recovery	**Mechanical Ventilation Manufacturer**	Vent Axia
Specific fan power [W/(L/s)]	0.550	**Mechanical Ventilation Model Name**	Sentinel Kinetic Plus B
Heat exchanger efficiency [%]	92.00	**How many wetrooms (incl. kitchen)?**	K+2

Building Elements - Floor Details

Type	Description	Underfloor heating	U-Value [W/m²K]	Area [m²]
Non-Heat Loss Floor		N/A	0	80.56

Building Elements - Roof Details

Type	Description	U-Value [W/m²K]	Area [m²]
Flat Roof		0.12	80.56

Building Elements - Wall Details

Type	Description	U-Value [W/m²K]	Area [m²]
Other	Exposed Wall 01	0.16	27.95
Other	Exposed Wall 02	0.18	7.7

Building Elements - Door Details

Description	Number of Doors	U-Value [W/m²K]	Area [m²]
	1	1.2	2.100

Building Elements - Window Details

Glazing type	User defined u-value	U-Value [W/m^{2}K]	Area [m^2]
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	16.320
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	8.520
Double-glazed, air filled (low-E, en = 0.05, soft coat)	Yes	1.200	1.200

Other Details

Thermal bridging factor [W/m²k]	0.0500	**Thermal mass category of dwelling**	Medium-high

Heating System - Solar Water Heating

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

Heating System - Hot Water System

Distribution Losses	283.66	**Combi boiler present?**	No
Supplementary electric water heating	N/A	**Water Storage Volume [L]**	2
Hot water storage manufacturer and model name		**Declared loss factor [kWh/d]**	N/A
Temperature factor unadjusted	1	**Temperature Factor Multiplier**	1
Primary Circuit loss type	Community heating		
Is hot water storage indoors or in group heating system?	Yes	**Insulation type**	Factory Insulated
Insulation thickness [mm]	80		

Heating System - Dist. system losses and gains

Temperature adjustment [ºC]	0.000	**Control Category**		**Responsiveness category**	
Central heating pumps	1	**Oil Boiler Pump**	0	**Oil boiler pump inside dwelling**	No
Gas boiler flue fan	0	**Warm air heating or fan coil radiators present**	No		

Heating System - Energy Requirements (Group)

Charging based on heat consumed?	Yes	**Distribution loss factor**	1.05	**Fraction of heat from waste heat/CHP**	0.28
% of heat from secondary heating		**Efficiency of secondary heating [%]**		**Secondary heating fuel type**	N/A
Heating System 1 percentage of heat [%]	10	**Heating System 1 efficency [%]**	91	**Heating System 1 fuel type**	Mains Gas
Heating System 2 percentage of heat [%]	36	**Heating System 2 efficency [%]**	450	**Heating System 2 fuel type**	Electricity
Heating System 3 percentage of heat [%]	54	**Heating System 3 efficency [%]**	221	**Heating System 3 fuel type**	Electricity
Solar space heating percentage of heat [%]					
CHP electrical efficiency	0.27	**CHP thermal efficiency**	0.68	**CHP Fuel type**	Mains Gas

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

BER Number		**Building Regulations**	**2019 TGD L**
BER Result	A2	**Energy Value kWh/m²/yr**	**46.48**
CO_2 emissions [kg/m²/yr]	8.84		
EPC	0.287	**EPC Pass/Fail**	**Pass**
CPC	0.269	**CPC Pass/Fail**	**Pass**

Part L Conformance - Fabric

Conformity with Maximum avg U-value requirements	U-value [W/m²K]	Pass/Fail	Conformity with Maximum U-value requirements	U-Value [W/m²K]	Pass/Fail
Pitched roof insulated on ceiling	0.00	Pass	**Roofs**	0.12	Pass
Pitched roof insulated on slope	0	Pass	**Walls**	0.18	Pass
Flat Roof	0.12	Pass	**Floors**	0	Pass
Floors with no underfloor heat	0.00	Pass	**External doors / windows / rooflights**	1.20	Pass
Floors with underfloor heat	0.00	Pass			
Walls	0.16	Pass			
Percentage of opening areas [%]	36.42				
Average U value of openings	1.20	Pass			
Permeability test carried out and meets guidelines in TGD L				0.15 | Pass	

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

	Source	Renewables Primary Energy	Total Primary Energy	RER
+ Delivered energy	PV/Wind	0.00	0.00	
+ Delivered energy	Other	0.00	0.00	
+ Delivered energy	Solar	0.00	0.00	
+ Delivered energy	Biomass	0.00	0.00	
+ Delivered energy	Biodiesel	0.00	0.00	
+ Delivered energy	Bioethanol	0.00	0.00	
+ Environmental energy	HP	719.93	719.93	
+ Saved energy	CHP	430.42	430.42	
+ District heating	District Heating	0.00	0.00	
+ Delivered energy	Grid	0.00	389.13	
+ Delivered energy	Thermal	0.00	1617.49	
SUBTOTAL		1150.35	3156.97	0.36 - Pass
Energy not used in Regulated Loads	PV/Wind/CHP	0.00	0.00	
TOTAL		1150.35	3156.97	0.36