

Property details

MPRN	0	Shared MPRN	
BER Number	N/A	BER number assigned to shared dwelling	N/A
Address line 1	Earth House,	Type of Rating	Existing Dwelling
Address line 2	Derrynalecka,	Purpose of Rating	Major Renovation
Address line 3		Building Regulations	2019 TGD L
County	Co. Mayo	Planning Reference	
Eircode	F12HP63	Date of Plans	
Dwelling Type	Detached house	Assessor Name	
Year of construction	2008	Date of Assessment	16/06/2021
Dwelling Extension	N/A	Assessor Comments	
Storeys	2	Assessor Description	Earth House - Cavity Wall Upgrade

Dimension details

	Area [m ²]	Height [m]	Volume [m ³]
Ground floor	134.74	2.50	336.85
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	76.67	2.44	187.07
Totals	211.41		523.92
Living Area	17.64 m ²	Living Area Percentage	8.34 %

Ventilation details

		Number	Air Change Rate [ac/h]
Chimneys		1	40.00
Open Flues		0	0.00
Fans & vents		1	10.00
Flueless combustion room heaters		0	0.00
Has a permeability test been carried out	No		
Infiltration rate due to structure [ac/h]	0.50	Is there a draught lobby on main entrance?	No
Intermediate infiltration rate	0.65	Draught lobby air change [ac/h]	0.05
Number of sides sheltered	1	Openings infiltration [ac/h]	0.15
Adjusted infiltration rate [ac/h]	0.60	Structure type	Masonry
Effective air change rate [ac/h]	0.68	Is there a suspended wooden ground floor?	No
Ventilation heat loss [W/K]	117.26	Windows/doors/attic hatches draught stripped [%]	100.00
Adjusted result of air permeability test [ac/h]	0.00	Ventilation method	Natural ventilation
Manufacturer and Model name	N/A	How many wetrooms (inc. kitchen)? Is the vent. ducting flexible/rigid/both?	N/A
Specific fan power [W/(l/s)]	0.00	Is MVHR ducting uninsulated where outside of insulated envelope?	N/A
Heat exchanger efficiency [%]	0.00	Adjusted heat exchanger efficiency	0.00
Electricity for ventilation fans [Kwh/y]	0.00		
Heat gains from ventilation fans [W]	0.00		

Building Elements - Floors

Type	Description	U/F Heating	In Roof	Age Band	Exposed Perimeter [m]	Area [m ²]	U-Value [W/m ² K]	Heat Loss (AU) [W/K]
Ground Floor - Solid		No	No	2005 -2009	35	134.74	0.31	41.77
Non-Heat Loss Floor		N/A	Yes	2005 -2009	N/A	76.67	0.00	0.00
Total area [m²]								211.41

Building Elements - Roofs

Type	Description	Insulation Thickness [mm]	Age Band	Area [m ²]	U-Value [W/m ² K]	Heat Loss (AU) [W/K]
	Pitched Roof - Insulated on Ceiling		2005 -2009	47.40	2.30	109.02
	Pitched Roof - Insulated on Ceiling		2005 -2009	132.40	2.30	304.52
Total area [m²]						179.80

Building Elements - Walls

Type	Description	Wall is semi-exposed	Include in compliance check	Age Band	Area [m ²]	U-Value [W/m ² K]	Heat Loss (AU) [W/K]
	300mm Cavity	No	No	2005 -2009	126.35	0.27	34.11
Total area [m²]							126.35

Building Elements - Doors

Count	Type	Description	Draught Stripped	Area [m ²]	U-Value [W/m ² K]	Heat Loss (AU) [W/K]
2	Solid exposed door		Yes	3.70	3.00	11.10
Total area [m²]						7.40

Building Elements - Windows

Count	Glazing Type	Frame Type	Frame Factor	Solar Transm.	In Roof	Over shading	Orient.	Area [m ²]	U-value [W/m ² K]
1	Double-glazed, air filled (low-E, en = 0.05, soft coat)	Wood/PVC	0.700	0.630	No	Average or Unknown	South	5.22	1.70
1	Double-glazed, air filled (low-E, en = 0.05, soft coat)	Wood/PVC	0.700	0.630	No	Average or Unknown	North	7.56	1.70
1	Double-glazed, air filled (low-E, en = 0.05, soft coat)	Wood/PVC	0.700	0.630	No	Average or Unknown	West	5.94	1.70
1	Double-glazed, air filled (low-E, en = 0.05, soft coat)	Wood/PVC	0.700	0.630	No	Average or Unknown	East	0.60	1.70
Total area [m²]								19.32	

Heat loss details

Total glazed area [m²]	19.32	Glazing ratio	0.04
Total glazed heat loss [W/K]	30.75	Summer solar gain [W/m²]	675.06
Total effective collection area [m²]	5.9	Total element area [m²]	467.61
Total plane heat loss [W/K]	542.38	Thermal bridging factor [W/m²K]	0.1500
Fabric heat loss [W/K]	612.52		
Total heat loss [W/K]	729.78	Per m2	3.45

Lighting and Internal Gains

Lighting Design Calculation Method	Bulb type only	Average Efficacy [lm/W]	11.20
Fixed lighting provision [klmh/y]	5927.94	Top up lighting requirement [klmh/y]	0.00
Energy required for fixed lighting [kWh/y]	944.12	Energy required for top up lighting [kWh/y]	0.00
Energy required for portable lighting [kWh/y]	248.22		
Basic energy consumption for lighting [kWh/y]	1254.04	Water heating (In watts [W])	257.30
Annual energy used for lighting [kWh/y]	1192.34	Occupants (In watts [W])	150.84
Internal gains from lighting during heating season [kWh/hs] (In watts [W])	912.14 (156.40)	Mechanical ventilation (In watts [W])	0.00
Lighting (In watts [W])	156.40	Heat loss to the cold water network (In watts [W])	-41.15
Appliance and cooking (In watts [W])	348.01	Net internal gains (In watts [W])	871.40

Lights

Count	Name	Description	Type	Efficiency	Power [W]
60	Default Incandescent		Incandescent	11.20	

Water heating details

Are there distribution losses?	Yes	Is supplementary electric water heating used in summer?	N/A
Are there storage losses?	Yes	Is there a combi boiler?	No
Is there a solar water heating system?	No	Total hot water demand [kWh/y]	1893.04
Standard number of occupants	3.02	Temperature factor unadjusted	0.60
Number of mixer showers	3	Temperature Factor Multiplier	1.30
Number of electric showers	1	Hot water storage loss factor [kWh/l d]	0.02
Number of baths	1	Volume factor	0.95
Daily hot water use [Litres/d]	120.72	Combi-boiler electricity consumption [kWh/y]	0.00
Hot water energy reqs. at taps [kWh/y]	1609.09	Adjusted storage loss [kWh/y]	907.37
Distribution losses [kWh/y]	283.96	Adjusted primary circuit loss [kWh/y]	1070.06
Water storage volume [Litres]	140.00	Heat gains from water heating system [W]	257.30
Is manufacturers declared loss factor available?	No	Output from supplementary heater [kWh/y]	0.00
Declared loss factor [kWh/d]	0.00		
Manufacturer and Model name			
Insulation type	Factory Insulated		
Insulation thickness [mm]	25		

Type of mixer shower	Flow restriction	Flow rate [l/min]	HW usage [l/day]	WWHRS Manufacturer/Model	WWHRS efficiency	WWHRS Utilisation Factor	Energy Savings [kWh/yr]
Vented hot water system	No	7.000		Any / Any			
Total :			45.50				0.00

Combi-boiler Type	None	Output from main water heater [kWh/y]	3870.47
Combi-boiler loss [kWh/y]	0.00	Annual Heat gains from water heating system [kWh/y]	2253.97
Keep Hot facility	None	WWHRS input to main system [kWh/y]	0.00
Storage Loss	907.37	WWHRS input to supplementary system [kWh/y]	0.00
Storage Type	Cylinder, indirect		
Primary Circuit loss type	Boiler with uninsulated primary pipework and no cylinder thermostat		
Primary circuit loss [kWh/y]	1220.00	Heat Pump Type of DHW	None
Is hot water storage indoors or in group heating system	Yes		

Net space heat demand

Required temp. during heated hours	21.00	Length of one unheated period [h]	8
Required temperature rest of dwelling	18.00	Unheated periods per week	14
Living area percentage	8.34	Heat use during heating season [kWh/y]	30226.88
Required mean internal temperature [C]	18.25	Heat use for full year [kWh/y]	33447.59
Thermal mass category of dwelling	Medium-high		

Utilisation factor

Intermittent heating

Internal heat capacity of dwelling [per m ²]	0.32	0.15
Internal heat capacity [MJ/K]	67.65	31.71

Space heat demand details

Month	Mean Ext. Temp [C]	Adj. Int. Temp [C]	Heat Loss [W]	Heat Use [kWh]	Gain/Loss Ratio	Utilisation Factor	Heat Use [W]	Useful Gains [W]	Solar Gain [W]
January	5.3	15.93	7757	5018	0.13	1.00	6745	1012	144
February	5.5	15.96	7637	4382	0.15	1.00	6520	1117	251
March	7.0	16.23	6739	4097	0.18	0.99	5507	1232	371
April	8.3	16.47	5960	3322	0.23	0.99	4614	1346	494
May	11.0	16.95	4343	2167	0.34	0.96	2913	1430	612
June	13.5	17.40	2845	1070	0.53	0.91	1487	1359	623
July	15.5	17.76	1647	388	0.88	0.77	521	1126	582
August	15.2	17.70	1827	505	0.77	0.82	678	1149	531
September	13.3	17.36	2965	1258	0.44	0.94	1747	1218	428
October	10.4	16.84	4702	2638	0.25	0.98	3546	1156	305
November	7.5	16.32	6439	3883	0.16	0.99	5393	1046	181
December	6.0	16.05	7338	4720	0.14	1.00	6344	994	127

Space Heating

Manufacturer & Model	Type	Space Heating Standard	Fuel	Design flow temp[°C]	Daily Operation [h]	SH Seasonal eff.	WH Seasonal eff.	Heats water
Firebird Boilers, S (White Cased)	Gas and oil boilers	N/A	Oil	0	0	85.7	85.7	Yes
TBA, TBA	Room heaters	N/A	Solid fuel	0	0	30	30	N/A

Dist. System Losses and Gains

Temperature adjustment [C]	0.6	Additional heat emissions due to non ideal control and responsiveness [kWh/y]	5938.01
Heating system control category	1	Gross heat emission to heated space [kWh/y]	36164.89
Heating system responsiveness category	1	Mean internal temperature [C]	17.74
Mean internal temperature during heating hours [C]	19.95		

	Number present	Boiler controlled by thermostat	Inside dwelling	Electricity consumption [kWh/y]	Heat gain [W]
Central heating pumps	2	No	Yes	338	20
Oil boiler pumps	1	No	No	130	0
Gas boiler flue fan	0			0	
Warm air heating or fan coil radiators present	No			0	0
Totals				468	20

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	117	Is there underfloor heating on the ground floor?	No
Average utilisation factor, October to May	0.99	U-Value of ground floor [W/m ² K]	0.00
Useful net gain [kWh/y]	115	Fraction of heating system output from ground floor	0.67
Net heat emission to heated space [kWh/y]	36050	Additional heat loss via envelope element	0.00
		Annual space heating requirement [kWh/y]	36050

Energy Requirements: Individual Heating Systems

Efficiency of main heating system [%]	85.7	Fraction of heat from secondary system	0.10
Manufacturer name	Firebird Boilers	Efficiency of secondary system [%]	30
Model name	S (White Cased)	Energy required for main heating system [kWh/y]	39850.96
Efficiency adjustment factor	0.95	Energy required for secondary heating system [kWh/y]	12054.96
Adjusted efficiency of main heating system [%]	81.42		

Fraction of main space and water heat from CHP	N/A	Efficiency adjustment factor	0.9500
Heat demand from CHP	0.0	Adj. efficiency of main water heating system [%]	81.42
Efficiency of main water heating system [%]	85.7	Water Heating Efficiency, η_{wh}	85.7
Manufacturer name	Firebird Boilers	Energy req. for main water heater [kWh/y]	5229.41
Model name	S (White Cased)	Energy req. for secondary water heater [kWh/y]	0.00
Heat Pump Type	N/A	Water Heating Standard	N/A

	Fuel Type	Primary energy conversion factor	CO₂ emission factor
Main space heating system	Heating Oil	1.10	0.272
Secondary space heating system	Manufactured Smokeless Fuel	1.20	0.392
Main water heating system	Heating Oil	1.10	0.272
Pumps, fans	Electricity	2.08	0.409
Energy for lighting	Electricity	2.08	0.409

CHP data

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

Summer internal gains

Dwelling volume [m ³]	523.925	Total gains in summer [W]	1546.47
Effective air change rate for summer period [ac/h]		Temperature increment due to gains [C]	2.52
Ventilation heat loss coefficient [W/K]	0.00	Summer mean external temperature [C]	15
Fabric heat loss coefficient [W/K]	612.52	Heat capacity parameter	0.32
Heat loss coefficient under summer conditions [W/K]	612.52	Temperature increment related to thermal mass [C]	0.00
Total Solar Gains from Summer Period	675.06	Threshold internal temperature [C]	17.52
Internal gains [W]	871.40		

Results

	Delivered energy [kWh/y]	Primary energy [kWh/y]	CO ₂ emissions [kgCO ₂ /y]
Main space heating system	39851	43836	10839
Secondary space heating system	12055	14466	4726
Main water heating system	4754	5229	1293
Supplementary water heating system	0	0	0
Pumps and fans	638	1328	261
Energy for lighting	1192	2480	488
CHP input (individual heating systems only)	0	0	0
CHP electric output (individual heating systems only)	0	0	0
Renewable and energy saving technologies			
Energy produced and saved	0	0	0
Energy consumed by the technology	0	0	0
Total	58491	67339	17607
Per m² floor area	276.67	318.52	83.28
Energy Rating	E1		