Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Array SAP 10 program, Array

Date: Tue 18 Jun 2024 14:07:48

Project Information			
Assessed By	Sean Hunter	Building Type	House, Detached
OCDEA Registration	EES/026592	Assessment Date	2024-06-18

Dwelling Details			
Assessment Type	As designed	Total Floor Area	126 m^2
Site Reference	4907-YO71-6328-1038	Plot Reference	1038
Address	Plot 4 Bed		

Client Details	
Name	Vistry Southern
Company	Vistry
Address	Central 40, Chineham Park, Basingstoke, RG24 8GU

This report covers items included within the SAP calculations. It is not a complete report of regulations compliance.

1a Target emission rate and dwelling emission rate		
Fuel for main heating system	Mains gas	
Target carbon dioxide emission rate	*9.61 $kgCO_2/m^2$*	
Dwelling carbon dioxide emission rate	9.24 $kgCO_2/m^2$	OK
1b Target primary energy rate and dwelling primary energy		
Target primary energy	*50.15 kWh_{PE}/m^2*	
Dwelling primary energy	49.4 kWh_{PE}/m^2	OK
1c Target fabric energy efficiency and dwelling fabric energy efficiency		
Target fabric energy efficiency	*38.0 kWh/m^2*	
Dwelling fabric energy efficiency	35.3 kWh/m^2	OK

2a Fabric U-values				
Element	***Maximum permitted average U-Value [W/m^2K]***	**Dwelling average U-Value [W/m^2K]**	**Element with highest individual U-Value**	
External walls	*0.26*	0.22	Walls (1) (0.22)	OK
Party walls	*0.2*	N/A	N/A	**N/A**
Curtain walls	*1.6*	N/A	N/A	**N/A**
Floors	*0.18*	0.11	FP McCann System (0.11)	OK
Roofs	*0.16*	0.09	Roof (2) (0.16)	OK
Windows, doors, and roof windows	*1.6*	1.28	Rear (1.4)	OK
Rooflights	*2.2*	N/A	N/A	**N/A**

2b Envelope elements (better than typically expected values are flagged with a subsequent (!))		
Name	**Net area [m^2]**	**U-Value [W/m^2K]**
Exposed wall: Walls (1)	137.3219	0.22
Ground floor: FP McCann System, FP McCann System	63.53	0.11
Exposed roof: Roof (1)	62.32	0.09 **(!)**
Exposed roof: Roof (2)	1.21	0.16

2c Openings (better than typically expected values are flagged with a subsequent (!))				
Name	**Area [m^2]**	**Orientation**	**Frame factor**	**U-Value [W/m^2K]**
Front, Solid Door	1.9782	South West	N/A	1.1 **(!)**
Left, Half Glaze	1.9782	North West	N/A	1.1 **(!)**
Front, Window	3.66	South West	1.0	1.3
Front, Window	1.4976	South West	1.0	1.3
Front, Window	1.4976	South West	1.0	1.3
Front, Window	1.4976	South West	1.0	1.3
Front, Window	0.71925	South West	1.0	1.3
Right, Window	1.1385	South	1.0	1.3
Left, Window	1.1385	West	1.0	1.3
Rear, French Door	3.0933	North East	1.0	1.4
Rear, Window	1.9005	North East	1.0	1.3
Rear, Window	1.092	North East	1.0	1.3
Rear, Window	1.4976	North East	1.0	1.3

Name	Area [m^2]	Orientation	Frame factor	U-Value [W/m^2K]
Rear, Window	0.71925	North East	1.0	1.3

2d Thermal bridging (better than typically expected values are flagged with a subsequent (!))				
Building part **1 - Main Dwelling**: Thermal bridging calculated from linear thermal transmittances for each junction				
Main element	**Junction detail**	**Source**	**Psi value [W/mK]**	**Drawing / reference**
External wall	E2: Other lintels (including other steel lintels)	Calculated by person with suitable expertise	0.025 **(!)**	E2-12826
External wall	E3: Sill	Calculated by person with suitable expertise	0.01 **(!)**	E3-12827
External wall	E4: Jamb	Calculated by person with suitable expertise	-0.05	E4-12843
External wall	E4: Jamb	SAP table default	0.1	E4-Default
External wall	E5: Ground floor (normal)	Calculated by person with suitable expertise	0.046	E5-12830 (Para)
External wall	E5: Ground floor (normal)	Calculated by person with suitable expertise	0.02 **(!)**	E5-12831 (Perp)
External wall	E6: Intermediate floor within a dwelling	Calculated by person with suitable expertise	0.001 **(!)**	E6-12833
External wall	E10: Eaves (insulation at ceiling level)	SAP table default	0.12	E10 - Default ff
External wall	E24: Eaves (insulation at ceiling level - inverted)	SAP table default	0.15	E24 - Default
External wall	E12: Gable (insulation at ceiling level)	Calculated by person with suitable expertise	0.027 **(!)**	E12-12897 - FF
External wall	E10: Eaves (insulation at ceiling level)	Calculated by person with suitable expertise	0.026 **(!)**	E10 - EW02 - RE01
External wall	E16: Corner (normal)	Calculated by person with suitable expertise	-0.034 **(!)**	E16-12838
External wall	E17: Corner (inverted - internal area greater than external area)	Calculated by person with suitable expertise	-0.114	E17-12839

3 Air permeability (better than typically expected values are flagged with a subsequent (!))		
Maximum permitted air permeability at 50Pa	*8 m^3/hm^2*	
Dwelling air permeability at 50Pa	4.5 m^3/hm^2, Design value	OK
Air permeability test certificate reference		

4 Space heating	
Main heating system 1: Boiler with radiators or underfloor heating - Mains gas	
Efficiency	92.5%
Emitter type	Radiators
Flow temperature	55°C
System type	Combi boiler
Manufacturer	Ideal Boilers
Model	LOGIC COMBI
Commissioning	
Secondary heating system: N/A	
Fuel	N/A
Efficiency	N/A
Commissioning	

5 Hot water	
Cylinder/store - type: N/A	
Capacity	N/A
Declared heat loss	N/A
Primary pipework insulated	N/A
Manufacturer	
Model	
Commissioning	
Waste water heat recovery system 1 - type: Instantaneous	
Efficiency	69.8%
Manufacturer	Q-Blue B.V.
Model	QB1-21

6 Controls		
Main heating 1 - type: Time and temperature zone control by arrangement of plumbing and electrical services		
Function		
Ecodesign class		
Manufacturer		
Model		
Water heating - type: Cylinder thermostat and HW separately timed		
Manufacturer		
Model		

7 Lighting		
Minimum permitted light source efficacy	*75 lm/W*	
Lowest light source efficacy	90 lm/W	**OK**
External lights control	N/A	

8 Mechanical ventilation		
System type: Decentralised mechanical extract		
Maximum permitted specific fan power	*0.7 W/(l/s)*	
Specific fan power	0.15 W/(l/s)	**OK**
Minimum permitted heat recovery efficiency	*N/A*	
Heat recovery efficiency	N/A	**N/A**
Manufacturer/Model	Lo-Carbon NBR dMEV C 100, 498095	
Commissioning		

9 Local generation	
Technology type: **Photovoltaic system (1)**	
Peak power	1.2 kWp
Orientation	South West
Pitch	45°
Overshading	None or very little
Manufacturer	
MCS certificate	

10 Heat networks
N/A

11 Supporting documentary evidence
N/A

12 Declarations	
a. Assessor Declaration	
This declaration by the assessor is confirmation that the contents of this BREL Compliance Report are a true and accurate reflection based upon the design information submitted for this dwelling for the purpose of carrying out the "As designed" assessment, and that the supporting documentary evidence (SAP Conventions, Appendix 1 (documentary evidence) schedules the minimum documentary evidence required) has been reviewed in the course of preparing this BREL Compliance Report.	
Signed: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Summary for Input Data

elmhurst energy

Property Reference	4907-YO71-6328-1038	**Issued on Date**	18/06/2024
Assessment Reference	1038	**Prop Type Ref**	Pembroke TF
Property	Plot, 4 Bed		

SAP Rating	91 B	**DER**	9.24	**TER**	9.61
Environmental	91 B	**% DER < TER**			3.85
CO_2 Emissions (t/year)	1	**DFEE**	35.27	**TFEE**	38.01
Compliance Check	See BREL	**% DFEE < TFEE**			7.22
% DPER < TPER	1.49	**DPER**	49.40	**TPER**	50.15

Assessor Details	Mr. Sean Hunter	**Assessor ID**	Y071-0001
Client			

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	Southwest	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Detached	
Which Floor	0	
2.0 Number of Storeys	2	
3.0 Date Built	2019	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	No	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Basement:	0.00 m	0.00 m²	0.00 m
Ground floor:	32.89 m	63.53 m²	2.38 m
1st Storey:	31.59 m	62.32 m²	2.61 m
2nd Storey:	0.00 m	0.00 m²	0.00 m
3rd Storey:	0.00 m	0.00 m²	0.00 m
4th Storey:	0.00 m	0.00 m²	0.00 m
5th Storey:	0.00 m	0.00 m²	0.00 m
6th Storey:	0.00 m	0.00 m²	0.00 m
7th Storey:	0.00 m	0.00 m²	0.00 m

8.0 Living Area	18.11	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
100mm Knauf Supafil 34	Timber Frame	Timber framed wall (one layer of plasterboard)	0.22	9.00	160.73	137.32	0.00	None	23.41	Calculate Wall Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
E-WM-30	Filled Cavity with Edge Sealing	Plasterboard on dabs mounted on cement render on both sides, AAC blocks, cavity	0.00	45.00	43.70	0.00	None

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Timber GF	Plasterboard on timber frame	9.00	77.30
Timber 1F	Plasterboard on timber frame	9.00	134.35
Structural Timber	Plasterboard on timber frame	9.00	41.27

10.0 External Roofs

Summary for Input Data

elmhurst energy

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
Plane Ceiling-500mm Loft Roll	External Plane Roof	Plasterboard, insulated at ceiling level	0.09	9.00	62.32	62.32	None	0.00	Enter Gross Area	0.00
Bay	External Plane Roof	Plasterboard, insulated at ceiling level	0.16	9.00	1.21	1.21	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling	+1	Other	62.32

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
FP McCann System	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.11	None	0.00	75.00	63.53

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor		Other	13.80	62.32

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Solid Door	Manufacturer	Solid Door			None	0.00	Wood	0.70	1.10
Half Glaze	Manufacturer	Half Glazed Door	Double Low-E Soft 0.05		None	0.71	Wood	0.70	1.10
Window	BFRC, BSI or CERTASS data	Window	Double Low-E Soft 0.05		None	0.47	Wood	1.00	1.30
Window Type 2	Manufacturer	Window	Double Low-E Soft 0.05		None	0.63	Wood	0.70	0.90
Window Type 3	Manufacturer	Window	Double Low-E Soft 0.05		None	0.71	Wood	0.70	1.30
French Door	BFRC, BSI or CERTASS data	Window	Double Low-E Hard 0.2		None	0.40	Wood	1.00	1.40
French Door Type 2	Manufacturer	Window	Double Low-E Soft 0.05		None	0.63	Wood	0.70	1.50
Roof Window	Manufacturer	Roof Window	Double Low-E Soft 0.05		None	0.71	Wood	0.70	1.80
Roof Window Type 2	Manufacturer	Roof Window	Double Low-E Soft 0.05		None	0.63	Wood	0.70	1.50

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front	Solid Door	100mm Knauf Supafil 34	South West	1.98	0
Left	Half Glaze	100mm Knauf Supafil 34	North West	1.98	0
Front	Window	100mm Knauf Supafil 34	South West	8.87	0
Right	Window	100mm Knauf Supafil 34	South	1.14	0
Left	Window	100mm Knauf Supafil 34	West	1.14	0
Rear	French Door	100mm Knauf Supafil 34	North East	3.09	0
Rear	Window	100mm Knauf Supafil 34	North East	5.21	0

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	

17.0 Thermal Bridging — Calculate Bridges

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted	Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	12.44	0.03	0.03	E2-12826	No
E3 Sill	Independently assessed	13.04	0.01	0.01	E3-12827	No
E4 Jamb	Independently assessed	30.90	-0.05	-0.05	E4-12843	No
E4 Jamb	Table K1 - Default	3.00	0.10	0.10	E4-Default	No
E5 Ground floor (normal)	Independently assessed	16.13	0.05	0.05	E5-12830 (Para)	No
E5 Ground floor (normal)	Independently assessed	16.76	0.02	0.02	E5-12831 (Perp)	No
E6 Intermediate floor within a dwelling	Independently assessed	29.71	0.00	0.00	E6-12833	No
E10 Eaves (insulation at ceiling level)	Table K1 - Default	16.13	0.12	0.12	E10 - Default ff	No
E24 Eaves (insulation at ceiling level - inverted)	Table K1 - Default	2.35	0.15	0.15	E24 - Default	No
E12 Gable (insulation at ceiling level)	Independently assessed	15.46	0.03	0.03	E12-12897 - FF	No
E10 Eaves (insulation at ceiling level)	Independently assessed	2.81	0.03	0.03	E10 - EW02 - RE01	No
E16 Corner (normal)	Independently assessed	21.76	-0.03	-0.03	E16-12838	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	1.80	-0.11	-0.11	E17-12839	No

Y-value	0.00	W/m²K
18.0 Pressure Testing	Yes	
Designed AP_{50}	4.50	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	
As Built AP_{50}	15.00	m³/(h.m²) @ 50 Pa

19.0 Mechanical Ventilation

Mechanical Ventilation

Summary for Input Data

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Mechanical extract ventilation - decentralised
MV Reference Number	500776
Configuration	0
MVHR Duct Insulated	Uninsulated Ducts
Manufacturer SFP	0.00
Duct Type	Rigid
MVHR Efficiency	0.00
Wet Rooms	5
SFP from Installer Commissioning Certificate	No

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.14	In Room Fan Kitchen	1
0.11	In Room Fan Other Wet Room	4
0.00	In Duct Fan Kitchen	0
0.00	In Duct Fan Other Wet Room	0
0.08	Through Wall Fan Kitchen	0
0.08	Through Wall Fan Other Wet Room	0

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System	No

22.0 Lighting

No Fixed Lighting	No

Name	Efficacy	Power	Capacity	Count
PL1 8.5 watt bayonet cap lamp	90.00	9	810	15
PL1LED3K-BC GL-HEXHAM	99.00	5	495	4

24.0 Main Heating 1	Database	
Percentage of Heat	100.00	%
Database Ref. No.	17929	
Fuel Type	Mains gas	
SAP Code	104	
In Winter	89.00	
In Summer	87.30	
Model Name	LOGIC COMBI	
Manufacturer	Ideal Boilers	
System Type	Combi boiler	
Controls SAP Code	2110	
PCDF Controls	0	
Delayed Start Stat	No	
Burner Control	Modulating	
Boiler Compensator	200005	
HETAS approved System	No	
Oil Pump Inside	No	
FI Case	0.00	
FI Water	0.00	
Flue Type	Balanced	
Smoke Control Area	Unknown	

Summary for Input Data

Fan Assisted Flue	Yes
Is MHS Pumped	Pump in heated space
Heating Pump Age	2013 or later
Heat Emitter	Radiators
Flow Temperature	Enter value
Flow Temperature Value	55.00
Boiler Interlock	Yes
Electric CPSU Temperature	0.00
Combi boiler type	Standard Combi
Combi keep hot type	None

25.0 Main Heating 2 — None

26.0 Heat Networks — None

	Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None			0.00	0.00	0.00	0.00	0.00		
Heat source 2	None			0.00	0.00	0.00	0.00	0.00		
Heat source 3	None			0.00	0.00	0.00	0.00	0.00		
Heat source 4	None			0.00	0.00	0.00	0.00	0.00		
Heat source 5	None			0.00	0.00	0.00	0.00	0.00		

28.0 Water Heating

Water Heating	Main Heating 1
SAP Code	901
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	Yes
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No
Water use <= 125 litres/person/day	Yes
Summer Immersion	No
Cold Water Source	From mains
Bath Count	1
Baths connected to WWHRS	0
Supplementary Immersion	No
Immersion Only Heating Hot Water	No

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
Shower 1	Combi boiler or unvented hot water system	8.00	0.00	Yes	Instantaneous System 1

28.3 Waste Water Heat Recovery System Instantaneous System 1

Database ID	80116
Brand Model	Showersave, QB1-21
Details	Year: 2017 + current Efficiency: 0 Utilisation factor: 0.973
Dedicated Storage Volume	0

29.0 Hot Water Cylinder — None

Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Insulation Thickness	0	
Cylinder Volume	250.00	L

Summary for Input Data

Loss	1.61	kWh/day
Pipes insulation	Fully insulated primary pipework	
In Airing Cupboard	No	

31.0 Thermal Store	None
Thermal Store Pipework	within a single casing

32.0 Photovoltaic Unit	One Dwelling
Export Capable Meter?	Yes
Connected To Dwelling	Yes
Diverter	No
Battery Capacity [kWh]	0.00

PV Cells kWp	Orientation	Elevation	Overshading	FGHRS	MCS Certificate	Overshading Factor	MCS Certificate Reference	Panel Manufacturer
1.20	South West	45°	None Or Little	No	No	1.00		

34.0 Small-scale Hydro	None	
Electricity Generated	0.00	
Apportioned	0.00	kWh/Year
Connected to dwelling's electricity meter	Yes	
Electricity Generation	Annual	

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Predicted Energy Assessment

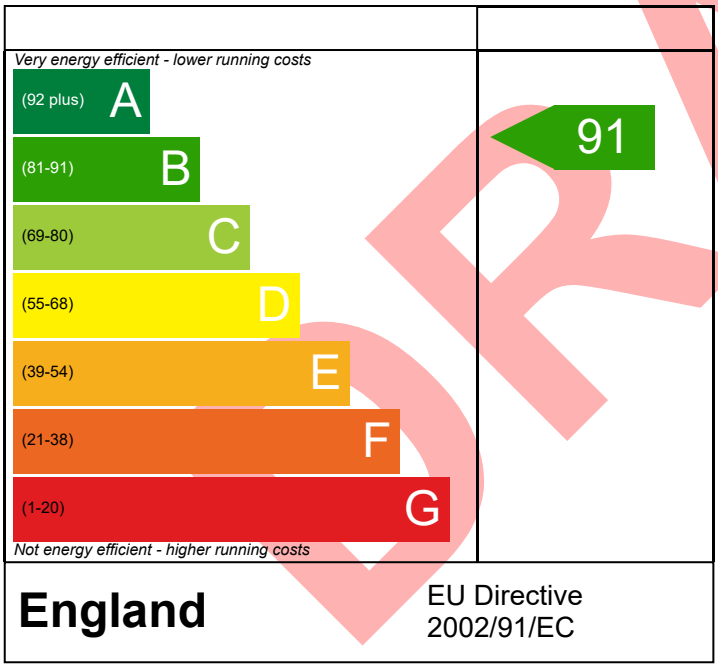
Plot, 4 Bed

Dwelling type:	House, Detached
Date of assessment:	18/06/2024
Produced by:	Sean Hunter
Total floor area:	125.85 m²
DRRN:	

This document is a Predicted Energy Assessment for properties marketed when they are incomplete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, this rating will be updated and an official Energy Performance Certificate will be created for the property. This will include more detailed information about the energy performance of the completed property.

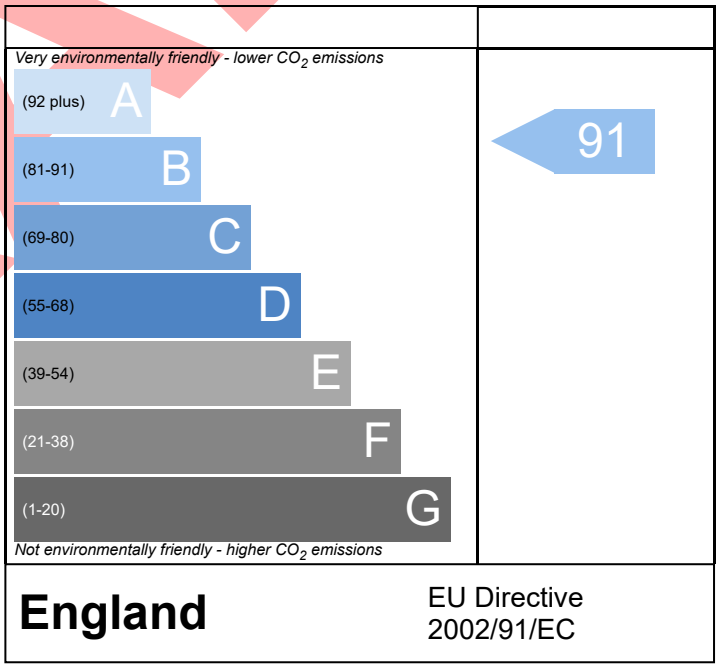
The energy performance has been assessed using the Government approved SAP 10 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO2) emissions.

Energy Efficiency Rating



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

Environmental Impact (CO_2) Rating



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO_2) emissions. The higher the rating the less impact it has on the environment.

Thermal Bridging

elmhurst energy

Property Reference	4907-YO71-6328-1038	**Issued on Date**	18/06/2024
Assessment Reference	1038	**Prop Type Ref**	Detached House
Property	Plot, 4 Bed		

SAP Rating	91 B	**DER**	9.24	**TER**	9.61
Environmental	91 B	**% DER < TER**			3.85
CO_2 Emissions (t/year)	1	**DFEE**	35.27	**TFEE**	38.01
Compliance Check	See BREL	**% DFEE < TFEE**			7.22
% DPER < TPER	1.49	**DPER**	49.40	**TPER**	50.15

Assessor Details	Mr. Sean Hunter	**Assessor ID**	Y071-0001
Client			

	Junction details	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E2 Other lintels (including other steel lintels)	Independently assessed	0.025	12.44	0.31	E2-12826
External wall	E3 Sill	Independently assessed	0.010	13.04	0.13	E3-12827
External wall	E4 Jamb	Independently assessed	-0.050	30.90	-1.54	E4-12843
External wall	E4 Jamb	Table K1 - Default	0.100	3.00	0.30	E4-Default
External wall	E5 Ground floor (normal)	Independently assessed	0.046	16.13	0.74	E5-12830 (Para)
External wall	E5 Ground floor (normal)	Independently assessed	0.020	16.76	0.34	E5-12831 (Perp)
External wall	E6 Intermediate floor within a dwelling	Independently assessed	0.001	29.71	0.03	E6-12833
External wall	E10 Eaves (insulation at ceiling level)	Table K1 - Default	0.120	16.13	1.94	E10 - Default ff
External wall	E24 Eaves (insulation at ceiling level - inverted)	Table K1 - Default	0.150	2.35	0.35	E24 - Default
External wall	E12 Gable (insulation at ceiling level)	Independently assessed	0.027	15.46	0.42	E12-12897 - FF
External wall	E10 Eaves (insulation at ceiling level)	Independently assessed	0.026	2.81	0.07	E10 - EW02 - RE01
External wall	E16 Corner (normal)	Independently assessed	-0.034	21.76	-0.74	E16-12838
External wall	E17 Corner (inverted – internal area greater than external area)	Independently assessed	-0.114	1.80	-0.21	E17-12839

Total: 182.29 W/mK:

Y-Value: 0.00 W/m²K: