

Building Regulations England Part L (BREL) Compliance Report

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

Date: Fri 20 Feb 2026 11:39:28

Project Information			
Assessed By	Stephen Crow	Building Type	House, Detached
OCDEA Registration	EES/031472	Assessment Date	2026-02-20

Dwelling Details			
Assessment Type	As designed	Total Floor Area	151 m ²
Site Reference	Type E	Plot Reference	v1
Address	Type E Land at Blacksmiths Lane, Royston, SG8 8AX		

Client Details	
Name	Chris Anderson
Company	The Turney Trust
Address	Tees Law, Hyde Hall Farm, Sandon, Buntingford, SG9 0RU

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	Electricity		
Target carbon dioxide emission rate	9.48 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	3.24 kgCO ₂ /m ²		OK
1b Target primary energy rate and dwelling primary energy			
Target primary energy	49.81 kWh _{PE} /m ²		
Dwelling primary energy	33.55 kWh _{PE} /m ²		OK
1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	42.8 kWh/m ²		
Dwelling fabric energy efficiency	42.8 kWh/m ²		OK

2a Fabric U-values				
Element	Maximum permitted average U-Value [W/m ² K]	Dwelling average U-Value [W/m ² K]	Element with highest individual U-Value	
External walls	0.26	0.18	Walls (1) (0.18)	OK
Party walls	0.2	N/A	N/A	N/A
Curtain walls	1.6	N/A	N/A	N/A
Floors	0.18	0.13	Heatloss Floor (0.13)	OK
Roofs	0.16	0.13	Roof (1) (0.13)	OK
Windows, doors, and roof windows	1.6	1.4	FW (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 ² K]	
Exposed wall: Walls (1)	10.13	0.18	
Exposed wall: Walls (2)	115.04	0.18	
Exposed wall: Walls (3)	38.42	0.18	
Ground floor: Heatloss Floor, Heatloss Floor	83.7	0.13	
Exposed roof: Roof (1)	66.94	0.13	
Exposed roof: Roof (2)	16.76	0.13	

2c Openings (better than typically expected values are flagged with a subsequent (!))				
Name	Area [m ²]	Orientation	Frame factor	U-Value [W/m ² K]
FW, Window	12	West	0.7	1.4
RW, Window	3.93	East	0.7	1.4
FSD, Solid Door	2.17	West	N/A	1.4
RGD, Glazed Door	2.87	East	0.7	1.4
LSW, Window	0.79	North	0.7	1.4
RSW, Window	0.79	South	0.7	1.4
RW2, Window	0.34	East	0.7	1.4
RW3, Window	4.23	East	0.7	1.4
RGD, Glazed Door	2.87	East	0.7	1.4

2d Thermal bridging (better than typically expected values are flagged with a subsequent (!))				
Building part 1: 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)	Government-approved scheme	0.025 (!)	
External wall	E3: Sill	Government-approved scheme	0.022 (!)	
External wall	E4: Jamb	Government-approved scheme	0.017 (!)	
External wall	E5: Ground floor (normal)	Government-approved scheme	0.061	
External wall	E6: Intermediate floor within a dwelling	Government-approved scheme	0.001 (!)	
External wall	E10: Eaves (insulation at ceiling level)	Government-approved scheme	0.057	
External wall	E16: Corner (normal)	Government-approved scheme	0.042	
External wall	E11: Eaves (insulation at rafter level)	Government-approved scheme	0.018 (!)	
External wall	E13: Gable (insulation at rafter level)	Government-approved scheme	0.036 (!)	
External wall	E12: Gable (insulation at ceiling level)	Government-approved scheme	0.043	
External wall	E14: Flat roof	SAP table default	0.16	
External wall	E17: Corner (inverted - internal area greater than external area)	Government-approved scheme	-0.085	

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	5.01 m ³ /hm ² , Design value	OK
Air permeability test certificate reference		

4 Space heating	
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity	
Efficiency	324.5%
Emitter type	Both radiators and underfloor
Flow temperature	35°C
System type	Heat Pump
Manufacturer	Mitsubishi Electric Europe B.V.
Model	PUZ-WZ60VAA and EHPT20X-MEHEW
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: N/A	
Efficiency	
Manufacturer	
Model	

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: N/A	
Manufacturer	
Model	

7 Lighting		
Minimum permitted light source efficacy	75 lm/W	
Lowest light source efficacy	80 lm/W	OK
External lights control	N/A	
8 Mechanical ventilation		
System type: N/A		
Maximum permitted specific fan power	N/A	
Specific fan power	N/A	N/A
Minimum permitted heat recovery efficiency	N/A	
Heat recovery efficiency	N/A	N/A
Manufacturer/Model		
Commissioning		
9 Local generation		
N/A		
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:	Assessor ID:	
Name:	Date:	
b. Client Declaration		
N/A		

Predicted Energy Assessment



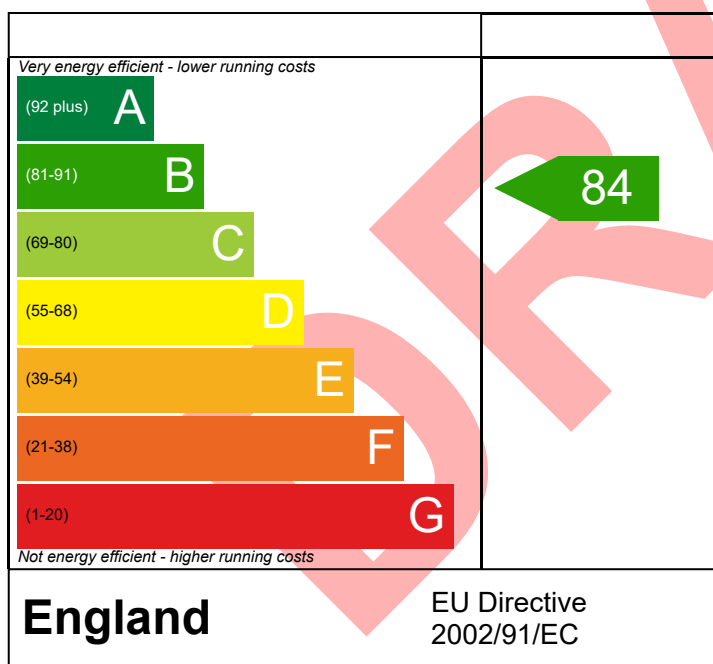
Type E, Land at Blacksmiths Lane, Royston,
Hertfordshire, SG8 8AX

Dwelling type: House, Detached
Date of assessment: 20/02/2026
SAP Version: 10.2
Produced by: Joe Cantwell Dillon
Total floor area: 150.64 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.

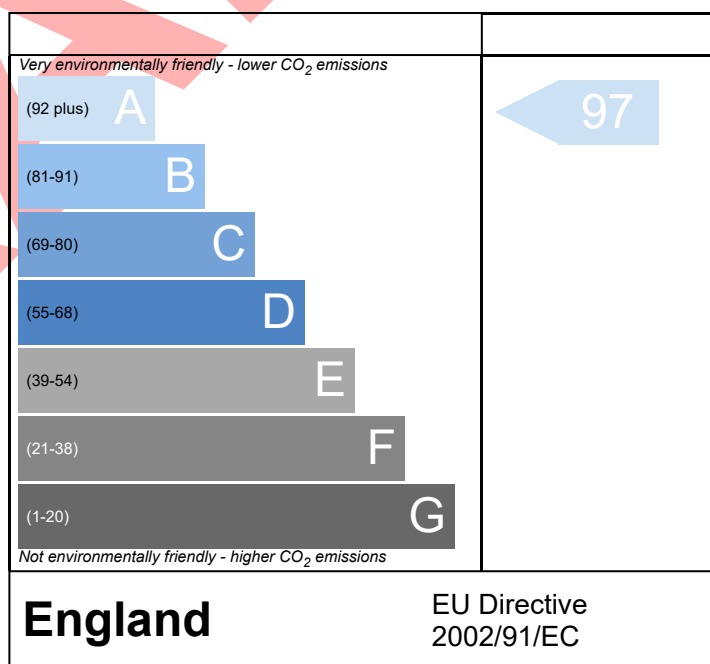
The energy performance has been assessed using the Government approved SAP 10 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO₂) emissions.

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 (CO₂) Rating



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

Summary for Input Data



Plot Reference	Type E	Issued on Date	20/02/2026
Assessment Reference	v1	Plot Type Ref	
Plot Address	Type E, Land at Blacksmiths Lane, Royston, Hertfordshire, SG8 8AX	SAP Version	10.2

SAP Rating	84 B	DER	3.24	TER	9.48
Environmental	97 A	% DER < TER			65.82
CO ₂ Emissions (t/year)	0.45	DFEE	42.76	TFEE	42.81
Compliance Check	See BREL	% DFEE < TFEE			0.12
% DPER < TPER	32.64	DPER	33.55	TPER	49.81

Assessor Details	Mr. Joe Cantwell Dillon	Assessor ID	BL89-0001
Client	S39576, Chris Anderson		

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

Orientation	West	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	House, Detached	
2.0 Number of Storeys	2	
3.0 Date Built	2026	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	228.49	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	No	
Smart gas meter fitted	No	

7.0 Measurements	Ground floor: 1st Storey:	Heat Loss Perimeter 38.94 m 37.08 m	Internal Floor Area 83.70 m ² 66.94 m ²	Average Storey Height 2.40 m 2.70 m
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8.0 Living Area	24.14	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res 0.00	Shelter	Openings	Area Calculation Type
	External Wall (Brick)	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.18	110.00	15.51	10.13	0.00	None	5.38	Enter Gross Area
	External Wall (Rendered)	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.18	110.00	132.55	115.04	0.00	None	17.51	Enter Gross Area
	External Wall (Cladded)	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.18	110.00	45.52	38.42	0.00	None	7.10	Enter Gross Area

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Internal Wall 1	Plasterboard on timber frame	9.00	201.36
	Internal Wall 2	Dense block, plasterboard on dabs	75.00	37.94

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
	External Roof 1	External Plane Roof	Plasterboard, insulated at ceiling level	0.13	9.00	66.94	66.94	None	0.00	Enter Gross Area	0.00
	External Roof 2	External Flat Roof	Plasterboard, insulated flat roof	0.13	9.00	16.76	16.76	None	0.00	Enter Gross Area	0.00

10.2 Internal Ceilings	Description	Storey	Construction	Kappa	Area (m ²)
	Internal Ceiling 1	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	9.00	66.94

Summary for Input Data

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Heatloss Floor	Ground Floor - Solid	Lowest occupied	Slab on ground, screed over insulation	0.13	None	0.00	110.00	83.70

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor 1	+1	Plasterboard ceiling, carpeted chipboard floor	18.00	66.94

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Window	Manufacturer	Window	Double Low-E Soft 0.1			0.63		0.70	1.40
Glazed Door	Manufacturer	Window	Double Low-E Soft 0.1			0.63		0.70	1.40
Solid Door	Manufacturer	Solid Door				0.00			1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
FW	Window	External Wall (Rendered)	West	12.00	
RW	Window	External Wall (Rendered)	East	3.93	
FSD	Solid Door	External Wall (Brick)	West	2.17	
RGD	Glazed Door	External Wall (Brick)	East	2.87	
LSW	Window	External Wall (Rendered)	North	0.79	
RSW	Window	External Wall (Rendered)	South	0.79	
RW2	Window	External Wall (Brick)	East	0.34	
RW3	Window	External Wall (Cladded)	East	4.23	
RGD	Glazed Door	External Wall (Cladded)	East	2.87	

14.0 Conservatory

15.0 Draught Proofing

 %

16.0 Draught Lobby

17.0 Thermal Bridging

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Gov Approved Scheme	25.36	0.03	0.03	No
E3 Sill	Gov Approved Scheme	17.38	0.02	0.02	No
E4 Jamb	Gov Approved Scheme	44.36	0.02	0.02	No
E5 Ground floor (normal)	Gov Approved Scheme	38.94	0.06	0.06	No
E6 Intermediate floor within a dwelling	Gov Approved Scheme	37.08	0.00	0.00	No
E10 Eaves (insulation at ceiling level)	Gov Approved Scheme	22.07	0.06	0.06	No
E16 Corner (normal)	Gov Approved Scheme	35.40	0.04	0.04	No
E11 Eaves (insulation at rafter level)	Gov Approved Scheme	7.48	0.02	0.02	No
E13 Gable (insulation at rafter level)	Gov Approved Scheme	4.22	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Gov Approved Scheme	15.01	0.04	0.04	No
E14 Flat roof	Table K1 - Default	11.98	0.16	0.16	No
E17 Corner (inverted – internal area greater than external area)	Gov Approved Scheme	15.00	-0.09	-0.09	No

Y-value W/m²K

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys

Number of open flues

Number of chimneys/flues attached to closed fire

Number of flues attached to solid fuel boiler

Number of flues attached to other heater

Number of blocked chimneys

Number of intermittent extract fans

Number of passive vents

Number of flueless gas fires

21.0 Fixed Cooling System

22.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

Summary for Input Data

22.0 Lighting

No Fixed Lighting

No				
Name	Efficacy	Power	Capacity	Count
Lighting 1	80.00	5.00	400.00	20

24.0 Main Heating 1

Database		
Percentage of Heat	100.00	%
Database Ref. No.	108374	
Fuel Type	Electricity	
In Winter	324.52	
In Summer	292.16	
Model Name	PUZ-WZ60VAA and EHPT20X-MEHEW	
Manufacturer	Mitsubishi Electric Europe B.V.	
System Type	Heat Pump	
Controls SAP Code	2207	
Controls description	Time and temperature zone control by arrangement	
Is MHS Pumped	Pump in heated space	
Heating Pump Age	2013 or later	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Enter value	
Flow Temperature Value	35.00	

25.0 Main Heating 2

None

26.0 Heat Networks

None

27.0 Secondary Heating

None

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	No
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
Cold Water Source	From mains
Bath Count	1
Immersion Only Heating Hot Water	No

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
s1	Combi boiler or unvented hot water system	11.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Internal Store	
Insulation Type	Measured Loss
Cylinder Volume	200.00
Loss	1.59

34.0 Small-scale Hydro

None

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

Recommendations

Lower cost measures

Summary for Input Data



None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar water heating			B 85	A 97
Photovoltaic	£8,000 - £10,000	£279	B 89	A 98
Wind turbine			0	0

Thermal Bridging

Plot Reference	Type E	Issued on Date	20/02/2026
Assessment Reference	v1	Plot Type Ref	Detached House
Plot Address	Type E, Land at Blacksmiths Lane, Royston, Hertfordshire, SG8 8AX	SAP Version	10.2

SAP Rating	84 B	DER	3.24	TER	9.48
Environmental	97 A	% DER < TER			65.82
CO ₂ Emissions (t/year)	0.45	DFEE	42.76	TFEE	42.81
Compliance Check	See BREL	% DFEE < TFEE			0.12
% DPER < TPER	32.64	DPER	33.55	TPER	49.81

Assessor Details	Mr. Joe Cantwell Dillon	Assessor ID	BL89-0001
Client	S39576, Chris Anderson		

	Junction details	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E2 Other lintels (including other steel lintels)	Gov Approved Scheme	0.025	25.36	0.63	
External wall	E3 Sill	Gov Approved Scheme	0.022	17.38	0.38	
External wall	E4 Jamb	Gov Approved Scheme	0.017	44.36	0.75	
External wall	E5 Ground floor (normal)	Gov Approved Scheme	0.061	38.94	2.38	
External wall	E6 Intermediate floor within a dwelling	Gov Approved Scheme	0.001	37.08	0.04	
External wall	E10 Eaves (insulation at ceiling level)	Gov Approved Scheme	0.057	22.07	1.26	
External wall	E16 Corner (normal)	Gov Approved Scheme	0.042	35.40	1.49	
External wall	E11 Eaves (insulation at rafter level)	Gov Approved Scheme	0.018	7.48	0.13	
External wall	E13 Gable (insulation at rafter level)	Gov Approved Scheme	0.036	4.22	0.15	
External wall	E12 Gable (insulation at ceiling level)	Gov Approved Scheme	0.043	15.01	0.65	
External wall	E14 Flat roof	Table K1 - Default	0.160	11.98	1.92	
External wall	E17 Corner (inverted – internal area greater than external area)	Gov Approved Scheme	-0.085	15.00	-1.28	

Total: 274.28 W/mK:
Y-Value: 0.02 W/m²K:

Energy Report



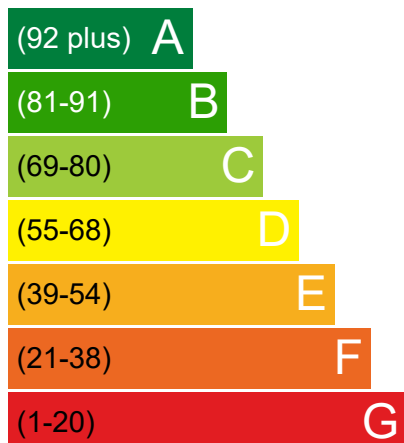
Dwelling Address	Type E, Land at Blacksmiths Lane, Royston, Hertfordshire, SG8 8AX
Reference	Type E-v1
SAP Version	10.2
Assessment Date	19/02/2026
Submission Date	
Property Type	House, Detached
Total Floor Area	151

This Energy Report has been generated using the UK's National Calculation Methodology for dwellings, Standard Assessment Procedure (SAP). This methodology is used to assess the energy efficiency of dwellings which is calculated based on a dwelling's heating, hot water, ventilation and lighting usage.

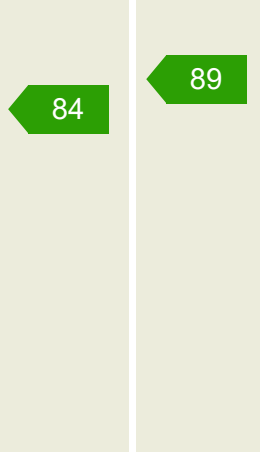
This document is not an Energy Performance Certificate (EPC) as required by the Energy Performance of Buildings Regulations

Energy Efficiency Rating

Most energy efficient - lower running costs

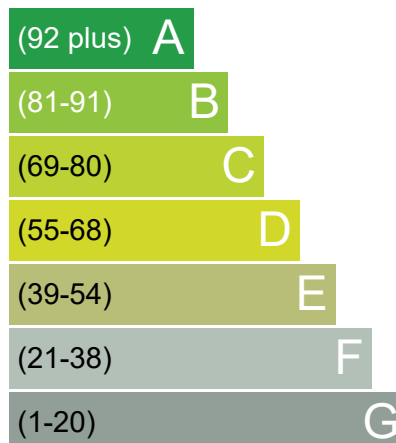


CURRENT POTENTIAL

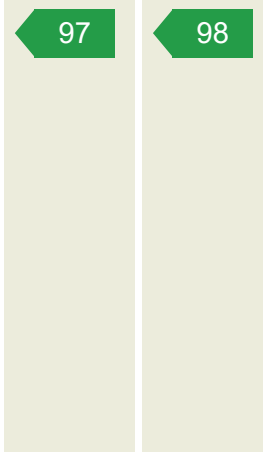


Carbon Dioxide (CO2) Emissions Rating

Very environmentally friendly - lower CO2 emissions



CURRENT POTENTIAL



Additional ratings for your home

Energy Report

	Primary Energy	Energy	Carbon	Cost	HTC
CURRENT	31.07 kWh	3011 kWh	451 kg	856.01 £	170 W/K
POTENTIAL	21.32 kWh	2029 kWh	319 kg	576.89 £	170 W/K

Breakdown of property's energy performance

Each feature is assessed as one of the following:

Very Poor	Poor	Average	Good	Very Good
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Feature	Description	Energy Performance
Walls	Average thermal transmittance 0.18 W/m ² K	Very Good
Roof	Average thermal transmittance 0.13 W/m ² K	Very Good
Floor	Average thermal transmittance 0.13 W/m ² K	Very Good
Windows	High performance glazing	Good
Main heating	Air source heat pump, radiators and underfloor, electric	Very Good
Main heating controls	Time and temperature zone control	Very Good
Secondary heating	None	
Hot water	From main system	Good
Lighting	Good lighting efficiency	Good
Air tightness	Air permeability [AP50] = 5.0 m ³ /h.m ² (assumed)	Good

Recommendations

The recommended measures provided below will help to improve the energy efficiency of the dwelling. To reach the dwelling's potential energy rating all of the recommended measures shown below would need to be installed. Having these measures installed individually or in any other order may give a different result when compared with the cumulative potential rating.

Recommended measures	Cumulative savings (per year)	Cumulative rating	Typical costs	Incremental savings (per year)	Cumulative CO2 rating
Solar water heating	£46	B 85			A 97
Photovoltaic	£325	B 89	£8,000 - £10,000	£279	A 98

The typical cost is based on average installation prices across the country so may not be representative of the actual costs in your area.

Estimated energy costs of the dwelling

The table below shows the estimated running costs of the space and water heating and lighting within the dwelling. It does not include the energy used from household appliances. The estimated annual costs after potential improvements indicates the total energy cost if all recommended measures named above were installed.

	Estimated annual costs	Estimated annual costs after potential improvements	Potential future savings
Lighting 	£96	£96	
Heating 	£466	£466	
Hot Water 	£294	£294	
New Technologies e.g. Impact of PV	£0	-(£279)	
TOTAL	£856	£577	

Estimated energy use and potential savings



Space Heating

1638

kWh per year



Water Heating

1035

kWh per year

About this document

Created by:
Company/Trading name:
Phone number:
Email address:

Disclaimer

This Energy Report should not under any circumstances be treated as a Condition Survey and cannot be used to indicate that any element of the dwelling (e.g. heating system) is working correctly.
This Energy Report must not be used in situations where an Energy Performance Certificate (EPC) is required.
This Energy Report is generated from a set of data inputs which may not reflect the actual dimensions, services or construction of the dwelling.
The calculation used to generate this report reflects the SAP Methodology current at the time of report generation.

Glossary terms for additional metrics

Primary Energy	The measure of the energy required for lighting, heating and hot water in a property. This includes the efficiency of the property's heating system, power station efficiency for electricity and the energy used to produce the fuel and deliver it to the property.
Energy Used	The estimated amount of fuel energy for lighting, heating and hot water for the property. The estimate is based on typical usage which is likely to be different to actual consumption.
Carbon (CO ₂)	The current emissions based on the energy estimates.
Cost	The estimated cost of energy. The cost of each unit of fuel is based on an industry standard which is likely to be different to those the occupier actually pays.
Heat Transfer Coefficient	Heat flow through the property envelope where internal and external temperatures are different.