Building Regulations England Part L (BREL) Compliance Report

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

Date: Wed 12 Mar 2025 11:29:23

Project Information			
Assessed By	Sebastian Ingham	Building Type	House, Detached
OCDEA Registration	EES/022597	Assessment Date	2025-03-12

Dwelling Details			
Assessment Type	As designed	Total Floor Area	96 m^2
Site Reference	Plot 07	Plot Reference	As Designed
Address	Plot 07 Lowans Hill, Redditch		

Client Details	
Name	-
Company	-
Address	-, -, -

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	*12.43 $kgCO_2/m^2$*	
Dwelling carbon dioxide emission rate	12.26 $kgCO_2/m^2$	OK
1b Target primary energy rate and dwelling primary energy		
Target primary energy	*65.05 kWh_{PE}/m^2*	
Dwelling primary energy	64.24 kWh_{PE}/m^2	OK
1c Target fabric energy efficiency and dwelling fabric energy efficiency		
Target fabric energy efficiency	*44.1 kWh/m^2*	
Dwelling fabric energy efficiency	43.4 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*	0.18	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*	0.12	Heat Loss Floor - over entranc (0.23)	OK
Roofs	*0.16*	0.11	Roof (1) (0.11)	OK
Windows, doors, and roof windows	*1.6*	1.2	SW door (1.2)	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)	126.4	0.18
Ground floor: Heat Loss Floor - ground, Heat Loss Floor - ground	46.44	0.11
Upper floor: Heat Loss Floor - over entranc, Heat Loss Floor - over entranc	3.06	0.23
Exposed roof: Roof (1)	49.5	0.11

2c Openings (better than typically expected values are flagged with a subsequent (!))

Name	Area [m^2]	Orientation	Frame factor	U-Value [W/m^2K]
SW door, Doors	1.89	South West	N/A	1.2
NW windows, Windows	3.3	North West	0.7	1.2
NW windows, Windows	2.31	North West	0.7	1.2
NW windows, Windows	1.21	North West	0.7	1.2
NW windows, Windows	6.82	North West	0.7	1.2
NE windows, Windows	2.25	North East	0.7	1.2
NE windows, Windows	0.6	North East	0.7	1.2
NE door, Doors	1.89	North East	N/A	1.2
SE windows, Windows	2.25	South East	0.7	1.2
SE windows, Windows	1	South East	0.7	1.2
SE windows, Windows	1.21	South East	0.7	1.2
SE windows, Windows	1.21	South East	0.7	1.2

Name	Area [m²]	Orientation	Frame factor	U-Value [W/m²K]
SE windows, Windows	0.49	South East	0.7	1.2

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)	Calculated by person with suitable expertise	0.084	
External wall	E3: Sill	Calculated by person with suitable expertise	0.034 **(!)**	
External wall	E4: Jamb	Calculated by person with suitable expertise	0.043	
External wall	E20: Exposed floor (normal)	SAP table default	0.32	
External wall	E21: Exposed floor (inverted)	SAP table default	0.32	
External wall	E10: Eaves (insulation at ceiling level)	Calculated by person with suitable expertise	0.044	
External wall	E12: Gable (insulation at ceiling level)	Calculated by person with suitable expertise	0.051	
External wall	E16: Corner (normal)	Calculated by person with suitable expertise	0.03 **(!)**	
External wall	E17: Corner (inverted - internal area greater than external area)	Calculated by person with suitable expertise	-0.015 **(!)**	

3 Air permeability (better than typically expected values are flagged with a subsequent (!))

Maximum permitted air permeability at 50Pa	*8 m³/hm²*	
Dwelling air permeability at 50Pa	5.01 m³/hm², Design value	OK
Air permeability test certificate reference		

4 Space heating

Main heating system 1: Boiler with radiators or underfloor heating - Mains gas	
Efficiency	88.7%
Emitter type	Radiators
Flow temperature	45°C
System type	
Manufacturer	Bosch Thermotechnology Ltd
Model	Greenstar 4000
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	
Technology type: **Photovoltaic system (1)**	
Peak power	3.01 kWp
Orientation	South East
Pitch	30°
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

Property Reference	Plot 07	Issued on Date	12/03/2025
Assessment Reference	As Designed	Prop Type Ref	Type 03
Property	Plot 07, Lowans Hill, Redditch		

SAP Rating	94 A	DER	12.26	TER	12.43
Environmental	89 B	% DER < TER			1.37
CO_2 Emissions (t/year)	1.09	DFEE	43.44	TFEE	44.14
Compliance Check	See BREL	% DFEE < TFEE			1.60
% DPER < TPER	1.24	DPER	64.24	TPER	65.05

Assessor Details	Mr. Sebastian Ingham	Assessor ID	T245-0001
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	2024	
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	0.00	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
Ground floor:	29.00 m	46.44 m²	2.47 m
1st Storey:	29.00 m	49.50 m²	2.80 m

8.0 Living Area 39.00 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
External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.18	9.00	152.83	126.40	0.00	None	26.43	Calculate Wall Area

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Wall	Plasterboard on timber frame	9.00	188.24

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
External Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.11	9.00	49.50	49.50	None	0.00	Calculate Wall Area	0.00

10.2 Internal Ceilings

Description	Storey	Construction	Area (m²)
Internal Ceiling	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	46.44

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Heat Loss Floor - ground	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.11	None	0.00	75.00	46.44
Heat Loss Floor - over entranc	Exposed Floor - Timber	+1	Timber exposed floor, insulation between joists	0.23	None	0.00	20.00	3.06

Summary for Input Data

elmhurst energy

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor		Plasterboard ceiling, carpeted chipboard floor	9.00	46.44

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Windows	Manufacturer	Window	Double glazed			0.76		0.70	1.20
Doors	Manufacturer	Solid Door				0.00			1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
SW door	Doors	External Wall	South West	1.89	0
NW windows	Windows	External Wall	North West	13.64	0
NE windows	Windows	External Wall	North East	2.85	0
NE door	Doors	External Wall	North East	1.89	0
SE windows	Windows	External Wall	South East	6.16	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	16.80	0.08	0.08	Yes
E3 Sill	Independently assessed	15.00	0.03	0.03	Yes
E4 Jamb	Independently assessed	38.00	0.04	0.04	Yes
E20 Exposed floor (normal)	Table K1 - Default	3.50	0.32	0.32	No
E21 Exposed floor (inverted)	Table K1 - Default	3.50	0.32	0.32	No
E10 Eaves (insulation at ceiling level)	Independently assessed	18.00	0.04	0.04	No
E12 Gable (insulation at ceiling level)	Independently assessed	11.00	0.05	0.05	No
E16 Corner (normal)	Independently assessed	23.55	0.03	0.03	No
E17 Corner (inverted – internal area greater than external area)	Independently assessed	2.47	-0.01	-0.01	No

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	No

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	4
Number of passive vents	0
Number of flueless gas fires	0

21.0 Fixed Cooling System	No	

22.0 Pressure Testing	Yes	
Designed AP_{50}	5.01	m³/(h.m²) @ 50 Pa
Property Tested?	Yes	
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting	No

Name	Efficacy	Power	Capacity	Count
Low energy Lighting	80.00	10.00	800.00	30

24.0 Main Heating 1	Database	
Percentage of Heat	100.00	%
Database Ref. No.	18907	
Fuel Type	Mains gas	

Summary for Input Data

SAP Code	104
Model Name	Greenstar 4000
Manufacturer	Bosch Thermotechnology Ltd
Controls SAP Code	2110
PCDF Controls	0
Delayed Start Stat	Yes
Burner Control	Modulating
Boiler Compensator	0
HETAS approved System	No
Flue Type	Balanced
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	45.00
Boiler Interlock	Yes
Combi boiler type	Standard Combi

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
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	Combi boiler or unvented hot water system	9.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder None

Cylinder Stat	No	
Cylinder In Heated Space	No	
Independent Time Control	No	
Insulation Type	None	
Insulation Thickness	0	
Cylinder Volume	0.00	L

Summary for Input Data

Loss	0.00	kWh/day
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
3.01	South East	30°	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

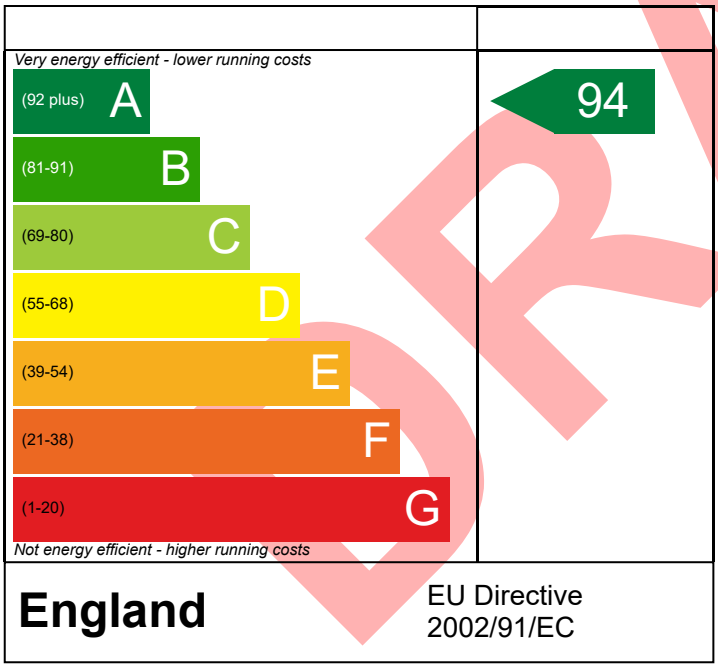
Plot 07, Lowans Hill, Redditch

Dwelling type:	House, Detached
Date of assessment:	12/03/2025
Produced by:	Sebastian Ingham
Total floor area:	95.94 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.

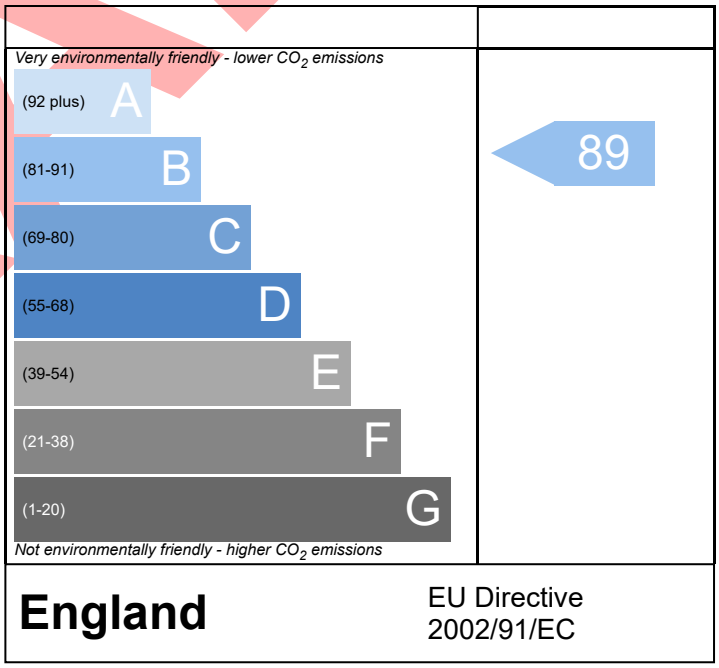
The energy performance has been assessed using the Government approved SAP 10 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO2) emissions.

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.

DRAFT