

Building Regulations England Part L (BREL) Compliance Report

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

Date: Mon 04 Mar 2024 15:08:37

Project Information			
Assessed By	Lorraine Clark	Building Type	House, Detached
OCDEA Registration	EES/030145	Assessment Date	2024-03-04

Dwelling Details			
Assessment Type	As designed	Total Floor Area	553 m ²
Site Reference	C2324352 8 Williams Way	Plot Reference	As Designed
Address	8 Williams Way, Radlett, WD7 7EZ		

Client Details	
Name	CMI Architecture Ltd
Company	CMI Architecture Ltd
Address	11 Warren Yard, Stratford Road, Milton Keynes, MK12 5NW

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	7.21 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	3.15 kgCO ₂ /m ²	OK	
1b Target primary energy rate and dwelling primary energy			
Target primary energy	38.87 kWh _{PE} /m ²		
Dwelling primary energy	32.41 kWh _{PE} /m ²	OK	
1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	41.4 kWh/m ²		
Dwelling fabric energy efficiency	41.2 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	0.17	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	0.11	1F Floor to Garage (0.16)	OK
Roofs	0.16	0.15	Roof (1) (0.16)	OK
Windows, doors, and roof windows	1.6	1.18	SW Windows (1.2)	OK
Rooflights	2.2	1.2	Roof Light, South West (1.2)	OK

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)	245.7765	0.18
Sheltered wall: Walls (2)	23.53	0.16
Exposed wall: Walls (3)	73.63	0.12 (!)
Exposed wall: Walls (4)	10.03	0.18
Ground floor: Ground Floor, Ground Floor	221.78	0.11
Upper floor: 1F Floor to Garage, 1F Floor to Garage	23.48	0.16
Exposed roof: Roof (1)	49.99	0.16
Exposed roof: Roof (2)	59.67	0.12
Exposed roof: Roof (3)	6.54	0.16
Exposed roof: Roof (4)	165.45	0.16
Exposed roof: Roof (5)	81.446	0.16
Exposed roof: Roof (6)	3.92	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 ² K]
Front Door, Solid Door	2.665	South West	N/A	1 (!)
SW Windows, Windows	1.3325	South West	1.0	1.2
SW Windows, Windows	1.3325	South West	1.0	1.2
SW Windows, Windows	0.39	South West	1.0	1.2
SW Windows, Windows	2.4832	South West	1.0	1.2

Name	Area [m ²]	Orientation	Frame factor	U-Value [W/m ² K]
SW Windows, Windows	2.4832	South West	1.0	1.2
SW Windows, Windows	2.4832	South West	1.0	1.2
SW Windows, Windows	2.0992	South West	1.0	1.2
SW Windows, Windows	2.0992	South West	1.0	1.2
SW Windows, Windows	2.0992	South West	1.0	1.2
SW Windows, Windows	2.0992	South West	1.0	1.2
NW Hall to Garage, Solid Door	2.1	North West	N/A	1 (!)
SE Windows, Windows	0.91	South East	1.0	1.2
SE Windows, Windows	0.91	South East	1.0	1.2
SE Windows, Windows	1.3195	South East	1.0	1.2
SE Windows, Windows	1.3195	South East	1.0	1.2
NE Windows, Windows	10.458	North East	1.0	1.2
NE Windows, Windows	1.727	North East	1.0	1.2
NE Windows, Windows	1.727	North East	1.0	1.2
NE Windows, Windows	28.7261	North East	1.0	1.2
NE Dormers, Windows	7.74	North East	1.0	1.2
NE Dormers, Windows	0.9	North East	1.0	1.2
NW Windows, Windows	0.91	North West	1.0	1.2
Roof Light, Roof Light	2.664	South West	0.7	1.2
SW Windows, Windows	4.92	South West	1.0	1.2
SW Dormers, Windows	2.18	South West	1.0	1.2
SW Utility to Garage, Solid Door	2.1	South West	N/A	1 (!)

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	0.023 (!)	E2-02 RCD
External wall	E3: Sill	Calculated by person with suitable expertise	0.21	RCD
External wall	E4: Jamb	Calculated by person with suitable expertise	0.016 (!)	RCD
External wall	E5: Ground floor (normal)	Calculated by person with suitable expertise	0.112	E5-04 RCD
External wall	E20: Exposed floor (normal)	SAP table default	0.32	
External wall	E6: Intermediate floor within a dwelling	Calculated by person with suitable expertise	0.002 (!)	RCD
External wall	E11: Eaves (insulation at rafter level)	Calculated by person with suitable expertise	0.018 (!)	RCD
External wall	E16: Corner (normal)	Calculated by person with suitable expertise	0.051	RCD
External wall	E14: Flat roof	SAP table default	0.16	
External wall	E17: Corner (inverted - internal area greater than external area)	Calculated by person with suitable expertise	-0.091	RCD
Roof	R1: Head of roof window	SAP table default	0.24	
Roof	R2: Sill of roof window	SAP table default	0.24	
Roof	R3: Jamb of roof window	SAP table default	0.24	
Roof	R5: Ridge (inverted)	SAP table default	0.12	
Roof	R6: Flat ceiling	SAP table default	0.12	
Roof	R7: Flat ceiling (inverted)	SAP table default	0.12	
Roof	R9: Roof to wall (flat ceiling)	SAP table default	0.32	
Roof	R4: Ridge (vaulted ceiling)	SAP table default	0.12	

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 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	276.6%	
Emitter type	Underfloor	
Flow temperature	55°C	
System type	Heat Pump	
Manufacturer	Vaillant Group UK Ltd	
Model	aroTHERM plus 12kW + AI	
Commissioning		
Main heating system 2: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	276.6%	
Emitter type	Underfloor	
Flow temperature	55°C	
System type	Heat Pump	
Manufacturer	Vaillant Group UK Ltd	
Model	aroTHERM plus 12kW + AI	
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	300 litres	
Declared heat loss	2.32 kWh/day	
Primary pipework insulated	Yes	
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		
Main heating 2 - 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		
<i>Minimum permitted light source efficacy</i>	75 lm/W	
Lowest light source efficacy	80 lm/W	OK
External lights control	N/A	
8 Mechanical ventilation		
System type: Decentralised mechanical extract		
<i>Maximum permitted specific fan power</i>	0.7 W/(l/s)	
Specific fan power	0.12 W/(l/s)	OK
<i>Minimum permitted heat recovery efficiency</i>	N/A	
Heat recovery efficiency	N/A	N/A
Manufacturer/Model	Unity CV2.1	
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.	
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Signed:	Assessor ID:
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Name:	Date:
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b. Client Declaration

N/A

Predicted Energy Assessment

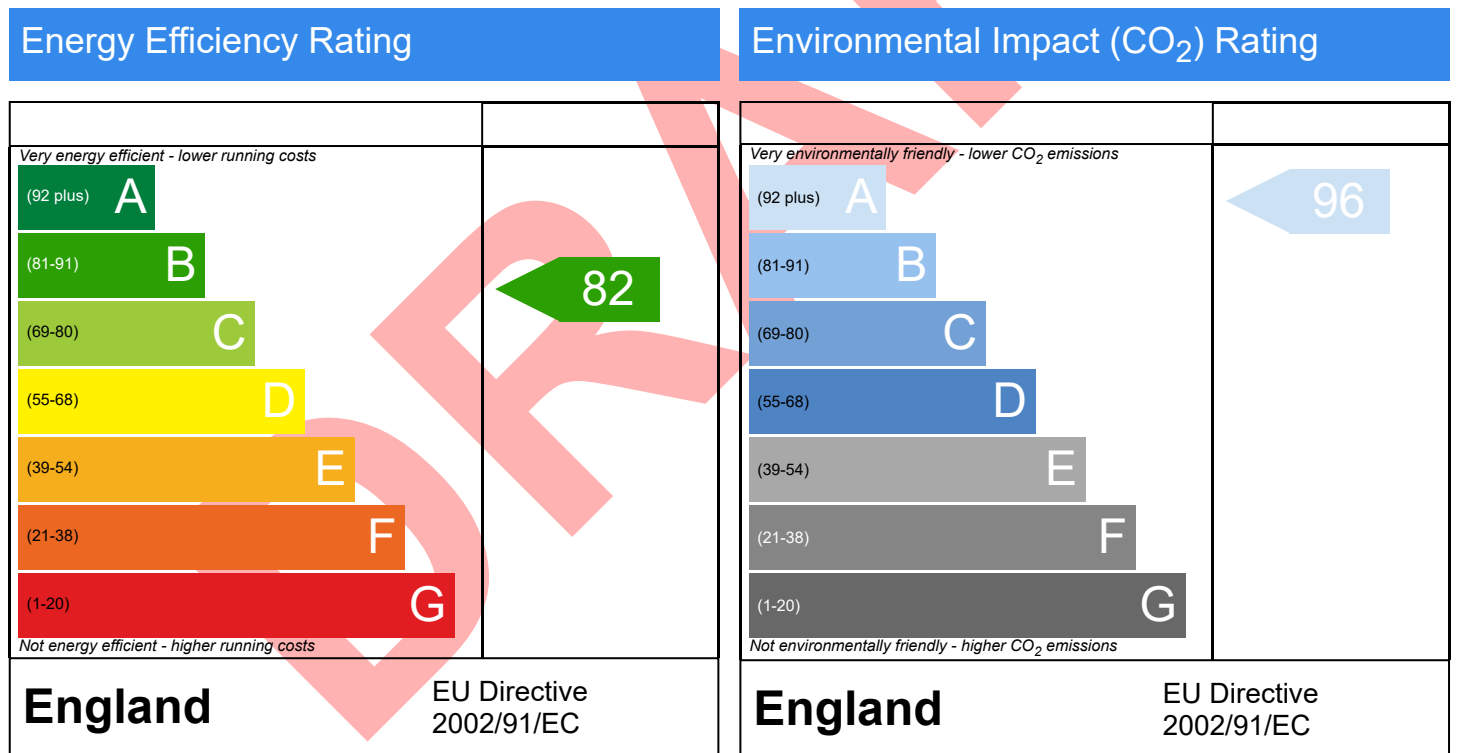


8, Williams Way, Radlett, Hertfordshire, WD7 7EZ

Dwelling type: House, Detached
 Date of assessment: 04/03/2024
 Produced by: Lorraine Clark
 Total floor area: 576.62 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.



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.

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.

Thermal Bridging

Property Reference	C2324352 8 Williams Way		Issued on Date	04/03/2024
Assessment Reference	As Designed	Prop Type Ref	Detached House	
Property	8, Williams Way, Radlett, Hertfordshire, WD7 7EZ			

SAP Rating	82 B	DER	3.15	TER	7.21
Environmental	96 A	% DER < TER			56.31
CO ₂ Emissions (t/year)	1.64	DFEE	41.20	TFEE	41.41
Compliance Check	See BREL	% DFEE < TFEE			0.49
% DPER < TPER	16.63	DPER	32.41	TPER	38.87

Assessor Details	Ms. Lorraine Clark	Assessor ID	CH40-0001
Client	005, CMI Architecture Ltd		

	Junction details	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E2 Other lintels (including other steel lintels)	Independently assessed	0.023	46.39	1.07	E2-02 RCD
External wall	E3 Sill	Independently assessed	0.210	30.16	6.33	RCD
External wall	E4 Jamb	Independently assessed	0.016	80.40	1.29	RCD
External wall	E5 Ground floor (normal)	Independently assessed	0.112	63.72	7.14	E5-04 RCD
External wall	E20 Exposed floor (normal)	Table K1 - Default	0.320	10.32	3.30	
External wall	E6 Intermediate floor within a dwelling	Independently assessed	0.002	120.61	0.24	RCD
External wall	E11 Eaves (insulation at rafter level)	Independently assessed	0.018	62.70	1.13	RCD
External wall	E16 Corner (normal)	Independently assessed	0.051	47.20	2.41	RCD
External wall	E14 Flat roof	Table K1 - Default	0.160	22.86	3.66	
External wall	E17 Corner (inverted – internal area greater than external area)	Independently assessed	-0.091	5.50	-0.50	RCD
External roof	R1 Head of roof window	Table K1 - Default	0.240	1.20	0.29	
External roof	R2 Sill of roof window	Table K1 - Default	0.240	1.20	0.29	
External roof	R3 Jamb of roof window	Table K1 - Default	0.240	4.44	1.07	
External roof	R5 Ridge (inverted)	Table K1 - Default	0.120	4.16	0.50	
External roof	R6 Flat ceiling	Table K1 - Default	0.120	43.50	5.22	
External roof	R7 Flat ceiling (inverted)	Table K1 - Default	0.120	20.67	2.48	
External roof	R9 Roof to wall (flat ceiling)	Table K1 - Default	0.320	11.40	3.65	
External roof	R4 Ridge (vaulted ceiling)	Table K1 - Default	0.120	20.78	2.49	

Total: 597.21 W/mK:
 Y-Value: 0.04 W/m²K: