

Building Regulations England Part L (BREL) Compliance Report

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

Date: Thu 25 Jul 2024 10:35:58

Project Information			
Assessed By	Kodi McGreavy	Building Type	House, Semi-detached
OCDEA Registration	EES/031557	Assessment Date	2024-07-25

Dwelling Details			
Assessment Type	As designed	Total Floor Area	125 m ²
Site Reference	Plot A	Plot Reference	Plot A
Address			

Client Details	
Name	Array
Company	Array
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	9.87 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	8.63 kgCO ₂ /m ²		OK
1b Target primary energy rate and dwelling primary energy			
Target primary energy	51.54 kWh _{PE} /m ²		
Dwelling primary energy	49.58 kWh _{PE} /m ²		OK
1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	33.4 kWh/m ²		
Dwelling fabric energy efficiency	33.3 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	0.16	Walls (1) (0.16)	OK
Party walls	0.2	0	Party Wall (1) (0)	N/A
Curtain walls	1.6	0	N/A	N/A
Floors	0.18	0.11	Heatloss Floor (0.11)	OK
Roofs	0.16	0.13	Roof (1) (0.13)	OK
Windows, doors, and roof windows	1.6	1.42	E - Door - Ground (1.6)	OK
Rooflights	2.2	2.2	W - Roof Light - 2nd , West (2.2)	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)	37.61	0.16
Exposed wall: Walls (2)	39.49	0.16
Exposed wall: Walls (3)	21.15	0.16
Party wall: Party Wall (1)	25.22	0 (!)
Party wall: Party Wall (2)	25.22	0 (!)
Party wall: Party Wall (3)	21.15	0 (!)
Ground floor: Heatloss Floor , Heatloss Floor	41.63	0.11
Exposed roof: Roof (1)	42.1888	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]
E - Door - Ground , Door	2	East	N/A	1.6
E - Window - Ground , Window	2.11	East	0.7	1.4
E - Window - 1st, Window	3.74	East	0.7	1.4
W - Window - Ground , Window	5.81	West	0.7	1.4
W - Window - 1st , Window	4.3	West	0.7	1.4
W - Roof Light - 2nd , Rooflight	1.0353	West	0.7	2.2
W - Roof Light - 2nd , Rooflight	1.0353	West	0.7	2.2
E - Roof Light - 2nd, Rooflight	1.0353	East	0.7	2.2

Name	Area [m ²]	Orientation	Frame factor	U-Value [W/m ² K]
E - Roof Light - 2nd, Rooflight	1.0353	East	0.7	2.2

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	0.05	
External wall	E3: Sill	Calculated by person with suitable expertise	0.04	
External wall	E4: Jamb	Calculated by person with suitable expertise	0.05	
External wall	E5: Ground floor (normal)	Calculated by person with suitable expertise	0.16	
External wall	E6: Intermediate floor within a dwelling	Calculated by person with suitable expertise	0.07	
External wall	E11: Eaves (insulation at rafter level)	Calculated by person with suitable expertise	0.04	
External wall	E13: Gable (insulation at rafter level)	Calculated by person with suitable expertise	0.04	
External wall	E16: Corner (normal)	Calculated by person with suitable expertise	0.09	
Party wall	P1: Ground floor	Calculated by person with suitable expertise	0.08	
Party wall	P2: Intermediate floor within a dwelling	Calculated by person with suitable expertise	0 (!)	
Party wall	P5: Roof (insulation at rafter level)	Calculated by person with suitable expertise	0.02 (!)	

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 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	83.8%
Emitter type	Radiators
Flow temperature	55°C
System type	Combi boiler
Manufacturer	Baxi Heating UK Ltd
Model	ASSURE 536 COMBI 2
Commissioning	
Secondary heating system: Closed room heater	
Fuel	Wood logs
Efficiency	60.0%
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 device in PCDB		
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	75 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	4 kWp	
Orientation	West	
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:	Assessor ID:	
Name:	Date:	
b. Client Declaration		
N/A		

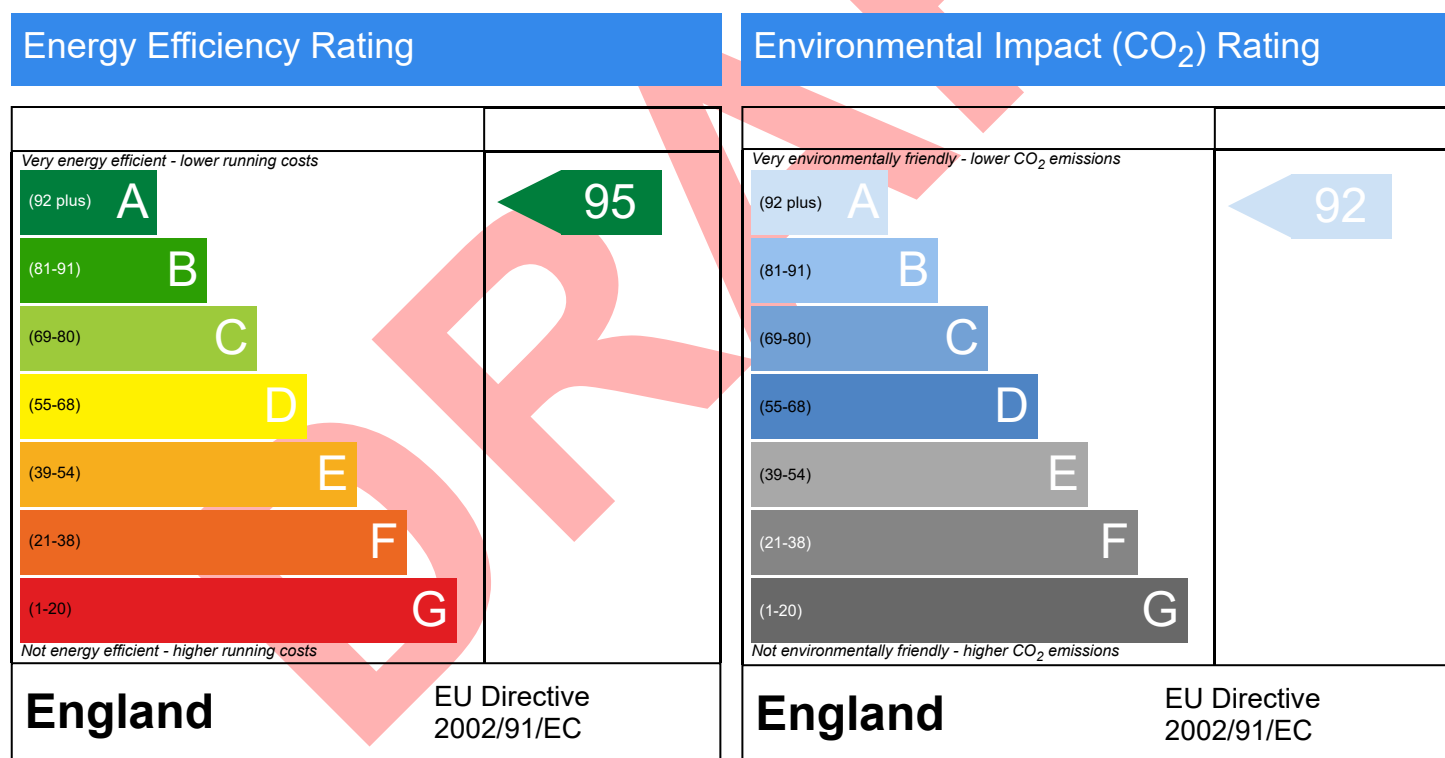
Predicted Energy Assessment



Dwelling type: House, Semi-Detached
Date of assessment: 25/07/2024
Produced by: Kodi McGreavy
Total floor area: 124.89 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.

Summary for Input Data



Property Reference	Plot A	Issued on Date	25/07/2024
Assessment Reference	Plot A	Prop Type Ref	P0322 - Straithwate Drive
Property			

SAP Rating	95 A	DER	8.63	TER	9.87
Environmental	92 A	% DER < TER			12.56
CO ₂ Emissions (t/year)	1	DFEE	33.27	TFEE	33.44
Compliance Check	See BREL	% DFEE < TFEE			0.51
% DPER < TPER	3.81	DPER	49.58	TPER	51.54

Assessor Details	Mr. Kodi McGreavy	Assessor ID	DC13-0001
Client	Barry Winterbottom ,		

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

Orientation	East
Property Tenture	ND
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Semi-Detached
2.0 Number of Storeys	3
3.0 Date Built	2024
4.0 Sheltered Sides	3
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation

7.0 Electricity Tariff	Standard
Smart electricity meter fitted	Yes
Smart gas meter fitted	Yes

7.0 Measurements	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	18.28 m	41.63 m ²	2.60 m
1st Storey:	18.28 m	41.63 m ²	2.60 m
2nd Storey:	18.28 m	41.63 m ²	2.18 m

8.0 Living Area	31.04	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	Shelter	Openings	Area Calculation Type
	External Wall - Ground	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.16	110.00	47.53	37.61	0.00	None	9.92	Enter Gross Area
	External Wall - 1st	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.16	110.00	47.53	39.49	0.00	None	8.04	Enter Gross Area
	External Wall - 2nd	Cavity Wall	Cavity wall; plasterboard on dabs or battens, lightweight aggregate block, filled cavity, any outside structure	0.16	110.00	21.15	21.15	0.00	None	0.00	Enter Gross Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall - Ground	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	25.22		None
	Party Wall - 1st	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	25.22		None
	Party Wall - 2nd	Filled Cavity with Edge Sealing	Single plasterboard on dabs both sides, lightweight aggregate blocks, cavity or cavity fill	0.00	110.00	21.15		None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Internal Wall - Ground	Plasterboard on timber frame	9.00	54.73
	Internal Wall - 2nd	Plasterboard on timber frame	9.00	26.81
	Internal Wall - 1st	Plasterboard on timber frame	9.00	112.71

10.0 External Roofs	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area	Shelter Code	Shelter Factor	Calculation Type	Openings
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Summary for Input Data

External Roof	External Slope Roof	Plasterboard, insulated slope	0.13	9.00	46.33	(m ²) 42.19	None	0.00	Enter Gross Area	4.14
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10.2 Internal Ceilings

Description	Storey	Construction	Area (m ²)
Internal Ceiling - Ground	Lowest occupied	Plasterboard ceiling, carpeted chipboard floor	41.63
Internal Ceiling - First	+1	Plasterboard ceiling, carpeted chipboard floor	41.63

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Heatloss Floor	Ground Floor - Solid	Lowest occupied	Slab on ground, screed over insulation	0.11	None	0.00	110.00	41.63

11.2 Internal Floors

Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
Internal Floor - 2nd		Plasterboard ceiling, carpeted chipboard floor	9.00	41.63
Internal Floor - 1st		Plasterboard ceiling, carpeted chipboard floor	9.00	41.63

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Window	Manufacturer	Window	Double glazed			0.76		0.70	1.40
Door	Manufacturer	Solid Door				0.00			1.60
Rooflight	Manufacturer	Roof Light	Double glazed			0.76		0.70	2.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
E - Door - Ground	Door	External Wall - Ground	East	2.00	
E - Window - Ground	Window	External Wall - Ground	East	2.11	
E - Window - 1st	Window	External Wall - 1st	East	3.74	
W - Window - Ground	Window	External Wall - Ground	West	5.81	
W - Window - 1st	Window	External Wall - 1st	West	4.30	
W - Roof Light - 2nd	Rooflight	External Roof	West	2.07	26
E - Roof Light - 2nd	Rooflight	External Roof	East	2.07	26

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	12.29	0.05	0.05	No
E3 Sill	Independently assessed	9.60	0.04	0.04	No
E4 Jamb	Independently assessed	25.98	0.05	0.05	No
E5 Ground floor (normal)	Independently assessed	18.28	0.16	0.16	No
E6 Intermediate floor within a dwelling	Independently assessed	18.28	0.07	0.07	No
E11 Eaves (insulation at rafter level)	Independently assessed	8.60	0.04	0.04	No
E13 Gable (insulation at rafter level)	Independently assessed	9.70	0.04	0.04	No
E16 Corner (normal)	Independently assessed	20.80	0.09	0.09	No
P1 Party wall - Ground floor	Independently assessed	9.70	0.08	0.08	No
P2 Party wall - Intermediate floor within a dwelling	Independently assessed	9.70	0.00	0.00	No
P5 Party wall - Roof (insulation at rafter level)	Independently assessed	9.70	0.02	0.02	No

Y-value

0.05

 W/m²K

18.0 Pressure Testing

Yes

Designed AP₅₀

5.00

 m³/(h.m²) @ 50 Pa

Test Method

Blower Door

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

No

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Lighting (LED)	75.00	5.00	375.00	16

24.0 Main Heating 1

Database

Percentage of Heat

100.00

 %

Summary for Input Data

Database Ref. No.	19081				
Fuel Type	Mains gas				
In Winter	83.80				
In Summer	86.70				
Model Name	ASSURE 536 COMBI 2				
Manufacturer	Baxi Heating UK Ltd				
System Type	Combi boiler				
Controls SAP Code	2112				
Delayed Start Stat	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	55.00				
Combi boiler type	Standard Combi				
Combi keep hot type	None				
25.0 Main Heating 2	None				
26.0 Heat Networks	None				
27.0 Secondary Heating					
Secondary Heating	SAP table				
SAP Code	633				
SHS efficiency	60.00				
HETAS Approved System	No				
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				
28.1 Showers					
Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
28.3 Waste Water Heat Recovery System					
29.0 Hot Water Cylinder	None				
In Airing Cupboard	No				
32.0 Photovoltaic Unit	One Dwelling				
Export Capable Meter?	Yes				
Connected To Dwelling	Yes				
Diverter	No				
Battery Capacity [kWh]	0.00				

Summary for Input Data



PV Cells kWp	Orientation	Elevation	Overshading	FGHRS	MCS Certificate	Overshading Factor	MCS Certificate Reference	Panel Manufacturer
4.00	West	30°	None Or Little		No	1.00		

34.0 Small-scale Hydro

None

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

Lower cost measures

None

Further measures to achieve even higher standards

Typical Cost

Typical savings per year

Ratings after improvement	
SAP rating	Environmental Impact
A 96	A 93
0	0
0	0