

Building Regulations England Part L (BREL) Compliance Report

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

Date: Fri 01 Mar 2024 08:29:23

Project Information			
Assessed By	Darren Coham	Building Type	House, Detached
OCDEA Registration	EES/022007	Assessment Date	2024-03-01

Dwelling Details			
Assessment Type	As designed	Total Floor Area	356 m ²
Site Reference	305	Plot Reference	305_Gas Boiler
Address	305 Peppard Road, Emmer Green, RG4 8TQ		

Client Details	
Name	Tony
Company	Tony Holt Design
Address	12 Station Road, Parkstone, Poole, BH14 8UB

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	9.46 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	9.4 kgCO ₂ /m ²		OK
1b Target primary energy rate and dwelling primary energy			
Target primary energy	51.48 kWh _{PE} /m ²		
Dwelling primary energy	50.92 kWh _{PE} /m ²		OK
1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	53.5 kWh/m ²		
Dwelling fabric energy efficiency	50.1 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	N/A	N/A	N/A
Curtain walls	1.6	N/A	N/A	N/A
Floors	0.18	0.13	Heatloss Floor 1 (0.13)	OK
Roofs	0.16	0.14	Roof (1) (0.14)	OK
Windows, doors, and roof windows	1.6	1.3	1 (1.3)	OK
Rooflights	2.2	1.3	rl, West (1.3)	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)	281.5195	0.16
Ground floor: Heatloss Floor 1, Heatloss Floor 1	198.12	0.13
Exposed roof: Roof (1)	193.12	0.14

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]
1, Windows	6.3945	East	0.75	1.3
2, Windows	5.964	East	0.75	1.3
3, Windows	3.012	South	0.75	1.3
4, Windows	1.911	South	0.75	1.3
5, Windows	12.06	West	0.75	1.3
6, Windows	8.304	West	0.75	1.3
7, Windows	6.768	West	0.75	1.3
8, Windows	4.032	South	0.75	1.3
9, Windows	2.76	South	0.75	1.3
10, ceramic panel	2.064	South	N/A	1.3
11, ceramic panel	1.2	South	N/A	1.3
12, Windows	12.0375	West	0.75	1.3
13, Windows	7.83	West	0.75	1.3
14, Windows	3.4875	East	0.75	1.3

Name	Area [m ²]	Orientation	Frame factor	U-Value [W/m ² K]
15, Windows	3.051	East	0.75	1.3
16, Windows	3.7275	East	0.75	1.3
17, Windows	3.7275	East	0.75	1.3
rl, Roof Lights	5	West	0.75	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)	Government-approved scheme	0.069	
External wall	E3: Sill	Government-approved scheme	0.028 (!)	
External wall	E4: Jamb	Government-approved scheme	0.023 (!)	
External wall	E5: Ground floor (normal)	Government-approved scheme	0.06	
External wall	E6: Intermediate floor within a dwelling	Government-approved scheme	0.001 (!)	
External wall	E16: Corner (normal)	Government-approved scheme	0.039 (!)	
External wall	E17: Corner (inverted - internal area greater than external area)	Government-approved scheme	-0.074	
External wall	E15: Flat roof with parapet	Government-approved scheme	0.071	
Roof	R11: Upstands or kerbs of rooflights	SAP table default	0.24	

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: Boiler with radiators or underfloor heating - Mains gas

Efficiency	88.8%
Emitter type	Underfloor
Flow temperature	60°C
System type	Regular boiler
Manufacturer	Ideal Boilers
Model	LOGIC SYSTEM
Commissioning	

Secondary heating system: N/A

Fuel	N/A
Efficiency	N/A
Commissioning	

5 Hot water

Cylinder/store - type: Cylinder

Capacity	210 litres
Declared heat loss	1.85 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	

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	100 lm/W	OK
External lights control	N/A	
8 Mechanical ventilation		
System type: Balanced whole-house mechanical ventilation with heat recovery		
Maximum permitted specific fan power	1.5 W/(l/s)	
Specific fan power	0.91 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	93%	OK
Manufacturer/Model	ComfoAir Q600 GB ST	
Commissioning		
9 Local generation		
Technology type: Photovoltaic system (1)		
Peak power	4 kWp	
Orientation	South	
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



305, Peppard Road, Emmer Green, Reading, RG4 8TQ

Dwelling type:

House, Detached

Date of assessment:

01/03/2024

Produced by:

Darren Coham

Total floor area:

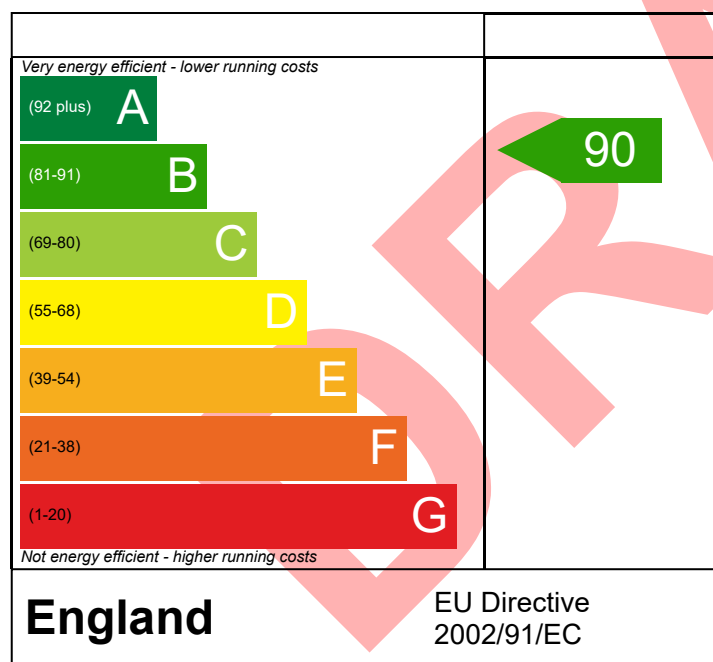
373.98 m²

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.

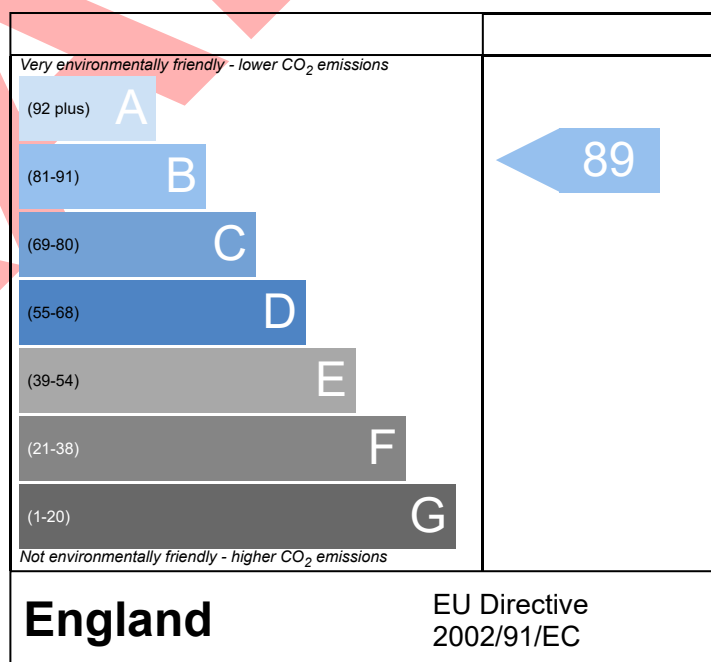
The energy performance has been assessed using the Government approved SAP 10 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO₂) emissions.

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



Property Reference	305	Issued on Date	01/03/2024
Assessment Reference	305_Gas Boiler	Prop Type Ref	Dwelling
Property	305, Peppard Road, Emmer Green, Reading, RG4 8TQ		

SAP Rating	90 B	DER	9.40	TER	9.46
Environmental	89 B	% DER < TER			0.63
CO ₂ Emissions (t/year)	2.88	DFEE	50.07	TFEE	53.45
Compliance Check	See BREL	% DFEE < TFEE			6.34
% DPER < TPER	1.09	DPER	50.92	TPER	51.48

Assessor Details	Mr. Darren Coham	Assessor ID	R789-0001
Client	Tony Holt Design, Tony		

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

Orientation	East
Property Tenure	1
Transaction Type	6
Terrain Type	Suburban
1.0 Property Type	House, Detached
2.0 Number of Storeys	2
3.0 Date Built	2024
4.0 Sheltered Sides	2
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	Unheated Space Floor Area	Average Storey Height
Ground floor:	84.91 m	198.12 m ²	18.47 m ²	2.48 m
1st Storey:	52.74 m	157.39 m ²		3.02 m

8.0 Living Area	138.31	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	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.16	70.00	369.85	281.52	0.00	None	88.33	Calculate Wall Area

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Internal Wall 1	Dense block, plasterboard on dabs	75.00	587.00

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	0.14	9.00	198.12	193.12	None	0.00	Enter Gross Area	5.00

10.2 Internal Ceilings	Description	Storey	Construction	Area (m ²)
	Internal Ceiling 1	Lowest occupied	Other	157.39

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 1	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.13	None	0.00	75.00	198.12

11.2 Internal Floors	Description	Storey Index	Construction	Kappa (kJ/m ² K)	Area (m ²)
	Internal Floor 1		Other	75.00	157.39

Summary for Input Data

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 Low-E Soft 0.05			0.40		0.75	1.30
Roof Lights	Manufacturer	Roof Light	Double Low-E Soft 0.05			0.40		0.75	1.30
ceramic panel	Manufacturer	Solid Door							1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
1	Windows	External Wall	East	6.39	
2	Windows	External Wall	East	5.96	
3	Windows	External Wall	South	3.01	
4	Windows	External Wall	South	1.91	
5	Windows	External Wall	West	12.06	
6	Windows	External Wall	West	8.30	
7	Windows	External Wall	West	6.77	
8	Windows	External Wall	South	4.03	
9	Windows	External Wall	South	2.76	
10	ceramic panel	External Wall	South	2.06	
11	ceramic panel	External Wall	South	1.20	
12	Windows	External Wall	West	12.04	
13	Windows	External Wall	West	7.83	
14	Windows	External Wall	East	3.49	
15	Windows	External Wall	East	3.05	
16	Windows	External Wall	East	3.73	
17	Windows	External Wall	East	3.73	
rl	Roof Lights	External Roof 1	West	5.00	0

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	47.08	0.07	0.07	Yes
E3 Sill	Gov Approved Scheme	27.43	0.03	0.03	No
E4 Jamb	Gov Approved Scheme	66.75	0.02	0.02	Yes
E5 Ground floor (normal)	Gov Approved Scheme	84.91	0.06	0.06	Yes
E6 Intermediate floor within a dwelling	Gov Approved Scheme	52.74	0.00	0.00	Yes
E16 Corner (normal)	Gov Approved Scheme	40.44	0.04	0.04	No
E17 Corner (inverted – internal area greater than external area)	Gov Approved Scheme	15.96	-0.07	-0.07	No
E15 Flat roof with parapet	Gov Approved Scheme	84.91	0.07	0.07	No
R11 Upstands or kerbs of rooflights	Table K1 - Default	9.00	0.24	0.24	No

Y-value W/m²K

18.0 Pressure Testing

Designed AP₅₀ m³/(h.m²) @ 50 Pa

Test Method

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present

Approved Installation

Mechanical Ventilation data Type

Type

MV Reference Number

Configuration

Manufacturer SFP

Duct Type

MVHR Efficiency

Wet Rooms

SFP from Installer Commissioning Certificate

MVHR System Location

Duct Installation Specification

20.0 Fans, Open Fireplaces, Flues

Summary for Input Data

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Lighting 1	100.00	6	600	50

24.0 Main Heating 1

Percentage of Heat

100.00 %

Database Ref. No.

18051

Fuel Type

Mains gas

In Winter

88.80

In Summer

79.80

Model Name

LOGIC SYSTEM

Manufacturer

Ideal Boilers

System Type

Regular boiler

Controls SAP Code

2110

Delayed Start Stat

Yes

Flue Type

Balanced

Fan Assisted Flue

Yes

Is MHS Pumped

Pump in heated space

Heating Pump Age

2013 or later

Heat Emitter

Underfloor

Underfloor Heating

Yes - Pipes in thin screed

Flow Temperature

Enter value

Flow Temperature Value

60.00

Boiler Interlock

Yes

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										
Heat source 2										
Heat source 3										
Heat source 4										
Heat source 5										

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

2

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

Hot Water Cylinder

Summary for Input Data

Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	210.00	L
Loss	1.85	kWh/day
In Airing Cupboard	No	

31.0 Thermal Store

32.0 Photovoltaic Unit

Export Capable Meter?

Connected To Dwelling

Diverter

Battery Capacity [kWh]

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

34.0 Small-scale Hydro

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

35.0 Special Features

Energy Saved	Fuel Saved	Energy Used	Fuel Used	Description	Monthly Air Change Rates	Special Technologies Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0.00		0.00				CO2 saving feature												

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
		B 91	B 89
		0	0
		0	0