

Project: 3A Modbury Gardens, Reading, RG2 7PD

Planning Condition:

No development shall commence on site until written verification has been submitted to and approved in writing by the Local Planning Authority demonstrating that the dwellings hereby permitted shall achieve a minimum of a 19% improvement in the dwelling emission rate over the target emission rate as defined in The Building Regulations for England Approved Document L1a: Conservation of Fuel and Power in New Dwellings (2013 edition), and built to the higher water efficiency standard under Regulation 36(3). Such evidence shall be in the form of a 'design stage' Standard Assessment Procedure (SAP), produced by an accredited energy assessor.

Reason:

To ensure that the development is carried out in accordance with sustainable building standards in accordance with policies of the local council.

Results:

The Design Stage SAP calculations were carried out using the guidelines and in accordance with the Building Regulations for England Approved Document L1a: Conservation of Fuel and Power in New Dwellings (2013 edition). Based on the calculations, above-mentioned project achieves the target of Dwelling Emission Rate (DER) being less than TER (Target Emission Rate) by 19%.

The end-terraced two-storey dwelling achieves this using the following:

- Efficient heating and hot water system
- High performance glazing with a U-value of 1.4
- External Ground Floor has a U-value of 0.10
- 1.4 kWp capacity of solar panel installed on-site
- Air change rate of 5m³/(h.m²) @50Pa
- Thermal bridging Y-value of 0.041

The project achieves a DER<TER% value of 30.93%.

Please see the SAP summary report with the input and other information attached below.

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)

J O S T E C

Property Reference	22137 - Modbury	Issued on Date	10/10/2023
Assessment Reference	As Designed V2	Prop Type Ref	Modbury Gardens
Property	3, Modbury Gardens, Reading , RG2 7PD		
SAP Rating	90 B	DER	11.77
Environmental	91 B	TER	17.04
CO ₂ Emissions (t/year)	0.86	% DER<TER	30.93
General Requirements Compliance	Pass	DFEE	48.02
		TFEE	52.89
		% DFEE<TFEE	9.21
Assessor Details	Mr. Mohamed Egal, Mohamed Egal, Tel: 01923 518 923, mohamed@jostec.co.uk		Assessor ID
			AW35-0001
Client			

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

Orientation	South						
Property Tenure	Unknown						
Transaction Type	New dwelling						
Terrain Type	Suburban						
1.0 Property Type	House, End-Terrace						
2.0 Number of Storeys	2						
3.0 Date Built	2022						
4.0 Sheltered Sides	1						
5.0 Sunlight/Shade	Average or unknown						
6.0 Measurements							
			Heat Loss Perimeter	Internal Floor Area	Average Storey Height		
	Ground Floor:		21.45 m	56.21 m²	2.68 m		
	1st Storey:		23.01 m	56.21 m²	2.45 m		
7.0 Living Area	26.57			m²			
8.0 Thermal Mass Parameter	Precise calculation						
Thermal Mass	259.03			kJ/m²K			
9.0 External Walls							
Description	Type	Construction		U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area (m²)	Nett Area (m²)
External Wall	Cavity Wall	Cavity wall : plasterboard on dabs, dense block, filled cavity, any outside structure		0.23	150.00	113.86	96.26
9.1 Party Walls							
Description	Type	Construction		U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	
Party Wall	Solid Wall	Plasterboard on dabs mounted on cement render on both sides, AAC blocks, cavity		0.00	45.00	42.91	
9.2 Internal Walls							
Description	Construction				Kappa (kJ/m²K)	Area (m²)	
Internal Block	Dense block, plasterboard on dabs				75.00	66.58	
Internal Stud	Plasterboard on timber frame				9.00	112.44	
10.0 External Roofs							
Description	Type	Construction		U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area (m²)	Nett Area (m²)
Cold Roof	External Plane Roof	Plasterboard, insulated at ceiling level		0.16	9.00	56.21	56.21

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10.2 Internal Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Ceiling	Plasterboard ceiling, carpeted chipboard floor	9.00	56.21

11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)
Ground Floor	Ground Floor - Solid	Suspended concrete floor, carpeted	0.10	75.00	56.21

11.2 Internal Floors

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Floor	Plasterboard ceiling, carpeted chipboard floor	18.00	56.21

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Windows	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.40
Entrance door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.05			0.63		0.70	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m²)	Curtain Closed
Entrance door	Half Glazed Door	[1] External Wall	South							1.89	
E Windows	Window	[1] External Wall	East	None	0.00					2.32	
N Windows	Window	[1] External Wall	North	None	0.00					8.43	
S Windows	Window	[1] External Wall	South	None	0.00					4.96	

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

Source Type	Bridge Type	Length	Psi	Imported	Reference:
Independently assessed	E2 Other lintels (including other steel lintels)	8.36	0.012	No	RCD
Independently assessed	E3 Sill	11.07	0.018	No	RCD
Independently assessed	E4 Jamb	26.30	0.013	No	
Independently assessed	E5 Ground floor (normal)	21.45	0.145	No	RCD
Independently assessed	E6 Intermediate floor within a dwelling	21.45	0.003	No	RCD
Independently assessed	E10 Eaves (insulation at ceiling level)	23.01	0.065	No	RCD
Independently assessed	E16 Corner (normal)	20.52	0.059	No	RCD
Independently assessed	P1 Party wall - Ground floor	9.11	0.138	No	
Table K1 - Default	P2 Party wall - Intermediate floor within a dwelling	9.11	0.000	No	
Independently assessed	P4 Party wall - Roof (insulation at ceiling level)	7.55	0.190	No	

Y-value	0.041	W/m²K
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18.0 Pressure Testing

Designed AP ₅₀	Yes	
Property Tested ?	5.00	m³/(h.m²) @ 50 Pa
As Built AP ₅₀		
		m³/(h.m²) @ 50 Pa

19.0 Mechanical Ventilation

Summer Overheating

Windows open in hot weather	Windows half open
Cross ventilation possible	Yes

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Night Ventilation

Air change rate

Mechanical Ventilation

Mechanical Ventilation System Present

20.0 Fans, Open Fireplaces, Flues

	MHS	SHS	Other	Total
Number of Chimneys	0		0	0
Number of open flues	0		0	0
Number of intermittent fans				3
Number of passive vents				0
Number of flueless gas fires				0

21.0 Fixed Cooling System

22.0 Lighting

Internal

Total number of light fittings

Total number of L.E.L. fittings

Percentage of L.E.L. fittings %

External

External lights fitted

23.0 Electricity Tariff

24.0 Main Heating 1

Percentage of Heat %

Database Ref. No.

Fuel Type

Main Heating

SAP Code

In Winter

In Summer

Controls

PCDF Controls

Delayed Start Stat

Sap Code

Flue Type

Fan Assisted Flue

Is MHS Pumped

Heat Emitter

Underfloor Heating

Flow Temperature

Combi boiler type

Combi keep hot type

25.0 Main Heating 2

Community Heating

28.0 Water Heating

Water Heating

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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
SAP Code	901

29.0 Hot Water Cylinder None

32.0 Photovoltaic Unit One Dwelling

PV Cells kWp	Orientation	Elevation	Overshading	Connected to Dwelling
1.40	South	30°	None Or Little	Yes

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
Solar water heating	£4,000 - £6,000	£86	B 91	