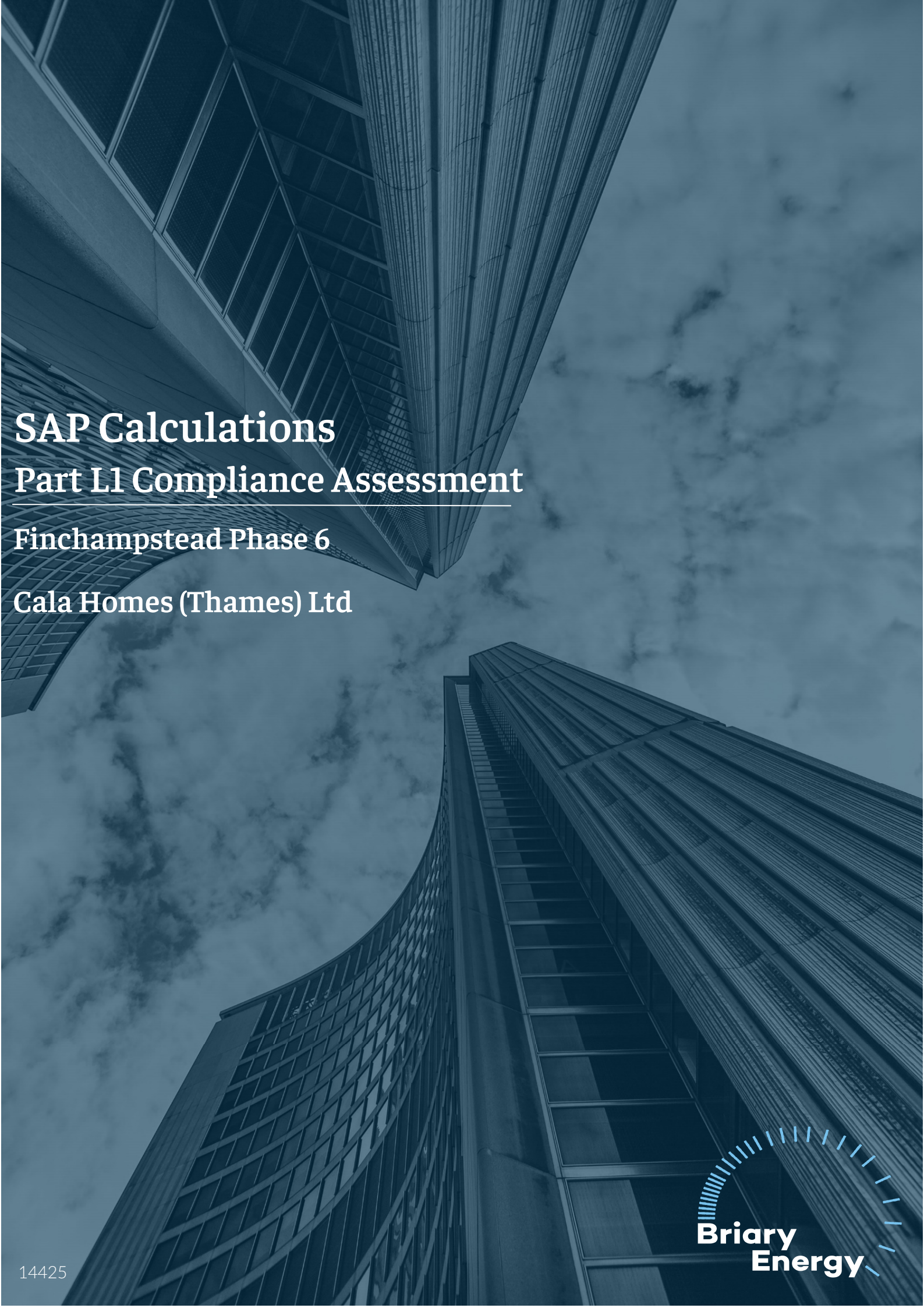




SAP Calculations
Part L1 Compliance Assessment
Finchampstead Phase 6
Cala Homes (Thames) Ltd



Specification

	Description	U Value W/m²K	Element	Specification	
Floors	Flr - Ground	0.17	Floor	Screed 70mm, EPS Grey 80mm, EPS Grey 150mm	
	Over Garage	0.16	Floor	Chipboard 18mm, Earthwool Loft Roll 44 300mm, Cement Particleboard 15mm	
Walls	Brick	0.21	Wall	Type A Wallboard 15mm, Knauf - Frametherm 32 140mm, OSB 9mm, Unventilated Cavity 51mm, Brickwork (Outer Leaf) 102.5mm	
	Clad	0.23	Wall	Type A Wallboard 15mm, Knauf - Frametherm 32 140mm, Plywood 9mm, Unventilated Cavity 51mm, Blockwork, medium (0.57) 100mm, Well Ventilated Layer 25mm, Timber (Hardwood) 20mm	
	Tile	0.25	Wall	Type A Wallboard 15mm, Knauf - Frametherm 32 140mm, Plywood 9mm, Unventilated Cavity 51mm, Blockwork, medium (0.57) 100mm, Render (Sand/Cement) 20mm	
	Garage	0.29	Wall	Type A Wallboard 15mm, Knauf - Frametherm 32 140mm, Type A Wallboard 15mm	
Roofs	Rf - Ins Joist	0.09	Roof	Plaster Skim 3mm, Plasterboard 12.5mm, Earthwool Loft Roll 44 150mm, Earthwool Loft Roll 44 350mm	
	Rf - Ins Rafter	0.16	Roof	Plaster Skim 3mm, Fireline Board 15mm, Gyproc ThermoLine Plus (40mm) (XPS) 40mm, PIR Celotex 150mm, Unventilated Air LowE 50mm	
	Uninsulated ceiling GF	0.17	Roof	As per calculation	
	Bay Joist	0.22	Roof	As per Stormking datasheet	
	Flat Roof Bay	0.22	Roof	As per Stormking datasheet	
Openings	Solid Doors	U-Value 1.2		Frame Factor = 0.7 G-Value = 0.63	
	Half Glazed Doors	U-Value 1.4		Frame Factor = 0.7 G-Value = 0.63	
	Windows Type 1	U-Value 1.3		Frame Factor = 0.7 G-Value = 0.47 - BFRC Rated	
	Windows Type 2	U-Value 1.4		Frame Factor = 0.7 G-Value = 0.47 - BFRC Rated	
	Roof Windows	U-Value 1.3		Frame Factor = 0.7 G-Value = 0.55	
Specifics	Airtightness m³/(hr.m²)	4.00		Mechanical Ventilation	Vectaire EL1003
	Thermal Mass	Calculated Thermal Mass		Renewables	
	Heating Fuel	ASHP - Ideal Logic Air 4kW-8kW			
	Lighting	101.25 lm/w		Additional Notes: Dual Heating Controls Radiators	

Plot	Housetype	Build	DAP	Thermal Elements			Door	HG Door		Roof Window		Window		Heating Info	Ctrls	Cyl Vol	Loss	PV	LED	Fans	Showers	WWHRS	DER	DFEE	DPER
				Floor UV	Wall UV	Roof UV		UV	GV	UV	GV	UV	GV												
														Model		Litres	kWh/day	kWp/Orient	(W)		Amt/Flow		(%)	(%)	(%)
1031	Rowan V1	House	4.00	0.16	0.22	0.16	1.20					1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	6	3 / 8.00	None	70.2	0.3	41.0
1032	Palm	House	4.00	0.17	0.25	0.17	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	6	3 / 8.00	None	73.3	7.3	47.3
1033	Fennel V1	House	4.00	0.15	0.23	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	66.5	7.6	33.0
1034	Fennel V1	House	4.00	0.15	0.23	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	66.3	7.8	32.7
1035	Fennel V1	House	4.00	0.15	0.23	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	66.5	7.6	33.0
1036	Fennel V1	House	4.00	0.15	0.23	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	66.3	7.8	32.7
1037	Magnolia	House	4.00	0.16	0.21	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	5	2 / 8.00	None	61.2	3.3	22.4
1038	Rowan V1	House	4.00	0.16	0.22	0.16	1.20					1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	6	3 / 8.00	None	70.3	0.2	41.0
1039	Palm V1	House	4.00	0.16	0.25	0.16	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	6	3 / 8.00	None	69.7	5.9	40.1
1040	Palm V1	House	4.00	0.16	0.25	0.16	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	6	3 / 8.00	None	69.7	5.9	40.1
1041	Rowan V1	House	4.00	0.16	0.22	0.16	1.20					1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	6	3 / 8.00	None	70.2	0.2	41.0
1042	Laurel V1	House	4.00	0.16	0.23	0.14	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	5	2 / 8.00	None	62.4	4.8	24.9
1043	Palm	House	4.00	0.17	0.25	0.17	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	6	3 / 8.00	None	73.4	6.8	47.5
1044	Palm V1	House	4.00	0.16	0.25	0.16	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	6	3 / 8.00	None	69.7	5.9	40.1
1045	Palm	House	4.00	0.17	0.25	0.17	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	6	3 / 8.00	None	73.4	6.8	47.5
1046	Laurel V1	House	4.00	0.16	0.23	0.14	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	5	2 / 8.00	None	62.6	4.8	25.3
1047	Rowan V1	House	4.00	0.16	0.22	0.16	1.20					1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	6	3 / 8.00	None	70.3	0.1	41.0
1048	Magnolia V2	House	4.00	0.15	0.23	0.14	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	5	2 / 8.00	None	62.0	4.1	23.9
1049	Blackthorn	House	4.00	0.16	0.21	0.09	1.20					1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	68.4	6.3	36.6
1050	Blackthorn	House	4.00	0.16	0.21	0.09	1.20					1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	68.5	6.2	36.6
1051	Blackthorn	House	4.00	0.16	0.21	0.09	1.20					1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	68.4	6.3	36.6
1052	Blackthorn	House	4.00	0.16	0.21	0.09	1.20					1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	68.5	6.2	36.6
1053	Palm	House	4.00	0.17	0.25	0.17	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	6	3 / 8.00	None	73.3	6.8	47.4

Plot	House type	Build	DAP	Thermal Elements			Door	HG Door		Roof Window		Window		Heating Info	Ctrls	Cyl Vol	Loss	PV	LED	Fans	Showers	WWHRS	DER	DFEE	DPER
				Floor UV	Wall UV	Roof UV		UV	GV	UV	GV	UV	GV												
														Model		Litres	kWh/day	kWp/Orient	(W)		Amt/Flow		(%)	(%)	(%)
1054	Rowan V2	House	3.80	0.16	0.22	0.16	1.20					1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	6	3 / 8.00	None	70.2	0.0	40.8
1055	Fennel V1	House	4.00	0.15	0.21	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	66.5	8.2	32.9
1056	Fennel V1	House	4.00	0.15	0.21	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	66.6	8.0	33.2
1057	Fennel V1	House	4.00	0.15	0.21	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	66.5	8.2	32.9
1058	Fennel V1	House	4.00	0.15	0.21	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	66.6	8.0	33.2
1059	Laurel V1	House	4.00	0.16	0.23	0.14	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	5	2 / 8.00	None	62.3	5.1	24.6
1060	Laurel V1	House	4.00	0.16	0.23	0.14	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	5	2 / 8.00	None	62.4	5.1	24.9
1061	Everglade V1	House	4.00	0.16	0.22	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	180.00	1.18	No PV	8.00	4	2 / 8.00	None	66.4	3.2	33.1
1062	Everglade V1	House	4.00	0.16	0.22	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	180.00	1.18	No PV	8.00	4	2 / 8.00	None	66.4	3.1	33.1
1063	Blackthorn	House	4.00	0.16	0.21	0.09	1.20					1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	68.4	5.8	36.6
1064	Blackthorn	House	4.00	0.16	0.21	0.09	1.20					1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	68.4	5.9	36.6
1065	Fennel V1	House	4.00	0.15	0.23	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	66.5	7.4	33.0
1066	Fennel V1	House	4.00	0.15	0.23	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	210.00	1.32	No PV	8.00	4	2 / 8.00	None	66.3	7.6	32.8
1067	Laurel V1	House	4.00	0.16	0.21	0.14	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	5	2 / 8.00	None	62.3	4.9	24.7
1068	Laurel V1	House	4.00	0.16	0.21	0.14	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	5	2 / 8.00	None	62.2	4.9	24.4
1069	Everglade V1	House	4.00	0.16	0.22	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 4kW Wet system, flow temperature 45°C	Zoned	180.00	1.18	No PV	8.00	4	2 / 8.00	None	66.5	4.1	33.3
1070	Laurel V1	House	4.00	0.16	0.23	0.14	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	5	2 / 8.00	None	62.4	5.1	24.9
1071	Rowan V1	House	4.00	0.16	0.22	0.16	1.20					1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	6	3 / 8.00	None	70.3	0.1	41.0
1072	Magnolia	House	4.00	0.16	0.21	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	5	2 / 8.00	None	61.4	3.0	22.8
1073	Rowan V1	House	4.00	0.16	0.22	0.16	1.20					1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	6	3 / 8.00	None	70.2	0.2	41.0
1074	Palm V1	House	4.00	0.16	0.25	0.16	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	6	3 / 8.00	None	69.7	5.9	40.1
1075	Palm V1	House	4.00	0.16	0.25	0.16	1.20	1.40	0.63	1.30	0.55	1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	6	3 / 8.00	None	69.5	5.8	40.0
1076	Rowan V1	House	4.00	0.16	0.22	0.16	1.20					1.30	0.47	Ideal Heating Logic Air 8kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	6	3 / 8.00	None	70.3	0.1	41.0

Plot	Housetype	Build	DAP	Thermal Elements			Door	HG Door		Roof Window		Window		Heating Info	Ctrls	Cyl Vol	Loss	PV	LED	Fans	Showers	WWHRS	DER	DFEE	DPER
				Floor UV	Wall UV	Roof UV		UV	GV	UV	GV	UV	GV												
1077	Magnolia	House	4.00	0.16	0.21	0.14	1.20			1.30	0.55	1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.51	No PV	8.00	5	2 / 8.00	None	61.2	3.3	22.4
1078	Rowan V1	House	3.80	0.16	0.22	0.16	1.20					1.30	0.47	Ideal Heating Logic Air 5kW Wet system, flow temperature 45°C	Zoned	250.00	1.50	No PV	8.00	6	3 / 8.00	None	62.5	0.3	25.2

Site Plan



Site Sign Off

I can confirm that the site has been built in accordance with the specification on the previous page, where the heating, hot water and ventilation has been installed as per the plot details within this document.

Name	
Company	
Date	
Signature	

If there are any changes required to the specification or plot details, please email info@briaryenergy.co.uk so we can issue a revised document.

Construction Details

SAP Reference	Description	Source	Ψ
E2	Other Lintels	Independently Assessed	0.024
E3	Sill	Independently Assessed	0.008
E4	Jamb	Independently Assessed	0.029
E5	Ground Floor Normal	Independently Assessed	0.062
E6	Internal Floor	Independently Assessed	-0.042
E10	Eaves At Ceiling	Independently Assessed	0.021
E11	Eaves At Rafter	Independently Assessed	0.004
E12	Gable At Ceiling	Independently Assessed	0.032
E13	Gable At Rafter	Independently Assessed	0.053
E16	Corner Normal	Independently Assessed	0.013
E17	Corner Inverted	Independently Assessed	-0.115
E18	Party wall between dwelling	Independently Assessed	0.011
E20	Exposed floor	Independently Assessed	0.035
E21	Exposed floor	Independently Assessed	0.059
E24	Eaves at Ceiling Inverted	Default Table K1	0.240
P1	Party Wall - Ground floor	Independently Assessed	0.086
P2	Party wall - Intermediate floor	Default Table K1	0.011
P4	Party wall - Roof	Independently Assessed	0.038
R1	Head of roof window	Independently Assessed	0.058
R2	Sill of roof window	Independently Assessed	0.049
R3	Jamb of roof window	Independently Assessed	0.058
R4	Ridge of vaulted ceiling	Default Table K1	0.12

U-Value Calculation

Flr - Ground

U-Value (W/m²K)

Heat Capacity (kJ/[m²k])



0.17



75.00

Internal surface resistance R _{si} (m ² K/W)	0.17				
External surface resistance R _{se} (m ² K/W)	0.17				
No. of Layers	3	Direction of heat flow	Downwards		
Total Thickness (mm)	300	Element Type	Floor		

Layer	Description	Thickness (mm)	Conductivity (W/mK)	Resistance (mK/W)
Internal Surface				
Layer 1	Screed	70	1.150	0.061
Layer 2	EPS Grey	80	0.030	2.667
Layer 3	EPS Grey	150	0.030	5.000
	<i>*Bridged Layer</i>			
External surface				

Calculations are based on BS EN ISO 6946, BS EN ISO 13370, BRE 443, BRE 497

U-Value Calculation

Over Garage

U-Value (W/m²K)

Heat Capacity (kJ/[m²k])



0.16



20.00

Internal surface resistance R _{si} (m ² K/W)	0.17				
External surface resistance R _{se} (m ² K/W)	0.04				
No. of Layers	3	Direction of heat flow	Downwards		
Total Thickness (mm)	333	Element Type	Floor		

Layer	Description	Thickness (mm)	Conductivity (W/mK)	Resistance (mK/W)
Internal Surface				
Layer 1	Chipboard	18	0.130	0.138
Layer 2	Earthwool Loft Roll 44 <i>*Bridged Layer</i>	300	0.044	6.818
Layer 3	Cement Particleboard	15	0.230	0.065
External surface				

Calculations are based on BS EN ISO 6946, BS EN ISO 13370, BRE 443, BRE 497

U-Value Calculation

Brick

U-Value (W/m²K)

Heat Capacity (kJ/[m²k])



0.21



9.00

Internal surface resistance R _{si} (m ² K/W)	0.13				
External surface resistance R _{se} (m ² K/W)	0.04				
No. of Layers	5	Direction of heat flow	Horizontal		
Total Thickness (mm)	318	Element Type	Wall		

Layer	Description	Thickness (mm)	Conductivity (W/mK)	Resistance (mK/W)
Internal Surface				
Layer 1	Type A Wallboard	15	0.190	0.079
Layer 2	Knauf - Frametherm 32 <i>*Bridged Layer</i>	140	0.032	4.375
Layer 3	OSB	9	0.130	0.069
Layer 4	Unventilated Cavity <i>*Bridged Layer</i>	51	0.069	0.739
Layer 5	Brickwork (Outer Leaf)	102.5	0.770	0.133
External surface				

Calculations are based on BS EN ISO 6946, BS EN ISO 13370, BRE 443, BRE 497

U-Value Calculation

Clad

U-Value (W/m²K)



0.23

Heat Capacity (kJ/[m²k])



9.00

Internal surface resistance R _{si} (m ² K/W)		0.13	
External surface resistance R _{se} (m ² K/W)		0.04	
No. of Layers	7	Direction of heat flow	Horizontal
Total Thickness (mm)	360	Element Type	Wall

Layer		Description	Thickness (mm)	Conductivity (W/mK)	Resistance (mK/W)
Internal Surface					
Layer 1	Type A Wallboard		15	0.190	0.079
Layer 2	Knauf - Frametherm 32		140	0.032	4.375
	<i>*Bridged Layer</i>				
Layer 3	Plywood		9	0.130	0.069
Layer 4	Unventilated Cavity		51	0.133	0.383
	<i>*Bridged Layer</i>				
Layer 5	Blockwork, medium (0.57)		100	0.570	0.175
	<i>*Bridged Layer</i>				
Layer 6	Well Ventilated Layer		25		0.130
	<i>*Bridged Layer</i>				
Layer 7	Timber (Hardwood)		20	0.180	0.111
External surface					

Calculations are based on BS EN ISO 6946, BS EN ISO 13370, BRE 443, BRE 497

U-Value Calculation

Tile

U-Value (W/m²K)

Heat Capacity (kJ/[m²k])



0.25



9.00

Internal surface resistance R _{si} (m ² K/W)	0.13				
External surface resistance R _{se} (m ² K/W)	0.04				
No. of Layers	6	Direction of heat flow	Horizontal		
Total Thickness (mm)	335	Element Type	Wall		

Layer	Description	Thickness (mm)	Conductivity (W/mK)	Resistance (mK/W)
Internal Surface				
Layer 1	Type A Wallboard	15	0.190	0.079
Layer 2	Knauf - Frametherm 32 <i>*Bridged Layer</i>	140	0.032	4.375
Layer 3	Plywood	9	0.130	0.069
Layer 4	Unventilated Cavity <i>*Bridged Layer</i>	51	0.133	0.383
Layer 5	Blockwork, medium (0.57) <i>*Bridged Layer</i>	100	0.570	0.175
Layer 6	Render (Sand/Cement)	20	1.000	0.020
External surface				

Calculations are based on BS EN ISO 6946, BS EN ISO 13370, BRE 443, BRE 497

U-Value Calculation

Garage

U-Value (W/m²K)

Heat Capacity (kJ/[m²k])



0.29



9.00

Internal surface resistance R _{si} (m ² K/W)	0.13				
External surface resistance R _{se} (m ² K/W)	0.04				
No. of Layers	3	Direction of heat flow	Horizontal		
Total Thickness (mm)	170	Element Type	Wall		

Layer	Description	Thickness (mm)	Conductivity (W/mK)	Resistance (mK/W)
Internal Surface				
Layer 1	Type A Wallboard	15	0.190	0.079
Layer 2	Knauf - Frametherm 32 <i>*Bridged Layer</i>	140	0.032	4.375
Layer 3	Type A Wallboard	15	0.190	0.079
External surface				

Calculations are based on BS EN ISO 6946, BS EN ISO 13370, BRE 443, BRE 497

U-Value Calculation

Rf - Ins Joist

U-Value (W/m²K)

Heat Capacity (kJ/[m²k])



0.09



9.00

Internal surface resistance R _{si} (m ² K/W)	0.1				
External surface resistance R _{se} (m ² K/W)	0.04				
No. of Layers	4	Direction of heat flow	Upwards		
Total Thickness (mm)	516	Element Type	Roof		

Layer	Description	Thickness (mm)	Conductivity (W/mK)	Resistance (mK/W)
Internal Surface				
Layer 1	Plaster Skim	3	0.180	0.017
Layer 2	Plasterboard	12.5	0.210	0.060
Layer 3	Earthwool Loft Roll 44	150	0.044	3.409
	<i>*Bridged Layer</i>			
Layer 4	Earthwool Loft Roll 44	350	0.044	7.955
External surface				

Calculations are based on BS EN ISO 6946, BS EN ISO 13370, BRE 443, BRE 497

U-Value Calculation

Rf - Ins Rafter

U-Value (W/m²K)

Heat Capacity (kJ/[m²k])



0.16



9.00

Internal surface resistance R _{si} (m²K/W)	0.1				
External surface resistance R _{se} (m²K/W)	0.04				
No. of Layers	5	Direction of heat flow	Upwards		
Total Thickness (mm)	258	Element Type	Roof		

Layer	Description	Thickness (mm)	Conductivity (W/mK)	Resistance (mK/W)
Internal Surface				
Layer 1	Plaster Skim	3	0.180	0.017
Layer 2	Fireline Board	15	0.240	0.063
Layer 3	Gyproc ThermaLine Plus (40mm) (XPS)	40	0.043	0.940
Layer 4	PIR Celotex	150	0.022	6.818
	<i>*Bridged Layer</i>			
Layer 5	Unventilated Air LowE	50	0.114	0.440
	<i>*Bridged Layer</i>			
External surface				

Calculations are based on BS EN ISO 6946, BS EN ISO 13370, BRE 443, BRE 497

U-VALUE CALCULATOR REPORT

Property Reference	Carrie Templates			Issued on Date	30/07/2025
Assessment Reference		Prop Type Ref			
Project					
Calculation Type	New Build (As Built)				
SAP Rating		DER		TER	
Environmental		% DER<TER			
CO ₂ Emissions (t/year)		DFEE		TFEE	
General Requirements Compliance		% DFEE<TFEE			
Assessor Details	Mrs. Carrie Morris, Carrie Morris, Tel: 03302236960, carrie@briaryenergy.co.uk			Assessor ID	CN44-0001
Client					

Building Elements

Roof 000007

Roof Type: Pitched Roof, insulated slope, flat ceiling

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0346	
Layer 1	Standard cavity				
	Main construction	50	0.1102	0.3930	100.00
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 2	Celotex				
	Main construction	150	0.0220	5.9047	87.50
	Main construction	150	0.1300	0.9993	12.50
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	Gyproc Thermaline Plus				
	Main construction	40	0.0426	0.8132	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	Loft space				
	Main construction	0	0.0600	0.0600	100.00
Layer 5	Standard cavity				
	Main construction	105	0.6563	0.1600	87.50
	Main construction	105	0.1300	0.8077	12.50
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 6	Plasterboard, standard				
	Main construction	15	0.2400	0.0625	100.00
Int surface				0.1000	

Total resistance: Upper limit = 6.189 m² K/W Lower limit = 5.300 m² K/W Average = 5.745 m² K/W
Total correction = 0.0043 m² K/W U-value (unrounded) = 0.17 W/m² K

Unheated space: None

Total thickness: 360 mm

U-value: 0.17 W/m² K

Kappa: n/a



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