U-VALUE CALCULATOR REPORT

Design SAP
elmhurst energy

Property Reference	S17212	Issued on Date	17/10/2017
Survey Reference	Original	Prop Type Ref	
Project	New Dwelling, Horseshoe Lane, Chadlington, OX7 3NB		
Calculation Type	New Build (As Designed)		

SAP Rating	82 B	DER	12.55	TER	15.95
Environmental	87 B	% DER<TER	21.33		
CO_2 Emissions (t/year)	3.01	DFEE	61.71	TFEE	65.78
General Requirements Compliance	Pass	% DFEE<TFEE	6.18		

Surveyor	Malcolm Lisle, Tel: 01142521995	Surveyor ID	8227-0002
Client			

Building Elements

Roof Sloping Roof

Roof Type: Pitched Roof, insulated sloping ceiling

Layer	Description	Thickness (mm)	Conductivity (W/m²K)	Resistance (m²K/W)	Fraction (%)
Ext surface				0.1000	
Layer 1	**Tiling, clay**				
	Main construction	1	1.0000	0.0000	100.00
Layer 2	**Standard cavity**				
	Main construction	50	0.0000	0.0000	100.00
	Corrections - Cavity Ventilated, Emissivity: Normal				
Layer 3	**Celotex FR5000**				
	Main construction	100	0.0210	4.7619	87.50
	Main construction	100	0.1300	0.7692	12.50
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	**Celotex FR5000**				
	Main construction	50	0.0210	2.3810	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 5	**Plasterboard, standard**				
	Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1000	

Total resistance: **Upper limit =** 6.457 m² K/W **Lower limit =** 5.529 m² K/W **Average =** 5.993 m² K/W

Total correction = 0.0039 m² K/W **U-value (unrounded) =** 0.17 W/m² K

Unheated space: None

Total thickness: 214 mm **U-value: 0.17 W/m² K** **Kappa: n/a**

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General Requirements Compliance	Pass	% DFEE<TFEE	6.18		

Surveyor	Malcolm Lisle, Tel: 01142521995	Surveyor ID	8227-0002
Client			

Building Elements

Roof Plane Roof

Roof Type: Pitched Roof, insulated flat ceiling

Layer	Description	Thickness (mm)	Conductivity (W/m²K)	Resistance (m²K/W)	Fraction (%)
Ext surface				0.0346	
Layer 1	**Tiling, clay**				
	Main construction	1	1.0000	0.0009	100.00
Layer 2	**Loft Space**				
	Main construction	0	0.0600	0.0600	100.00
Layer 3	**ROCKWOOL ROLL**				
	Main construction	150	0.0440	3.4091	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	**ROCKWOOL ROLL**				
	Main construction	100	0.0440	2.2727	87.50
	Main construction	100	0.1300	0.7692	12.50
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 5	**Plasterboard, standard**				
	Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1000	

Total resistance: **Upper limit =** 5.695 m² K/W **Lower limit =** 5.491 m² K/W **Average =** 5.593 m² K/W

Total correction = 0.0048 m² K/W **U-value (unrounded) =** 0.18 W/m² K

Unheated space: None

Total thickness: 264 mm **U-value: 0.18 W/m² K** **Kappa: n/a**

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General Requirements Compliance	Pass	% DFEE<TFEE	6.18		

Surveyor	Malcolm Lisle, Tel: 01142521995	Surveyor ID	8227-0002
Client			

Building Elements

Roof Flat Roof

Roof Type: Flat Roof standard (no precipitation)

Layer	Description	Thickness (mm)	Conductivity (W/m²K)	Resistance (m²K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	**Plywood**				
	Main construction	22	0.1300	0.1692	100.00
Layer 2	**Celotex FR5000**				
	Main construction	100	0.0210	4.7619	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	**Celotex FR5000**				
	Main construction	40	0.0210	1.9048	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	**Standard cavity**				
	Main construction	150	0.9375	0.1600	100.00
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 5	**Plasterboard, standard**				
	Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1000	

Total resistance: **Upper limit =** 7.195 m² K/W **Lower limit =** 7.195 m² K/W **Average =** 7.195 m² K/W

Total correction = 0.0051 m² K/W **U-value (unrounded) =** 0.14 W/m² K

Unheated space: None

Total thickness: 325 mm **U-value: 0.14 W/m² K** **Kappa: n/a**

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General Requirements Compliance	Pass	% DFEE<TFEE	6.18		

Surveyor	Malcolm Lisle, Tel: 01142521995	Surveyor ID	8227-0002
Client			

Building Elements

Wall Main Cottage

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m²K)	Resistance (m²K/W)	Fraction (%)
Ext surface				0.1300	
Layer 1	**Sandstone**				
	Main construction	150	2.3000	0.0000	100.00
Layer 2	**Standard cavity**				
	Main construction	50	0.0000	0.0000	100.00
	Corrections - Cavity Ventilated, Emissivity: Normal				
Layer 3	**Celotex CW4000**				
	Main construction	100	0.0220	4.5455	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	**Thermalite Turbo**				
	Main construction	100	0.1100	0.9091	93.43
	Main construction	100	0.8803	0.1136	6.57
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 5	**airspace/plaster dabs**				
	Main construction	15	0.0882	0.1700	80.00
	Main construction	15	0.0882	0.1700	20.00
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 6	**Plasterboard, standard**				
	Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1300	

Total resistance: **Upper limit =** 5.884 m² K/W **Lower limit =** 5.658 m² K/W **Average =** 5.771 m² K/W

Total correction = 0.0063 m² K/W **U-value (unrounded) =** 0.18 W/m² K

Unheated space: None

Total thickness: 428 mm **U-value: 0.18 W/m² K** **Kappa: n/a**

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General Requirements Compliance	Pass	% DFEE<TFEE	6.18		

Surveyor	Malcolm Lisle, Tel: 01142521995	Surveyor ID	8227-0002
Client			

Building Elements

Wall Lower Cottage

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m²K)	Resistance (m²K/W)	Fraction (%)
Ext surface				0.1300	
Layer 1	**Render - Cement and Sand**				
	Main construction	20	1.0000	0.0000	100.00
Layer 2	**Blockwork, medium**				
	Main construction	100	0.5700	0.0000	93.43
	Main construction	100	0.8803	0.0000	6.57
Layer 3	**Standard cavity**				
	Main construction	50	0.0000	0.0000	100.00
	Corrections - Cavity Ventilated, Emissivity: Normal				
Layer 4	**Celotex GA4000**				
	Main construction	100	0.0220	4.5455	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 5	**Thermalite Turbo**				
	Main construction	100	0.1100	0.9091	93.43
	Main construction	100	0.8803	0.1136	6.57
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 6	**airspace/plaster dabs**				
	Main construction	15	0.0882	0.1700	80.00
	Main construction	15	0.0882	0.1700	20.00
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 7	**Plasterboard, standard**				
	Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1300	

Total resistance: **Upper limit =** 5.884 m² K/W **Lower limit =** 5.658 m² K/W **Average =** 5.771 m² K/W

Total correction = 0.0063 m² K/W **U-value (unrounded) =** 0.18 W/m² K

Unheated space: None

Total thickness: 398 mm **U-value: 0.18 W/m² K** **Kappa: n/a**

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General Requirements Compliance	Pass	% DFEE<TFEE	6.18		

Surveyor	Malcolm Lisle, Tel: 01142521995	Surveyor ID	8227-0002
Client			

Building Elements

Wall Retaining Wall

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m²K)	Resistance (m²K/W)	Fraction (%)
Ext surface				0.1300	
Layer 1	**Blockwork, medium**				
	Main construction	100	0.5700	0.0000	93.43
	Main construction	100	0.8803	0.0000	6.57
Layer 2	**Standard cavity**				
	Main construction	50	0.0000	0.0000	100.00
	Corrections - Cavity Ventilated, Emissivity: Normal				
Layer 3	**Celotex CW4000**				
	Main construction	100	0.0220	4.5455	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	**Blockwork, medium**				
	Main construction	100	0.5700	0.1754	93.43
	Main construction	100	0.8803	0.1136	6.57
Layer 5	**airspace/plaster dabs**				
	Main construction	15	0.0882	0.1700	80.00
	Main construction	15	0.0882	0.1700	20.00
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 6	**Plasterboard, standard**				
	Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1300	

Total resistance: **Upper limit =** 5.206 m² K/W **Lower limit =** 5.204 m² K/W **Average =** 5.205 m² K/W

Total correction = 0.0076 m² K/W **U-value (unrounded) =** 0.2 W/m² K

Unheated space: None

Total thickness: 378 mm **U-value: 0.20 W/m² K** **Kappa: n/a**

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General Requirements Compliance	Pass	% DFEE<TFEE	6.18		

Surveyor	Malcolm Lisle, Tel: 01142521995	Surveyor ID	8227-0002
Client			

Building Elements

Floor Upper Ground Floor

Floor Type: Suspended Floor
Area = 39.35 m², Perimeter = 26.10 m, Wall thickness = 275.00 mm, Soil: Unknown
Depth of underfloor space below ground:0.200 m Floor wind shielding: Average (suburban)
Floor height above ground:h = 0.200 m
U-value of walls above ground:Uw = 1.500 m
Ventilation openings per perimeter length:e = 0.0015 %
Mean wind speed:v = 5.000 m/s
Resistance on solum:Rg = 0.000 m²K/W

Layer	Description	Thickness (mm)	Conductivity (W/m²K)	Resistance (m²K/W)	Fraction (%)
Ext surface				0.1700	
Layer 1	**Screed**				
	Main construction	100	1.1500	0.0870	100.00
Layer 2	**Celotex SL5000 (86mm +)**				
	Main construction	86	0.0220	3.9091	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	**Celotex SL5000 (56mm)**				
	Main construction	56	0.0230	2.4348	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	**Blockwork, dense**				
	Main construction	100	1.5900	0.0629	100.00
Int surface				0.1700	

Total resistance: **Upper limit =** 6.834 m² K/W **Lower limit =** 6.834 m² K/W **Average =** 6.834 m² K/W
Total correction = 0.0045 m² K/W **U-value (unrounded) =** 0.13 W/m² K

Unheated space: None

Total thickness: 342 mm **U-value: 0.13 W/m² K** **Kappa: n/a**

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General Requirements Compliance	Pass	% DFEE<TFEE	6.18		

Surveyor	Malcolm Lisle, Tel: 01142521995	Surveyor ID	8227-0002
Client			

Building Elements

Floor Lower Ground Floor

Floor Type: Slab On Ground Floor
Area = 148.02 m², Perimeter = 51.60 m, Wall thickness = 275.00 mm, Soil: Unknown
Horizontal edge insulation: none
Vertical edge insulation: none

Layer	Description	Thickness (mm)	Conductivity (W/m²K)	Resistance (m²K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	**Screed**				
	Main construction	100	1.1500	0.0870	100.00
Layer 2	**Celotex SL5000 (56mm)**				
	Main construction	56	0.0230	2.4348	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	**Celotex SL5000 (86mm +)**				
	Main construction	86	0.0220	3.9091	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	**Concrete, reinforced (2% steel)**				
	Main construction	140	2.5000	0.0560	100.00
Int surface				0.1700	

Total resistance: **Upper limit =** 6.487 m² K/W **Lower limit =** 6.487 m² K/W **Average =** 6.487 m² K/W

Total correction = 0.0050 m² K/W **U-value (unrounded) =** 0.12 W/m² K

Unheated space: None

Total thickness: 382 mm **U-value: 0.12 W/m² K** **Kappa: n/a**