

elmhurst
energy



SAP Report Submission for Building Regulations Compliance

Client: Mr & Mrs Bates
C/o RPS Design Group

Project: Land adjacent Orchard End, Highground Lane
BARNHAM, PO22 0BU

Contact: Julie Lock
Shropshire Council
julie.lock@shropshire.gov.uk

Report Issue Date: 25/02/2022

EXCELLENCE
IN ENERGY
ASSESSMENT

PREDICTED ENERGY ASSESSMENT

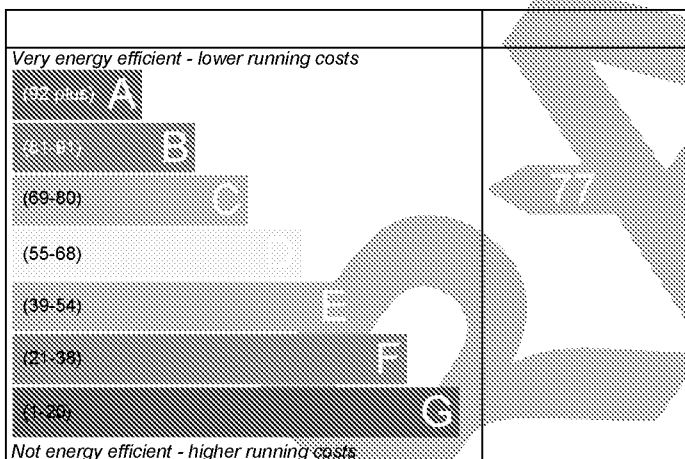
Design SAP
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Land adjacent Orchard End, Highground Lane, Dwelling type: Bungalow, Detached
BARNHAM, Date of assessment: 25/02/2022
PO22 0BU Produced by: Energyfirst
Total floor area: 181.16 m²
DRRN:

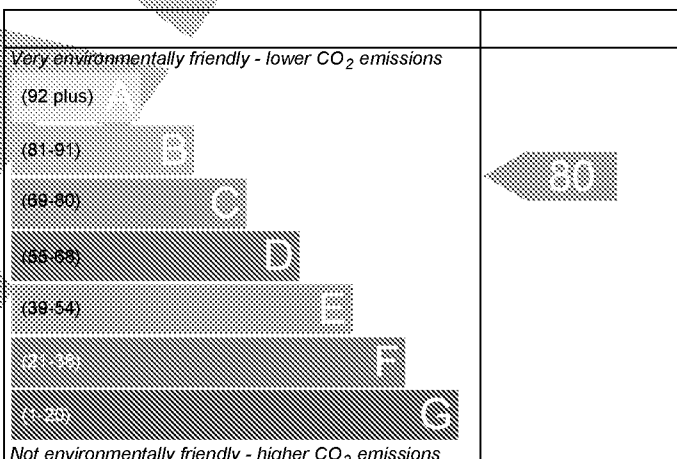
This document is a Predicted Energy Assessment for properties marketed when they are incomplete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, this rating will be updated and an official Energy Performance 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 SAP2012 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



Environmental Impact (CO₂) Rating



England EU Directive 2002/91/EC

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.

England EU Directive 2002/91/EC

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.

This report has not been submitted through the Elmhurst Energy members' portal, therefore results are subject to change when the dwelling is completed.

BUILDING REGULATION COMPLIANCE

Calculation Type: New Build (As Designed)

Design SAP
elmhurst energy

Property Reference	22/00635/ENERAT	Issued on Date	25/02/2022
Assessment Reference	22/00635/ENERAT	Prop Type Ref	Dormer Bungalow
Property	Land adjacent Orchard End, Highground Lane, BARNHAM, PO22 0BU		

SAP Rating	77 C	DER	19.99	TER	22.17
Environmental	80 C	% DER<TER	9.85		
CO ₂ Emissions (t/year)	2.84	DFEE	54.71	TFEE	55.02
General Requirements Compliance	Pass	% DFEE<TFEE	0.56		

Assessor Details	Ms. Julie Lock, Shropshire Council, Tel: 01743258748, julie.lock@shropshire.gov.uk	Assessor ID	J971-0001
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Client	
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SUMMARY FOR INPUT DATA FOR New Build (As Designed)

Criterion 1 – Achieving the TER and TFEE rate

1a TER and DER

Fuel for main heating	Electricity		
Fuel factor	1.55 (electricity)		
Target Carbon Dioxide Emission Rate (TER)	22.17	kgCO ₂ /m ²	
Dwelling Carbon Dioxide Emission Rate (DER)	19.99	kgCO ₂ /m ²	Pass
	-2.18 (-9.8%)	kgCO ₂ /m ²	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	55.02	kWh/m ² /yr	
Dwelling Fabric Energy Efficiency (DFEE)	54.71	kWh/m ² /yr	
	-0.3 (-0.5%)	kWh/m ² /yr	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.20 (max. 0.30)	0.28 (max. 0.70)	Pass
Floor	0.19 (max. 0.25)	0.19 (max. 0.70)	Pass
Roof	0.16 (max. 0.20)	0.17 (max. 0.35)	Pass
Openings	1.51 (max. 2.00)	1.80 (max. 3.30)	Pass

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	5.00 (design value)	m ³ /(h.m ²) @ 50 Pa	
Maximum	10.0	m ³ /(h.m ²) @ 50 Pa	Pass

Limiting System Efficiencies

4 Heating efficiency

Main heating system	Heat pump with radiators or underfloor - Electric Air-to-water heat pump	
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BUILDING REGULATION COMPLIANCE

Calculation Type: New Build (As Designed)

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Secondary heating system

Room heaters - Wood Logs
Data from manufacturer, tested to BS EN 1266, HETAS approved
Tba
Efficiency: 75%
Minimum: 65%

Pass

5 Cylinder insulation

Hot water storage

Nominal cylinder loss: 2.55 kWh/day
Permitted by DBSCG 2.86

Pass

Primary pipework insulated

Yes

Pass

6 Controls

Space heating controls

Time and temperature zone control

Pass

Hot water controls

Cylinderstat

Pass

Independent timer for DHW

Pass

7 Low energy lights

Percentage of fixed lights with low-energy fittings

100

%

Minimum

75

%

Pass

8 Mechanical ventilation

Not applicable

Criterion 3 - Limiting the effects of heat gains in summer

9 Summertime temperature

Overheating risk (South East England)

Not significant

Pass

Based on:

Overshading

Average

Windows facing South East

7.80 m², No overhang

Windows facing South West

1.10 m², No overhang

Windows facing North West

17.25 m², No overhang

Air change rate

8.00 ach

Blinds/curtains

None

Criterion 4 - Building performance consistent with DER and DFEF rate

Air permeability and pressure testing

3 Air permeability

Air permeability at 50 pascals

5.00 (design value)

m³/(h.m²) @ 50 Pa

Maximum

10.0

m³/(h.m²) @ 50 Pa

Pass

10 Key features

External wall U-value

0.12

W/m²K

Secondary heating (wood logs)

N/A

Secondary heating fuel:

wood logs

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THERMAL BRIDGING

Calculation Type: New Build (As Designed)

Design SAP
elmhurst energy

Property Reference	22/00635/ENERAT	Issued on Date	25/02/2022
Assessment Reference	22/00635/ENERAT	Prop Type Ref	Dormer Bungalow
Property	Land adjacent Orchard End, Highground Lane, BARNHAM, PO22 0BU		
SAP Rating	77 C	DER	19.99
Environmental	80 C	2 DER-TER	9.85
CO ₂ Emissions (t/year)	2.84	DERE	54.71
General Requirements Compliance	Pass	2 DER-TERE	0.56
Assessor Details	Ms. Julie Lock, Shropshire Council, Tel: 01743258748, julie.lock@shropshire.gov.uk		Assessor ID
Client			

	Junction detail	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E2 Other lintels (including other steel lintels)	Independently assessed	0.173	19.16	3.31	
External wall	E3 Sill	Table K1 - Approved	0.040	12.70	0.51	
External wall	E4 Jamb	Table K1 - Approved	0.050	43.20	2.16	
External wall	E5 Ground floor (normal)	Table K1 - Approved	0.160	44.80	7.17	
External wall	E6 Intermediate floor within a dwelling	Table K1 - Approved	0.070	45.77	3.20	
External wall	E10 Eaves (insulation at ceiling level)	Table K1 - Approved	0.060	22.51	1.35	
External wall	E12 Gable (insulation at ceiling level)	Table K1 - Approved	0.240	5.50	1.32	
External wall	E13 Gable (insulation at rafter level)	Table K1 - Approved	0.040	12.20	0.49	
External wall	E16 Corner (normal)	Table K1 - Approved	0.090	29.95	2.70	
External wall	E17 Corner (inverted – internal area greater than external area)	Table K1 - Approved	-0.090	13.97	-1.26	
External roof	R1 Head of roof window	Table K1 - Default	0.080	2.94	0.24	
External roof	R2 Sill of roof window	Table K1 - Default	0.060	2.94	0.18	
External roof	R3 Jamb of roof window	Table K1 - Default	0.080	6.32	0.51	
External roof	R6 Flat ceiling	Table K1 - Default	0.060	30.50	1.83	
External roof	R8 Roof to wall (rafter)	Table K1 - Default	0.060	30.50	1.83	

Total: 25.53 W/mK:
Y-Value: 0.064 W/m²K:

U-VALUE CALCULATOR REPORT

Design SAP
elmhurst energy

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Environmental	80 C	% DER < TER	9.85		
CO ₂ Emissions (t/year)	2.84	DERF	54.71	TERF	55.02
General Requirements Compliance	Pass	% DERF < TERF	0.56		

Assessor Details	Ms. Julie Lock, Shropshire Council, Tel: 01743258748, julie.lock@shropshire.gov.uk	Assessor ID	1971-0001
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Client	
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Building Elements

Roof 000003 - pitched roof - insulated slope, sloping

Roof Type: Pitched Roof, insulated sloping ceiling

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.1000	
Layer 1	Tiles, clay				
	Main construction	15	1.0000	0.0000	100.00
Layer 2	Air layer ventilated				
	Main construction	25	0.2500	0.0000	100.00
	Corrections - Cavity Ventilated, Emissivity: Normal				
Layer 3	Sarking Felt				
	Main construction	1	0.2300	0.0000	100.00
Layer 4	Air layer ventilated				
	Main construction	25	0.0000	0.0000	87.50
	Main construction	25	0.1300	0.0000	12.50
	Corrections - Cavity Ventilated, Emissivity: Normal				
Layer 5	Celotex XR4000				
	Main construction	150	0.0220	6.8182	87.50
	Main construction	150	0.1300	1.1538	12.50
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 6	Celotex PL4025 [37.5mm]				
	Main construction	37.5	0.0313	1.2000	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 7	Plaster, standard				
	Main construction	3	0.4000	0.0075	100.00
Int surface				0.1000	

Total resistance:	Upper limit = 6.444 m ² K/W	Lower limit = 5.633 m ² K/W	Average = 6.039 m ² K/W
	Total correction = 0.0053 m ² K/W	U-value (unrounded) = 0.17 W/m ² K	

Unheated space: None

Total thickness: 257 mm

U-value: 0.17 W/m² K

Kappa: n/a

U-VALUE CALCULATOR REPORT

Design SAP
elmhurst energy

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Project	Land adjacent Orchard End, Highground Lane, BARNHAM, PO22 0BU		
Calculation Type	New Build (As Designed)		

SAP Rating	77 C	DER	19.99	TBR	22.17
Environmental	80 C	% DER < TBR	9.85		
CO ₂ Emissions (t/year)	2.84	DREE	54.71	TREE	55.02
General Requirements Compliance	Pass	% DPER < TREE	0.56		

Assessor Details	Ms. Julie Lock, Shropshire Council, Tel: 01743258748, julie.lock@shropshire.gov.uk	Assessor ID	1971-0001
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Client	
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Building Elements

Roof 000004 - Pitched roof - insulated at ceiling

Roof Type: Pitched Roof, insulated flat ceiling

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	Roof space				
	Main construction	0	0.2000	0.2000	100.00
Layer 2	Chipboard				
	Main construction	18	0.1300	0.1385	100.00
Layer 3	Standard cavity				
	Main construction	50	0.3125	0.1600	87.50
	Main construction	50	0.1300	0.3846	12.50
	Corrections - Cavity Unventilated, Emissivity:				
	Normal				
Layer 4	Celotex XR4000				
	Main construction	150	0.0220	6.8182	87.50
	Main construction	150	0.1300	1.1538	12.50
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 5	Celotex PL4025 [37.5mm]				
	Main construction	37.5	0.0313	1.2000	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 6	Plaster, standard				
	Main construction	3	0.4000	0.0075	100.00
Int surface				0.1000	

Total resistance: Upper limit = 7.043 m² K/W Lower limit = 6.084 m² K/W Average = 6.564 m² K/W
Total correction = 0.0075 m² K/W U-value (unrounded) = 0.16 W/m² K

Unheated space: None

Total thickness: 259 mm

U-value: 0.16 W/m² K

Kappa: n/a

U-VALUE CALCULATOR REPORT

Design SAP
elmhurst energy

Property Reference	22/00635/ENERAT	Issued on Date	25/02/2022
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Project	Land adjacent Orchard End, Highground Lane, BARNHAM, PO22 0BU		
Calculation Type	New Build (As Designed)		

SAP Rating	77 C	DER	19.99	TBR	22.17
Environmental	80 C	% DER < TBR	9.85		
CO ₂ Emissions (t/year)	2.84	DREE	54.71	TREE	55.02
General Requirements Compliance	Pass	% DPER < TREE	0.56		

Assessor Details	Ms. Julie Lock, Shropshire Council, Tel: 01743258748, julie.lock@shropshire.gov.uk	Assessor ID	1971-0001
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Client	
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Building Elements

Wall 000001 - Masonry wall partial cavity fill

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	Flint				
	Main construction	100	0.9000	0.1111	100.00
Layer 2	Low E Cavity				
	Main construction	50	0.0752	0.6650	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	Celotex CW4000				
	Main construction	60	0.0220	2.7273	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	Blockwork, dense				
	Main construction	100	1.1300	0.0885	100.00
Layer 5	Blockwork, medium				
	Main construction	100	0.5700	0.1754	93.43
	Main construction	100	0.8803	0.1136	6.57
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	Gyproc Wallboard (12.5mm)				
	Main construction	12.5	0.1900	0.0658	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 8	Plaster, standard				
	Main construction	3	0.4000	0.0075	100.00
Int surface				0.1300	

Total resistance: Upper limit = 4.176 m² K/W Lower limit = 4.175 m² K/W Average = 4.176 m² K/W
Total correction = 0.0045 m² K/W U-value (unrounded) = 0.24 W/m² K

Unheated space: None

Total thickness: 441 mm

U-value: 0.24 W/m² K

Kappa: n/a

U-VALUE CALCULATOR REPORT

Design SAP
elmhurst energy

Property Reference	22/00635/ENERAT	Issued on Date	25/02/2022
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Project	Land adjacent Orchard End, Highground Lane, BARNHAM, PO22 0BU		
Calculation Type	New Build (As Designed)		

SAP Rating	77 C	DER	19.99	TBR	22.17
Environmental	80 C	% DER < TBR	9.85		
CO ₂ Emissions (t/year)	2.84	DREE	54.71	TREE	55.02
General Requirements Compliance	Pass	% DPER < TREE	0.56		

Assessor Details	Ms. Julie Lock, Shropshire Council, Tel: 01743258748, julie.lock@shropshire.gov.uk	Assessor ID	1971-0001
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Client	
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Building Elements

Wall 000002 - Timber framed insulation between studs

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	Tiling, clay				
	Main construction	15	1.0000	0.0150	100.00
Layer 2	airspace/timber battens				
	Main construction	22	0.1222	0.1800	89.63
	Main construction	22	0.1243	0.1770	10.37
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 3	airspace/timber battens				
	Main construction	22	0.1222	0.1800	89.63
	Main construction	22	0.1243	0.1770	10.37
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 4	Vapour control layer				
	Main construction	1	0.0000	0.0000	100.00
Layer 5	Plywood				
	Main construction	12	0.1300	0.0923	100.00
Layer 6	Celotex GA4000				
	Main construction	60	0.0220	2.7273	80.21
	Main construction	60	0.1300	0.4615	19.79
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 7	Vapour control layer				
	Main construction	1	0.0000	0.0000	100.00
Layer 8	Celotex PL4025 [37.5mm]				
	Main construction	37.5	0.0313	1.2000	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 9	Plaster, standard				
	Main construction	3	0.4000	0.0075	100.00
Int surface				0.1300	

Total resistance:	Upper limit = 3.827 m ² K/W	Lower limit = 3.227 m ² K/W	Average = 3.527 m ² K/W
	Total correction = 0.0027 m ² K/W	U-value (unrounded) = 0.28 W/m ² K	

U-VALUE CALCULATOR REPORT

Design SAP
elmhurst energy

Unheated space: None

Total thickness: 174 mm

U-value: 0.28 W/m² K

Kappa: n/a

U-VALUE CALCULATOR REPORT

Design SAP
elmhurst energy

Property Reference	22/00635/ENERAT	Issued on Date	25/02/2022
Assessment Reference	22/00635/ENERAT	Dwop Type Ref	Dormer Bungalow
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Calculation Type	New Build (As Designed)		

SAP Rating	77 C	DER	19.99	TBR	22.17
Environmental	80 C	% DER < TBR	9.85		
CO ₂ Emissions (t/year)	2.84	DREE	54.71	TREE	55.02
General Requirements Compliance	Pass	% DPER < TREE	0.56		

Assessor Details	Ms. Julie Lock, Shropshire Council, Tel: 01743258748, julie.lock@shropshire.gov.uk	Assessor ID	1971-0001
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Client	
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Building Elements

Floor 000005 - floor - slab-on-ground floor

Floor Type: Slab On Ground Floor

Area = 109.04 m², Perimeter = 44.80 m, Wall thickness = 300.00 mm, Soil: Clay

Horizontal edge insulation: none

Vertical edge insulation: none

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	1200g Visqueen DPM				
	Main construction	1	0.0000	0.0000	100.00
Layer 2	Celotex GA4000				
	Main construction	75	0.0220	3.4091	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	1000g VCL				
	Main construction	1	0.0000	0.0000	100.00
Layer 4	Screed				
	Main construction	65	1.1500	0.0565	100.00
Int surface				0.1700	

Total resistance:	Upper limit = 3.466 m ² K/W	Lower limit = 3.466 m ² K/W	Average = 3.466 m ² K/W
	Total correction = 0.0097 m ² K/W	U-value (unrounded) = 0.19 W/m ² K	

Unheated space: None

Total thickness: 142 mm

U-value: 0.19 W/m² K

Kappa: n/a

BASIC COMPLIANCE REPORT

Calculation Type: New Build (As Designed)

Design SAP
elmhurst energy

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Assessment Reference	22/00635/ENERAT			Prop Type Ref	Dormer Bungalow		
Property	Land adjacent Orchard End, Highground Lane, BARNHAM, PO22 0BU						
SAP Rating	77 C		DER	19.99		TER	22.17
Environmental	80 C		% DER<TER	9.85			
CO ₂ Emissions (t/year)	2.84		DFEE	54.71		TFEE	55.02
General Requirements Compliance	Pass		% DFEE<TFEE	0.56			
Assessor Details	Ms. Julie Lock, Shropshire Council, Tel: 01743258748, julie.lock@shropshire.gov.uk					Assessor ID	J971-0001
Client							

SUMMARY FOR INPUT DATA FOR New Build (As Designed)

Criterion 1 – Achieving the TER and TFEE rate

1a TER and DER

Fuel for main heating	Electricity		
Fuel factor	1.55 (electricity)		
Target Carbon Dioxide Emission Rate (TER)	22.17	kgCO ₂ /m ²	
Dwelling Carbon Dioxide Emission Rate (DER)	19.99	kgCO ₂ /m ²	Pass
	-2.18 (-9.8%)	kgCO ₂ /m ²	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	55.02	kWh/m ² /yr	
Dwelling Fabric Energy Efficiency (DFEE)	54.71	kWh/m ² /yr	
	-0.3 (-0.5%)	kWh/m ² /yr	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.20 (max. 0.30)	0.28 (max. 0.70)	Pass
Floor	0.19 (max. 0.25)	0.19 (max. 0.70)	Pass
Roof	0.16 (max. 0.20)	0.17 (max. 0.35)	Pass
Openings	1.51 (max. 2.00)	1.80 (max. 3.30)	Pass

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	5.00 (design value)	
Maximum	10.0	Pass

Limiting System Efficiencies

4 Heating efficiency

Main heating system	Heat pump with radiators or underfloor - Electric Air-to-water heat pump	
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BASIC COMPLIANCE REPORT

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Secondary heating system

Room heaters - Wood Logs
Data from manufacturer, tested to BS EN 1266, HETAS approved
Tba
Efficiency: 75%
Minimum: 65%

Pass

5 Cylinder insulation

Hot water storage

Nominal cylinder loss: 2.55 kWh/day
Permitted by DBSCG 2.86

Pass

Primary pipework insulated

Yes

Pass

6 Controls

Space heating controls

Time and temperature zone control

Pass

Hot water controls

Cylinderstat

Pass

Independent timer for DHW

Pass

7 Low energy lights

Percentage of fixed lights with low-energy fittings

100 %

Minimum

75 %

Pass

8 Mechanical ventilation

Not applicable

Criterion 3 – Limiting the effects of heat gains in summer

9 Summertime temperature

Overheating risk (South East England)

Not significant

Pass

Based on:

Overshading

Average

Windows facing South East

7.80 m², No overhang

Windows facing South West

1.10 m², No overhang

Windows facing North West

17.25 m², No overhang

Air change rate

8.00 ach

Blinds/curtains

None

Criterion 4 – Building performance consistent with DER and DFEE rate

Air permeability and pressure testing

3 Air permeability

Air permeability at 50 pascals

5.00 (design value)

Maximum

10.0

Pass

10 Key features

External wall U-value

0.12

W/m²K

Secondary heating (wood logs)

N/A

Secondary heating fuel:

wood logs

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elmhurst energy

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General Requirements Compliance	Pass	% DERE-TDER	0.56			
Assessor Details	Ms. Julie Lock, Shropshire Council, Tel: 01743258748, julie.lock@shropshire.gov.uk				Assessor ID	J971-0001
Client						

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

Orientation	South East
Property Tenure	Owner-occupied
Transaction Type	New dwelling
Terrain Type	Urban
1.0 Property Type	Bungalow, Detached
2.0 Number of Storeys	2
3.0 Date Built	2022
4.0 Sheltered Sides	0
5.0 Sunlight/Shade	Average or unknown

6.0 Measurements		Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	Ground Floor:	44.80 m	109.04 m ²	2.25 m
	1st Storey:	45.77 m	72.12 m ²	2.17 m

7.0 Living Area	27.13	m ²
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8.0 Thermal Mass Parameter	Simple calculation - Medium	
Thermal Mass	250.00	kJ/m²K

9.0 External Walls		U-Value (W/m ² K)	Gross Area (m ²)	Nett Area (m ²)
Description	Type			
Main Wall	Cavity Wall	0.24	122.06	95.85
Dormer Wall	Timber Frame	0.28	12.69	8.43
Other	Timber Frame	0.12	66.43	66.43

10.0 External Roofs		U-Value (W/m ² K)	Gross Area (m ²)	Nett Area (m ²)
Description	Type			
Sloping Ceiling	External Slope Roof	0.17	41.75	38.65
Flat Ceiling	External Plane Roof	0.16	44.28	44.28

11.0 Heat Loss Floors		U-Value (W/m ² K)	Area (m ²)
Description	Type		
Ground Floor	Ground Floor - Solid	0.19	109.04

12.0 Opening Types

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)

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Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Glazed Door/Windows	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.80
Windows	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.40
Composite Door	Manufacturer	Solid Door							1.40
Roof Lights	Manufacturer	Roof Window	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
Opening 1	Window	[1] Main Wall	South East	None	0.00					6.59	
Opening 2	Window	[2] Dormer Wall	South East	None	0.00					1.21	
Opening 3	Roof Window	[1] Sloping Ceiling	South East	None						1.53	
Opening 4	Solid Door	[1] Main Wall	South East							2.16	
Opening 5	Window	[1] Main Wall	South West	None	0.00					1.10	
Opening 6	Solid Door	[1] Main Wall	South West							2.16	
Opening 7	Window	[1] Main Wall	North West	None	0.00					4.96	
Opening 8	Window	[2] Dormer Wall	North West	None	0.00					3.05	
Opening 9	Roof Window	[1] Sloping Ceiling	North West	None						1.57	
Opening 10	Window	[1] Main Wall	North West	None	0.00					9.24	

14.0 Conservatory

None

15.0 Draught Proofing

100

%

16.0 Draught Lobby

Yes

17.0 Thermal Bridging

Calculate Bridges

17.1 List of Bridges

Source Type	Bridge Type	Length	Psi	Imported
Independently assessed	E2 Other lintels (including other steel lintels)	19.16	0.173	Yes
Table K1 - Approved	E3 Sill	12.70	0.040	No
Table K1 - Approved	E4 Jamb	43.20	0.050	No
Table K1 - Approved	E5 Ground floor (normal)	44.80	0.160	Yes
Table K1 - Approved	E6 Intermediate floor within a dwelling	45.77	0.070	Yes
Table K1 - Approved	E10 Eaves (insulation at ceiling level)	22.51	0.060	No
Table K1 - Approved	E12 Gable (insulation at ceiling level)	5.50	0.240	No
Table K1 - Approved	E13 Gable (insulation at rafter level)	12.20	0.040	No
Table K1 - Approved	E16 Corner (normal)	29.95	0.090	No
Table K1 - Approved	E17 Corner (inverted -- internal area greater than external area)	13.97	-0.090	No
Table K1 - Default	R1 Head of roof window	2.94	0.080	Yes
Table K1 - Default	R2 Sill of roof window	2.94	0.060	Yes
Table K1 - Default	R3 Jamb of roof window	6.32	0.080	Yes
Table K1 - Default	R6 Flat ceiling	30.50	0.060	No
Table K1 - Default	R8 Roof to wall (rafter)	30.50	0.060	No

Y-value

0.064

W/m²K

18.0 Pressure Testing

Yes

Designed AP₅₀

5.00

m³/(h.m²) @ 50 Pa

Property Tested ?

As Built AP₅₀

m³/(h.m²) @ 50 Pa

19.0 Mechanical Ventilation

Summer Overheating

Windows open in hot weather

Windows fully open

Cross ventilation possible

Yes

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)

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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	0
Number of open flues	0	0	0	0
Number of intermittent fans				5
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

Light and motion sensor

23.0 Electricity Tariff

24.0 Main Heating 1

Description

Percentage of Heat %

Main Heating

SAP Code

Efficiency (SAP Table) %

Controls

PCDF Controls

Sap Code

Is MHS Pumped

Heat Emitter

Underfloor Heating

Flow Temperature

25.0 Main Heating 2

Community Heating

27.0 Secondary Heating

Secondary Heating

Description

SHS efficiency %

SAP Code

HETAS Approved System

Smoke Control Area

Test Method

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)

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Manufacturer	Tba
Model Name	Tba
28.0 Water Heating	
Water Heating	HWP From main heating 1
Flue Gas Heat Recovery System	Main Heating 1
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
Immersion Heater	Single
Supplementary Immersion	Yes
Immersion Only Heating Hot Water	Yes
29.0 Hot Water Cylinder	
Cylinder Stat	Hot Water Cylinder
Cylinder In Heated Space	Yes
Independent Time Control	Yes
Insulation Type	Yes
Insulation Thickness	Foam
Cylinder Volume	80 mm
Pipes Insulation	300.00 L
Pipes Insulation	Fully insulated primary pipework
31.0 Thermal Store	
None	

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	£105	C 79	
	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar photovoltaic panels, 2.5 kWp	£3,500 - £5,500	£402	B 85	