PREDICTED ENERGY ASSESSMENT

Design SAP
elmhurst energy

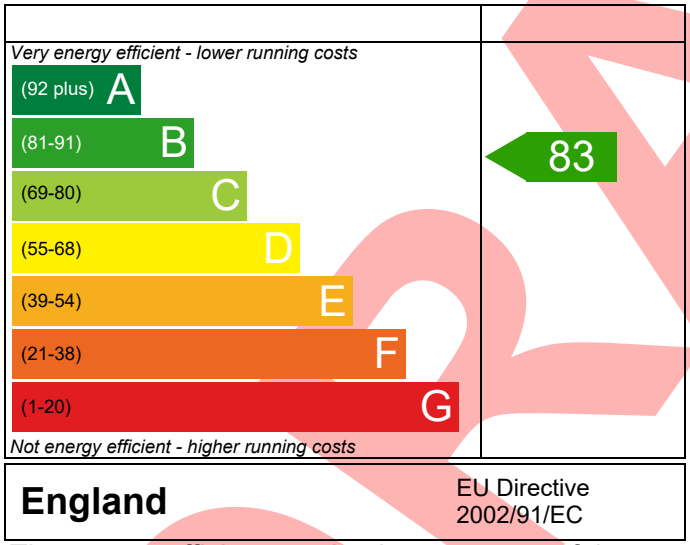
Plot 13, 21, School View,
Askam in Furness,
Cumbria,
LA16 7FN

Dwelling type:	House, Detached
Date of assessment:	09/08/2023
Produced by:	BREW Compliance Ltd
Total floor area:	79.92 m²

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 (CO_2) emissions.

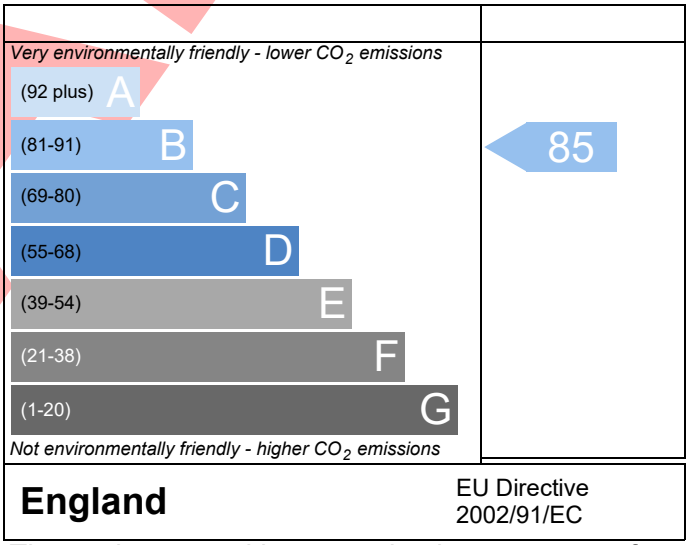
Energy Efficiency Rating



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.

Environmental Impact (CO_2) Rating



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 (CO_2) emissions. The higher the rating the less impact it has on the environment.

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BUILDING REGULATION COMPLIANCE
Calculation Type: New Build (As Designed)

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Property Reference	Plot 13	**Issued on Date**	09/08/2023
Assessment Reference	As Built	**Prop Type Ref**	Cartmel DET
Property	Plot 13, 21, School View, Askam in Furness, Cumbria, LA16 7FN		

SAP Rating	83 B	**DER**	19.15	**TER**	20.02
Environmental	85 B	**% DER<TER**	4.36		
CO_2 Emissions (t/year)	1.45	**DFEE**	56.00	**TFEE**	60.60
General Requirements Compliance	Pass	**% DFEE<TFEE**	7.58		

Assessor Details	Mr. Kieran Abadie, BREW Compliance Ltd, Tel: 07943 063 981, kieran@brewcompliance.co.uk	**Assessor ID**	AX84-0001
Client	Moorsolve Limited, Moorsolve		

SUMARY FOR INPUT DATA FOR New Build (As Designed)

Criterion 1 – Achieving the TER and TFEE rate

1a TER and DER

Fuel for main heating	Mains gas		
Fuel factor	1.00 (mains gas)		
Target Carbon Dioxide Emission Rate (TER)	20.02	$kgCO_2/m^2$	
Dwelling Carbon Dioxide Emission Rate (DER)	19.15	$kgCO_2/m^2$	Pass
	-0.87 (-4.3%)	$kgCO_2/m^2$	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	60.60	$kWh/m^2/yr$	
Dwelling Fabric Energy Efficiency (DFEE)	56.00	$kWh/m^2/yr$	
	-4.6 (-7.6%)	$kWh/m^2/yr$	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.20 (max. 0.30)	0.20 (max. 0.70)	Pass
Floor	0.12 (max. 0.25)	0.12 (max. 0.70)	Pass
Roof	0.11 (max. 0.20)	0.11 (max. 0.35)	Pass
Openings	1.43 (max. 2.00)	1.44 (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	5.10 (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

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Main heating system	Boiler system with radiators or underfloor - Mains gas Data from database Ideal LOGIC COMBI ESP1 30 Combi boiler Efficiency: 89.6% SEDBUK2009 Minimum: 88.0%		Pass
Secondary heating system	None		

5 Cylinder insulation

Hot water storage	No cylinder		

6 Controls

Space heating controls	Time and temperature zone control		Pass
Hot water controls	No cylinder		
Boiler interlock	Yes		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 (North West England)	Not significant		Pass

Based on:

Overshading	Average		
Windows facing East Windows facing West	5.49 m², No overhang 7.39 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	5.10 (design value)	m³/(h.m²) @ 50 Pa	
Maximum	10.0	m³/(h.m²) @ 50 Pa	Pass

10 Key features

Roof U-value	0.11	W/m²K
Floor U-value	0.12	W/m²K

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THERMAL BRIDGING
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	Junction detail	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E2 Other lintels (including other steel lintels)	Table K1 - Approved	0.300	10.21	3.06	
External wall	E3 Sill	Table K1 - Approved	0.040	7.42	0.30	
External wall	E4 Jamb	Table K1 - Approved	0.050	24.78	1.24	
External wall	E5 Ground floor (normal)	Table K1 - Approved	0.160	28.00	4.48	
External wall	E6 Intermediate floor within a dwelling	Table K1 - Approved	0.070	28.00	1.96	
External wall	E10 Eaves (insulation at ceiling level)	Table K1 - Approved	0.060	10.77	0.65	
External wall	E12 Gable (insulation at ceiling level)	Table K1 - Approved	0.240	17.23	4.14	
External wall	E16 Corner (normal)	Table K1 - Approved	0.090	25.54	2.30	
External wall	E17 Corner (inverted – internal area greater than external area)	Table K1 - Approved	-0.090	5.11	-0.46	

Total: 17.66 **W/mK:**

Y-Value: 0.079 **W/m²K:**

BASIC COMPLIANCE REPORT
Calculation Type: New Build (As Designed)

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Openings	1.43 (max. 2.00)	1.44 (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	5.10 (design value)	
Maximum	10.0	Pass

Limiting System Efficiencies

4 Heating efficiency

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Secondary heating system	None		
5 Cylinder insulation			
Hot water storage	No cylinder		
6 Controls			
Space heating controls	Time and temperature zone control		Pass
Hot water controls	No cylinder		
Boiler interlock	Yes		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 (North West England)	Not significant		Pass
Based on:			
Overshading	Average		
Windows facing East	5.49 m², No overhang		
Windows facing West	7.39 m², No overhang		
Air change rate	8.00 ach		
Blinds/curtains	None		

Criterion 4 – Building performance consistent with DER and DFEE rate

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

Orientation	East
Property Tenure	Owner-occupied
Transaction Type	New dwelling
Terrain Type	Suburban
1.0 Property Type	House, Detached
2.0 Number of Storeys	2
3.0 Date Built	2023
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown

6.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground Floor:	28.00 m	39.96 m²	2.39 m
1st Storey:	28.00 m	39.96 m²	2.72 m

7.0 Living Area	15.41	m²
8.0 Thermal Mass Parameter	Simple calculation - Low	
Thermal Mass	100.00	kJ/m²K

9.0 External Walls

Description	Type	U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)
External Wall	Timber Frame	0.20	143.02	128.08

10.0 External Roofs

Description	Type	U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)
External Roof	External Plane Roof	0.11	39.96	39.96

11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m²K)	Area (m²)
Ground Floor	Ground Floor - Solid		0.12	39.36

12.0 Opening Types

SUMMARY FOR INPUT DATA
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Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Glazing	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.44
Doors	Manufacturer	Solid Door							1.40
1/2 Doors	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
Front	Window	[1] External Wall	East	None	0.00					5.49	
Rear	Window	[1] External Wall	West	None	0.00					7.39	
Entrance	Solid Door	[1] External Wall	East							2.06	

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
Table K1 - Approved	E2 Other lintels (including other steel lintels)	10.21	0.300	No
Table K1 - Approved	E3 Sill	7.42	0.040	No
Table K1 - Approved	E4 Jamb	24.78	0.050	No
Table K1 - Approved	E5 Ground floor (normal)	28.00	0.160	No
Table K1 - Approved	E6 Intermediate floor within a dwelling	28.00	0.070	No
Table K1 - Approved	E10 Eaves (insulation at ceiling level)	10.77	0.060	No
Table K1 - Approved	E12 Gable (insulation at ceiling level)	17.23	0.240	No
Table K1 - Approved	E16 Corner (normal)	25.54	0.090	No
Table K1 - Approved	E17 Corner (inverted – internal area greater than external area)	5.11	-0.090	No

Y-value	0.079	W/m²K

18.0 Pressure Testing	Yes	
Designed AP_{50}	5.10	m³/(h.m²) @ 50 Pa
Property Tested ?		
As Built AP_{50}		m³/(h.m²) @ 50 Pa

19.0 Mechanical Ventilation

Summer Overheating

Windows open in hot weather	Windows fully open
Cross ventilation possible	Yes
Night Ventilation	No
Air change rate	8.00

Mechanical Ventilation

Mechanical Ventilation System Present	No

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	No	

22.0 Lighting		
Internal		
Total number of light fittings	10	
Total number of L.E.L. fittings	10	
Percentage of L.E.L. fittings	100.00	%
External		
External lights fitted	No	
23.0 Electricity Tariff	Standard	
24.0 Main Heating 1	Database	
Description	Combination Boiler	
Percentage of Heat	100	%
Database Ref. No.	17956	
Fuel Type	Mains gas	
Main Heating	BGW	
SAP Code	104	
In Winter	90.5	
In Summer	87.3	
Controls	CBI Time and temperature zone control	
PCDF Controls	0	
Delayed Start Stat	No	
Sap Code	2110	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heat Emitter	Radiators	
Flow Temperature	Normal (> 45°C)	
Combi boiler type	Standard Combi	
Combi keep hot type	None	
25.0 Main Heating 2	None	
Community Heating	None	
28.0 Water Heating	HWP From main heating 1	
Water Heating	Main Heating 1	
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	

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	£80	B 84	

	Typical Cost	Typical savings per year	Ratings after improvement SAP rating	Environmental Impact
Solar photovoltaic panels, 2.5 kWp	£3,500 - £5,500	£679	A 95	