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

LOW CARBON BOX

Property Reference	18210 Plot 139	**Issued on Date**	31/01/2021
Assessment Reference	139	**Prop Type Ref**	Worthing h
Property	139, Golf Road, MABLETHORPE, LN12		

SAP Rating	83 B	**DER**	18.33	**TER**	18.37
Environmental	84 B	**% DER<TER**	0.22		
CO_2 Emissions (t/year)	1.70	**DFEE**	53.77	**TFEE**	57.51
General Requirements Compliance	Pass	**% DFEE<TFEE**	6.51		

Assessor Details	Mr. Robert Atherton, Low Carbon Box Limited, Tel: 07540977134, robert@lowcarbonbox.co.uk	**Assessor ID**	F291-0001
Client			

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)	18.37	$kgCO_2/m^2$	
Dwelling Carbon Dioxide Emission Rate (DER)	18.33	$kgCO_2/m^2$	Pass
	-0.04 (-0.2%)	$kgCO_2/m^2$	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	57.51	$kWh/m^2/yr$	
Dwelling Fabric Energy Efficiency (DFEE)	53.77	$kWh/m^2/yr$	
	-3.7 (-6.4%)	$kWh/m^2/yr$	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.25 (max. 0.30)	0.25 (max. 0.70)	Pass
Floor	0.18 (max. 0.25)	0.18 (max. 0.70)	Pass
Roof	0.14 (max. 0.20)	0.14 (max. 0.35)	Pass
Openings	1.38 (max. 2.00)	1.40 (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	6.75 (design value)	
Maximum	10.0	Pass

Limiting System Efficiencies

4 Heating efficiency

Main heating system	Boiler system with radiators or underfloor - Mains gas Data from database Vaillant ecoFIT sustain 830 VUW 306/6-3 (H-GB) Combi boiler Efficiency: 89.3% 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 (East Pennines)	Slight	Pass
Based on:		
Overshading	Average	
Windows facing North	0.72 m², No overhang	
Windows facing East	8.55 m², No overhang	
Windows facing West	6.79 m², No overhang	
Air change rate	4.00 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	6.75 (design value)		
Maximum	10.0		Pass
10 Key features			
Door U-value	0.91	W/m²K	

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

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

Orientation	West
Property Tenure	Unknown
Transaction Type	New dwelling
Terrain Type	Suburban
1.0 Property Type	House, Detached
2.0 Number of Storeys	2
3.0 Date Built	2021
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:	29.85 m	49.50 m²	2.36 m
1st Storey:	29.85 m	49.50 m²	2.70 m

7.0 Living Area	17.75	m²
8.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	105.84	kJ/m²K

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area (m²)	Nett Area (m²)
External Wall	Timber Frame	Timber framed wall (one layer of plasterboard)	0.25	9.00	151.04	132.83

9.2 Internal Walls

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Partition 2	Plasterboard on timber frame	9.00	189.02

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area (m²)	Nett Area (m²)
External Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.14	9.00	49.50	49.50

10.2 Internal Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Internal Ceiling 1	Plasterboard ceiling, carpeted chipboard floor	9.00	49.50

11.0 Heat Loss Floors

SUMMARY FOR INPUT DATA
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Description	Type	Construction	U-Value (W/m^2K)	Kappa (kJ/m^2K)	Area (m^2)
Ground Floor	Ground Floor - Solid	Slab on ground, screed over insulation	0.18	110.00	49.50

11.2 Internal Floors

Description	Construction	Kappa (kJ/m^2K)	Area (m^2)
Internal Floor 1	Plasterboard ceiling, carpeted chipboard floor	18.00	44.42

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m^2K)
Front Door	Manufacturer	Solid Door							1.20
Windows	Manufacturer	Window	Double Low-E Soft 0.05			0.71		0.70	1.40
HG Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.05			0.63		0.70	1.50
Garage door	Manufacturer	Door to Corridor							0.91

13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m^2)	Curtain Closed
Front Door	Solid Door	[1] External Wall	West							2.15	
Front Windows	Window	[1] External Wall	West	None	0.00					6.79	
Rear Windows	Window	[1] External Wall	East	None	0.00					8.55	
Side	Window	[1] External Wall	North	None	0.00					0.72	

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	
Independently assessed	E2 Other lintels (including other steel lintels)	13.40	0.085	No	
Independently assessed	E3 Sill	10.80	0.034	No	CBA-314
Independently assessed	E4 Jamb	33.75	0.039	No	CBA-315
Independently assessed	E5 Ground floor (normal)	29.85	0.110	No	CD0022
Independently assessed	E6 Intermediate floor within a dwelling	29.85	0.027	No	CD0029
Independently assessed	E10 Eaves (insulation at ceiling level)	15.23	0.059	No	Knauf
Independently assessed	E12 Gable (insulation at ceiling level)	14.62	0.081	No	Knauf
Independently assessed	E16 Corner (normal)	25.30	0.060	No	CBA-316
Table K1 - Approved	E17 Corner (inverted – internal area greater than external area)	5.06	-0.090	No	ACD

Y-value	0.040	W/m^2K
18.0 Pressure Testing	Yes	
Designed AP_{50}	6.75	$m^3/(h.m^2)$ @ 50 Pa
Property Tested ?		
As Built AP_{50}		$m^3/(h.m^2)$ @ 50 Pa

19.0 Mechanical Ventilation

Summer Overheating

Windows open in hot weather	Windows half open
Cross ventilation possible	Yes
Night Ventilation	No
Air change rate	4.00

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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				4
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	12	
Total number of L.E.L. fittings	12	
Percentage of L.E.L. fittings	100.00	%
External		
External lights fitted	Yes	
Light and motion sensor	Yes	
23.0 Electricity Tariff	Standard	
24.0 Main Heating 1	Database	
Description	System	
Percentage of Heat	100	%
Database Ref. No.	17959	
Fuel Type	Mains gas	
Main Heating	BGW	
SAP Code	104	
In Winter	90.2	
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	£30	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	£366	A 93	

ASSESSMENT NOTES
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ASSESSMENT NOTES - Last time updated on: 31.01.2021

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)	Independently assessed	0.085	13.40	1.14	
External wall	E3 Sill	Independently assessed	0.034	10.80	0.37	CBA-314
External wall	E4 Jamb	Independently assessed	0.039	33.75	1.32	CBA-315
External wall	E5 Ground floor (normal)	Independently assessed	0.110	29.85	3.28	CD0022
External wall	E6 Intermediate floor within a dwelling	Independently assessed	0.027	29.85	0.81	CD0029
External wall	E10 Eaves (insulation at ceiling level)	Independently assessed	0.059	15.23	0.90	Knauf
External wall	E12 Gable (insulation at ceiling level)	Independently assessed	0.081	14.62	1.18	Knauf
External wall	E16 Corner (normal)	Independently assessed	0.060	25.30	1.52	CBA-316
External wall	E17 Corner (inverted – internal area greater than external area)	Table K1 - Approved	-0.090	5.06	-0.46	ACD

Total: 10.06 **W/mK:**

Y-Value: 0.040 **W/m²K:**