

# BASIC COMPLIANCE REPORT

## Calculation Type: New Build (As Designed)



<b>Property Reference</b>	19266 Plot 02	<b>Issued on Date</b>	21/04/2020	
<b>Assessment Reference</b>	2	<b>Prop Type Ref</b>	2B semi higher	
<b>Property</b>	2, Beeching Close, Harpenden, AL5 4LZ			
<b>SAP Rating</b>	83 B	<b>DER</b>	19.29	
<b>Environmental</b>	85 B	<b>TER</b>	19.29	
<b>CO<sub>2</sub> Emissions (t/year)</b>	1.36	<b>% DER&lt;TER</b>	0.00	
<b>General Requirements Compliance</b>	Pass	<b>DFEE</b>	52.89	
		<b>TFEE</b>	57.61	
		<b>% DFEE&lt;TFEE</b>	8.19	
<b>Assessor Details</b>	Mr. Robert Atherton, Low Carbon Box Limited, Tel: 07540977134, robert@lowcarbonbox.co.uk		<b>Assessor ID</b>	F291-0001
<b>Client</b>				

### 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	Mains gas		
Fuel factor	1.00 (mains gas)		
Target Carbon Dioxide Emission Rate (TER)	19.29	kgCO <sub>2</sub> /m <sup>2</sup>	
Dwelling Carbon Dioxide Emission Rate (DER)	19.29	kgCO <sub>2</sub> /m <sup>2</sup>	Pass
	0.00 (0.0%)	kgCO <sub>2</sub> /m <sup>2</sup>	

##### 1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	57.61	kWh/m <sup>2</sup> /yr	
Dwelling Fabric Energy Efficiency (DFEE)	52.89	kWh/m <sup>2</sup> /yr	
	-4.7 (-8.2%)	kWh/m <sup>2</sup> /yr	Pass

#### Criterion 2 – Limits on design flexibility

##### Limiting Fabric Standards

##### 2 Fabric U-values

Element	Average	Highest	
External wall	0.23 (max. 0.30)	0.27 (max. 0.70)	Pass
Party wall	0.00 (max. 0.20)	-	Pass
Floor	0.15 (max. 0.25)	0.15 (max. 0.70)	Pass
Roof	0.11 (max. 0.20)	0.11 (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	4.90 (design value)	
Maximum	10.0	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 Vaillant ecoTEC sustain 34 VUW 346/7-2 (H-GB) Combi boiler Efficiency: 89.2% SEDBUK2009 Minimum: 88.0%	Pass
Secondary heating system	None	

### 5 Cylinder insulation

Hot water storage	No cylinder	
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### 6 Controls

Space heating controls	Programmer, room thermostat and TRVs	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

Continuous extract system (decentralised)		
Specific fan power	0.1600 0.1600	
Maximum	0.7	Pass

## Criterion 3 – Limiting the effects of heat gains in summer

### 9 Summertime temperature

Overheating risk (Thames Valley)	Medium	Pass
Based on:		
Overshading	Average	
Windows facing North East	8.94 m <sup>2</sup> , No overhang	
Windows facing South West	7.22 m <sup>2</sup> , No overhang	
Windows facing North West	1.45 m <sup>2</sup> , No overhang	
Air change rate	4.00 ach	
Blinds/curtains	None	

## Criterion 4 – Building performance consistent with DER and DFEE rate

### Party Walls

Type	U-value	W/m <sup>2</sup> K	
Filled Cavity with Edge Sealing	0.00		Pass

### Air permeability and pressure testing

#### 3 Air permeability

Air permeability at 50 pascals	4.90 (design value)	
Maximum	10.0	Pass

### 10 Key features

Party wall U-value	0.00	W/m <sup>2</sup> K
Roof U-value	0.11	W/m <sup>2</sup> K

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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Environmental	85 B	% DER<TER	0.00		
CO <sub>2</sub> Emissions (t/year)	1.36	DFEE	52.89	TFEE	57.61
General Requirements Compliance	Pass	% DFEE<TFEE	8.19		

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

Orientation	South West
Property Tenure	Unknown
Transaction Type	New dwelling
Terrain Type	Suburban
1.0 Property Type	House, Semi-Detached
2.0 Number of Storeys	2
3.0 Date Built	2020
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:	21.58 m	39.64 m <sup>2</sup>	2.38 m
1st Storey:	21.58 m	39.64 m <sup>2</sup>	2.70 m

7.0 Living Area	14.40	m <sup>2</sup>
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8.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	185.3	kJ/m <sup>2</sup> K

9.0 External Walls	Description	Type	Construction	U-Value (W/m <sup>2</sup> K)	Kappa (kJ/m <sup>2</sup> K)	Gross Area (m <sup>2</sup> )	Nett Area (m <sup>2</sup> )
	Ext Cavity Wall Above Party	Cavity Wall	Other	0.23	78.00	109.63	89.92
		Cavity Wall	Other	0.27	78.00	2.17	2.17

9.1 Party Walls	Description	Type	Construction	U-Value (W/m <sup>2</sup> K)	Kappa (kJ/m <sup>2</sup> K)	Area (m <sup>2</sup> )
	Party Wall 1	Filled Cavity with Edge Sealing	Other	0.00	78.00	18.81

9.2 Internal Walls	Description	Construction	Kappa (kJ/m <sup>2</sup> K)	Area (m <sup>2</sup> )
	Partitions	Plasterboard on timber frame	9.00	142.61

10.0 External Roofs	Description	Type	Construction	U-Value (W/m <sup>2</sup> K)	Kappa (kJ/m <sup>2</sup> K)	Gross Area (m <sup>2</sup> )	Nett Area (m <sup>2</sup> )
	Roof	External Plane Roof	Plasterboard, insulated at ceiling level	0.11	9.00	39.64	39.64

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### 10.2 Internal Ceilings

Description	Construction	Kappa (kJ/m <sup>2</sup> K)	Area (m <sup>2</sup> )
Internal Ceiling 1	Plasterboard ceiling, carpeted chipboard floor	9.00	39.64

### 11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m <sup>2</sup> K)	Kappa (kJ/m <sup>2</sup> K)	Area (m <sup>2</sup> )
Ground floor	Ground Floor - Solid	Suspended concrete floor, carpeted	0.15	75.00	39.64

### 11.2 Internal Floors

Description	Construction	Kappa (kJ/m <sup>2</sup> K)	Area (m <sup>2</sup> )
Internal Floor 1	Plasterboard ceiling, carpeted chipboard floor	18.00	39.64

### 12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m <sup>2</sup> K)
Front Door	Manufacturer	Solid Door							1.20
Window	Manufacturer	Window	Double Low-E Soft 0.05			0.70		0.70	1.40
HG door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.05			0.70		0.50	1.40
French Doors	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.37
Rooflight	Manufacturer	Roof Window	Double Low-E Soft 0.05			0.63		0.70	1.60

### 13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m <sup>2</sup> )	Curtain Closed
Front Door	Solid Door	[1] Ext Cavity Wall	South West							2.10	
Front Windows	Window	[1] Ext Cavity Wall	South West	None	0.00					7.22	
Rear win	Window	[1] Ext Cavity Wall	North East	None	0.00					8.94	
Side win	Window	[1] Ext Cavity Wall	North West	None	0.00					1.45	

### 14.0 Conservatory

### 15.0 Draught Proofing

 %

### 16.0 Draught Lobby

### 17.0 Thermal Bridging

### 17.1 List of Bridges

Source Type	Bridge Type	Length	Psi	Imported
Independently assessed	E1 Steel lintel with perforated steel base plate	13.38	0.302	No
Independently assessed	E3 Sill	10.21	0.017	No
Independently assessed	E4 Jamb	28.36	0.021	No
Independently assessed	E5 Ground floor (normal)	21.58	0.098	No
Independently assessed	E6 Intermediate floor within a dwelling	21.58	0.000	No
Table K1 - Approved	E10 Eaves (insulation at ceiling level)	15.45	0.060	No
Independently assessed	E12 Gable (insulation at ceiling level)	10.26	0.127	No
Independently assessed	E16 Corner (normal)	15.24	0.060	No
Table K1 - Default	E25 Staggered party wall between dwellings	10.16	0.120	No
Table K1 - Default	P1 Party wall - Ground floor	4.13	0.160	No
Table K1 - Default	P2 Party wall - Intermediate floor within a dwelling	4.13	0.000	No
Independently assessed	P4 Party wall - Roof (insulation at ceiling level)	4.13	0.041	No

Y-value  W/m<sup>2</sup>K

### 18.0 Pressure Testing

Designed AP<sub>50</sub>  m<sup>3</sup>/(h.m<sup>2</sup>) @ 50 Pa

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Property Tested ?   
 As Built AP<sub>50</sub>  m<sup>3</sup>/(h.m<sup>2</sup>) @ 50 Pa

### 19.0 Mechanical Ventilation

#### Summer Overheating

Windows open in hot weather   
 Cross ventilation possible   
 Night Ventilation   
 Air change rate

#### Mechanical Ventilation

Mechanical Ventilation System Present   
 Approved Installation   
 Mechanical Ventilation data Type   
 Type   
 MV Reference Number   
 Duct Type

### 19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.16	Through Wall Fan Kitchen	1
0.16	Through Wall Fan Other Wet Room	2

### 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				0
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

### 23.0 Electricity Tariff

### 24.0 Main Heating 1

Description   
 Percentage of Heat  %  
 Database Ref. No.   
 Fuel Type   
 Main Heating   
 SAP Code   
 In Winter

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In Summer	87.0
Controls	CBE Programmer, room thermostat and TRVs
PCDF Controls	0
Delayed Start Stat	No
Sap Code	2106
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
<b>25.0 Main Heating 2</b>	None

Community Heating	None
<b>28.0 Water Heating</b>	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
<b>29.0 Hot Water Cylinder</b>	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	£335	A 95	

# ASSESSMENT NOTES

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**ASSESSMENT NOTES - Last time updated on: 21.04.2020**

# THERMAL BRIDGING

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	Junction detail	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E1 Steel lintel with perforated steel base plate	Independently assessed	0.302	13.38	4.04	
External wall	E3 Sill	Independently assessed	0.017	10.21	0.17	
External wall	E4 Jamb	Independently assessed	0.021	28.36	0.60	
External wall	E5 Ground floor (normal)	Independently assessed	0.098	21.58	2.11	
External wall	E6 Intermediate floor within a dwelling	Independently assessed	0.000	21.58	0.00	
External wall	E10 Eaves (insulation at ceiling level)	Table K1 - Approved	0.060	15.45	0.93	
External wall	E12 Gable (insulation at ceiling level)	Independently assessed	0.127	10.26	1.30	
External wall	E16 Corner (normal)	Independently assessed	0.060	15.24	0.91	
External wall	E25 Staggered party wall between dwellings	Table K1 - Default	0.120	10.16	1.22	
Party wall	P1 Party wall - Ground floor	Table K1 - Default	0.160	4.13	0.66	
Party wall	P2 Party wall - Intermediate floor within a dwelling	Table K1 - Default	0.000	4.13	0.00	
Party wall	P4 Party wall - Roof (insulation at ceiling level)	Independently assessed	0.041	4.13	0.17	

Total: **12.12** W/mK:  
 Y-Value: **0.063** W/m<sup>2</sup>K: