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

Property Reference	4878-SAP-NB-5 OLIVERS BATTERY	**Issued on Date**	29/06/2021
Assessment Reference	001	**Prop Type Ref**	4878-SAP-NB-5 OLIVERS BATTERY
Property	5 , OLIVERS BATTERY, WINCHESTER , SO22 4EU		

SAP Rating	78 C	**DER**	21.16	**TER**	25.05
Environmental	80 C	**% DER<TER**	15.52		
CO_2 Emissions (t/year)	2.26	**DFEE**	53.39	**TFEE**	58.50
General Requirements Compliance	Pass	**% DFEE<TFEE**	8.73		

Assessor Details	Mr. Michael Andrews, Energy Saving Experts Ltd, Tel: 01225 862266, mike@energy-saving-experts.com	**Assessor ID**	N388-0001
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	Electricity		
Fuel factor	1.55 (electricity)		
Target Carbon Dioxide Emission Rate (TER)	25.05	$kgCO_2/m^2$	
Dwelling Carbon Dioxide Emission Rate (DER)	21.16	$kgCO_2/m^2$	Pass
	-3.89 (-15.5%)	$kgCO_2/m^2$	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	58.50	$kWh/m^2/yr$	
Dwelling Fabric Energy Efficiency (DFEE)	53.39	$kWh/m^2/yr$	
	-5.1 (-8.7%)	$kWh/m^2/yr$	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.22 (max. 0.30)	0.28 (max. 0.70)	Pass
Floor	0.12 (max. 0.25)	0.12 (max. 0.70)	Pass
Roof	0.16 (max. 0.20)	0.18 (max. 0.35)	Pass
Openings	1.41 (max. 2.00)	1.60 (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	
Secondary heating system	None	

5 Cylinder insulation

Hot water storage	Nominal cylinder loss: 2.26 kWh/day Permitted by DBSCG 2.56		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 (Southern England)	Medium		Pass

Based on:

Overshading	Average	
Windows facing North Windows facing East Windows facing South	11.96 m², No overhang 11.34 m², No overhang 10.73 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	5.00 (design value)		
Maximum	10.0		Pass

10 Key features

Roof U-value	0.11	W/m²K
Floor U-value	0.12	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	South
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	1
5.0 Sunlight/Shade	Average or unknown

6.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground Floor:	36.41 m	74.03 m²	2.32 m
1st Storey:	12.15 m	51.46 m²	2.33 m

7.0 Living Area	11.83	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	0.21	120.43	85.16
External Wall Dormer	Timber Frame	0.18	12.60	9.16
External Wall loft wall	Timber Frame	0.28	13.58	13.58

10.0 External Roofs

Description	Type	U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)
External Roof Rafter	External Slope Roof	0.18	57.47	55.79
External Roof Ins at ceiling	External Plane Roof	0.11	13.09	13.09
External Roof Ins at rafter 2	External Plane Roof	0.13	21.02	21.02

11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m²K)	Area (m²)
Heat Loss Floor	Ground Floor - Solid		0.12	74.03

12.0 Opening Types

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

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Half glazed door	Manufacturer	Half Glazed Door	Double Low-E Hard 0.2			0.72		0.70	1.40
Glazed door	Manufacturer	Window	Double Low-E Hard 0.2			0.72		0.70	1.40
Solid door	Manufacturer	Solid Door							1.60
Windows	Manufacturer	Window	Double Low-E Hard 0.2			0.72		0.70	1.40
Rooflight	Manufacturer	Roof Window	Double Low-E Hard 0.2			0.72		0.70	1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m²)	Curtain Closed
DG01	Half Glazed Door	[1] External Wall	South							2.73	
DG02	Window	[1] External Wall	East	None	0.00					11.34	
DG03	Solid Door	[1] External Wall	North							1.95	
WG01	Window	[1] External Wall	South	None	0.00					1.89	
WG02	Window	[1] External Wall	North	None	0.00					2.52	
WG03	Window	[1] External Wall	North	None	0.00					1.26	
WG04	Window	[1] External Wall	North	None	0.00					2.52	
WG05	Window	[1] External Wall	South	None	0.00					1.89	
WG06	Window	[1] External Wall	South	None	0.00					0.63	
WF01	Window	[1] External Wall	South	None	0.00					2.88	
WF02/04	Window	[2] External Wall Dormer	South	None	0.00					3.44	
WF03	Window	[1] External Wall	North	None	0.00					5.66	
WR01/2	Roof Window	[1] External Roof Rafter	North	None						1.68	

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)	17.83	0.300	Yes
Table K1 - Approved	E3 Sill	11.33	0.040	No
Table K1 - Approved	E3 Sill	15.60	0.040	Yes
Table K1 - Approved	E4 Jamb	3.06	0.050	No
Table K1 - Approved	E4 Jamb	25.20	0.050	Yes
Table K1 - Approved	E5 Ground floor (normal)	36.41	0.160	Yes
Table K1 - Approved	E6 Intermediate floor within a dwelling	12.15	0.070	Yes
Table K1 - Approved	E10 Eaves (insulation at ceiling level)	15.77	0.060	No
Table K1 - Approved	E12 Gable (insulation at ceiling level)	7.99	0.240	No
Table K1 - Approved	E13 Gable (insulation at rafter level)	23.49	0.040	No
Table K1 - Approved	E16 Corner (normal)	14.94	0.090	No
Table K1 - Approved	E17 Corner (inverted – internal area greater than external area)	2.26	-0.090	No
Table K1 - Default	R1 Head of roof window	1.56	0.080	Yes
Table K1 - Default	R2 Sill of roof window	1.56	0.060	Yes
Table K1 - Default	R3 Jamb of roof window	4.32	0.080	Yes
Table K1 - Default	R6 Flat ceiling	22.41	0.060	No
Table K1 - Default	R7 Flat ceiling (inverted)	11.20	0.040	No
Table K1 - Default	R8 Roof to wall (rafter)	21.11	0.060	No

Y-value 0.074 W/m²K

18.0 Pressure Testing Yes

SUMMARY FOR INPUT DATA
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Designed AP_{50}	5.00	$m^3/(h.m^2)$ @ 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

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	15	
Total number of L.E.L. fittings	15	
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	SAP table	
Description	ASHP TBC	
Percentage of Heat	100	%
Main Heating	PET	
SAP Code	224	
Efficiency (SAP Table)	175.1	%
Controls	CHD Time and temperature zone control	
PCDF Controls	0	
Sap Code	2207	
Is MHS Pumped	Pump in heated space	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Unknown	
25.0 Main Heating 2	None	
Community Heating	None	
28.0 Water Heating	HWP From main heating 1	

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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	
Immersion Heater	Single	
Supplementary Immersion	Yes	
Immersion Only Heating Hot Water	No	
29.0 Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Foam	
Insulation Thickness	80 mm	
Cylinder Volume	250.00	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	£96	C 80	
	Typical Cost	**Typical savings per year**	**Ratings after improvement SAP rating**	**Environmental Impact**
Solar photovoltaic panels, 2.5 kWp	£3,500 - £5,500	£360	B 88	

THERMAL BRIDGING
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General Requirements Compliance	Pass	**% DFEE<TFEE**	8.73		

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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	17.83	5.35	
External wall	E3 Sill	Table K1 - Approved	0.040	11.33	0.45	
External wall	E3 Sill	Table K1 - Approved	0.040	15.60	0.62	
External wall	E4 Jamb	Table K1 - Approved	0.050	3.06	0.15	
External wall	E4 Jamb	Table K1 - Approved	0.050	25.20	1.26	
External wall	E5 Ground floor (normal)	Table K1 - Approved	0.160	36.41	5.83	
External wall	E6 Intermediate floor within a dwelling	Table K1 - Approved	0.070	12.15	0.85	
External wall	E10 Eaves (insulation at ceiling level)	Table K1 - Approved	0.060	15.77	0.95	
External wall	E12 Gable (insulation at ceiling level)	Table K1 - Approved	0.240	7.99	1.92	
External wall	E13 Gable (insulation at rafter level)	Table K1 - Approved	0.040	23.49	0.94	
External wall	E16 Corner (normal)	Table K1 - Approved	0.090	14.94	1.34	
External wall	E17 Corner (inverted – internal area greater than external area)	Table K1 - Approved	-0.090	2.26	-0.20	
External roof	R1 Head of roof window	Table K1 - Default	0.080	1.56	0.12	
External roof	R2 Sill of roof window	Table K1 - Default	0.060	1.56	0.09	
External roof	R3 Jamb of roof window	Table K1 - Default	0.080	4.32	0.35	
External roof	R6 Flat ceiling	Table K1 - Default	0.060	22.41	1.34	
External roof	R7 Flat ceiling (inverted)	Table K1 - Default	0.040	11.20	0.45	
External roof	R8 Roof to wall (rafter)	Table K1 - Default	0.060	21.11	1.27	

Total: **23.08** **W/mK:**

Y-Value: **0.074** **W/m²K:**