

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Built)

Property Reference	075 - PRJ013014			Issued on Date	27/05/2025
Assessment Reference	075	Prop Type Ref	1BFA		
Property	Flat 3, Hawker House, Paulet Close, Netley Abbey, SOUTHAMPTON, SO31 5JW				
SAP Rating	83 B	DER	3.01	TER	20.79
Environmental	99 A	% DER<TER	85.52		
CO ₂ Emissions (t/year)	-0.09	DFEE	45.27	TFEE	51.72
General Requirements Compliance	Pass	% DFEE<TFEE	12.48		
Assessor Details	Mr. Christopher Nicholls, Briary Energy Limited, Tel: 0203 397 1373, chris@briaryenergy.co.uk			Assessor ID	U903-0001
Client					

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REGULATIONS COMPLIANCE REPORT - Approved Document L1A, 2013 Edition, England

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DWELLING AS BUILT

Top-floor flat, total floor area 51 m²

This report covers items included within the SAP calculations.
It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating:Mains gas
Fuel factor:1.00 (mains gas)
Target Carbon Dioxide Emission Rate (TER) 20.79 kgCO₂/m²
Dwelling Carbon Dioxide Emission Rate (DER) 3.01 kgCO₂/m²OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)51.7 kWh/m²/yr
Dwelling Fabric Energy Efficiency (DFEE)45.3 kWh/m²/yrOK

2 Fabric U-values

Element	Average	Highest	
External wall	0.24 (max. 0.30)	0.32 (max. 0.70)	OK
Floor	(no floor)		
Roof	0.08 (max. 0.20)	0.08 (max. 0.35)	OK
Openings	1.40 (max. 2.00)	1.40 (max. 3.30)	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals:	3.35 (measured in this dwelling)	
Maximum	10.0	OK

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% OK

Secondary heating system: None

5 Cylinder insulation

Hot water storage: No cylinder

6 Controls

Space heating controls:	Programmer, room thermostat and TRVs	OK
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Hot water controls: No cylinder

Boiler interlock	Yes	OK
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7 Low energy lights

Percentage of fixed lights with low-energy fittings:100%	
Minimum	75% OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (Southern England):	Slight	OK
Based on:		
Overshading:	Average	
Windows facing South East:	3.36 m ² , No overhang	
Windows facing North West:	2.89 m ² , No overhang	
Air change rate:	5.31 ach	
Blinds/curtains:	Dark-coloured curtain or roller blind, closed 100% of daylight hours	

10 Key features

Roof U-value	0.08 W/m ² K
Air permeability	3.4 m ³ /m ² h
Photovoltaic array	2.00 kW

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CALCULATION OF DWELLING EMISSIONS FOR REGULATIONS COMPLIANCE 09 Jan 2014

SAP 2012 WORKSHEET FOR New Build (As Built) (Version 9.92, January 2014)
CALCULATION OF DWELLING EMISSIONS FOR REGULATIONS COMPLIANCE 09 Jan 2014

1. Overall dwelling dimensions

	Area (m ²)	Storey height (m)	Volume (m ³)
Ground floor	50.6700 (1b)	x 2.3400 (2b)	= 118.5678 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	50.6700		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	= 118.5678 (5)

2. Ventilation rate

	main heating	secondary heating	other	total	m3 per hour
Number of chimneys	0	+	0	=	0 * 40 = 0.0000 (6a)
Number of open flues	0	+	0	=	0 * 20 = 0.0000 (6b)
Number of intermittent fans					2 * 10 = 20.0000 (7a)
Number of passive vents					0 * 10 = 0.0000 (7b)
Number of flueless gas fires					0 * 40 = 0.0000 (7c)
Air changes per hour					
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(7a)+(7b)+(7c) =					20.0000 / (5) = 0.1687 (8)
Pressure test					Yes
Measured/design AP50					3.3500
Infiltration rate					0.3362 (18)
Number of sides sheltered					0 (19)
Shelter factor			(20) = 1 - [0.075 x (19)] =		1.0000 (20)
Infiltration rate adjusted to include shelter factor			(21) = (18) x (20) =		0.3362 (21)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind speed	5.1000	5.0000	4.9000	4.4000	4.3000	3.8000	3.8000	3.7000	4.0000	4.3000	4.5000	4.7000 (22)
Wind factor	1.2750	1.2500	1.2250	1.1000	1.0750	0.9500	0.9500	0.9250	1.0000	1.0750	1.1250	1.1750 (22a)
Adj infilt rate												
	0.4286	0.4202	0.4118	0.3698	0.3614	0.3194	0.3194	0.3110	0.3362	0.3614	0.3782	0.3950 (22b)
Effective ac	0.5919	0.5883	0.5848	0.5684	0.5653	0.5510	0.5510	0.5484	0.5565	0.5653	0.5715	0.5780 (25)

3. Heat losses and heat loss parameter

Element	Gross m ²	Openings m ²	NetArea m ²	U-value W/m ² K	A x U W/K	K-value kJ/m ² K	A x K kJ/K
Windows (Uw = 1.40)			6.2600	1.3258	8.2860		(27)
W1 - Brick (Timber Frame)	51.4600	6.2550	45.2050	0.2100	9.4931	7.4000	334.5170 (29a)
W1 - Corridor	15.3120		15.3120	0.3200	4.8998	13.4400	205.7933 (29a)
Rf - Ins Joist	50.6720		50.6720	0.0800	4.0538	7.4000	374.9728 (30)
Total net area of external elements Aum(A, m ²)			117.4390				(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	26.7326		(33)
Party Floor			50.6720			20.1600	1021.5475 (32d)
Stud			83.9637			7.4000	621.3316 (32c)
Heat capacity Cm = Sum(A x k)						(28)...(30) + (32) + (32a)...(32e) =	2558.1622 (34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m ² K							50.4867 (35)
Thermal bridges (Sum(L x Psi) calculated using Appendix K)							10.3267 (36)
Total fabric heat loss						(33) + (36) =	37.0593 (37)

Ventilation heat loss calculated monthly (38)m = 0.33 x (25)m x (5)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(38)m	23.1580	23.0184	22.8816	22.2390	22.1188	21.5591	21.5591	21.4555	21.7747	22.1188	22.3620	22.6163 (38)
Heat transfer coeff	60.2173	60.0778	59.9409	59.2984	59.1781	58.6185	58.6185	58.5148	58.8340	59.1781	59.4214	59.6756 (39)
Average = Sum(39)m / 12 =												59.2978 (39)
HLP	1.1884	1.1857	1.1830	1.1703	1.1679	1.1569	1.1569	1.1548	1.1611	1.1679	1.1727	1.1777 (40)
HLP (average)												1.1703 (40)
Days in month	31	28	31	30	31	30	31	31	30	31	30	31 (41)

4. Water heating energy requirements (kWh/year)

Assumed occupancy												1.7098 (42)
Average daily hot water use (litres/day)												74.8087 (43)
Daily hot water use	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	82.2896	79.2972	76.3049	73.3125	70.3202	67.3278	67.3278	70.3202	73.3125	76.3049	79.2972	82.2896 (44)
Energy conte	122.0331	106.7309	110.1367	96.0199	92.1334	79.5041	73.6722	84.5399	85.5496	99.6998	108.8302	118.1825 (45)
Energy content (annual)										Total = Sum(45)m =		1177.0324 (45)
Distribution loss (46)m = 0.15 x (45)m												
	18.3050	16.0096	16.5205	14.4030	13.8200	11.9256	11.0508	12.6810	12.8324	14.9550	16.3245	17.7274 (46)
Water storage loss:												
Total storage loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (56)

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If cylinder contains dedicated solar storage	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (57)
Combi loss	1.1548	0.9733	0.9665	0.8095	0.7451	0.6156	0.5704	0.6837	0.7213	0.8749	0.9924	1.1184 (61)
Total heat required for water heating calculated for each month	123.1879	107.7042	111.1032	96.8294	92.8784	80.1197	74.2426	85.2236	86.2709	100.5747	109.8226	119.3009 (62)
Solar input	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (63)
Output from w/h	123.1879	107.7042	111.1032	96.8294	92.8784	80.1197	74.2426	85.2236	86.2709	100.5747	109.8226	119.3009 (64)
Heat gains from water heating, kWh/month	40.8647	35.7314	36.8621	32.1290	30.8206	26.5890	24.6386	28.2804	28.6256	33.3689	36.4341	39.5753 (65)

5. Internal gains (see Table 5 and 5a)

Metabolic gains (Table 5), Watts	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(66)m	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	14.5581	12.9304	10.5157	7.9610	5.9510	5.0241	5.4287	7.0564	9.4711	12.0257	14.0358	14.9627 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	148.9739	150.5198	146.6243	138.3310	127.8623	118.0232	111.4501	109.9042	113.7998	122.0930	132.5617	142.4008 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492 (69)
Pumps, fans	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000 (70)
Losses e.g. evaporation (negative values) (Table 5)	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936 (71)
Water heating gains (Table 5)	54.9257	53.1717	49.5458	44.6236	41.4255	36.9292	33.1164	38.0114	39.7577	44.8507	50.6030	53.1926 (72)
Total internal gains	270.1053	268.2695	258.3334	242.5633	226.8865	211.6241	201.6428	206.6196	214.6762	230.6170	248.8481	262.2037 (73)

6. Solar gains

[Jan]				Area m2	Solar flux Table 6a W/m2	g Specific data or Table 6b		FF Specific data or Table 6c		Access factor Table 6d	Gains W	
Southeast				3.3640	36.7938	0.5000		0.7200		0.7700	30.8793 (77)	
Northwest				2.8910	11.2829	0.5000		0.7200		0.7700	8.1378 (81)	
Solar gains	39.0170	69.1635	101.8123	138.1847	165.7628	169.3958	161.3049	139.9917	114.2918	78.3762	47.2257	33.0719 (83)
Total gains	309.1224	337.4329	360.1456	380.7480	392.6493	381.0199	362.9477	346.6113	328.9681	308.9933	296.0738	295.2757 (84)

7. Mean internal temperature (heating season)

Temperature during heating periods in the living area from Table 9, Th1 (C)												21.0000 (85)
Utilisation factor for gains for living area, nil,m (see Table 9a)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
tau	11.8006	11.8280	11.8550	11.9835	12.0078	12.1225	12.1225	12.1439	12.0781	12.0078	11.9587	11.9077
alpha	1.7867	1.7885	1.7903	1.7989	1.8005	1.8082	1.8082	1.8096	1.8052	1.8005	1.7972	1.7938
util living area	0.9126	0.8954	0.8677	0.8192	0.7449	0.6389	0.5309	0.5607	0.7088	0.8315	0.8924	0.9186 (86)
MIT	17.4741	17.7541	18.2794	19.0040	19.7293	20.3470	20.6766	20.6286	20.1456	19.2334	18.2392	17.4156 (87)
Th 2	19.9293	19.9315	19.9337	19.9438	19.9458	19.9547	19.9547	19.9563	19.9512	19.9458	19.9419	19.9379 (88)
util rest of house	0.9038	0.8849	0.8536	0.7979	0.7103	0.5802	0.4420	0.4752	0.6580	0.8076	0.8799	0.9104 (89)
MIT 2	16.7044	16.9815	17.5006	18.2161	18.9156	19.4946	19.7751	19.7410	19.3193	18.4502	17.4719	16.6523 (90)
Living area fraction									fLA = Living area / (4) =			0.4932 (91)
MIT	17.0840	17.3625	17.8847	18.6047	19.3169	19.9150	20.2197	20.1788	19.7268	18.8365	17.8503	17.0288 (92)
Temperature adjustment												-0.1500
adjusted MIT	16.9340	17.2125	17.7347	18.4547	19.1669	19.7650	20.0697	20.0288	19.5768	18.6865	17.7003	16.8788 (93)

8. Space heating requirement

Utilisation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Useful gains	0.8707	0.8495	0.8162	0.7610	0.6802	0.5682	0.4528	0.4818	0.6368	0.7718	0.8448	0.8785 (94)
Ext temp.	269.1588	286.6632	293.9661	289.7415	267.0868	216.4956	164.3298	167.0078	209.4983	238.4722	250.1099	259.3957 (95)
Heat loss rate W	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000 (96)
Month fracti	760.7871	739.7086	673.4208	566.5769	441.8769	302.7655	203.3881	212.3388	322.2220	478.5427	629.8869	756.6124 (97)
Space heating kWh	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000 (97a)
Space heating	365.7715	304.4465	282.3143	199.3214	130.0439	0.0000	0.0000	0.0000	0.0000	178.6125	273.4394	369.9292 (98)
Space heating per m2										(98) / (4) =		2103.8787 (98)
												41.5212 (99)

8c. Space cooling requirement

Not applicable

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9a. Energy requirements - Individual heating systems, including micro-CHP

Fraction of space heat from secondary/supplementary system (Table 11)													0.0000 (201)
Fraction of space heat from main system(s)													1.0000 (202)
Efficiency of main space heating system 1 (in %)													90.2000 (206)
Efficiency of secondary/supplementary heating system, %													0.0000 (208)
Space heating requirement													2332.4597 (211)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Space heating requirement	365.7715	304.4465	282.3143	199.3214	130.0439	0.0000	0.0000	0.0000	0.0000	178.6125	273.4394	369.9292	(98)
Space heating efficiency (main heating system 1)	90.2000	90.2000	90.2000	90.2000	90.2000	0.0000	0.0000	0.0000	0.0000	90.2000	90.2000	90.2000	(210)
Space heating fuel (main heating system)	405.5116	337.5239	312.9870	220.9772	144.1728	0.0000	0.0000	0.0000	0.0000	198.0183	303.1479	410.1210	(211)
Water heating requirement	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(215)
Water heating													
Water heating requirement	123.1879	107.7042	111.1032	96.8294	92.8784	80.1197	74.2426	85.2236	86.2709	100.5747	109.8226	119.3009	(64)
Efficiency of water heater (217)m	86.2095	86.0677	85.7508	85.0886	83.7863	76.2000	76.2000	76.2000	76.2000	84.6006	85.6888	76.2000	(216)
Fuel for water heating, kWh/month	142.8936	125.1389	129.5652	113.7983	110.8515	105.1439	97.4313	111.8420	113.2164	118.8818	128.1645	138.1884	(219)
Water heating fuel used												1435.1158	(219)
Annual totals kWh/year													
Space heating fuel - main system												2332.4597	(211)
Space heating fuel - secondary												0.0000	(215)
Electricity for pumps and fans:													
central heating pump												30.0000	(230c)
main heating flue fan												45.0000	(230e)
Total electricity for the above, kWh/year												75.0000	(231)
Electricity for lighting (calculated in Appendix L)												257.1005	(232)
Energy saving/generation technologies (Appendices M ,N and Q)													
PV Unit 0 (0.80 * 2.00 * 1004 * 1.00) =												-1606.3939	(233)
Total delivered energy for all uses												2493.2822	(238)

12a. Carbon dioxide emissions - Individual heating systems including micro-CHP

	Energy kWh/year	Emission factor kg CO2/kWh	Emissions kg CO2/year
Space heating - main system 1	2332.4597	0.2160	503.8113 (261)
Space heating - secondary	0.0000	0.0000	0.0000 (263)
Water heating (other fuel)	1435.1158	0.2160	309.9850 (264)
Space and water heating			813.7963 (265)
Pumps and fans	75.0000	0.5190	38.9250 (267)
Energy for lighting	257.1005	0.5190	133.4352 (268)
Energy saving/generation technologies			
PV Unit	-1606.3939	0.5190	-833.7184 (269)
Total CO2, kg/year			152.4380 (272)
Dwelling Carbon Dioxide Emission Rate (DER)			3.0100 (273)

16 CO2 EMISSIONS ASSOCIATED WITH APPLIANCES AND COOKING AND SITE-WIDE ELECTRICITY GENERATION TECHNOLOGIES

DER		3.0100 ZC1
Total Floor Area	TFA	50.6700
Assumed number of occupants	N	1.7098
CO2 emission factor in Table 12 for electricity displaced from grid	EF	0.5190
CO2 emissions from appliances, equation (L14)		17.4223 ZC2
CO2 emissions from cooking, equation (L16)		3.1584 ZC3
Total CO2 emissions		23.5907 ZC4
Residual CO2 emissions offset from biofuel CHP		0.0000 ZC5
Additional allowable electricity generation, kWh/m²/year		0.0000 ZC6
Resulting CO2 emissions offset from additional allowable electricity generation		0.0000 ZC7
Net CO2 emissions		23.5907 ZC8

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CALCULATION OF TARGET EMISSIONS 09 Jan 2014

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1. Overall dwelling dimensions

	Area (m ²)	Storey height (m)	Volume (m ³)
Ground floor	50.6700 (1b)	x 2.3400 (2b)	= 118.5678 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	50.6700		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	= 118.5678 (5)

2. Ventilation rate

	main heating	secondary heating	other	total	m ³ per hour
Number of chimneys	0	+	0	=	0 * 40 = 0.0000 (6a)
Number of open flues	0	+	0	=	0 * 20 = 0.0000 (6b)
Number of intermittent fans					2 * 10 = 20.0000 (7a)
Number of passive vents					0 * 10 = 0.0000 (7b)
Number of flueless gas fires					0 * 40 = 0.0000 (7c)
Infiltration due to chimneys, flues and fans	= (6a)+(6b)+(7a)+(7b)+(7c) =				20.0000 / (5) = 0.1687 (8)
Pressure test					Yes
Measured/design AP50					5.0000
Infiltration rate					0.4187 (18)
Number of sides sheltered					0 (19)
Shelter factor	(20) = 1 - [0.075 x (19)] =				1.0000 (20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) =				0.4187 (21)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind speed	5.1000	5.0000	4.9000	4.4000	4.3000	3.8000	3.8000	3.7000	4.0000	4.3000	4.5000	4.7000 (22)
Wind factor	1.2750	1.2500	1.2250	1.1000	1.0750	0.9500	0.9500	0.9250	1.0000	1.0750	1.1250	1.1750 (22a)
Adj infilt rate												
Effective ac	0.5338	0.5233	0.5129	0.4605	0.4501	0.3977	0.3977	0.3873	0.4187	0.4501	0.4710	0.4919 (22b)
Effective ac	0.6425	0.6369	0.6315	0.6061	0.6013	0.5791	0.5791	0.5750	0.5876	0.6013	0.6109	0.6210 (25)

3. Heat losses and heat loss parameter

Element	Gross m2	Openings m2	NetArea m2	U-value W/m2K	A x U W/K	K-value kJ/m2K	A x K kJ/K					
TER Opening Type (Uw = 1.40)			6.2600	1.3258	8.2860			(27)				
W1 - Brick (Timber Frame)	51.4600	6.2550	45.2050	0.1800	8.1369			(29a)				
W1 - Corridor	15.3120		15.3120	0.1800	2.7562			(29a)				
Rf - Ins Joist	50.6720		50.6720	0.1300	6.5874			(30)				
Total net area of external elements Aum(A, m2)			117.4390					(31)				
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	25.7664			(33)				
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K								250.0000 (35)				
Thermal bridges (Sum(L x Psi) calculated using Appendix K)								6.6631 (36)				
Total fabric heat loss						(33) + (36) =		32.4295 (37)				
Ventilation heat loss calculated monthly (38)m = 0.33 x (25)m x (5)												
(38)m	25.1386	24.9221	24.7099	23.7132	23.5268	22.6587	22.6587	22.4979	22.9931	23.5268	23.9040	24.2984 (38)
Heat transfer coeff	57.5681	57.3516	57.1394	56.1427	55.9563	55.0882	55.0882	54.9274	55.4226	55.9563	56.3335	56.7279 (39)
Average = Sum(39)m / 12 =												56.1418 (39)
HLP	1.1361	1.1319	1.1277	1.1080	1.1043	1.0872	1.0872	1.0840	1.0938	1.1043	1.1118	1.1196 (40)
HLP (average)												1.1080 (40)
Days in month	31	28	31	30	31	30	31	31	30	31	30	31 (41)

4. Water heating energy requirements (kWh/year)

Assumed occupancy												1.7098 (42)
Average daily hot water use (litres/day)												74.8087 (43)
Daily hot water use	82.2896	79.2972	76.3049	73.3125	70.3202	67.3278	67.3278	70.3202	73.3125	76.3049	79.2972	82.2896 (44)
Energy conte	122.0331	106.7309	110.1367	96.0199	92.1334	79.5041	73.6722	84.5399	85.5496	99.6998	108.8302	118.1825 (45)
Energy content (annual)												Total = Sum(45)m = 1177.0324 (45)
Distribution loss (46)m = 0.15 x (45)m	18.3050	16.0096	16.5205	14.4030	13.8200	11.9256	11.0508	12.6810	12.8324	14.9550	16.3245	17.7274 (46)
Water storage loss:												
Total storage loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (56)
If cylinder contains dedicated solar storage	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (57)
Combi loss	41.9339	36.4985	38.8841	36.1541	35.8344	33.2028	34.3095	35.8344	36.1541	38.8841	39.1055	41.9339 (61)

Total heat required for water heating calculated for each month												
	163.9669	143.2294	149.0209	132.1740	127.9678	112.7069	107.9817	120.3743	121.7038	138.5840	147.9357	160.1164 (62)
Solar input	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (63)
								Solar input (sum of months) = Sum(63)m =				0.0000 (63)
Output from w/h												
	163.9669	143.2294	149.0209	132.1740	127.9678	112.7069	107.9817	120.3743	121.7038	138.5840	147.9357	160.1164 (64)
								Total per year (kWh/year) = Sum(64)m =				1625.7617 (64)
Heat gains from water heating, kWh/month												
	51.0595	44.6126	46.3415	40.9651	39.5929	34.7358	33.0734	37.0681	37.4838	42.8712	45.9624	49.7792 (65)

Metabolic gains (Table 5), Watts												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(66)m	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920	85.4920 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	14.6494	13.0114	10.5816	8.0110	5.9883	5.0556	5.4627	7.1006	9.5305	12.1011	14.1238	15.0565 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	148.9739	150.5198	146.6243	138.3310	127.8623	118.0232	111.4501	109.9042	113.7998	122.0930	132.5617	142.4008 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492	31.5492 (69)
Pumps, fans	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000 (70)
Losses e.g. evaporation (negative values) (Table 5)	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936	-68.3936 (71)
Water heating gains (Table 5)	68.6283	66.3879	62.2870	56.8960	53.2163	48.2442	44.4535	49.8228	52.0608	57.6226	63.8367	66.9075 (72)
Total internal gains	283.8992	281.5667	271.1404	254.8856	238.7145	222.9706	213.0139	218.4752	227.0387	243.4644	262.1698	276.0124 (73)

[Jan]	Area m2	Solar flux Table 6a W/m2	g Specific data or Table 6b	FF Specific data or Table 6c	Access factor Table 6d	Gains W
Southeast	3.3640	36.7938	0.6300	0.7000	0.7700	37.8271 (77)
Northwest	2.8910	11.2829	0.6300	0.7000	0.7700	9.9688 (81)

Temperature during heating periods in the living area from Table 9, Th1 (C)												21.0000 (85)
Utilisation factor for gains for living area, nil/m (see Table 9a)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
tau	61.1233	61.3540	61.5819	62.6751	62.8839	63.8748	63.8748	64.0618	63.4895	62.8839	62.4628	62.0286
alpha	5.0749	5.0903	5.1055	5.1783	5.1923	5.2583	5.2583	5.2708	5.2326	5.1923	5.1642	5.1352
util living area	0.9970	0.9945	0.9878	0.9653	0.8987	0.7463	0.5746	0.6231	0.8563	0.9737	0.9942	0.9977 (86)
MIT	19.8281	19.9603	20.1858	20.4959	20.7694	20.9413	20.9879	20.9819	20.8724	20.5301	20.1323	19.8123 (87)
Th 2	19.9714	19.9749	19.9783	19.9943	19.9973	20.0113	20.0113	20.0139	20.0059	19.9973	19.9912	19.9849 (88)
util rest of house	0.9960	0.9927	0.9835	0.9519	0.8586	0.6582	0.4536	0.5018	0.7879	0.9609	0.9918	0.9969 (89)
MIT 2	18.4153	18.6104	18.9402	19.3949	19.7647	19.9708	20.0067	20.0062	19.9013	19.4508	18.8737	18.4019 (90)
Living area fraction	19.1121	19.2762	19.5546	19.9379	20.2602	20.4494	20.4906	20.4874	20.3803	19.9831	19.4944	19.0932 (91)
MIT	19.1121	19.2762	19.5546	19.9379	20.2602	20.4494	20.4906	20.4874	20.3803	19.9831	19.4944	19.0975 (92)
Temperature adjustment												0.0000
adjusted MIT	19.1121	19.2762	19.5546	19.9379	20.2602	20.4494	20.4906	20.4874	20.3803	19.9831	19.4944	19.0975 (93)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.9949	0.9910	0.9811	0.9510	0.8704	0.6995	0.5137	0.5620	0.8165	0.9606	0.9903	0.9960 (94)
Useful gains	330.0078	362.9944	388.3896	403.3721	384.5303	301.1180	210.9124	219.1530	299.6799	326.1101	316.9112	315.2447 (95)
Ext temp.	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000 (96)
Heat loss rate W	852.7018	824.4976	745.9295	619.6996	478.9976	322.2350	214.3268	224.5090	348.0686	525.0428	698.2208	845.1022 (97)
Month fracti	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000 (97a)
Space heating kWh	388.8843	310.1301	266.0097	155.7558	70.2836	0.0000	0.0000	0.0000	0.0000	148.0060	274.5429	394.2139 (98)
Space heating												2007.8264 (98)
Space heating per m2												39.6255 (99)
										(98) / (4) =		

Fraction of space heat from secondary/supplementary system (Table 11)	0.0000 (201)
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FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Built)

CALCULATION OF TARGET EMISSIONS 09 Jan 2014

Fraction of space heat from main system(s)													1.0000 (202)
Efficiency of main space heating system 1 (in %)													93.4000 (206)
Efficiency of secondary/supplementary heating system, %													0.0000 (208)
Space heating requirement													2149.7071 (211)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Space heating requirement	388.8843	310.1301	266.0097	155.7558	70.2836	0.0000	0.0000	0.0000	0.0000	148.0060	274.5429	394.2139	(98)
Space heating efficiency (main heating system 1)	93.4000	93.4000	93.4000	93.4000	93.4000	0.0000	0.0000	0.0000	0.0000	93.4000	93.4000	93.4000	(210)
Space heating fuel (main heating system)	416.3644	332.0451	284.8070	166.7621	75.2501	0.0000	0.0000	0.0000	0.0000	158.4646	293.9432	422.0706	(211)
Water heating requirement	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(215)
Water heating requirement	163.9669	143.2294	149.0209	132.1740	127.9678	112.7069	107.9817	120.3743	121.7038	138.5840	147.9357	160.1164	(64)
Efficiency of water heater	87.1490	86.9451	86.4938	85.4654	83.6118	80.3000	80.3000	80.3000	80.3000	85.2170	86.5865	80.3000	(216)
Fuel for water heating, kWh/month	188.1455	164.7355	172.2909	154.6521	153.0500	140.3572	134.4729	149.9058	151.5613	162.6249	170.8530	183.5548	(219)
Water heating fuel used												1926.2039	(219)
Annual totals kWh/year													
Space heating fuel - main system												2149.7071	(211)
Space heating fuel - secondary												0.0000	(215)
Electricity for pumps and fans:													
central heating pump												30.0000	(230c)
main heating flue fan												45.0000	(230e)
Total electricity for the above, kWh/year												75.0000	(231)
Electricity for lighting (calculated in Appendix L)												258.7125	(232)
Total delivered energy for all uses												4409.6235	(238)

12a. Carbon dioxide emissions - Individual heating systems including micro-CHP

	Energy kWh/year	Emission factor kg CO2/kWh	Emissions kg CO2/year
Space heating - main system 1	2149.7071	0.2160	464.3367 (261)
Space heating - secondary	0.0000	0.0000	0.0000 (263)
Water heating (other fuel)	1926.2039	0.2160	416.0600 (264)
Space and water heating			880.3968 (265)
Pumps and fans	75.0000	0.5190	38.9250 (267)
Energy for lighting	258.7125	0.5190	134.2718 (268)
Total CO2, kg/m2/year			1053.5936 (272)
Emissions per m2 for space and water heating			17.3751 (272a)
Fuel factor (mains gas)			1.0000
Emissions per m2 for lighting			2.6499 (272b)
Emissions per m2 for pumps and fans			0.7682 (272c)
Target Carbon Dioxide Emission Rate (TER) = (17.3751 * 1.00) + 2.6499 + 0.7682, rounded to 2 d.p.			20.7900 (273)

BASIC COMPLIANCE REPORT

Calculation Type: New Build (As Built)

Property Reference	075 - PRJ013014	Issued on Date	27/05/2025
Assessment Reference	075	Prop Type Ref	1BFA
Property	Flat 3, Hawker House, Paulet Close, Netley Abbey, SOUTHAMPTON, SO31 5JW		
SAP Rating	83 B	DER	3.01
Environmental	99 A	TER	20.79
CO₂ Emissions (t/year)	-0.09	% DER<TER	85.52
General Requirements Compliance	Pass	DFEE	45.27
		TFEE	51.72
		% DFEE<TFEE	12.48
Assessor Details	Mr. Christopher Nicholls, Briary Energy Limited, Tel: 0203 397 1373, chris@briaryenergy.co.uk		Assessor ID U903-0001
Client			

SUMMARY FOR INPUT DATA FOR New Build (As Built)

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)	20.79	kgCO ₂ /m ²	
Dwelling Carbon Dioxide Emission Rate (DER)	3.01	kgCO ₂ /m ²	Pass
	-17.78 (-85.5%)	kgCO ₂ /m ²	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	51.72	kWh/m ² /yr	
Dwelling Fabric Energy Efficiency (DFEE)	45.27	kWh/m ² /yr	
	-6.4 (-12.4%)	kWh/m ² /yr	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.24 (max. 0.30)	0.32 (max. 0.70)	Pass
Roof	0.08 (max. 0.20)	0.08 (max. 0.35)	Pass
Openings	1.40 (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	3.35 (measured in this dwelling)	
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	

BASIC COMPLIANCE REPORT

Calculation Type: New Build (As Built)

5 Cylinder insulation

Hot water storage

No cylinder

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

Not applicable

Criterion 3 – Limiting the effects of heat gains in summer

9 Summertime temperature

Overheating risk (Southern England)

Slight

Pass

Based on:

Overshading

Average

Windows facing South East

3.36 m², No overhang

Windows facing North West

2.89 m², No overhang

Air change rate

5.31 ach

Blinds/curtains

Dark-coloured curtain or roller blind, closed 100% of daylight hours

Criterion 4 – Building performance consistent with DER and DFEE rate

Air permeability and pressure testing

3 Air permeability

Air permeability at 50 pascals

3.35 (measured in this dwelling)

Maximum

10.0

Pass

10 Key features

Roof U-value

0.08

W/m²K

Air permeability

3.4

m³/m²h

Photovoltaic array

2.00

kW

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