

PREDICTED ENERGY ASSESSMENT

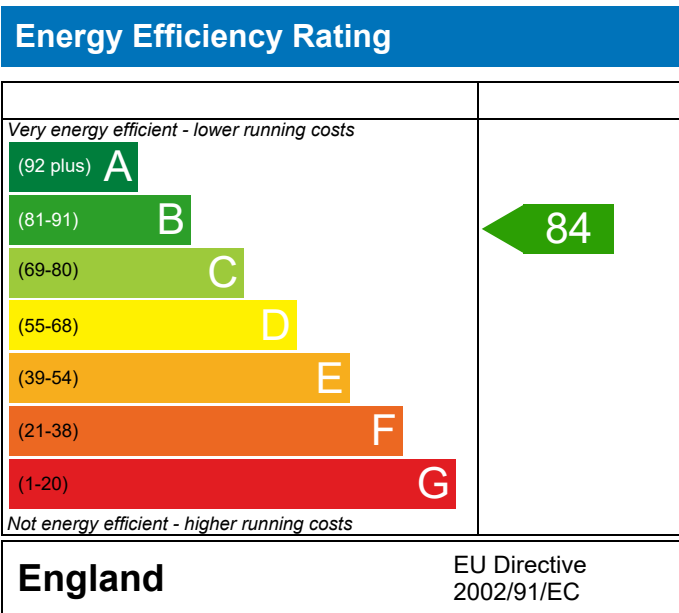


Plot 683

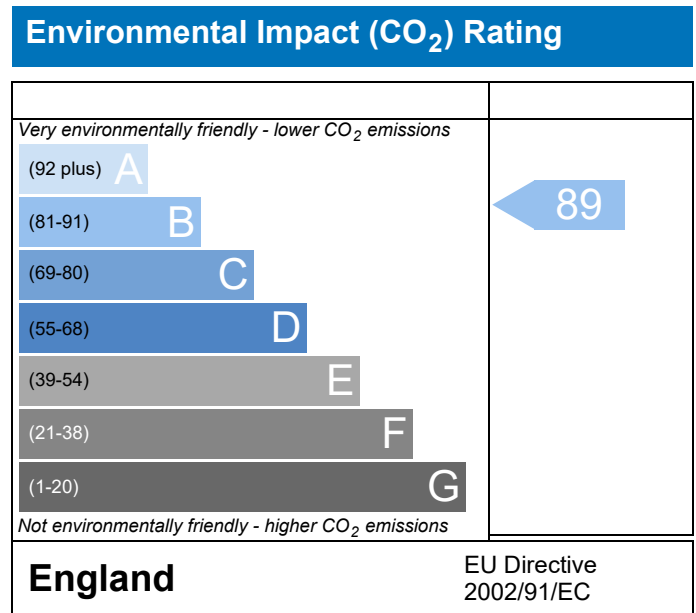
Dwelling type: Flat, End-Terrace
 Date of assessment: 26/02/2021
 Produced by: Michael Juckes
 Total floor area: 44.01 m²

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 (CO₂) emissions.



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.



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

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

BUILDING REGULATION COMPLIANCE

Calculation Type: New Build (As Designed)



Property Reference	683 - PRJ009149	Issued on Date	26/02/2021
Assessment Reference	683	Prop Type Ref	Block B
Property	Plot 683		

SAP Rating	84 B	DER	17.89	TER	19.67
Environmental	89 B	% DER<TER	9.05		
CO ₂ Emissions (t/year)	0.65	DFEE	39.91	TFEE	44.11
General Requirements Compliance	Pass	% DFEE<TFEE	9.52		

Assessor Details	Mr. Michael Juckes, Michael Juckes, Tel: 02033971373, michael@briaryenergy.co.uk	Assessor ID	T850-0001
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Client	
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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)	19.67	kgCO ₂ /m ²	
Dwelling Carbon Dioxide Emission Rate (DER)	17.89	kgCO ₂ /m ²	Pass
	-1.78 (-9.0%)	kgCO ₂ /m ²	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	44.11	kWh/m ² /yr	
Dwelling Fabric Energy Efficiency (DFEE)	39.91	kWh/m ² /yr	
	-4.2 (-9.5%)	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
Party wall	0.00 (max. 0.20)	-	Pass
Openings	1.36 (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	5.01 (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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BUILDING REGULATION COMPLIANCE

Calculation Type: New Build (As Designed)



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

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

0.1900 0.1800

Maximum

0.7

Pass

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 North East

4.85 m², No overhang

Windows facing South East

3.69 m², No overhang

Air change rate

4.21 ach

Blinds/curtains

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

Criterion 4 – Building performance consistent with DER and DFEE rate

Party Walls

Type

U-value

Filled Cavity with Edge Sealing

0.00

W/m²K

Pass

Air permeability and pressure testing

3 Air permeability

Air permeability at 50 pascals

5.01 (design value) m³/(h.m²) @ 50 Pa

Maximum

10.0 m³/(h.m²) @ 50 Pa

Pass

10 Key features

Party wall U-value

0.00

W/m²K

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FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



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Assessment Reference	683	Prop Type Ref	Block B
Property	Plot 683		

SAP Rating	84 B	DER	17.89	TER	19.67
Environmental	89 B	% DER<TER	9.05		
CO ₂ Emissions (t/year)	0.65	DFEE	39.91	TTEE	44.11
General Requirements Compliance	Pass	% DFEE<TTEE	9.52		

Assessor Details	Mr. Michael Juckes, Michael Juckes, Tel: 02033971373, michael@briaryenergy.co.uk	Assessor ID	T850-0001
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Client	
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CALCULATION OF HEAT DEMAND 09 Jan 2014

SAP 2012 WORKSHEET FOR New Build (As Designed) (Version 9.92, January 2014)
 CALCULATION OF HEAT DEMAND 09 Jan 2014

1. Overall dwelling dimensions

	Area (m ²)	Storey height (m)	Volume (m ³)
Ground floor	44.0100 (1b)	2.4600 (2b)	108.2646 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	44.0100		(4)
Dwelling volume			(3a)+(3b)+(3c)+(3d)+(3e)...(3n) = 108.2646 (5)

2. Ventilation rate

	main heating	secondary heating	other	total	m ³ per hour
Number of chimneys	0	0	0	0 * 40 =	0.0000 (6a)
Number of open flues	0	0	0	0 * 20 =	0.0000 (6b)
Number of intermittent fans				0 * 10 =	0.0000 (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) =	0.0000 / (5) = 0.0000 (8)
Pressure test	Yes
Measured/design AP50	5.0100
Infiltration rate	0.2505 (18)
Number of sides sheltered	1 (19)
Shelter factor	(20) = 1 - [0.075 x (19)] = 0.9250 (20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) = 0.2317 (21)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind speed	5.1000	4.7000	4.6000	4.3000	4.3000	4.0000	4.0000	3.9000	4.0000	4.5000	4.4000	4.7000 (22)
Wind factor	1.2750	1.1750	1.1500	1.0750	1.0750	1.0000	1.0000	0.9750	1.0000	1.1250	1.1000	1.1750 (22a)
Adj infilt rate	0.2954	0.2723	0.2665	0.2491	0.2491	0.2317	0.2317	0.2259	0.2317	0.2607	0.2549	0.2723 (22b)
Mechanical extract ventilation - decentralised												0.5000 (23a)
If mechanical ventilation:												
Effective ac	0.5454	0.5223	0.5165	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5107	0.5049	0.5223 (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)			8.5400	1.3258	11.3220		(27)
Solid Door			2.1200	1.2000	2.5440		(26)
W1 - Clad	34.9590	8.5420	26.4170	0.2500	6.6043	61.0100	1611.7012 (29a)
W1 - To Corridor	13.3600	2.1170	11.2430	0.2499	2.8097	106.6200	1198.7287 (29a)
Total net area of external elements Aum(A, m ²)			48.3200				(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	23.2800		(33)
Party Wall			18.2690	0.0000	0.0000	54.0300	987.0741 (32)
Party Floor			44.0060			40.0000	1760.2400 (32d)
Party Ceiling			44.0060			70.0000	3080.4200 (32b)
1st Floor Stud			88.0778			5.8200	512.6130 (32c)
Heat capacity Cm = Sum(A x k)					(28)...(30) + (32) + (32a)...(32e) =		9150.7769 (34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m ² K							207.9249 (35)
Thermal bridges (Sum(L x Psi) calculated using Appendix K)							4.5593 (36)
Total fabric heat loss						(33) + (36) =	27.8392 (37)

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



CALCULATION OF HEAT DEMAND 09 Jan 2014

Ventilation heat loss calculated monthly (38)m = 0.33 x (25)m x (5)												
(38)m	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Heat transfer coeff	19.4869	18.6590	18.4521	17.8637	17.8637	17.8637	17.8637	17.8637	17.8637	18.2451	18.0381	18.6590 (38)
Average = Sum(39)m / 12 =	47.3261	46.4983	46.2913	45.7029	45.7029	45.7029	45.7029	45.7029	45.7029	46.0843	45.8774	46.4983 (39)
												46.0661 (39)
HLP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
HLP (average)	1.0753	1.0565	1.0518	1.0385	1.0385	1.0385	1.0385	1.0385	1.0385	1.0471	1.0424	1.0565 (40)
Days in month												1.0467 (40)
	31	28	31	30	31	30	31	31	30	31	30	31 (41)

4. Water heating energy requirements (kWh/year)

Assumed occupancy													1.5165 (42)
Average daily hot water use (litres/day)													70.2174 (43)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daily hot water use	77.2391	74.4304	71.6217	68.8130	66.0043	63.1956	63.1956	66.0043	68.8130	71.6217	74.4304	77.2391 (44)	
Energy content (annual)	114.5434	100.1804	103.3772	90.1267	86.4787	74.6246	69.1506	79.3514	80.2991	93.5808	102.1508	110.9291 (45)	
Distribution loss (46)m = 0.15 x (45)m	17.1815	15.0271	15.5066	13.5190	12.9718	11.1937	10.3726	11.9027	12.0449	14.0371	15.3226	16.6394 (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													
Combi 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 (57)	
Total heat required for water heating calculated for each month	14.4823	13.0648	14.4390	13.9444	14.3881	13.8998	14.3480	14.3740	13.9241	14.4180	13.9864	14.4740 (61)	
Solar input	129.0257	113.2451	117.8162	104.0711	100.8669	88.5244	83.4986	93.7254	94.2231	107.9988	116.1372	125.4031 (62)	
Output from w/h	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)	
	129.0257	113.2451	117.8162	104.0711	100.8669	88.5244	83.4986	93.7254	94.2231	107.9988	116.1372	125.4031 (64)	
								Total per year (kWh/year) =	Sum(64)m =			1274.5357 (64)	
												1275 (64)	
RHI water heating demand													
Heat gains from water heating, kWh/month	41.7063	36.5762	37.9827	33.4532	32.3512	28.2876	26.5796	29.9778	30.1805	34.7201	37.4617	40.5024 (65)	

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

Metabolic gains (Table 5), Watts												
(66)m	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913 (66)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	29.6681	26.3510	21.4300	16.2239	12.1276	10.2386	11.0632	14.3803	19.3013	24.5074	28.6037	30.4927 (67)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	196.6178	198.6581	193.5166	182.5711	168.7544	155.7686	147.0933	145.0530	150.1945	161.1400	174.9567	187.9425 (68)
Pumps, fans	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156 (69)
Losses e.g. evaporation (negative values) (Table 5)	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)
Water heating gains (Table 5)	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609 (71)
Total internal gains	56.0568	54.4288	51.0520	46.4628	43.4828	39.2884	35.7253	40.2928	41.9173	46.6668	52.0302	54.4388 (72)
	361.2888	358.3839	344.9447	324.2039	303.3108	284.2416	272.8278	278.6722	290.3591	311.2602	334.5367	351.8200 (73)

6. Solar gains

[Jan]		Area	Solar flux	Specific data	Specific data	Access	Gains					
		m2	Table 6a	g	FF	factor	W					
			W/m2	or Table 6b	or Table 6c	Table 6d						
Northeast		4.8500	15.0428	0.5000	0.0000	0.7700	28.0887 (75)					
Southeast		3.6920	46.3896	0.5000	0.0000	0.7700	65.9391 (77)					
Solar gains	94.0278	145.1268	219.2362	313.3972	366.9658	409.1296	378.9859	330.4970	264.6377	175.8767	113.3352	75.7529 (83)
Total gains	455.3166	503.5107	564.1809	637.6011	670.2767	693.3712	651.8137	609.1692	554.9968	487.1369	447.8719	427.5728 (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	53.7100	54.6662	54.9106	55.6175	55.6175	55.6175	55.6175	55.6175	55.6175	55.1572	55.4060	54.6662	
alpha	4.5807	4.6444	4.6607	4.7078	4.7078	4.7078	4.7078	4.7078	4.7078	4.6771	4.6937	4.6444	
util living area	0.9551	0.9316	0.8678	0.7327	0.5542	0.3670	0.2591	0.2771	0.4849	0.7623	0.9113	0.9620 (86)	
MIT	20.2413	20.3915	20.6367	20.8644	20.9687	20.9963	20.9994	20.9993	20.9871	20.8676	20.5720	20.2232 (87)	
Th 2	20.0210	20.0365	20.0404	20.0514	20.0514	20.0514	20.0514	20.0514	20.0514	20.0442	20.0481	20.0365 (88)	
util rest of house													
MIT 2	0.9443	0.9164	0.8411	0.6894	0.4975	0.3058	0.1929	0.2063	0.4120	0.7089	0.8886	0.9526 (89)	
	19.3659	19.5212	19.7507	19.9554	20.0336	20.0500	20.0513	20.0513	20.0459	19.9572	19.7046	19.3621 (90)	

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



CALCULATION OF HEAT DEMAND 09 Jan 2014

Living area fraction										FLA = Living area / (4) =	0.4199 (91)	
MIT	19.7335	19.8867	20.1227	20.3371	20.4263	20.4473	20.4494	20.4493	20.4411	20.3395	20.0688	19.7237 (92)
Temperature adjustment												-0.1500
adjusted MIT	19.5835	19.7367	19.9727	20.1871	20.2763	20.2973	20.2994	20.2993	20.2911	20.1895	19.9188	19.5737 (93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.9386	0.9109	0.8390	0.6959	0.5113	0.3217	0.2102	0.2249	0.4307	0.7176	0.8850	0.9472 (94)
Useful gains	427.3616	458.6602	473.3592	443.7209	342.6895	223.0815	137.0122	136.9830	239.0639	349.5809	396.3867	404.9981 (95)
Ext temp.	5.4000	5.7000	7.3000	9.6000	12.6000	15.4000	17.3000	17.3000	15.0000	11.8000	8.4000	5.5000 (96)
Heat loss rate W												
Month fracti	671.2474	652.6804	586.6373	483.8599	350.8273	223.8219	137.0825	137.0778	241.8194	386.6242	528.4534	654.4011 (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	181.4510	130.3816	84.2789	28.9001	6.0545	0.0000	0.0000	0.0000	0.0000	27.5602	95.0880	185.5558 (98)
RHI space heating demand												739 (98)

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



CALCULATION OF ENERGY RATINGS 09 Jan 2014

Distribution loss (46)m = 0.15 x (45)m	17.1815	15.0271	15.5066	13.5190	12.9718	11.1937	10.3726	11.9027	12.0449	14.0371	15.3226	16.6394 (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	14.4823	13.0648	14.4390	13.9444	14.3881	13.8998	14.3480	14.3740	13.9241	14.4180	13.9864	14.4740 (61)
Total heat required for water heating calculated for each month	129.0257	113.2451	117.8162	104.0711	100.8669	88.5244	83.4986	93.7254	94.2231	107.9988	116.1372	125.4031 (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	129.0257	113.2451	117.8162	104.0711	100.8669	88.5244	83.4986	93.7254	94.2231	107.9988	116.1372	125.4031 (64)
Heat gains from water heating, kWh/month	41.7063	36.5762	37.9827	33.4532	32.3512	28.2876	26.5796	29.9778	30.1805	34.7201	37.4617	40.5024 (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	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	29.6681	26.3510	21.4300	16.2239	12.1276	10.2386	11.0632	14.3803	19.3013	24.5074	28.6037	30.4927 (67)
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Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156 (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)	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609 (71)
Water heating gains (Table 5)	56.0568	54.4288	51.0520	46.4628	43.4828	39.2884	35.7253	40.2928	41.9173	46.6668	52.0302	54.4388 (72)
Total internal gains	361.2888	358.3839	344.9447	324.2039	303.3108	284.2416	272.8278	278.6722	290.3591	311.2602	334.5367	351.8200 (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						
Northeast	4.8500	11.2829	0.5000	0.0000	0.7700	21.0681 (75)						
Southeast	3.6920	36.7938	0.5000	0.0000	0.7700	52.2995 (77)						
Solar gains	73.3676	131.9701	199.1550	277.9188	339.7300	349.7821	332.0217	283.9954	226.1297	150.8668	89.1518	61.9627 (83)
Total gains	434.6563	490.3540	544.0997	602.1227	643.0409	634.0238	604.8495	562.6676	516.4888	462.1270	423.6885	413.7827 (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	53.7100	53.9459	54.1839	55.4060	55.6175	55.6175	55.6175	55.6175	55.6175	55.6175	55.1572	54.6662
alpha	4.5807	4.5964	4.6123	4.6937	4.7078	4.7078	4.7078	4.7078	4.7078	4.7078	4.6771	4.6444
util living area	0.9698	0.9479	0.9000	0.7893	0.6258	0.4547	0.3312	0.3714	0.5858	0.8362	0.9458	0.9747 (86)
MIT	20.0777	20.2645	20.5225	20.7989	20.9429	20.9895	20.9981	20.9968	20.9677	20.7760	20.3966	20.0513 (87)
Th 2	20.0210	20.0249	20.0287	20.0481	20.0514	20.0514	20.0514	20.0514	20.0514	20.0514	20.0442	20.0365 (88)
util rest of house	0.9627	0.9362	0.8788	0.7512	0.5717	0.3900	0.2604	0.2959	0.5141	0.7959	0.9317	0.9687 (89)
MIT 2	19.2069	19.3900	19.6365	19.8991	20.0161	20.0467	20.0509	20.0504	20.0351	19.8897	19.5366	19.1940 (90)
Living area fraction	19.5725	19.7572	20.0086	20.2769	20.4052	20.4426	20.4486	20.4478	20.4267	20.2618	19.8977	19.5540 (91)
Temperature adjustment	19.4225	19.6072	19.8586	20.1269	20.2552	20.2926	20.2986	20.2978	20.2767	20.1118	19.7477	-0.1500 (92)
adjusted MIT												19.4040 (93)

8. Space heating requirement

Utilisation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Useful gains	0.9574	0.9303	0.8746	0.7545	0.5837	0.4067	0.2790	0.3156	0.5317	0.7987	0.9266	0.9638 (94)
Ext temp.	416.1283	456.1776	475.8562	454.3171	375.3543	257.8369	168.7360	177.5981	274.6012	369.0888	392.5694	398.7938 (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	715.6913	692.9924	626.6794	515.0623	390.9993	260.1667	169.0376	178.1408	282.2945	434.7178	582.8629	706.9586 (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 per m2	222.8749	159.1395	112.2124	43.7365	11.6399	0.0000	0.0000	0.0000	0.0000	48.8280	137.0113	229.2746 (98)
												964.7172 (98)
												(98) / (4) = 21.9204 (99)

8c. Space cooling requirement

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



CALCULATION OF ENERGY RATINGS 09 Jan 2014

Not applicable

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
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 %)													90.5000 (206)
Efficiency of secondary/supplementary heating system, %													0.0000 (208)
Space heating requirement													1065.9859 (211)
Space heating requirement	222.8749	159.1395	112.2124	43.7365	11.6399	0.0000	0.0000	0.0000	0.0000	48.8280	137.0113	229.2746	(98)
Space heating efficiency (main heating system 1)	90.5000	90.5000	90.5000	90.5000	90.5000	0.0000	0.0000	0.0000	0.0000	90.5000	90.5000	90.5000	(210)
Space heating fuel (main heating system)	246.2706	175.8448	123.9916	48.3277	12.8618	0.0000	0.0000	0.0000	0.0000	53.9536	151.3937	253.3422	(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	129.0257	113.2451	117.8162	104.0711	100.8669	88.5244	83.4986	93.7254	94.2231	107.9988	116.1372	125.4031	(64)
Efficiency of water heater (217)m	89.2998	89.1415	88.8323	88.2231	87.6205	87.3000	87.3000	87.3000	87.3000	88.2718	89.0033	89.3421	(216)
Fuel for water heating, kWh/month	144.4860	127.0397	132.6277	117.9636	115.1179	101.4025	95.6456	107.3601	107.9303	122.3481	130.4864	140.3628	(219)
Water heating fuel used													1442.7707 (219)
Annual totals kWh/year													
Space heating fuel - main system													1065.9859 (211)
Space heating fuel - secondary													0.0000 (215)
Electricity for pumps and fans: (MEVDecentralised, Database: total watage = 5.0830, total flow = 21.0000, SFP = 0.2420)													
mechanical ventilation fans (SFP = 0.2420)													31.9703 (230a)
central heating pump													30.0000 (230c)
main heating flue fan													45.0000 (230e)
Total electricity for the above, kWh/year													106.9703 (231)
Electricity for lighting (calculated in Appendix L)													209.5793 (232)
Total delivered energy for all uses													2825.3061 (238)

10a. Fuel costs - using Table 12 prices

	Fuel kWh/year	Fuel price p/kWh	Fuel cost £/year	
Space heating - main system 1	1065.9859	3.4800	37.0963	(240)
Space heating - secondary	0.0000	0.0000	0.0000	(242)
Water heating (other fuel)	1442.7707	3.4800	50.2084	(247)
Mechanical ventilation fans	31.9703	13.1900	4.2169	(249)
Pumps and fans for heating	75.0000	13.1900	9.8925	(249)
Energy for lighting	209.5793	13.1900	27.6435	(250)
Additional standing charges			120.0000	(251)
Total energy cost			249.0576	(255)

11a. SAP rating - Individual heating systems

Energy cost deflator (Table 12):		0.4200 (256)
Energy cost factor (ECF)	$[(255) \times (256)] / [(4) + 45.0] =$	1.1752 (257)
SAP value		83.6060
SAP rating (Section 12)		84 (258)
SAP band		B

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	1065.9859	0.2160	230.2529	(261)
Space heating - secondary	0.0000	0.0000	0.0000	(263)
Water heating (other fuel)	1442.7707	0.2160	311.6385	(264)
Space and water heating			541.8914	(265)
Pumps and fans	106.9703	0.5190	55.5176	(267)
Energy for lighting	209.5793	0.5190	108.7716	(268)
Total kg/year			706.1807	(272)
CO2 emissions per m2			16.0500	(273)
EI value			89.3688	
EI rating			89	(274)
EI band			B	

Calculation of stars for heating and DHW

Main heating energy efficiency	$3.48 \times (1 + 0.29 \times 0.00) / 0.9050 = 3.845$, stars = 4
Main heating environmental impact	$0.216 \times (1 + 0.29 \times 0.00) / 0.9050 = 0.2387$, stars = 4
Water heating energy efficiency	$3.48 / 0.8824 = 3.944$, stars = 4
Water heating environmental impact	$0.216 / 0.8824 = 0.2448$, stars = 4

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



CALCULATION OF ENERGY RATINGS 09 Jan 2014

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



CALCULATION OF EPC COSTS, EMISSIONS AND PRIMARY ENERGY 09 Jan 2014

SAP 2012 WORKSHEET FOR New Build (As Designed) (Version 9.92, January 2014)
 CALCULATION OF EPC COSTS, EMISSIONS AND PRIMARY ENERGY 09 Jan 2014

1. Overall dwelling dimensions

	Area (m2)	Storey height (m)	Volume (m3)
Ground floor	44.0100 (1b)	2.4600 (2b)	108.2646 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	44.0100		108.2646 (4)
Dwelling volume			(3a)+(3b)+(3c)+(3d)+(3e)...(3n) = 108.2646 (5)

2. Ventilation rate

	main heating	secondary heating	other	total	m3 per hour
Number of chimneys	0	0	0	0 * 40 =	0.0000 (6a)
Number of open flues	0	0	0	0 * 20 =	0.0000 (6b)
Number of intermittent fans				0 * 10 =	0.0000 (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) =				0.0000 / (5) =	0.0000 (8)
Pressure test				Yes	
Measured/design AP50				5.0100	
Infiltration rate				0.2505	(18)
Number of sides sheltered				1	(19)
Shelter factor			(20) = 1 - [0.075 x (19)] =		0.9250 (20)
Infiltration rate adjusted to include shelter factor			(21) = (18) x (20) =		0.2317 (21)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind speed	5.1000	4.7000	4.6000	4.3000	4.3000	4.0000	4.0000	3.9000	4.0000	4.5000	4.4000	4.7000 (22)
Wind factor	1.2750	1.1750	1.1500	1.0750	1.0750	1.0000	1.0000	0.9750	1.0000	1.1250	1.1000	1.1750 (22a)
Adj infilt rate	0.2954	0.2723	0.2665	0.2491	0.2491	0.2317	0.2317	0.2259	0.2317	0.2607	0.2549	0.2723 (22b)
Mechanical extract ventilation - decentralised												0.5000 (23a)
If mechanical ventilation:												
Effective ac	0.5454	0.5223	0.5165	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5107	0.5049	0.5223 (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
Windows (Uw = 1.40)			8.5400	1.3258	11.3220		(27)
Solid Door			2.1200	1.2000	2.5440		(26)
Wl - Clad	34.9590	8.5420	26.4170	0.2500	6.6043	61.0100	1611.7012 (29a)
Wl - To Corridor	13.3600	2.1170	11.2430	0.2499	2.8097	106.6200	1198.7287 (29a)
Total net area of external elements Aum(A, m2)			48.3200				(31)
Fabric heat loss, W/K = Sum (A x U)			(26)...(30) + (32) =	23.2800			(33)
Party Wall			18.2690	0.0000	0.0000	54.0300	987.0741 (32)
Party Floor			44.0060			40.0000	1760.2400 (32d)
Party Ceiling			44.0060			70.0000	3080.4200 (32b)
1st Floor Stud			88.0778			5.8200	512.6130 (32c)
Heat capacity Cm = Sum(A x k)						(28)...(30) + (32) + (32a)...(32e) =	9150.7769 (34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K							207.9249 (35)
Thermal bridges (Sum(L x Psi) calculated using Appendix K)							4.5593 (36)
Total fabric heat loss						(33) + (36) =	27.8392 (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	19.4869	18.6590	18.4521	17.8637	17.8637	17.8637	17.8637	17.8637	17.8637	18.2451	18.0381	18.6590 (38)
Heat transfer coeff	47.3261	46.4983	46.2913	45.7029	45.7029	45.7029	45.7029	45.7029	45.7029	46.0843	45.8774	46.4983 (39)
Average = Sum(39)m / 12 =												46.0661 (39)
HLP	1.0753	1.0565	1.0518	1.0385	1.0385	1.0385	1.0385	1.0385	1.0385	1.0471	1.0424	1.0565 (40)
HLP (average)												1.0467 (40)
Days in month	31	28	31	30	31	30	31	31	30	31	30	31 (41)

4. Water heating energy requirements (kWh/year)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Assumed occupancy												1.5165 (42)
Average daily hot water use (litres/day)												70.2174 (43)
Daily hot water use	77.2391	74.4304	71.6217	68.8130	66.0043	63.1956	63.1956	66.0043	68.8130	71.6217	74.4304	77.2391 (44)
Energy conte	114.5434	100.1804	103.3772	90.1267	86.4787	74.6246	69.1506	79.3514	80.2991	93.5808	102.1508	110.9291 (45)
Energy content (annual)										Total = Sum(45)m =		1104.7928 (45)

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



CALCULATION OF EPC COSTS, EMISSIONS AND PRIMARY ENERGY 09 Jan 2014

Distribution loss (46)m = 0.15 x (45)m	17.1815	15.0271	15.5066	13.5190	12.9718	11.1937	10.3726	11.9027	12.0449	14.0371	15.3226	16.6394 (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	14.4823	13.0648	14.4390	13.9444	14.3881	13.8998	14.3480	14.3740	13.9241	14.4180	13.9864	14.4740 (61)
Total heat required for water heating calculated for each month	129.0257	113.2451	117.8162	104.0711	100.8669	88.5244	83.4986	93.7254	94.2231	107.9988	116.1372	125.4031 (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	129.0257	113.2451	117.8162	104.0711	100.8669	88.5244	83.4986	93.7254	94.2231	107.9988	116.1372	125.4031 (64)
Heat gains from water heating, kWh/month	41.7063	36.5762	37.9827	33.4532	32.3512	28.2876	26.5796	29.9778	30.1805	34.7201	37.4617	40.5024 (65)
												1274.5357 (64)

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	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913	90.9913 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	29.6681	26.3510	21.4300	16.2239	12.1276	10.2386	11.0632	14.3803	19.3013	24.5074	28.6037	30.4927 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	196.6178	198.6581	193.5166	182.5711	168.7544	155.7686	147.0933	145.0530	150.1945	161.1400	174.9567	187.9425 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156	45.6156 (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)	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609	-60.6609 (71)
Water heating gains (Table 5)	56.0568	54.4288	51.0520	46.4628	43.4828	39.2884	35.7253	40.2928	41.9173	46.6668	52.0302	54.4388 (72)
Total internal gains	361.2888	358.3839	344.9447	324.2039	303.3108	284.2416	272.8278	278.6722	290.3591	311.2602	334.5367	351.8200 (73)

6. Solar gains

[Jan]	Area	Solar flux	g	FF	Access	Gains						
	m ²	Table 6a	Specific data	Specific data	factor	W						
		W/m ²	or Table 6b	or Table 6c	Table 6d							
Northeast	4.8500	15.0428	0.5000	0.0000	0.7700	28.0887 (75)						
Southeast	3.6920	46.3896	0.5000	0.0000	0.7700	65.9391 (77)						
Solar gains	94.0278	145.1268	219.2362	313.3972	366.9658	409.1296	378.9859	330.4970	264.6377	175.8767	113.3352	75.7529 (83)
Total gains	455.3166	503.5107	564.1809	637.6011	670.2767	693.3712	651.8137	609.1692	554.9968	487.1369	447.8719	427.5728 (84)

7. Mean internal temperature (heating season)

Temperature during heating periods in the living area from Table 9, Thl (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	53.7100	54.6662	54.9106	55.6175	55.6175	55.6175	55.6175	55.6175	55.6175	55.1572	55.4060	54.6662
alpha	4.5807	4.6444	4.6607	4.7078	4.7078	4.7078	4.7078	4.7078	4.7078	4.6771	4.6937	4.6444
util living area	0.9551	0.9316	0.8678	0.7327	0.5542	0.3670	0.2591	0.2771	0.4849	0.7623	0.9113	0.9620 (86)
MIT	20.2413	20.3915	20.6367	20.8644	20.9687	20.9963	20.9994	20.9993	20.9871	20.8676	20.5720	20.2232 (87)
Th 2	20.0210	20.0365	20.0404	20.0514	20.0514	20.0514	20.0514	20.0514	20.0514	20.0442	20.0481	20.0365 (88)
util rest of house	0.9443	0.9164	0.8411	0.6894	0.4975	0.3058	0.1929	0.2063	0.4120	0.7089	0.8886	0.9526 (89)
MIT 2	19.3659	19.5212	19.7507	19.9554	20.0336	20.0500	20.0513	20.0513	20.0459	19.9572	19.7046	19.3621 (90)
Living area fraction	19.7335	19.8867	20.1227	20.3371	20.4263	20.4473	20.4494	20.4493	20.4411	20.3395	20.0688	19.7237 (92)
Temperature adjustment	19.5835	19.7367	19.9727	20.1871	20.2763	20.2973	20.2994	20.2993	20.2911	20.1895	19.9188	-0.1500
adjusted MIT												19.5737 (93)

8. Space heating requirement

Utilisation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Useful gains	427.3616	458.6602	473.3592	443.7209	342.6895	223.0815	137.0122	136.9830	239.0639	349.5809	396.3867	404.9981 (95)
Ext temp.	5.4000	5.7000	7.3000	9.6000	12.6000	15.4000	17.3000	17.3000	15.0000	11.8000	8.4000	5.5000 (96)
Heat loss rate W	671.2474	652.6804	586.6373	483.8599	350.8273	223.8219	137.0825	137.0778	241.8194	386.6242	528.4534	654.4011 (97)
Month fracti	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000 (97a)
Space heating kWh	181.4510	130.3816	84.2789	28.9001	6.0545	0.0000	0.0000	0.0000	0.0000	27.5602	95.0880	185.5558 (98)
Space heating												739.2702 (98)
Space heating per m2												16.7978 (99)

8c. Space cooling requirement

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



CALCULATION OF EPC COSTS, EMISSIONS AND PRIMARY ENERGY 09 Jan 2014

Not applicable

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
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 %)													90.5000 (206)
Efficiency of secondary/supplementary heating system, %													0.0000 (208)
Space heating requirement													816.8731 (211)
Space heating requirement	181.4510	130.3816	84.2789	28.9001	6.0545	0.0000	0.0000	0.0000	0.0000	27.5602	95.0880	185.5558	(98)
Space heating efficiency (main heating system 1)	90.5000	90.5000	90.5000	90.5000	90.5000	0.0000	0.0000	0.0000	0.0000	90.5000	90.5000	90.5000	(210)
Space heating fuel (main heating system)	200.4983	144.0681	93.1259	31.9338	6.6901	0.0000	0.0000	0.0000	0.0000	30.4533	105.0696	205.0341	(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	129.0257	113.2451	117.8162	104.0711	100.8669	88.5244	83.4986	93.7254	94.2231	107.9988	116.1372	125.4031	(64)
Efficiency of water heater (217)m	89.1421	88.9839	88.6066	87.9761	87.4751	87.3000	87.3000	87.3000	87.3000	87.9321	88.7121	89.1817	(217)
Fuel for water heating, kWh/month	144.7416	127.2648	132.9655	118.2947	115.3092	101.4025	95.6456	107.3601	107.9303	122.8207	130.9147	140.6153	(219)
Water heating fuel used													1445.2651 (219)
Annual totals kWh/year													
Space heating fuel - main system													816.8731 (211)
Space heating fuel - secondary													0.0000 (215)
Electricity for pumps and fans: (MEVDecentralised, Database: total watage = 5.0830, total flow = 21.0000, SFP = 0.2420)													
mechanical ventilation fans (SFP = 0.2420)													31.9703 (230a)
central heating pump													30.0000 (230c)
main heating flue fan													45.0000 (230e)
Total electricity for the above, kWh/year													106.9703 (231)
Electricity for lighting (calculated in Appendix L)													209.5793 (232)
Total delivered energy for all uses													2578.6879 (238)

10a. Fuel costs - using BEDF prices (472)

	Fuel kWh/year	Fuel price p/kWh	Fuel cost £/year
Space heating - main system 1	816.8731	3.8700	31.6130 (240)
Space heating - secondary	0.0000	0.0000	0.0000 (242)
Water heating (other fuel)	1445.2651	3.8700	55.9318 (247)
Mechanical ventilation fans	31.9703	18.9000	6.0424 (249)
Pumps and fans for heating	75.0000	18.9000	14.1750 (249)
Energy for lighting	209.5793	18.9000	39.6105 (250)
Additional standing charges			93.0000 (251)
Total energy cost			240.3726 (255)

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	816.8731	0.2160	176.4446 (261)
Space heating - secondary	0.0000	0.0000	0.0000 (263)
Water heating (other fuel)	1445.2651	0.2160	312.1773 (264)
Space and water heating			488.6219 (265)
Pumps and fans	106.9703	0.5190	55.5176 (267)
Energy for lighting	209.5793	0.5190	108.7716 (268)
Total kg/year			652.9111 (272)

13a. Primary energy - Individual heating systems including micro-CHP

	Energy kWh/year	Primary energy factor kg CO2/kWh	Primary energy kWh/year
Space heating - main system 1	816.8731	1.2200	996.5852 (261)
Space heating - secondary	0.0000	0.0000	0.0000 (263)
Water heating (other fuel)	1445.2651	1.2200	1763.2234 (264)
Space and water heating			2759.8087 (265)
Pumps and fans	106.9703	3.0700	328.3989 (267)
Energy for lighting	209.5793	3.0700	643.4084 (268)
Primary energy kWh/year			3731.6160 (272)
Primary energy kWh/m2/year			84.7902 (273)

SAP 2012 EPC IMPROVEMENTS

Current energy efficiency rating: B 84
Current environmental impact rating: B 89

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



CALCULATION OF EPC COSTS, EMISSIONS AND PRIMARY ENERGY 09 Jan 2014

(For testing purposes):

A		Not considered
B		Not considered
C		Not considered
D		Not considered
E	Low energy lighting	Already installed
F		Not considered
G		Not considered
H		Not considered
I		Not considered
J		Not considered
K		Not considered
M		Not considered
N	Solar water heating	Not applicable
O		Not considered
P		Not considered
R		Not considered
S		Not considered
T		Not considered
U	Solar photovoltaic panels	Not applicable
A2		Not considered
A3		Not considered
T2		Not considered
W		Not considered
X		Not considered
Y		Not considered
J2		Not considered
Q2		Not considered
Z1		Not considered
Z2		Not considered
Z3		Not considered
Z4		Not considered
Z5		Not considered
V2	Wind turbine	Not applicable
L2		Not considered
Q3		Not considered
O3		Not considered

Recommended measures: (none)	SAP change	Cost change	CO2 change
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Recommended measures (none)	Typical annual savings	Energy efficiency	Environmental impact
	Total Savings £0	0.00 kg/m ²	
Potential energy efficiency rating:		B 84	
Potential environmental impact rating:			B 89

Fuel prices for cost data on this page from database revision number 472 TEST (30 Jan 2021)
 Recommendation texts revision number 4.9c (22 Feb 2014)

Typical heating and lighting costs of this home (per year, Southern England):

	Current	Potential	Saving
Electricity	£60	£60	£0
Mains gas	£181	£181	£0
Space heating	£145	£145	£0
Water heating	£56	£56	£0
Lighting	£40	£40	£0
Total cost of fuels	£241	£241	£0
Total cost of uses	£241	£241	£0
Delivered energy	59 kWh/m ²	59 kWh/m ²	0 kWh/m ²
Carbon dioxide emissions	0.7 tonnes	0.7 tonnes	0.0 tonnes
CO2 emissions per m ²	15 kg/m ²	15 kg/m ²	0 kg/m ²
Primary energy	85 kWh/m ²	85 kWh/m ²	0 kWh/m ²

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



CALCULATION OF ENERGY RATINGS FOR IMPROVED DWELLING 09 Jan 2014

SAP 2012 WORKSHEET FOR New Build (As Designed) (Version 9.92, January 2014)
CALCULATION OF ENERGY RATINGS FOR IMPROVED DWELLING 09 Jan 2014

No improvements selected / applicable

FULL SAP CALCULATION PRINTOUT

Calculation Type: New Build (As Designed)



CALCULATION OF EPC COSTS, EMISSIONS AND PRIMARY ENERGY FOR IMPROVED DWELLING 09 Jan 2014

SAP 2012 WORKSHEET FOR New Build (As Designed) (Version 9.92, January 2014)
CALCULATION OF EPC COSTS, EMISSIONS AND PRIMARY ENERGY FOR IMPROVED DWELLING 09 Jan 2014

No improvements selected / applicable

BASIC COMPLIANCE REPORT

Calculation Type: New Build (As Designed)



Property Reference	683 - PRJ009149	Issued on Date	26/02/2021
Assessment Reference	683	Prop Type Ref	Block B
Property	Plot 683		

SAP Rating	84 B	DER	17.89	TER	19.67
Environmental	89 B	% DER<TER	9.05		
CO₂ Emissions (t/year)	0.65	DFEE	39.91	TFEE	44.11
General Requirements Compliance	Pass	% DFEE<TFEE	9.52		

Assessor Details	Mr. Michael Juckes, Michael Juckes, Tel: 02033971373, michael@briaryenergy.co.uk	Assessor ID	T850-0001
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Client	
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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)	19.67	kgCO ₂ /m ²	
Dwelling Carbon Dioxide Emission Rate (DER)	17.89	kgCO ₂ /m ²	Pass
	-1.78 (-9.0%)	kgCO ₂ /m ²	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	44.11	kWh/m ² /yr	
Dwelling Fabric Energy Efficiency (DFEE)	39.91	kWh/m ² /yr	
	-4.2 (-9.5%)	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
Party wall	0.00 (max. 0.20)	-	Pass
Openings	1.36 (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	5.01 (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 Ideal LOGIC COMBI ESP1 30 Combi boiler Efficiency: 89.6% SEDBUK2009 Minimum: 88.0%	Pass
Secondary heating system	None	

BASIC COMPLIANCE REPORT

Calculation Type: New Build (As Designed)



5 Cylinder insulation

Hot water storage

6 Controls

Space heating controls

Hot water controls

Boiler interlock

7 Low energy lights

Percentage of fixed lights with low-energy fittings %

Minimum %

8 Mechanical ventilation

Continuous extract system (decentralised)

Specific fan power

Maximum

Criterion 3 – Limiting the effects of heat gains in summer

9 Summertime temperature

Overheating risk (Southern England)

Based on:

Overshading

Windows facing North East

Windows facing South East

Air change rate

Blinds/curtains

Criterion 4 – Building performance consistent with DER and DFEE rate

Party Walls

Type	U-value	W/m ² K	
Filled Cavity with Edge Sealing	<input type="text" value="0.00"/>	W/m ² K	<input type="text" value="Pass"/>

Air permeability and pressure testing

3 Air permeability

Air permeability at 50 pascals

Maximum

10 Key features

Party wall U-value 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.