

Calculated by Lambda Calculation Engine SAP Engine version v94.0.1.1

RRN: 9024-0271-5100-6817-9830
Address: CS8 Baseline;

1. Overall dwelling dimensions

First floor(main)	39.94	2.96	118.2224	(1c)–	(3c)
Second floor(main)	40.34	2.98	120.2132	(1d)–	(3d)
Third floor(main)	38	3	114	(1e)–	(3e)
Ground floor (extension 1)	16.65	2.94	48.951	(1b)–	(3b)
First floor (extension 1)	17.18	2.98	51.1964	(1c)–	(3c)
Second floor (extension 1)	17.8	2.95	52.51	(1d)–	(3d)
Ground floor (extension 2)	14.58	2.6	37.908	(1b)–	(3b)
Total floor area	184.4900				(4)
Dwelling volume (m³)			543.0010		(5)

2. Ventilation rate

Number of chimneys													40	(6a)
Number of open flues													0	(6b)
Number of intermittent fans													0	(7a)
Number of passive vents													0	(7b)
Number of flueless gas fires													0	(7c)
													ach	
Infiltration due to chimneys, flues and fans													0.0737	(8)
Number of storeys													3	(9)
Additional infiltration													0.2000	(10)
Structural infiltration													0.3500	(11)
Floor infiltration													0.0000	(12)
0.05 if no draught lobby													0.0500	(13)
% of windows and doors draught proofed													41	(14)
Window infiltration													0.1680	(15)
Infiltration rate													0.8417	(18)
Number of sides sheltered													2	(19)
Shelter factor													0.8500	(20)
Infiltration rate incorporating shelter factor													0.7154	(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	0.9122	0.8943	0.8764	0.7870	0.7691	0.6796	0.6796	0.6618	0.7154	0.7691	0.8048	0.8406		(22b)
Effective ach	0.9160	0.8999	0.8840	0.8097	0.7957	0.7310	0.7310	0.7190	0.7559	0.7957	0.8239	0.8533		(25)

3. Heat losses and heat loss parameter

Element	Net	U-value	A x U	K-value	A x K								
Element						(Main)							
Doors	3.7000	3.0000	11.1000			(26)							
Windows (1)	11.1100	4.0268	44.7383			(27)							
Windows (2)	7.7200	2.1898	16.9051			(27)							
Ground Floor	0.0000	0.0000	0.0000			(28a)							
Exposed Floor	0.0000	0.0000	48.4080			(28b)							
Walls	54.1500	1.5000	81.2250			(29a)							
Roof	40.3400	0.2100	8.4714			(30)							
Element (extension 1)													
Windows (1)	4.8500	4.0268	19.5302			(27)							
Windows (2)	3.3700	2.1898	7.3796			(27)							
Ground Floor	16.6500	0.1800	2.9970			(28a)							
Walls	19.0500	1.5000	28.5750			(29a)							
Alternative wall	0.0000	0.0000	0.0000			(29b)							
Roof	17.8000	0.2100	3.7380			(30)							
Element (extension 2)													
Windows (1)	1.3700	4.0268	5.5168			(27)							
Windows (2)	0.9500	2.1898	2.0803			(27)							
Ground Floor	14.5800	1.1600	16.9128			(28a)							
Walls	40.2900	1.5000	60.4350			(29a)							
Roof	16.8400	2.3000	38.7320			(30)							
Total area of elements (whole dwelling)	293.1100					(31)							
Party wall (main)	113.8900	0.2500	28.4725			(32)							
Party wall (extn 1)	40.5300	0.2500	10.1325			(32)							
Fabric heat loss			435.3494			(33)							
Thermal mass parameter			250.0000			(35)							
Thermal bridges (0.15 × total area)			43.9665			(36)							
Total fabric heat loss			479.3159			(37)							
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Vent loss	164.1406	161.2459	158.4085	145.0815	142.5881	130.9806	130.9806	128.8311	135.4516	142.5881	147.6323	152.9058	(38)
Heat transfer coeff	643.4565	640.5618	637.7244	624.3974	621.9039	610.2965	610.2965	608.1470	614.7675	621.9039	626.9482	632.2217	(39)
Heat transfer coeff (average)										624.3855			(39)
HLP	3.4878	3.4721	3.4567	3.3845	3.3709	3.3080	3.3080	3.2964	3.3323	3.3709	3.3983	3.4269	(40)
HLP (average)										3.3844			(40)
Days in month	31.0000	28.0000	31.0000	30.0000	31.0000	30.0000	31.0000	31.0000	30.0000	31.0000	30.0000	31.0000	(41)

4. Water heating energy requirements

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Space heating requirement	4699.4148	3925.7563	3613.7831	2473.4265	1517.5768	0.0000	0.0000	0.0000	0.0000	2231.4963	3478.1297	4699.0988	(98)
Space heating efficiency (main heating system)	90.4000	90.4000	90.4000	90.4000	90.4000	0.0000	0.0000	0.0000	0.0000	90.4000	90.4000	90.4000	(210)
Space heating fuel (main heating system)	4678.6209	3908.3857	3597.7929	2462.4821	1510.8619	0.0000	0.0000	0.0000	0.0000	2221.6224	3462.7398	4678.3063	(211)
Space heating fuel (secondary)	469.9415	392.5756	361.3783	247.3426	151.7577	0.0000	0.0000	0.0000	0.0000	223.1496	347.8130	469.9099	(215)
Water heating requirement	276.8868	244.9305	259.3080	235.3330	232.7049	190.3481	184.1595	200.2184	199.2815	243.8857	254.2624	271.1970	(64)
Efficiency of water heater	89.6604	89.6200	89.5126	89.2543	88.6671	79.7000	79.7000	79.7000	79.7000	89.1046	89.4974	89.6745	(216) (217)
Water heating fuel	308.8173	273.2990	289.6887	263.6656	262.4479	238.8308	231.0659	251.2151	250.0395	273.7071	284.1004	302.4237	(219)
Space cooling fuel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(221)
Annual totals:											kWh/year		
Space heating fuel - main system											26520.8120		(211)
Space heating fuel - secondary											2663.8682		(215)
Water heating fuel											3229.3010		(219)
central heating pump											120.0000		(230c)
boiler flue fan											45.0000		(230e)
Electricity for pumps and fans											165.0000		(231)
Electricity for lighting											635.3555		(232)
Total delivered energy for all uses											33214.3367		(238)

10. Fuel costs

	Fuel kWh/year	Fuel price p/kWh	Fuel cost £/year	
Space heating - main system	26520.8120	3.4800	922.9243	(240)
Space heating - secondary	2663.8682	13.1900	351.3642	(242)
Water heating	3229.3010	3.4800	112.3797	(247)
Pumps and fans for heating	0.0000	165.0000	21.7635	(249)
Electricity for lighting	635.3555	13.1900	83.8034	(250)
Additional standing charges			120.0000	(251)
Total energy cost			1612.2350	(255)

11. SAP rating

Energy cost deflator	0.4200	(256)
Energy cost factor (ECF)	2.9506	(257)
SAP value	58.8388	
SAP rating	59	(258)
SAP BAND	D	

12. Carbon dioxide emissions

	Energy kWh/year	Emission factor	Emissions kg/year	
Space heating - main system	26520.8120	0.2160	5728.4954	(261)
Space heating - secondary	2663.8682	0.5190	1382.5476	(263)
Water heating	3229.3010	0.2160	697.5290	(264)
Space and water heating			7808.5720	(265)
Pumps and fans	0.5190	165.0000	85.6350	(267)
Energy for lighting	635.3555	0.5190	329.7495	(268)
Total kg/year			8223.9565	(272)
			kg/m2/year	
CO2 emissions per m2			44.58	(273)
EI value			52.3399	
EI rating			52	(274)
EI band			E	

SAP 2012 WORKSHEET (Version 9.94, September 2019)

CALCULATION OF ENERGY RATINGS FOR IMPROVED DWELLING

15 Mar 2021

Calculated by Lambda Calculation Engine SAP Engine version v94.0.1.1

RRN: 9024-0271-5100-6817-9830

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1. Overall dwelling dimensions

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Second floor(main)	40.34	2.98	120.2132	(1d)–	(3d)
Third floor(main)	38	3	114	(1e)–	(3e)
Ground floor (extension 1)	16.65	2.94	48.951	(1b)–	(3b)
First floor (extension 1)	17.18	2.98	51.1964	(1c)–	(3c)
Second floor (extension 1)	17.8	2.95	52.51	(1d)–	(3d)
Ground floor (extension 2)	14.58	2.6	37.908	(1b)–	(3b)
Total floor area	184.4900				(4)
Dwelling volume (m³)			543.0010		(5)

2. Ventilation rate

Number of chimneys	40	(6a)
Number of open flues	0	(6b)
Number of intermittent fans	0	(7a)
Number of passive vents	0	(7b)
Number of flueless gas fires	0	(7c)

Infiltration due to chimneys, flues and fans	ach												(8)
Number of storeys	3												(9)
Additional infiltration	0.2000												(10)
Structural infiltration	0.3500												(11)
Floor infiltration	0.0000												(12)
0.05 if no draught lobby	0.0500												(13)
% of windows and doors draught proofed	100												(14)
Window infiltration	0.0500												(15)
Infiltration rate	0.7237												(18)
Number of sides sheltered	2												(19)
Shelter factor	0.8500												(20)
Infiltration rate incorporating shelter factor	0.6151												(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	0.7843	0.7689	0.7535	0.6766	0.6612	0.5844	0.5844	0.5690	0.6151	0.6612	0.6920	0.7228	(22b)
Effective ach	0.8075	0.7956	0.7839	0.7289	0.7186	0.6707	0.6707	0.6619	0.6892	0.7186	0.7394	0.7612	(25)

3. Heat losses and heat loss parameter

Element	Net	U-value	A x U	K-value	A x K	
Element						(Main)
Doors	3. 7000	3. 0000	11. 1000			(26)
Windows	7. 7200	2. 1898	16. 9051			(27)
Windows	11. 1100	1. 5038	16. 7068			(27)
Ground Floor	0. 0000	0. 0000	0. 0000			(28a)
Exposed Floor	0. 0000	0. 0000	48. 4080			(28b)
Walls	54. 1500	0. 7000	37. 9050			(29a)
Roof	40. 3400	0. 2100	8. 4714			(30)
Element (extension 1)						
Windows	3. 3700	2. 1898	7. 3796			(27)
Windows	4. 8500	1. 5038	7. 2932			(27)
Ground Floor	16. 6500	0. 1800	2. 9970			(28a)
Walls	19. 0500	0. 7000	13. 3350			(29a)
Alternative wall	0. 0000	0. 0000	0. 0000			(29b)
Roof	17. 8000	0. 2100	3. 7380			(30)
Element (extension 2)						
Windows	0. 9500	2. 1898	2. 0803			(27)
Windows	1. 3700	1. 5038	2. 0602			(27)
Ground Floor	14. 5800	1. 1600	16. 9128			(28a)
Walls	40. 2900	0. 7000	28. 2030			(29a)
Roof	16. 8400	0. 1800	3. 0312			(30)
Total area of elements (whole dwelling)						
Party wall (main)	293. 1100					(31)
Party wall (extn 1)	113. 8900	0. 2500	28. 4725			(32)
Fabric heat loss	40. 5300	0. 2500	10. 1325			(32)
Thermal mass parameter			265. 1315			(33)
Thermal bridges (0.15 × total area)			250. 0000			(35)
(36)			43. 9665			
Total fabric heat loss			309. 0980			(37)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Vent loss	144.7035	142.5636	140.4661	130.6139	128.7706	120.1897	120.1897	118.6007	123.4950	128.7706	132.4996	136.3981	(38)
Heat transfer coeff	453.8015	451.6616	449.5641	439.7119	437.8686	429.2878	429.2878	427.6987	432.5930	437.8686	441.5976	445.4961	(39)
Heat transfer coeff (average)	439.7031												(39)
HLP	2.4598	2.4482	2.4368	2.3834	2.3734	2.3269	2.3269	2.3183	2.3448	2.3734	2.3936	2.4147	(40)
HLP (average)	2.3833												(40)
Days in month	31.0000	28.0000	31.0000	30.0000	31.0000	30.0000	31.0000	31.0000	30.0000	31.0000	30.0000	31.0000	(41)

4. Water heating energy requirements

Assumed occupancy	2.9817												(42)
Average daily hot water use (litres/day)	110.5425												(43)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daily hot water use	121.5967	117.1750	112.7533	108.3316	103.9099	99.4882	99.4882	103.9099	108.3316	112.7533	117.1750	121.5967	(44)
Energy content	180.3244	157.7129	162.7456	141.8855	136.1425	117.4807	108.8631	124.9220	126.4140	147.3233	160.8149	174.6346	(45)
Energy content (annual)	1739.2634												(45)
Distribution loss	27.0487	23.6569	24.4118	21.2828	20.4214	17.6221	16.3295	18.7383	18.9621	22.0985	24.1222	26.1952	(46)
Cylinder volume	110.0000												(47)
Cylinder loss factor (kWh/litre/day)	0.0152												(51)
Volume factor	1.0294												(52)
Temperature factor	0.6000												(53)
Energy lost from cylinder in kWh/day	1.0317												(55)
Total storage loss	31.9832	28.8881	31.9832	30.9515	31.9832	30.9515	31.9832	31.9832	30.9515	31.9832	30.9515	31.9832	(56)
Net storage loss	31.9832	28.8881	31.9832	30.9515	31.9832	30.9515	31.9832	31.9832	30.9515	31.9832	30.9515	31.9832	(57)
Primary loss	64.5792	58.3296	64.5792	62.4960	64.5792	41.9160	43.3132	43.3132	41.9160	64.5792	62.4960	64.5792	(59)
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	(61)
Total	276.8868	244.9305	259.3080	235.3330	232.7049	190.3481	184.1595	200.2184	199.2815	243.8857	254.2624	271.1970	(62)
WW heat rec.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(G10)
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)	0.0000												(63)
Flue gas heat rec.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(66)
Fghrs PV	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Output from w/h	276.8868	244.9305	259.3080	235.3330	232.7049	190.3481	184.1595	200.2184	199.2815	243.8857	254.2624	271.1970	(64)
Output from water heater(annual)	2792.5158												(64)
Heat gains (kWh)	137.2078	122.2137	131.3628	121.9349	122.5173	97.3563	96.4341	101.7737	100.3266	126.2349	128.2289	135.3159	(65)

5. Internal gains

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Metabolic	178.9019	178.9019	178.9019	178.9019	178.9019	178.9019	178.9019	178.9019	178.9019	178.9019	178.9019	178.9019	(66)
Lighting	91.1609	80.9683	65.8479	49.8511	37.2643	31.4601	33.9937	44.1863	59.3068	75.3036	87.8904	93.6946	(67)
Appliances	531.4256	536.9401	523.0437	493.4598	456.1154	421.0170	397.5691	392.0546	405.9510	435.5349	472.8793	507.9777	(68)

Cooking	55.8719	55.8719	55.8719	55.8719	55.8719	55.8719	55.8719	55.8719	55.8719	55.8719	55.8719	55.8719	(69)
Pumps, fans	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	(70)
Losses	-119.2679	-119.2679	-119.2679	-119.2679	-119.2679	-119.2679	-119.2679	-119.2679	-119.2679	-119.2679	-119.2679	-119.2679	(71)
Water heating	184.4191	181.8656	176.5629	169.3541	164.6738	135.2171	129.6157	136.7926	139.3425	169.6706	178.0957	181.8762	(72)
Total internal	932.5115	925.2799	890.9604	838.1708	783.5594	713.2000	686.6844	698.5393	730.1062	806.0149	864.3713	909.0544	(73)

6. Solar gains

(calculation for January)														
Orientation		Area				Gains[W]								
East		11.1100				66.6858								(76)
East		7.7200				55.8997								(76)
East		4.8500				29.1113								(76)
East		3.3700				24.4018								(76)
East		1.3700				8.2232								(76)
East		0.9500				6.8788								(76)
						total:		191.2006						(83-1)
Solar gains	191.2006	374.0289	615.9723	898.3588	1100.9725	1127.0412	1072.9892	921.6819	716.4012	443.8168	238.4046	157.2340	(83)	
Total gains	1123.7120	1299.3088	1506.9326	1736.5296	1884.5319	1840.2413	1759.6736	1620.2212	1446.5074	1249.8317	1102.7759	1066.2884	(84)	

7. Mean internal temperature

Living room temperature during heating periods Th1												21.0000	(85)
Heating system responsiveness												1.0000	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
tau	28.2322	28.3659	28.4983	29.1368	29.2595	29.8443	29.8443	29.9552	29.6163	29.2595	29.0124	28.7585	
alpha	2.8821	2.8911	2.8999	2.9425	2.9506	2.9896	2.9896	2.9970	2.9744	2.9506	2.9342	2.9172	
external 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	
util living area	0.9965	0.9943	0.9890	0.9747	0.9419	0.8751	0.7752	0.8173	0.9367	0.9839	0.9947	0.9971	(86)
MIT 1	18.3454	18.5381	18.9263	19.4920	20.0437	20.5234	20.7800	20.7300	20.3186	19.6162	18.9076	18.3433	(87)
th2													(88)
util rest	0.9951	0.9920	0.9840	0.9614	0.9041	0.7692	0.5509	0.6173	0.8752	0.9731	0.9920	0.9959	(89)
MIT 2	16.7540	16.9505	17.3413	17.9215	18.4571	18.9035	19.0764	19.0594	18.7360	18.0536	17.3415	16.7695	(90)
Living area fraction =											0.1200		(91)
MIT	16.9450	17.1410	17.5315	18.1099	18.6475	19.0979	19.2809	19.2599	18.9259	18.2411	17.5294	16.9583	(92)
Temperature adjustment											0.0000		
adjusted MIT	16.9450	17.1410	17.5315	18.1099	18.6475	19.0979	19.2809	19.2599	18.9259	18.2411	17.5294	16.9583	(93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Utilisation	0.9927	0.9883	0.9778	0.9510	0.8909	0.7671	0.5761	0.6369	0.8656	0.9650	0.9885	0.9938	(94)
Useful gains W	1115.4735	1284.1493	1473.4531	1651.3967	1678.9810	1411.5913	1013.7920	1031.9035	1252.1054	1206.0929	1090.0799	1059.7100	(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	5738.3024	5528.7913	4959.3646	4049.7242	3042.1068	1930.8914	1150.8655	1223.1555	2087.6389	3345.8183	4605.6040	5683.7839	(97)
Month fraction	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	3439.3847	2852.3994	2593.5182	1726.7958	1014.1656	0.0000	0.0000	0.0000	0.0000	1591.9557	2531.1773	3440.3110	(98)
Space heating											19189.7077		(98)
Space heating per m2											104.0149		(99)

8c. Space cooling requirement

- not applicable

9. Energy requirements

Fraction of space heat from secondary											0.1000		(201)
Fraction of space heat from main system											0.9000		(202)
Fraction of total space heat from main system 1											0.9000		(204)
Efficiency of main heating system 1											90.4000		(206)
Efficiency of secondary heating system											100.0000		(208)
Space heating requirement											19104.7975		(211)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Space heating requirement	3439.3847	2852.3994	2593.5182	1726.7958	1014.1656	0.0000	0.0000	0.0000	0.0000	1591.9557	2531.1773	3440.3110	(98)
Space heating efficiency (main heating system)	90.4000	90.4000	90.4000	90.4000	90.4000	0.0000	0.0000	0.0000	0.0000	90.4000	90.4000	90.4000	(210)
Space heating fuel (main heating system)	3424.1662	2839.7781	2582.0424	1719.1551	1009.6781	0.0000	0.0000	0.0000	0.0000	1584.9117	2519.9774	3425.0884	(211)
Space heating fuel (secondary)	343.9385	285.2399	259.3518	172.6796	101.4166	0.0000	0.0000	0.0000	0.0000	159.1956	253.1177	344.0311	(215)
Water heating requirement	276.8868	244.9305	259.3080	235.3330	232.7049	190.3481	184.1595	200.2184	199.2815	243.8857	254.2624	271.1970	(64)
Efficiency of water heater	89.4144	89.3551	89.2026	88.8316	87.9999	79.7000	79.7000	79.7000	79.7000	88.6684	89.1976	89.4331	(216)
Water heating fuel	309.6669	274.1091	290.6955	264.9204	264.4378	238.8308	231.0659	251.2151	250.0395	275.0536	285.0551	303.2402	(217)
Space cooling fuel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(219)
													(221)
Annual totals:											kWh/year		
Space heating fuel - main system											19104.7975		(211)
Space heating fuel - secondary											1918.9708		(215)
Water heating fuel											3238.3298		(219)
central heating pump											120.0000		(230c)
boiler flue fan											45.0000		(230e)
Electricity for pumps and fans											165.0000		(231)
Electricity for lighting											643.9723		(232)
PV generation											-1727.2394		(233)
Total delivered energy for all uses											23343.8310		(238)

10. Fuel costs

	Fuel kWh/year	Fuel price p/kWh	Fuel cost £/year	
Space heating - main system	19104.7975	3.4800	664.8470	(240)
Space heating - secondary	1918.9708	13.1900	253.1122	(242)

Water heating	3238.3298	3.4800	112.6939	(247)
Pumps and fans for heating	0.0000	165.0000	21.7635	(249)
Electricity for lighting	643.9723	13.1900	84.9399	(250)
Additional standing charges			120.0000	(251)
Electricity generated – PVs	-1727.2394		-227.8229	(252)
Total energy cost			1029.5336	(255)

11. SAP rating

Energy cost deflator			0.4200	(256)
Energy cost factor (ECF)			1.8842	(257)
SAP value			73.7155	
SAP rating			74	(258)
SAP BAND			C	

12. Carbon dioxide emissions

	Energy kWh/year	Emission factor	Emissions kg/year	
Space heating – main system	19104.7975	0.2160	4126.6363	(261)
Space heating – secondary	1918.9708	0.5190	995.9458	(263)
Water heating	3238.3298	0.2160	699.4792	(264)
Space and water heating			5822.0613	(265)
Pumps and fans	0.5190	165.0000	85.6350	(267)
Energy for lighting	643.9723	0.5190	334.2216	(268)
Electricity generated – PVs	-1727.2394	0.5190	-896.4372	(269)
Total kg/year			5345.4807	(272)
CO2 emissions per m2			kg/m2/year	
EI value			28.97	(273)
EI rating			69	(274)
EI band			C	