SAP Worksheet

SAP 10.2

Plot: 008
Housetype: Plot 08

Issued on Date	17/02/2026	DER	5.64	TER	12.36	%	54.37
SAP Rating	77 (C)	DFEE	51.12	TFEE	51.16	%	0.08
Environmental Rating	96 (A)	DPER	66.17	TPER	66.21	%	0.06
Assessor Details	Connor Campbell - KAZN000009 - Briary Energy						

1. Dimensions

	Area(m^2)		Av. Height(m)		Volume(m^3)	
Ground Floor	5.3300	(1a) x	2.7200	(2a) =	14.4800	(3a)
First Floor	64.1800	(1b) x	2.1600	(2b) =	138.6100	(3b)
Total floor area TFA					69.5200	(4)
Dwelling volume					153.0900	(5)

2. Ventilation

Chimneys/Flues	0.0000	x 80 =		0.0000	(6a)
Open chimneys	0.0000	x 20 =		0.0000	(6b)
Chimneys / flues attached to closed fire	0.0000	x 10 =		0.0000	(6c)
Flues attached to solid fuel boiler	0.0000	x 20 =		0.0000	(6d)
Flues attached to other heater	0.0000	x 35 =		0.0000	(6e)
Number of blocked chimneys	0.0000	x 20 =		0.0000	(6f)
Number of intermittent extract fans	0.0000	x 10 =		0.0000	(7a)
Number of passive vents	0.0000	x 10 =		0.0000	(7b)
Number of flueless gas fires	0.0000	x 40 =		0.0000	(7c)
Infiltration due to chimneys, flues and fans			0.0000	0.0000	(8)
Air permeability value, AP50, ($m^3/h/m^2$)			4.0000	4.0000	(17)
Air permeability value, AP4, ($m^3/h/m^2$)			0.0000	0.0000	(17a)
Air permeability value)			0.2000	0.2000	(18)
Number of sides on which dwelling is sheltered			3	3	(19)
Shelter factor				0.7800	(20)
Infiltration rate incorporating shelter factor				0.1600	(21)
Infiltration rate modified for monthly wind speed					
Monthly average wind speed from Table U2					

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
5.1000	5.0000	4.9000	4.4000	4.3000	3.8000	3.8000	3.7000	4.0000	4.3000	4.5000	4.7000	52.5000	(22)

Wind Factor (22a)m = (22)m ÷ 4

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
1.2750	1.2500	1.2250	1.1000	1.0750	0.9500	0.9500	0.9250	1.0000	1.0750	1.1250	1.1750	13.1250	(22a)

Adjusted infiltration rate (allowing for shelter and wind speed) = (21) x (22a)m

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
0.1976	0.1938	0.1899	0.1705	0.1666	0.1473	0.1473	0.1434	0.1550	0.1666	0.1744	0.1821	2.0344	(22b)

Calculate effective air change rate for the applicable case:

If mechanical ventilation: air change rate through system	0.5000	(23a)
If exhaust air heat pump using Appendix N, (23b) = (23a) × F mv (equation (N4)) , otherwise (23b) = (23a)	0.5000	(23b)

For mechanical ventilation systems providing variable air change rates, the monthly rate held in the PCDB or Appendix Q data and should instead be used:

Effective air change rate

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	(25)

Effective air change rate from PCDB:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	(25)

3. Heat loss

Items in the table below are to be expanded as necessary to allow for all different types of element e.g. 4 wall types.

The k -value

ELEMENT	Gross Area (m^2)	Openings m^2	Net Area A ,m^2	U-value W/m2K	A X U (W/K)	K-value kJ/m^2·K	A X K kJ/K	
Front			2.34	1.4	3.28			(26)
Front			7.33	1.24	9.06			(27)
Rear			4.04	1.24	4.99			(27a)
Flr - Ground			5.33	0.13	0.68	110	586.52	(28a)
Flr - Exposed Garage			58.85	0.18	10.59	20	1177.06	(28a)
Wl - Clad	45.22	2.34	42.88	0.18	7.72	60	2572.8	(29a)
Wl - Garage	3.27		3.27	0.16	0.52	60	195.96	(29a)
Wl - Dormer	22.03	7.33	14.7	0.2	2.94	9	132.3	(29a)
Wl - Stud Ashlar	34.18		34.18	0.11	3.69	9	307.58	(29a)
Rf - Ins Joist	22.1		22.1	0.11	2.43	9	198.87	(30)
Rf - Ins Rafter	44.53	4.04	40.5	0.15	6.07	9	364.46	(30)

Rf - Flat Dormer	10.6	10.6	0.15	1.59	9	95.39	(30)
Total area						246.1	(31)
Stud	57.74	57.74			9	519.66	(32c)
Block	9.8	9.8			75	735	(32c)
Internal Floor 1	5.33	5.33			9	47.99	(32d)
Internal Ceiling 1	5.33	5.33			9	47.99	(32e)
Fabric heat loss, W/K = ∑ (A x U)						53.5658	(33)
Heat capacity Cm = ∑(A x k)						6981.5700	(34)
Thermal mass parameter (TMP = Cm ÷ TFA) in kJ/m²K						100.4297	(35)
For design assessments where the details of the construction are not known precisely the indicative values of TMP in Table 1j can be used instead of a detailed calculation. Also TMP calculated separately can be used in (35).						100.4297	
						100.4297	
						100.4297	

Thermal Bridging

Ref	Junction detail	Length	Thermal transmittance	Total HTB	
E2	Other lintels (including other steel lintels	1.02	0.064	0.065	
E4	Jamb	4.58	0.016	0.073	
E5	Ground floor (normal)	11.27	0.112	1.262	
E10	Eaves (insulation at ceiling level)	3.23	0.063	0.204	
E11	Eaves (insulation at rafter level)	21.92	0.017	0.373	
E13	Gable (insulation at rafter level)	13.28	0.062	0.824	
E16	Corner (normal)	17.4	0.054	0.939	
E20	Exposed floor (normal)	30.72	0.116	3.563	
E21	Exposed floor (inverted)	3.41	0.32	1.092	
R1	Head of roof window	3.42	0.058	0.198	
R2	Sill of roof window	8.85	0.049	0.434	
R3	Jamb of roof window	15.18	0.058	0.88	
R6	Flat ceiling	27.35	0.12	3.282	
R7	Flat ceiling (inverted)	22	0.12	2.64	
R9	Roof to wall (flat ceiling)	17.14	0.32	5.485	
Linear Thermal bridges: ∑ (L x Ψ) calculated using Appendix K				21.3140	(36)
Point Thermal bridges: ∑χ (W/K) if significant point thermal bridge present and values available				0.0000	(36a)
Total fabric heat loss H = ∑(A × U) + ∑(L × Ψ) +∑χ				74.8799	(37)

Ventilation heat loss calculated monthly

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
25.2595	25.2595	25.2595	25.2595	25.2595	25.2595	25.2595	25.2595	25.2595	25.2595	25.2595	25.2595	(38)

Heat transfer coefficient, W/K

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
100.1394	100.1394	100.1394	100.1394	100.1394	100.1394	100.1394	100.1394	100.1394	100.1394	100.1394	100.1394	(39)

Heat loss parameter (HLP), W/m²K

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1.4405	1.4405	1.4405	1.4405	1.4405	1.4405	1.4405	1.4405	1.4405	1.4405	1.4405	1.4405	(40)

Number of days in month (Table 1a)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
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

Assumed occupancy, N — 2.2343 (42)

if TFA > 13.9, N = 1 + 1.76 x [1 - exp(-0.000349 x (TFA -13.9²))] + 0.0013 x (TFA -13.9)

if TFA < 13.9, N = 1

Hot water usage in litres per day for mixer showers, Vd,shower (from Appendix J)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
61.6822	60.7552	59.4045	56.8200	54.9128	52.7858	51.5768	52.9174	54.3869	56.6706	59.3105	61.4459	(42a)

Hot water usage in litres per day for baths, Vd,bath (from Appendix J)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
26.6486	26.2528	25.6955	24.6679	23.8984	23.0452	22.5844	23.1378	23.7404	24.6533	25.7021	26.5585	(42b)

Hot water usage in litres per day for other uses, Vd,other (from Appendix J)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
37.5119	36.1478	34.7838	33.4197	32.0556	30.6915	30.6915	32.0556	33.4197	34.7838	36.1478	37.5119	(42c)

Annual average hot water usage in litres per day Vd,average (from Appendix J) — 115.6781 (43)

Hot water usage in litres per day for each month Vd,m = (42a) + (42b) + (42c)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
125.8427	123.1559	119.8837	114.9076	110.8668	106.5226	104.8527	108.1108	111.5469	116.1077	121.1605	125.5163	1388.4742	(44)

Energy content of hot water used = 4.18 x Vd,m x nm x DTm / 3600 kWh/month (from Appendix J)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
199.3041	175.3723	184.2568	157.3028	149.2480	130.9819	126.8103	133.8637	137.5485	157.5570	172.6153	196.5281	1921.3890	(45)

Distribution loss (46) = 0.15 x (45)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
29.8956	26.3059	27.6385	23.5954	22.3872	19.6473	19.0215	20.0796	20.6323	23.6336	25.8923	29.4792	(46)

Storage volume (litres) including any solar or WWHRS storage within same vessel — 0.0000 (47)

Water storage loss (or HIU loss)

Enter (50) or (54) in (55) — 0.9558 (55)

Water storage (or HIU) loss calculated for each month (56) = (55) × (41)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
29.6298	26.7624	29.6298	28.6740	29.6298	28.6740	29.6298	29.6298	28.6740	29.6298	28.6740	29.6298	(56)

If the vessel contains dedicated solar storage or dedicated WWHRS storage,
(57)m = (56)m x [(47) – Vs] ÷ (47), else (57)m = (56)m

where Vs is Vww from Appendix G3 or (H12) from Appendix H (as applicable).

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
29.6298	26.7624	29.6298	28.6740	29.6298	28.6740	29.6298	29.6298	28.6740	29.6298	28.6740	29.6298	(57)

Primary circuit loss for each month from Table 3
modified by factor from Table H4 if there is solar Water heating and a cylinder thermostat
Primary circuit loss for each month from Table 3
, although not for DHW-only heat networks)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
23.2624	21.0112	23.2624	22.5120	23.2624	22.5120	23.2624	23.2624	22.5120	23.2624	22.5120	23.2624	(59)

Combi loss for each month from Table 3a, 3b or 3c (enter 0 if not a combi boiler)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
0.0000	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 heat required for Water heating calculated for each month (62) = 0.85 × (45) + (46) + (57) + (59) + (61)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
252.1963	223.1459	237.1490	208.4888	202.1402	182.1679	179.7025	186.7559	188.7345	210.4492	223.8013	249.4203	2544.1520	(62)

WWHRS DHW input calculated using Appendix G (negative quantity) (enter 0 if no WWHRS contribution to Water heating)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(63a)

PV diverter DHW input calculated using Appendix G (negative quantity) (enter 0 if no PV diverter contribution)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(63b)

Solar DHW input calculated using Appendix H (negative quantity) (enter 0 if no solar contribution to Water heating)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(63c)

FGHRS DHW input calculated using Appendix G (negative quantity) (enter 0 if no FGHRS contribution to Water heating)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(63d)

Output from water heater for each month, kWh/month (64) = (62) + (63a) + (63b) + (63c) + (63d)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
252.1963	223.1459	237.1490	208.4888	202.1402	182.1679	179.7025	186.7559	188.7345	210.4492	223.8013	249.4203	2544.1520	(64)

Output from water heater for each month, kWh/month (64) = (62) + (63a) + (63b) + (63c) + (63d)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(64a)

Heat gains from Water heating, kWh/month 0.25 x [0.85 × (45) + (61) + (64a)] + 0.8 x [(46) + (57) + (59)]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
84.8785	75.1203	79.8753	70.3128	68.2349	61.5611	60.7743	63.1196	63.7445	70.9976	75.4042	83.9555	(65)

include (57) m in calculation of (65) m only if hot water store is in the dwelling or hot water is from heat network

5. Internal gains)

Metabolic gains (Table 5), watts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
134.0605	134.0605	134.0605	134.0605	134.0605	134.0605	134.0605	134.0605	134.0605	134.0605	134.0605	134.0605	(66)

Lighting gains (calculated in Appendix L, equation L12 or L12a), also see Table 5

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
22.8249	20.2729	16.4870	12.4817	9.3302	7.8770	8.5114	11.0634	14.8492	18.8545	22.0060	23.4593	(67)

Appliances gains (calculated in Appendix L, equation L16 or L16a), also see Table 5

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
292.7868	295.8250	288.1688	271.8697	251.2950	231.9576	219.0391	216.0009	223.6571	239.9562	260.5309	279.8683	(68)

Cooking gains (calculated in Appendix L, equation L18 or L18a), also see Table 5

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
50.6404	50.6404	50.6404	50.6404	50.6404	50.6404	50.6404	50.6404	50.6404	50.6404	50.6404	50.6404	(69)

Pumps and fans gains (Table 5a)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(70)

Loss e.g. evaporation (negative values) (Table 5

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
-89.3737	-89.3737	-89.3737	-89.3737	-89.3737	-89.3737	-89.3737	-89.3737	-89.3737	-89.3737	-89.3737	-89.3737	(71)

Water heating gains (Table 5)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
114.0840	111.7861	107.3593	97.6566	91.7136	85.5015	81.6860	84.8382	88.5340	95.4269	104.7280	112.8435	(72)

Total internal gains

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
525.0230	523.2112	507.3423	477.3353	447.6660	420.6633	404.5636	407.2297	422.3676	449.5649	482.5922	511.4982	(73)

6. Solar gains

Solar gains in watts, calculated for each month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
131.8611	238.2277	362.1344	509.3546	625.8863	645.7158	612.4032	521.7407	412.5293	273.0472	160.4194	111.2409	(83)

Total gains – internal and solar (watts)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
656.8841	761.4390	869.4767	986.6899	1073.5523	1066.3792	1016.9668	928.9704	834.8969	722.6121	643.0116	622.7391	(84)

7. Mean internal temperature

Temperature during heating periods in the living area from Table 9, Th1 (°C) 21.0000 (85)

Utilisation factor for gains for living area, 1,m (see Table 9a)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.9252	0.8966	0.8480	0.7640	0.6454	0.5091	0.3947	0.4402	0.6281	0.8106	0.9005	0.9328	(86)

Mean internal temperature in living area T1 (follow steps 3 and 4 in Table 9c)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
18.1693	18.5285	19.0996	19.7825	20.3659	20.7395	20.8956	20.8626	20.5571	19.7883	18.8385	18.0714	(87)

Temperature during heating periods in rest of dwelling from Table 9, Th2 (°C)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
19.7324	19.7324	19.7324	19.7324	19.7324	19.7324	19.7324	19.7324	19.7324	19.7324	19.7324	19.7324	(88)

Utilisation factor for gains for rest of dwelling, 2,m (see Table 9a)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.9139	0.8814	0.8254	0.7284	0.5911	0.4304	0.2937	0.3364	0.5525	0.7732	0.8831	0.9226	(89)

Mean internal temperature in the rest of dwelling T2
follow steps 5 and 6 in Table 9c, if two main heating systems see further notes in Table 9c)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
16.5085	16.9550	17.6604	18.4837	19.1534	19.5448	19.6814	19.6601	19.3818	18.5187	17.3541	16.3863	(90)

Living area fraction 0.4687 (91)

Mean internal temperature (for the whole dwelling)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
17.2868	17.6925	18.3349	19.0924	19.7217	20.1047	20.2505	20.2236	19.9326	19.1137	18.0498	17.1760	(92)

Apply adjustment to the mean internal temperature from Table 4e, where appropriate

Adjusted mean internal temperature:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
17.1368	17.5425	18.1849	18.9424	19.5717	19.9547	20.1005	20.0736	19.7826	18.9637	17.8998	17.0260	(93)

8. Space heating requirement

Set Ti to the mean internal temperature obtained at step 11 of Table 9b, so that Ti,m=(93)m and re-calculate the utilisation factor for gains using Table 9a

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.8820	0.8469	0.7914	0.7027	0.5836	0.4451	0.3244	0.3659	0.5558	0.7457	0.8496	0.8919	(94)

Useful gains, mGm , W = (94)m x (84)m

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
579.3917	644.8934	688.0834	693.3896	626.5152	474.6270	329.8973	339.9408	464.0195	538.8437	546.3289	555.4398	(95)

Monthly average external temperature from Table U1

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
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 for mean internal temperature Lm, W = (39)m x [(93)m– (96)m]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1285.4736	1266.0085	1170.1189	1005.6410	788.2624	536.2186	350.5330	367.8743	569.0545	837.5380	1081.4841	1284.3920	(97)

Space heating requirement for each month 0.024 x [(97)m – (95)m] x (41)m

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
525.3250	417.3893	358.6344	224.8210	120.3399	0.0000	0.0000	0.0000	0.0000	222.2285	385.3117	542.3404	(98a)

Solar space heating calculated using Appendix H (negative quantity)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(98b)

Space heating requirement for each month after solar contribution

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
525.3250	417.3893	358.6344	224.8210	120.3399	0.0000	0.0000	0.0000	0.0000	222.2285	385.3117	542.3404	(98c)

Space heating requirement in kWh/m²/year (98c) ÷ (4) = 40.2260 (99)

9a. Energy requirements

Fraction of space heat from secondary/supplementary system,	0.0000	(201)
Fraction of space heat from Main System(s),	1.0000	(202)
Fraction of main heating from Main System 2,	0.0000	(203)
Fraction of total space heat from Main System 1,	1.0000	(204)
Fraction of total space heat from Main System 2,	0.0000	(205)
Efficiency of main space heating system 1 (in %),	100.0000	(206)
Efficiency of main space heating system 2 (in %),	0.0000	(207)
Efficiency of secondary/supplementary heating system, %,	0.0000	(208)
Cooling System Seasonal Energy Efficiency Ratio,	0.0000	(209)

Space heating requirement (calculated above),

Space heating fuel (main heating system 1), kWh/month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
525.3250	417.3893	358.6344	224.8210	120.3399	0.0000	0.0000	0.0000	0.0000	222.2285	385.3117	542.3404	(211)

Space heating fuel (main heating system 2), kWh/month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(213)

Space heating fuel (secondary), kWh/month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
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)

Efficiency of water heater

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
280.5000	280.5000	280.5000	280.5000	280.5000	280.5000	280.5000	280.5000	280.5000	280.5000	280.5000	280.5000	(217)

Fuel for Water heating

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
89.9095	79.5529	84.5451	74.3275	72.0643	64.9440	64.0651	66.5797	67.2850	75.0265	79.7866	88.9199	907.0061	(219)

Space Cooling

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
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)

Space heating fuel used, Main System 1

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
525.3250	417.3893	358.6344	224.8210	120.3399	0.0000	0.0000	0.0000	0.0000	222.2285	385.3117	542.3404	(211)

Space heating fuel used, Main System 2

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(213)

Space heating fuel used, secondary

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
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 fuel used

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
89.9095	79.5529	84.5451	74.3275	72.0643	64.9440	64.0651	66.5797	67.2850	75.0265	79.7866	88.9199	(219)

Electricity for instantaneous electric shower(s)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(64a)

Space cooling fuel used

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
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)

Electricity for pumps, fans and electric keep-hot

Mechanical vent fans - balanced, extract or positive input from outside	21.9852	(230a)
warm air heating system fans	0.0000	(230b)
Heating circulation pump or water pump within warm air heating unit	0.0000	(230c)
Oil boiler auxiliary (oil pump, flue fan, etc; excludes circulation pump)	0.0000	(230d)
Gas boiler auxiliary (flue fan, etc; excludes circulation pump)	0.0000	(230e)
Maintaining electric keep-hot facility for gas combi boiler	0.0000	(230f)
Pump for solar Water heating	0.0000	(230g)
Pump for storage WWHRS	0.0000	(230h)
Total electricity for the above	21.9852	(231)
Electricity for lighting	161.2380	(232)

Energy saving/generation technologies (Appendices M, N) - Energy used in dwelling

Electricity generated by PVs (Appendix M) (negative quantity)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
38.1330	57.3888	86.4897	99.0395	103.8894	84.3263	83.2446	78.0126	68.4186	64.9710	42.8108	32.6330	839.3575	(233a)

Electricity generated by wind turbines (Appendix M) (negative quantity)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(234a)

Electricity generated by hydro-electric generators

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(235a)

Electricity used or net electricity generated by micro-CHP

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(235c)

Energy saving/generation technologies (Appendices M, N) - Energy exported

Electricity generated by PVs (Appendix M) (negative quantity)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
10.0482	22.6078	48.6362	80.3663	116.2318	131.4509	129.9513	109.2825	79.5472	36.9948	14.2603	7.7390	787.1164	(233b)

Electricity generated by wind turbines (Appendix M) (negative quantity)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(234b)

Electricity generated by hydro-electric generators

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(235b)

Electricity used or net electricity generated by micro-CHP

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(235d)

Total delivered energy for all uses	2260.1456	(238)

11a. SAP Rating

Energy cost deflator	0.3600	(256)
Energy cost factor (ECF)	1.4413	(257)
SAP rating	76.6359	(258)

12a. CO_2 Emissions

	Energy KWh/year	Emission factor kg	Emissions kg CO_2/year	

Space heating - Main System 1	2796.3902	0.1545	432.1222	(261)
Space heating - Main System 2	0.0000	0.0000	0.0000	(262)
Space heating - secondary	0.0000	0.0000	0.0000	(263)
Energy for Water heating	907.0061	0.1409	127.7760	(264)
Energy for instantaneous electric shower(s)	0.0000	0.0000	0.0000	(264a)
Space and Water heating			559.8982	(265)
Space cooling	0.0000	0.0000	0.0000	(266)
Electricity for pumps, fans and electric keep	21.9852	0.1387	3.0496	(267)
Electricity for lighting	161.2380	0.1443	23.2716	(268)
Energy Saved			209.4792	(269)
Total CO_2, kg/year			376.7402	(272)
Dwelling CO_2 Emission Rate			5.4194	(273)
EI rating			95.5916	(274)

13a. Primary Energy

	Energy KWh/year	Emission factor kg	Emissionsr kg CO_2/year	
Space heating - Main System 1	2796.3902	1.5721	4396.1935	(275)
Space heating - Main System 2	0.0000	0.0000	0.0000	(276)
Space heating - secondary	0.0000	0.0000	0.0000	(277)
Energy for Water heating	907.0061	1.5209	1379.4742	(278)
Energy for instantaneous electric shower(s)	0.0000	0.0000	0.0000	(278a)
Space and Water heating			5775.6677	(279)
Space cooling	0.0000	0.0000	0.0000	(280)
Electricity for pumps, fans and electric keep	21.9852	1.5128	33.2591	(281)
Electricity for lighting	161.2380	1.5338	247.3122	(282)
energy saved or generated	0.0000	0.0000	1610.9698	
Appendix Q items				
Appendix Q items				
Total PE, kWh/year			4445.2691	(286)
Dwelling PE Rate			63.9451	(287)