SAP Worksheet

SAP 10.2

Plot: 007
Housetype: Plot 07

Issued on Date	17/02/2026	DER	2.51	TER	8.99	%	72.08
SAP Rating	88 (B)	DFEE	35.97	TFEE	39.01	%	7.79
Environmental Rating	97 (A)	DPER	26.00	TPER	46.97	%	44.65

Assessor Details	Connor Campbell - KAZN000009 - Briary Energy

1. Dimensions

	Area(m^2)		Av. Height(m)		Volume(m^3)	
Ground Floor	71.0600	(1a) x	2.5600	(2a) =	181.8500	(3a)
First Floor	64.2400	(1b) x	2.7000	(2b) =	173.6500	(3b)
2nd Floor	37.5600	(1c) x	2.3800	(2c) =	89.5600	(3c)
Total floor area TFA					172.8600	(4)
Dwelling volume					445.0500	(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 $kJ/m^2 \cdot K$	A X K kJ/K	
Front			2.15	1.4	3.01			(26)
L Side			2.15	1.3	2.79			(26a)
Front			7.12	1.24	8.8			(27)
L Side			2.84	1.24	3.5			(27)
R Side			1.86	1.24	2.3			(27)
Rear			11.91	1.24	14.72			(27)
Front			3.79	1.24	4.68			(27)
L Side			0.93	1.24	1.15			(27)
L Side			3.65	1.24	4.51			(27)
L Side			1.35	1.24	1.66			(27a)

Rear			10.48	1.24	12.95			(27a)
Flr - Ground			71.06	0.12	8.17	110	7816.16	(28a)
Wl - Brick	130.04	31.67	98.37	0.18	17.71	60	5901.9	(29a)
Wl - Tile	10.42	4.72	5.7	0.18	1.03	60	341.7	(29a)
Wl - Stud Ashlar	25.13		25.13	0.11	2.71	9	226.13	(29a)
Rf - Ins Rafter	31.93	11.82	20.11	0.15	3.02	9	181.01	(30)
Rf - Flat Bay	2.14		2.14	0.15	0.32	9	19.24	(30)
Rf - Flat Roof	20.79		20.79	0.15	3.12	9	187.12	(30)
Rf - Ashlar behind Stud	24.55		24.55	0.11	2.65	9	220.94	(30)
Total area							316.05	(31)
Party Wall	72.98		72.98			110	8027.47	(32)
Stud	16.03		16.03			9	144.28	(32c)
Stud	107.36		107.36			9	966.24	(32c)
Stud	59.44		59.44			9	534.96	(32c)
Block	87.48		87.48			75	6560.95	(32c)
Block	61.78		61.78			75	4633.68	(32c)
Internal Floor 1	101.8		101.8			9	916.23	(32d)
Internal Ceiling 1	101.8		101.8			9	916.23	(32e)
Fabric heat loss, W/K = ∑ (A x U)							98.7954	(33)
Heat capacity Cm = ∑(A x k)							37594.2365	(34)
Thermal mass parameter (TMP = Cm ÷ TFA) in kJ/m²K							217.4850	(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).							217.4850 217.4850 217.4850	

Thermal Bridging

Ref	Junction detail	Length	Thermal transmittance	Total HTB	
E2	Other lintels (including other steel lintels	24.64	0.064	1.577	
E3	Sill	17.51	0.021	0.368	
E4	Jamb	41.68	0.016	0.667	
E5	Ground floor (normal)	27.43	0.112	3.072	
E6	Intermediate floor within a dwelling	22.06	0.002	0.044	
E11	Eaves (insulation at rafter level)	22.74	0.017	0.387	
E13	Gable (insulation at rafter level)	5.23	0.062	0.324	
E16	Corner (normal)	22	0.054	1.188	
E17	Corner (inverted internal area > external area)	13.13	-0.097	-1.274	
E18	Party wall between dwellings	10.52	0.035	0.368	
E24	Eaves (insulation at ceiling level - inverted	2.53	0.15	0.379	
P1	Ground floor	11.84	0.108	1.278	
P2	Intermediate floor within a dwelling	12.82	0	0	
P4	Roof (insulation at ceiling level)	5.07	0.101	0.512	
P5	Roof (insulation at rafter level)	8.75	0.046	0.402	
R1	Head of roof window	6.62	0.058	0.384	
R2	Sill of roof window	6.62	0.049	0.324	
R3	Jamb of roof window	14.38	0.058	0.834	
R4	Ridge (vaulted ceiling)	6.94	0.12	0.833	
R5	Ridge (inverted)	1.36	0.12	0.163	
R7	Flat ceiling (inverted)	13.27	0.12	1.593	
Linear Thermal bridges: ∑ (L x Ψ) calculated using Appendix K				13.4250	(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				112.2204	(37)

Ventilation heat loss calculated monthly

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
73.4341	73.4341	73.4341	73.4341	73.4341	73.4341	73.4341	73.4341	73.4341	73.4341	73.4341	73.4341	(38)

Heat transfer coefficient, W/K

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
185.6545	185.6545	185.6545	185.6545	185.6545	185.6545	185.6545	185.6545	185.6545	185.6545	185.6545	185.6545	(39)

Heat loss parameter (HLP), W/m²K

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1.0740	1.0740	1.0740	1.0740	1.0740	1.0740	1.0740	1.0740	1.0740	1.0740	1.0740	1.0740	(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 — 2.9664 (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	
73.9564	72.8450	71.2254	68.1267	65.8399	63.2897	61.8402	63.4475	65.2094	67.9475	71.1128	73.6730	(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	
31.9269	31.4527	30.7850	29.5539	28.6320	27.6098	27.0577	27.7207	28.4426	29.5364	30.7929	31.8190	(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	
45.0088	43.3721	41.7354	40.0987	38.4620	36.8254	36.8254	38.4620	40.0987	41.7354	43.3721	45.0088	(42c)

Annual average hot water usage in litres per day Vd,average (from Appendix J) — 138.7036 (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	
150.8921	147.6698	143.7458	137.7793	132.9339	127.7248	125.7232	129.6302	133.7507	139.2193	145.2778	150.5008	1664.8477	(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	
238.9761	210.2798	220.9320	188.6129	178.9546	157.0526	152.0513	160.5093	164.9280	188.9193	206.9749	235.6478	2303.8386	(45)

Distribution loss (46) = 0.15 x (45)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
35.8464	31.5420	33.1398	28.2919	26.8432	23.5579	22.8077	24.0764	24.7392	28.3379	31.0462	35.3472	(46)

Storage volume (litres) including any solar or WWHRS storage within same vessel 230.2000 (47)

Water storage loss (or HIU loss)

Enter (50) or (54) in (55) 0.8532 (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	
26.4492	23.8896	26.4492	25.5960	26.4492	25.5960	26.4492	26.4492	25.5960	26.4492	25.5960	26.4492	(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	
26.4492	23.8896	26.4492	25.5960	26.4492	25.5960	26.4492	26.4492	25.5960	26.4492	25.5960	26.4492	(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	
288.6877	255.1806	270.6436	236.7209	228.6662	205.1606	201.7629	210.2209	213.0360	238.6309	255.0829	285.3594	2889.1526	(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	
288.6877	255.1806	270.6436	236.7209	228.6662	205.1606	201.7629	210.2209	213.0360	238.6309	255.0829	285.3594	2889.1526	(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	
119.2288	105.8387	113.2292	101.2002	99.2717	90.7064	90.3263	93.1386	93.3250	102.5850	107.3055	118.1222	(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	
177.9832	177.9832	177.9832	177.9832	177.9832	177.9832	177.9832	177.9832	177.9832	177.9832	177.9832	177.9832	(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	
41.6547	36.9973	30.0882	22.7787	17.0274	14.3752	15.5329	20.1903	27.0994	34.4089	40.1602	42.8124	(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	
514.1109	519.4458	506.0021	477.3821	441.2545	407.2996	384.6157	379.2808	392.7245	421.3445	457.4721	491.4270	(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	
55.7647	55.7647	55.7647	55.7647	55.7647	55.7647	55.7647	55.7647	55.7647	55.7647	55.7647	55.7647	(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	
-118.6555	-118.6555	-118.6555	-118.6555	-118.6555	-118.6555	-118.6555	-118.6555	-118.6555	-118.6555	-118.6555	-118.6555	(71)

Water heating gains (Table 5)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
160.2538	157.4980	152.1897	140.5558	133.4297	125.9811	121.4064	125.1863	129.6180	137.8830	149.0355	158.7664	(72)

Total internal gains

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
831.1118	829.0335	803.3725	755.8091	706.8040	662.7483	636.6474	639.7498	664.5343	708.7288	761.7603	808.0982	(73)

6. Solar gains

Solar gains in watts, calculated for each month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
412.6569	761.5026	1195.4015	1734.8898	2172.2605	2256.6169	2134.0272	1792.8818	1380.1226	883.2135	504.9909	346.1813	(83)

Total gains – internal and solar (watts)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1243.7688	1590.5361	1998.7740	2490.6988	2879.0645	2919.3652	2770.6746	2432.6317	2044.6569	1591.9423	1266.7512	1154.2795	(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	
0.9921	0.9760	0.9236	0.7809	0.5774	0.4036	0.2942	0.3495	0.5993	0.8953	0.9824	0.9944	(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	
20.4639	20.1784	20.4894	20.7761	20.9010	20.9296	20.9339	20.9328	20.9055	20.6687	20.2313	20.0512	(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	
20.0221	20.0221	20.0221	20.0221	20.0221	20.0221	20.0221	20.0221	20.0221	20.0221	20.0221	20.0221	(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	
0.9899	0.9697	0.9055	0.7409	0.5233	0.3434	0.2291	0.2760	0.5243	0.8626	0.9767	0.9928	(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	
19.5342	19.0837	19.4651	19.7901	19.9126	19.9356	19.9382	19.9377	19.9199	19.6844	19.1535	18.9613	(90)

Living area fraction 0.1037 (91)

Mean internal temperature (for the whole dwelling)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
19.6306	19.1972	19.5714	19.8924	20.0151	20.0387	20.0415	20.0410	20.0222	19.7865	19.2653	19.0743	(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	
19.4806	19.0472	19.4214	19.7424	19.8651	19.8887	19.8915	19.8910	19.8722	19.6365	19.1153	18.9243	(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	
0.9884	0.9614	0.8921	0.7283	0.5144	0.3351	0.2204	0.2661	0.5122	0.8470	0.9694	0.9903	(94)

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1229.3666	1529.1876	1783.1264	1814.0882	1480.9197	978.1885	610.7118	647.2239	1047.3305	1348.4007	1228.0141	1143.0953	(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	
2818.3538	2626.4976	2398.9119	2012.9368	1515.8917	981.8784	611.0746	648.1127	1071.6269	1677.6664	2230.6940	2733.6366	(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	
1182.2065	737.3923	458.1445	143.1709	26.0192	0.0000	0.0000	0.0000	0.0000	244.9737	721.9295	1183.3627	(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	
1182.2065	737.3923	458.1445	143.1709	26.0192	0.0000	0.0000	0.0000	0.0000	244.9737	721.9295	1183.3627	(98c)

Space heating requirement in kWh/m²/year (98c) ÷ (4) = 27.1736 (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 %),	315.5980	(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	
374.5925	233.6492	145.1671	45.3650	8.2444	0.0000	0.0000	0.0000	0.0000	77.6221	228.7497	374.9588	(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	
301.7615	301.7615	301.7615	301.7615	301.7615	301.7615	301.7615	301.7615	301.7615	301.7615	301.7615	301.7615	(217)

Fuel for Water heating

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
95.6675	84.5637	89.6879	78.4464	75.7771	67.9877	66.8617	69.6646	70.5975	79.0793	84.5313	94.5646	957.4293	(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	
374.5925	233.6492	145.1671	45.3650	8.2444	0.0000	0.0000	0.0000	0.0000	77.6221	228.7497	374.9588	(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	
95.6675	84.5637	89.6879	78.4464	75.7771	67.9877	66.8617	69.6646	70.5975	79.0793	84.5313	94.5646	(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 77.6136 (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 77.6136 (231)
Electricity for lighting 294.2539 (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	
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	(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	
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	(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	2817.6454	(238)

11a. SAP Rating

Energy cost deflator	0.3600	(256)
Energy cost factor (ECF)	0.7678	(257)
SAP rating	87.5544	(258)

12a. CO_2 Emissions

	Energy KWh/year	Emission factor kg	Emissions kg CO_2/year	
Space heating - Main System 1	1488.3487	0.1575	234.4445	(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	957.4293	0.1410	134.9952	(264)
Energy for instantaneous electric shower(s)	0.0000	0.0000	0.0000	(264a)
Space and Water heating			369.4398	(265)
Space cooling	0.0000	0.0000	0.0000	(266)
Electricity for pumps, fans and electric keep	77.6136	0.1387	10.7660	(267)
Electricity for lighting	294.2539	0.1443	42.4699	(268)
Total CO_2, kg/year			422.6756	(272)
Dwelling CO_2 Emission Rate			2.4452	(273)
EI rating			97.4002	(274)

13a. Primary Energy

	Energy KWh/year	Emission factor kg	Emissionsr kg CO_2/year	
Space heating - Main System 1	1488.3487	1.5831	2356.1597	(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	957.4293	1.5214	1456.5973	(278)
Energy for instantaneous electric shower(s)	0.0000	0.0000	0.0000	(278a)
Space and Water heating			3812.7569	(279)
Space cooling	0.0000	0.0000	0.0000	(280)
Electricity for pumps, fans and electric keep	77.6136	1.5128	117.4138	(281)
Electricity for lighting	294.2539	1.5338	451.3364	(282)
Appendix Q items				
Appendix Q items				
Total PE, kWh/year			4381.5072	(286)
Dwelling PE Rate			25.3473	(287)