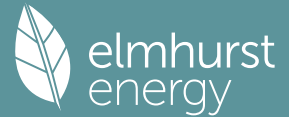


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Plot Reference	UNIT 07			Issued on Date	08/07/2026
Assessment Reference	001	Plot Type Ref	UNIT 07		
Plot Address	UNIT 07, Stoney Wood Quarter, 34 The Fairway, LONDON, NW7 3HS			SAP Version	10.2
SAP Rating	81 B	DER	3.90	TER	16.34
Environmental	97 A	% DER < TER			76.13
CO ₂ Emissions (t/year)	0.26	DFEE	37.79	TFEE	43.85
Compliance Check	See BREL	% DFEE < TFEE			13.81
% DPER < TPER	52.90	DPER	41.57	TPER	88.26
Assessor Details	Mr. Ondrej Gajdos			Assessor ID	W452-0001
Client					

SAP 10 WORKSHEET FOR New Build (As Designed) (Version 10.2, February 2022)
CALCULATION OF FABRIC ENERGY EFFICIENCY

1. Overall dwelling characteristics

	Area (m ²)	Storey height (m)	Volume (m ³)
Main dwelling			
Basement floor	39.1000 (1a)	x 2.9000 (2a)	= 113.3900 (1a) - (3a)
Ground floor	32.6000 (1b)	x 2.8000 (2b)	= 91.2800 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	71.7000		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	= 204.6700 (5)

2. Ventilation rate

	m ³ per hour
Number of open chimneys	0 * 80 = 0.0000 (6a)
Number of open flues	0 * 20 = 0.0000 (6b)
Number of chimneys / flues attached to closed fire	0 * 10 = 0.0000 (6c)
Number of flues attached to solid fuel boiler	0 * 20 = 0.0000 (6d)
Number of flues attached to other heater	0 * 35 = 0.0000 (6e)
Number of blocked chimneys	0 * 20 = 0.0000 (6f)
Number of intermittent extract fans	3 * 10 = 30.0000 (7a)
Number of passive vents	0 * 10 = 0.0000 (7b)
Number of flueless gas fires	0 * 40 = 0.0000 (7c)
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =	Air changes per hour 30.0000 / (5) = 0.1466 (8)
Pressure test	Yes
Pressure Test Method	Blower Door
Measured/design AP50	3.0000 (17)
Infiltration rate	0.2966 (18)
Number of sides sheltered	4 (19)
Shelter factor	(20) = 1 - [0.075 x (19)] = 0.7000 (20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) = 0.2076 (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	0.2647	0.2595	0.2543	0.2284	0.2232	0.1972	0.1972	0.1920	0.2076	0.2232	0.2336	0.2439 (22b)
If exhaust air heat pump using Appendix N, (23b) = (23a) x Fmv (equation (N5)), otherwise (23b) = (23a)												0.0000 (23b)
If balanced with heat recovery: efficiency in % allowing for in-use factor (from Table 4h) =												0.0000 (23c)
Effective ac	0.5350	0.5337	0.5323	0.5261	0.5249	0.5194	0.5194	0.5184	0.5215	0.5249	0.5273	0.5298 (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
Main dwelling							
dl			1.8900	1.0000	1.8900		(26)
l			30.1500	0.7940	23.9378		(27)
basement floor			39.1000	0.1000	3.9100	110.0000	4300.9998 (28)
exposed wall	79.3500	32.0400	47.3100	0.1500	7.0965	60.0000	2838.5999 (29a)
basement wall	62.0600		62.0600	0.1500	9.3090	9.0000	558.5400 (29a)
Total net area of external elements Aum(A, m ²)			180.5100				(31)
Fabric heat loss, W/K = Sum (A x U)			(26)...(30) + (32) =		46.1433		(33)
Main dwelling							
pw			28.5000	0.0000	0.0000	110.0000	3135.0000 (32)
pc			35.9000			30.0000	1077.0000 (32b)
iw			89.9600			9.0000	809.6400 (32c)
if			32.6000			18.0000	586.8000 (32d)
ic			32.6000			9.0000	293.4000 (32e)

Heat capacity Cm = Sum(A x k)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m²K
List of Thermal Bridges

(28)...(30) + (32) + (32a)...(32e) = 13599.9797 (34)
189.6789 (35)

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	36.1366	36.0448	35.9547	35.5317	35.4526	35.0841	35.0841	35.0159	35.2260	35.4526	35.6127	35.7800 (38)
Heat transfer coeff	90.8400	90.7481	90.6580	90.2350	90.1559	89.7875	89.7875	89.7192	89.9294	90.1559	90.3160	90.4834 (39)
Average = Sum(39)m / 12 =												90.2347
HLP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
HLP (average)	1.2669	1.2657	1.2644	1.2585	1.2574	1.2523	1.2523	1.2513	1.2542	1.2574	1.2596	1.2620 (40)
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31

Assumed occupancy												2.2867 (42)
Hot water usage for mixer showers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (42a)
Hot water usage for baths	27.0260	26.6246	26.0594	25.0172	24.2369	23.3716	22.9042	23.4654	24.0766	25.0024	26.0661	26.9346 (42b)
Hot water usage for other uses	38.0479	36.6643	35.2808	33.8972	32.5136	31.1301	31.1301	32.5136	33.8972	35.2808	36.6643	38.0479 (42c)
Average daily hot water use (litres/day)												59.6463 (43)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Daily hot water use	65.0738	63.2889	61.3401	58.9144	56.7505	54.5016	54.0343	55.9791	57.9738	60.2832	62.7304	64.9825 (44)
Energy content (annual)	103.0611	90.1226	94.2775	80.6509	76.3971	67.0161	65.3498	69.3138	71.4874	81.8037	89.3709	101.7469 (45)
Distribution loss (46)m = 0.15 x (45)m										Total = Sum(45)m =		990.5978
Water storage loss (or HIU 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 (46)
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)
Primary 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 (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 heat required for water heating calculated for each month	87.6019	76.6042	80.1359	68.5533	64.9375	56.9637	55.5473	58.9167	60.7643	69.5332	75.9653	86.4848 (62)
WWHRS	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	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 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 (63c)
FGHRS	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 w/h	87.6019	76.6042	80.1359	68.5533	64.9375	56.9637	55.5473	58.9167	60.7643	69.5332	75.9653	86.4848 (64)
12Total per year (kWh/year)									Total per year (kWh/year) = Sum(64)m =			842.0081 (64)
Electric shower(s)	50.0999	44.6395	48.7446	46.5163	47.3892	45.2047	46.7115	47.3892	46.5163	48.7446	47.8280	50.0999 (64a)
												569.8838 (64a)
Heat gains from water heating, kWh/month	34.4255	30.3109	32.2201	28.7674	28.0817	25.5421	25.5647	26.5765	26.8202	29.5694	30.9483	34.1462 (65)

Metabolic gains (Table 5), Watts												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(66)m	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	101.4983	112.3731	101.4983	104.8816	101.4983	104.8816	101.4983	101.4983	104.8816	101.4983	104.8816	101.4983 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	201.2318	203.3199	198.0578	186.8555	172.7145	159.4240	150.5451	148.4570	153.7190	164.9214	179.0624	192.3529 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334 (69)
Pumps, fans	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)
Losses e.g. evaporation (negative values) (Table 5)	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672 (71)
Water heating gains (Table 5)	46.2708	45.1055	43.3066	39.9547	37.7442	35.4751	34.3612	35.7211	37.2502	39.7439	42.9838	45.8954 (72)
Total internal gains	406.3010	418.0988	400.1629	388.9920	369.2572	357.0809	343.7048	342.9765	353.1511	363.4638	384.2279	397.0468 (73)

[Jan											Area		Solar flux		g		FF		Access		Gains	
											m2		Table 6a		Table 6b		Table 6c		factor		W	
											W/m2								Table 6d			
Southwest											20.9600		36.7938		0.5300		0.7000		0.7700		198.2775 (79)	
Northwest											9.1900		11.2829		0.5300		0.7000		0.7700		26.6591 (81)	
Solar gains	224.9366	392.0052	559.8793	733.1418	857.1645	866.7943	829.0952	734.1488	619.5008	439.5911	271.0347	191.4554	(84)									
Total gains	631.2376	810.1040	960.0422	1122.1338	1226.4217	1223.8752	1172.7999	1077.1253	972.6518	803.0548	655.2627	588.5022	(83)									

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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	41.5871	41.6292	41.6706	41.8659	41.9027	42.0746	42.0746	42.1066	42.0082	41.9027	41.8284	41.7510
alpha	3.7725	3.7753	3.7780	3.7911	3.7935	3.8050	3.8050	3.8071	3.8005	3.7935	3.7886	3.7834
util living area	0.9783	0.9489	0.8942	0.7803	0.6227	0.4551	0.3333	0.3770	0.5906	0.8479	0.9574	0.9829 (86)
MIT	19.3808	19.7533	20.1785	20.6101	20.8652	20.9682	20.9924	20.9880	20.9169	20.5369	19.8676	19.3030 (87)
Th 2	19.8668	19.8678	19.8688	19.8735	19.8744	19.8784	19.8784	19.8792	19.8768	19.8744	19.8726	19.8707 (88)
util rest of house	0.9730	0.9373	0.8717	0.7392	0.5629	0.3808	0.2500	0.2879	0.5100	0.8071	0.9457	0.9787 (89)
MIT 2	18.4269	18.7893	19.1931	19.5836	19.7902	19.8641	19.8763	19.8756	19.8345	19.5352	18.9100	18.3534 (90)
Living area fraction	fLA = Living area / (4) =											
MIT	18.8168	19.1833	19.5958	20.0031	20.2295	20.3153	20.3324	20.3301	20.2768	19.9445	19.3013	18.7415 (92)
Temperature adjustment	0.0000											
adjusted MIT	18.8168	19.1833	19.5958	20.0031	20.2295	20.3153	20.3324	20.3301	20.2768	19.9445	19.3013	18.7415 (93)

8. Space heating requirement												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.9666	0.9289	0.8655	0.7443	0.5825	0.4102	0.2840	0.3242	0.5398	0.8099	0.9383	0.9731 (94)
Useful gains	610.1813	752.4793	830.8854	835.1663	714.3320	502.0764	333.0828	349.2151	525.0723	650.3981	614.8424	572.6685 (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	1318.7016	1296.1794	1187.2395	1001.8848	768.9817	513.1581	335.1252	352.6096	555.4768	842.4629	1101.9756	1315.7632 (97)
Space heating kWh	527.1391	365.3664	265.1274	120.0374	40.6593	0.0000	0.0000	0.0000	0.0000	142.8962	350.7359	552.8625 (98a)
Space heating requirement - total per year (kWh/year)	2364.8242											
Solar heating kWh	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)
Solar heating contribution - total per year (kWh/year)	0.0000											
Space heating kWh	527.1391	365.3664	265.1274	120.0374	40.6593	0.0000	0.0000	0.0000	0.0000	142.8962	350.7359	552.8625 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)	2364.8242											
Space heating per m2	(98c) / (4) = 32.9822 (99)											

8c. Space cooling requirement												
Calculated for June, July and August. See Table 10b												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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
Heat loss rate W	0.0000	0.0000	0.0000	0.0000	0.0000	844.0022	664.4273	681.8663	0.0000	0.0000	0.0000	0.0000 (100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.9355	0.9634	0.9493	0.0000	0.0000	0.0000	0.0000 (101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	789.5959	640.0848	647.2731	0.0000	0.0000	0.0000	0.0000 (102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	1392.1787	1334.4639	1224.6081	0.0000	0.0000	0.0000	0.0000 (103)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	433.8596	516.6181	429.5373	0.0000	0.0000	0.0000	0.0000 (104)
Cooled fraction	fc = cooled area / (4) =											
Intermittency factor (Table 10b)	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500 (105)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	108.4649	129.1545	107.3843	0.0000	0.0000	0.0000	0.0000 (107)
Space cooling requirement	345.0037 (107)											
Energy for space heating	32.9822 (99)											
Energy for space cooling	4.8118 (108)											
Total	37.7940 (109)											
Fabric Energy Efficiency (DFEE)	37.8 (109)											

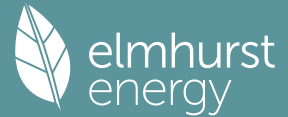
SAP 10 WORKSHEET FOR New Build (As Designed) (Version 10.2, February 2022)

CALCULATION OF TARGET FABRIC ENERGY EFFICIENCY

1. Overall dwelling characteristics												
Main dwelling	Area (m2)	Storey height (m)	Volume (m3)									
Basement floor	39.1000 (1a)	x	2.9000 (2a)	=	113.3900 (1a) - (3a)							
Ground floor	32.6000 (1b)	x	2.8000 (2b)	=	91.2800 (1b) - (3b)							
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	71.7000				(4)							
Dwelling volume	(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =				204.6700 (5)							

2. Ventilation rate												
												m3 per hour
Number of open chimneys	0 * 80 =											0.0000 (6a)
Number of open flues	0 * 20 =											0.0000 (6b)
Number of chimneys / flues attached to closed fire	0 * 10 =											0.0000 (6c)
Number of flues attached to solid fuel boiler	0 * 20 =											0.0000 (6d)
Number of flues attached to other heater	0 * 35 =											0.0000 (6e)
Number of blocked chimneys	0 * 20 =											0.0000 (6f)
Number of intermittent extract fans	3 * 10 =											30.0000 (7a)
Number of passive vents	0 * 10 =											0.0000 (7b)

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Number of flueless gas fires

0 * 40 = 0.0000 (7c)

Infiltration due to chimneys, flues and fans = (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =
Pressure test
Pressure Test Method
Measured/design AP50
Infiltration rate
Number of sides sheltered

Air changes per hour
30.0000 / (5) = 0.1466 (8)
Yes
Blower Door
5.0000 (17)
0.3966 (18)
4 (19)

Shelter factor (20) = 1 - [0.075 x (19)] = 0.7000 (20)
Infiltration rate adjusted to include shelter factor (21) = (18) x (20) = 0.2776 (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	0.3539	0.3470	0.3401	0.3054	0.2984	0.2637	0.2637	0.2568	0.2776	0.2984	0.3123	0.3262 (22b)
If exhaust air heat pump using Appendix N, (23b) = (23a) x Fmv (equation (N5)), otherwise (23b) = (23a)												0.0000 (23b)
If balanced with heat recovery: efficiency in % allowing for in-use factor (from Table 4h) =												0.0000 (23c)
Effective ac	0.5626	0.5602	0.5578	0.5466	0.5445	0.5348	0.5348	0.5330	0.5385	0.5445	0.5488	0.5532 (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
Main dwelling							
TER Opaque door			1.8900	1.0000	1.8900		(26)
TER Opening Type			16.0300	1.1450	18.3550		(27)
basement floor			39.1000	0.1300	5.0830		(28)
exposed wall	79.3500	17.9200	61.4300	0.1800	11.0574		(29a)
basement wall	62.0600		62.0600	0.1800	11.1708		(29a)
Total net area of external elements Aum(A, m2)			180.5100				(31)
Fabric heat loss, W/K = Sum (A x U)					47.5562		(33)
Main dwelling							
pw			28.5000	0.0000	0.0000		(32)

Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K 189.6789 (35)

List of Thermal Bridges

K1 Element	Length	Psi-value	Total
E2 Other lintels (including other steel lintels)	12.3500	0.0500	0.6175
E3 Sill	11.4500	0.0500	0.5725
E4 Jamb	35.2000	0.0500	1.7600
E5 Ground floor (normal)	6.7000	0.1600	1.0720
E22 Basement floor	21.3000	0.0700	1.4910
E6 Intermediate floor within a dwelling	6.1000	0.0000	0.0000
E7 Party floor between dwellings (in blocks of flats)	21.5000	0.0700	1.5050
E16 Corner (normal)	11.5000	0.0900	1.0350
E17 Corner (inverted - internal area greater than external area)	5.7000	-0.0900	-0.5130
E18 Party wall between dwellings	11.3000	0.0600	0.6780
E25 Staggered party wall between dwellings	5.7000	0.0600	0.3420

Thermal bridges (Sum(L x Psi) calculated using Appendix K) 8.5600 (36)

Point Thermal bridges

Total fabric heat loss (33) + (36) + (36a) = 56.1162 (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	38.0012	37.8369	37.6759	36.9196	36.7781	36.1193	36.1193	35.9973	36.3730	36.7781	37.0643	37.3636 (38)
Heat transfer coeff	94.1174	93.9531	93.7921	93.0357	92.8942	92.2355	92.2355	92.1135	92.4892	92.8942	93.1805	93.4798 (39)
Average = Sum(39)m / 12 =												93.0351

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
HLP	1.3127	1.3104	1.3081	1.2976	1.2956	1.2864	1.2864	1.2847	1.2899	1.2956	1.2996	1.3038 (40)
HLP (average)												1.2976
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31

4. Water heating energy requirements (kWh/year)

Assumed occupancy												2.2867 (42)
Hot water usage for mixer showers												
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(42a)
Hot water usage for baths												
27.0260	26.6246	26.0594	25.0172	24.2369	23.3716	22.9042	23.4654	24.0766	25.0024	26.0661	26.9346	(42b)
Hot water usage for other uses												
38.0479	36.6643	35.2808	33.8972	32.5136	31.1301	31.1301	32.5136	33.8972	35.2808	36.6643	38.0479	(42c)
Average daily hot water use (litres/day)												59.6463 (43)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Daily hot water use	65.0738	63.2889	61.3401	58.9144	56.7505	54.5016	54.0343	55.9791	57.9738	60.2832	62.7304	64.9825 (44)
Energy conte	103.0611	90.1226	94.2775	80.6509	76.3971	67.0161	65.3498	69.3138	71.4874	81.8037	89.3709	101.7469 (45)
Energy content (annual)												990.5978
Distribution loss (46)m = 0.15 x (45)m												
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(46)
Water storage loss (or HIU 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)
Primary 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 (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 heat required for water heating calculated for each month												
87.6019	76.6042	80.1359	68.5533	64.9375	56.9637	55.5473	58.9167	60.7643	69.5332	75.9653	86.4848	(62)
WWHRS	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	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 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 (63c)
FGHRS	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 w/h												
87.6019	76.6042	80.1359	68.5533	64.9375	56.9637	55.5473	58.9167	60.7643	69.5332	75.9653	86.4848	(64)
Total per year (kWh/year)												842.0081 (64)
Electric shower(s)												842 (64)

50.0999	44.6395	48.7446	46.5163	47.3892	45.2047	46.7115	47.3892	46.5163	48.7446	47.8280	50.0999	(64a)
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Heat gains from water heating, kWh/month
34.4255 30.3109 32.2201 28.7674 28.0817 25.5421 25.5647 26.5765 26.8202 29.5694 30.9483 34.1462 (65)

Total Energy used by instantaneous electric shower(s) (kWh/year) = Sum(64a)m = 569.8838 (64a)

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	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340	114.3340 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	101.4932	112.3674	101.4932	104.8763	101.4932	104.8763	101.4932	101.4932	104.8763	101.4932	104.8763	101.4932 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	201.2318	203.3199	198.0578	186.8555	172.7145	159.4240	150.5451	148.4570	153.7190	164.9214	179.0624	192.3529 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334	34.4334 (69)
Pumps, fans	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)
Losses e.g. evaporation (negative values) (Table 5)	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672	-91.4672 (71)
Water heating gains (Table 5)	46.2708	45.1055	43.3066	39.9547	37.7442	35.4751	34.3612	35.7211	37.2502	39.7439	42.9838	45.8954 (72)
Total internal gains	406.2959	418.0930	400.1578	388.9866	369.2520	357.0756	343.6996	342.9714	353.1457	363.4586	384.2226	397.0416 (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
Southwest					11.1500	36.7938	0.6300	0.7000			0.7700			125.3781 (79)
Northwest					4.8800	11.2829	0.6300	0.7000			0.7700			16.8273 (81)
Solar gains	142.2054	247.8177	353.9213	463.4103	541.7718	547.8449	524.0232	464.0346	391.5979	277.8943	171.3472	121.0395 (83)		
Total gains	548.5013	665.9108	754.0791	852.3970	911.0238	904.9205	867.7228	807.0060	744.7437	641.3529	555.5698	518.0812 (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)												
tau	40.1389	40.2091	40.2782	40.6056	40.6675	40.9579	40.9579	41.0122	40.8455	40.6675	40.5425	40.4127
alpha	3.6759	3.6806	3.6852	3.7070	3.7112	3.7305	3.7305	3.7341	3.7230	3.7112	3.7028	3.6942
util living area	0.9863	0.9721	0.9459	0.8814	0.7663	0.5992	0.4527	0.5014	0.7236	0.9140	0.9747	0.9888 (86)
MIT	19.1629	19.4570	19.8463	20.3305	20.7035	20.9138	20.9766	20.9658	20.8222	20.3205	19.6529	19.1104 (87)
Th 2	19.8309	19.8327	19.8345	19.8427	19.8443	19.8515	19.8515	19.8528	19.8487	19.8443	19.8412	19.8379 (88)
util rest of house	0.9828	0.9651	0.9321	0.8513	0.7093	0.5098	0.3413	0.3866	0.6408	0.8853	0.9671	0.9859 (89)
MIT 2	18.1865	18.4770	18.8573	19.3199	19.6469	19.8101	19.8448	19.8420	19.7512	19.3238	18.6795	18.1396 (90)
Living area fraction									fLA = Living area / (4) =			0.4086 (91)
MIT	18.5855	18.8775	19.2614	19.7328	20.0786	20.2612	20.3073	20.3013	20.1889	19.7311	19.0773	18.5363 (92)
Temperature adjustment												0.0000
adjusted MIT	18.5855	18.8775	19.2614	19.7328	20.0786	20.2612	20.3073	20.3013	20.1889	19.7311	19.0773	18.5363 (93)

8. Space heating requirement

Utilisation	0.9777	0.9578	0.9238	0.8480	0.7219	0.5431	0.3866	0.4330	0.6673	0.8820	0.9606	0.9815 (94)
Useful gains	536.2895	637.7810	696.6510	722.8688	657.6258	491.4899	335.4430	349.4248	496.9649	565.6456	533.6665	508.4785 (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	1344.5185	1313.2289	1196.9197	1007.8420	778.3275	522.1605	341.9442	359.3590	563.1531	848.2264	1116.0498	1340.1580 (97)
Space heating kWh	601.3223	453.9010	372.2000	205.1807	89.8020	0.0000	0.0000	0.0000	0.0000	210.2402	419.3160	618.7696 (98a)
Space heating requirement - total per year (kWh/year)												2970.7318
Solar heating kWh	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)
Solar heating contribution - total per year (kWh/year)												0.0000
Space heating kWh	601.3223	453.9010	372.2000	205.1807	89.8020	0.0000	0.0000	0.0000	0.0000	210.2402	419.3160	618.7696 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												2970.7318
Space heating per m ²										(98c) / (4) =		41.4328 (99)

8c. Space cooling requirement

Calculated for June, July and August. See Table 10b												
Ext. temp.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	867.0134	682.5424	700.0624	0.0000	0.0000	0.0000	0.0000 (100)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.8473	0.9034	0.8778	0.0000	0.0000	0.0000	0.0000 (101)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	734.6156	616.6048	614.5253	0.0000	0.0000	0.0000	0.0000 (102)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	1019.3802	977.8858	908.8896	0.0000	0.0000	0.0000	0.0000 (103)
Cooled fraction									fC = cooled area / (4) =			1.0000 (105)
Intermittency factor (Table 10b)	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500 (106)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	51.2576	67.1983	54.7518	0.0000	0.0000	0.0000	0.0000 (107)
Space cooling requirement												173.2076 (107)
Energy for space heating												41.4328 (99)
Energy for space cooling												2.4157 (108)

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Total
Fabric Energy Efficiency (TFEE)

43.8485 (109)
43.8 (109)