

Full SAP Calculation Printout



Plot Reference	UNIT 12				Issued on Date	08/07/2026	
Assessment Reference	001			Plot Type Ref	UNIT 12		
Plot Address	UNIT 12, Stoney Wood Quarter, 34 The Fairway, LONDON, NW7 3HS				SAP Version	10.2	
SAP Rating	81 B	DER	4.31	TER	16.35		
Environmental	97 A	% DER < TER				73.64	
CO ₂ Emissions (t/year)	0.21	DFEE	35.95	TFEE	39.60		
Compliance Check	See BREL	% DFEE < TFEE				9.22	
% DPER < TPER	47.36	DPER	46.08	TPER	87.54		
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	53.9000	2.7500	148.2250
Ground floor			
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	53.9000		
Dwelling volume			

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	2 * 10 = 20.0000 (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) =	20.0000 / (5) = 0.1349 (8)
Pressure test	Yes
Pressure Test Method	Blower Door
Measured/design AP50	3.0000 (17)
Infiltration rate	0.2849 (18)
Number of sides sheltered	3 (19)
Shelter factor	(20) = 1 - [0.075 x (19)] = 0.7750 (20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) = 0.2208 (21)

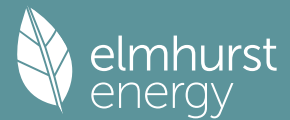
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind speed	5.1000	5.0000	4.9000	4.4000	4.3000	3.8000	3.8000	3.7000	4.0000	4.3000	4.5000	4.7000 (22)
Wind factor	1.2750	1.2500	1.2250	1.1000	1.0750	0.9500	0.9500	0.9250	1.0000	1.0750	1.1250	1.1750 (22a)
Adj infiltr rate	0.2815	0.2760	0.2705	0.2429	0.2374	0.2098	0.2098	0.2043	0.2208	0.2374	0.2484	0.2595 (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	0.5396	0.5381	0.5366	0.5295	0.5282	0.5220	0.5220	0.5209	0.5244	0.5282	0.5309	0.5337 (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			2.1000	1.0000	2.1000		(26)
1			26.1800	0.7940	20.7858		(27)
exposed wall	47.3000	28.2800	19.0200	0.1500	2.8530	60.0000	1141.2000 (29a)
corridor wall	3.5750		3.5750	0.2500	0.8938	9.0000	32.1750 (29a)
flat roof	53.9000		53.9000	0.1000	5.3900	9.0000	485.1000 (30)
Total net area of external elements Aum(A, m ²)			104.7750				(31)
Fabric heat loss, W/K = Sum (A x U)					(26)...(30) + (32) =	32.0226	(33)
Main dwelling							
pw			28.6000	0.0000	0.0000	110.0000	3146.0000 (32)
pf			53.9000			40.0000	2156.0001 (32a)
iw			128.1500			9.0000	1153.3499 (32c)
Heat capacity Cm = Sum (A x k)							(28)...(30) + (32) + (32a)...(32e) = 8113.8250 (34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m ² K							150.5348 (35)
List of Thermal Bridges							
K1 Element					Length	Psi-value	Total
E2 Other lintels (including other steel lintels)					11.5800	0.0500	0.5790
E3 Sill					10.5800	0.0500	0.5290

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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	31.2130	31.2456	31.2776	31.4287	31.4572	31.5903	31.5903	31.6151	31.5389	31.4572	31.3997	31.3398	
alpha	3.0809	3.0830	3.0852	3.0952	3.0971	3.1060	3.1060	3.1077	3.1026	3.0971	3.0933	3.0893	
util living area	0.9389	0.8778	0.7995	0.6851	0.5517	0.4099	0.2991	0.3270	0.4932	0.7347	0.8951	0.9500 (86)	
MIT	19.2142	19.7009	20.1539	20.5636	20.8197	20.9465	20.9848	20.9796	20.9029	20.5384	19.7995	19.1048 (87)	
Th 2	19.8099	19.8110	19.8120	19.8170	19.8180	19.8223	19.8223	19.8231	19.8207	19.8180	19.8161	19.8141 (88)	
util rest of house	0.9275	0.8578	0.7691	0.6418	0.4952	0.3405	0.2213	0.2464	0.4202	0.6860	0.8739	0.9404 (89)	
MIT 2	18.2427	18.7052	19.1251	19.4913	19.7016	19.7964	19.8176	19.8164	19.7691	19.4847	18.8139	18.1402 (90)	
Living area fraction	fLA = Living area / (4) =												0.2968 (91)
MIT	18.5311	19.0007	19.4305	19.8096	20.0335	20.1378	20.1641	20.1617	20.1057	19.7975	19.1065	18.4265 (92)	
Temperature adjustment													0.0000
adjusted MIT	18.5311	19.0007	19.4305	19.8096	20.0335	20.1378	20.1641	20.1617	20.1057	19.7975	19.1065	18.4265 (93)	

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.9122	0.8418	0.7583	0.6415	0.5059	0.3595	0.2441	0.2700	0.4384	0.6851	0.8587	0.9260 (94)
Useful gains	543.3991	662.8008	700.7464	664.9521	551.3042	383.5292	251.8024	264.6853	407.2082	539.3849	541.0871	509.8228 (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	1027.6043	1017.1287	931.7610	782.3596	597.0795	395.0976	254.2857	268.1705	429.1796	658.9810	861.8141	1023.1191 (97)
Space heating kWh	360.2487	238.1084	171.8749	84.5334	34.0569	0.0000	0.0000	0.0000	0.0000	88.9795	230.9235	381.8924 (98a)
Space heating requirement - total per year (kWh/year)												1590.6176
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	360.2487	238.1084	171.8749	84.5334	34.0569	0.0000	0.0000	0.0000	0.0000	88.9795	230.9235	381.8924 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												1590.6176
Space heating per m2												(98c) / (4) = 29.5105 (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	670.6524	527.9604	541.8047	0.0000	0.0000	0.0000	0.0000 (100)	
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.9230	0.9527	0.9431	0.0000	0.0000	0.0000	0.0000 (101)	
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	619.0067	502.9702	510.9839	0.0000	0.0000	0.0000	0.0000 (102)	
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	1218.4243	1178.4887	1120.3721	0.0000	0.0000	0.0000	0.0000 (103)	
Space cooling kWh													
	0.0000	0.0000	0.0000	0.0000	0.0000	431.5807	502.5858	453.3848	0.0000	0.0000	0.0000	0.0000 (104)	
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	107.8952	125.6464	113.3462	0.0000	0.0000	0.0000	0.0000 (107)	
Space cooling requirement												346.8878 (107)	
Energy for space heating												29.5105 (99)	
Energy for space cooling												6.4358 (108)	
Total												35.9463 (109)	
Fabric Energy Efficiency (DFEE)												35.9 (109)	

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

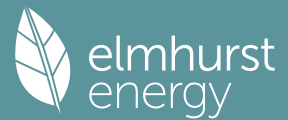
1. Overall dwelling characteristics

Main dwelling	Area (m2)	Storey height (m)	Volume (m3)
Ground floor	53.9000 (1b)	x 2.7500 (2b)	= 148.2250 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	53.9000		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =	148.2250 (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	2 * 10 =	20.0000 (7a)
Number of passive vents	0 * 10 =	0.0000 (7b)
Number of flueless gas fires	0 * 40 =	0.0000 (7c)

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Infiltration due to chimneys, flues and fans	= (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =											Air changes per hour	
Pressure test												20.0000 / (5) =	0.1349 (8)
Pressure Test Method												Yes	
Measured/design AP50												Blower Door	
Infiltration rate												5.0000	(17)
Number of sides sheltered												0.3849	(18)
												3	(19)
Shelter factor												(20) = 1 - [0.075 x (19)] =	0.7750 (20)
Infiltration rate adjusted to include shelter factor												(21) = (18) x (20) =	0.2983 (21)

Wind speed	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Wind factor	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)
Adj infilt rate	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)
	0.3804	0.3729	0.3654	0.3282	0.3207	0.2834	0.2834	0.2759	0.2983	0.3207	0.3356	0.3505	(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	0.5723	0.5695	0.5668	0.5538	0.5514	0.5402	0.5402	0.5381	0.5445	0.5514	0.5563	0.5614	(25)

3. Heat losses and heat loss parameter

Element	Gross	Openings	NetArea	U-value	A x U	K-value	A x K	
	m2	m2	m2	W/m2K	W/K	kJ/m2K	kJ/K	
Main dwelling								
TER Opaque door			2.1000	1.0000	2.1000			(26)
TER Opening Type			11.3700	1.1450	13.0191			(27)
exposed wall	47.3000	13.4700	33.8300	0.1800	6.0894			(29a)
corridor wall	3.5750		3.5750	0.1800	0.6435			(29a)
flat roof	53.9000		53.9000	0.1100	5.9290			(30)
Total net area of external elements Aum(A, m2)			104.7750					(31)
Fabric heat loss, W/K = Sum (A x U)					27.7810			(33)
Main dwelling								
pw			28.6000	0.0000	0.0000			(32)

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

List of Thermal Bridges													150.5348 (35)
K1 Element													
E2 Other lintels (including other steel lintels)						11.5800		Psi-value					Total
E3 Sill						10.5800		0.0500					0.5790
E4 Jamb						38.7000		0.0500					0.5290
E7 Party floor between dwellings (in blocks of flats)						11.2000		0.0700					1.9350
E9 Balcony between dwellings, wall insulation continuous						2.8000		0.0200					0.7840
E23 Balcony within or between dwellings, balcony support penetrates wall insulation						5.3000		0.0200					0.0560
E24 Eaves (insulation at ceiling level - inverted)						4.6000		0.2400					0.1060
E14 Flat roof						2.7000		0.0800					1.1040
E15 Flat roof with parapet						14.6000		0.5600					0.2160
E16 Corner (normal)						8.2500		0.0900					8.1760
E17 Corner (inverted - internal area greater than external area)						2.7500		-0.0900					0.7425
E18 Party wall between dwellings						5.5000		0.0600					-0.2475
Thermal bridges (Sum(L x Psi) calculated using Appendix K)													0.3300
Point Thermal bridges													14.3100 (36)
Total fabric heat loss													(33a) =
													0.0000
													(33) + (36) + (36a) =
													42.0910 (37)

Ventilation heat loss calculated monthly (38)m = 0.33 x (25)m x (5)

(38)m	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Heat transfer coeff	27.9954	27.8580	27.7233	27.0908	26.9724	26.4215	26.4215	26.3195	26.6337	26.9724	27.2118	27.4622	(38)
Average = Sum(39)m / 12 =	70.0864	69.9490	69.8143	69.1818	69.0634	68.5125	68.5125	68.4104	68.7247	69.0634	69.3028	69.5531	(39)
													69.1812
HLP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP (average)	1.3003	1.2978	1.2953	1.2835	1.2813	1.2711	1.2711	1.2692	1.2750	1.2813	1.2858	1.2904	(40)
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31	

4. Water heating energy requirements (kWh/year)

Assumed occupancy													1.8051 (42)
Hot water usage for mixer showers													0.0000 (42a)
Hot water usage for baths	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(42b)
Hot water usage for other uses	23.5533	23.2035	22.7109	21.8027	21.1226	20.3685	19.9612	20.4503	20.9829	21.7898	22.7168	23.4737	(42c)
Average daily hot water use (litres/day)	33.1156	31.9114	30.7072	29.5030	28.2988	27.0946	27.0946	28.2988	29.5030	30.7072	31.9114	33.1156	(43)
													51.9428
Daily hot water use	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Energy conte	56.6690	55.1150	53.4182	51.3057	49.4214	47.4631	47.0558	48.7491	50.4859	52.4971	54.6282	56.5894	(44)
Energy content (annual)	89.7498	78.4830	82.1018	70.2350	66.5307	58.3614	56.9099	60.3616	62.2542	71.2380	77.8279	88.6053	(45)
Distribution loss (46)m = 0.15 x (45)m													Total = Sum(45)m =
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	862.6586
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	(46)
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	(47)
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	(48)
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	(49)
Total heat required for water heating calculated for each month	76.2873	66.7105	69.7865	59.6997	56.5511	49.6072	48.3734	51.3074	52.9161	60.5523	66.1537	75.3145	(50)
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	(51)
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	(52)
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	(53)
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	(54)
Output from w/h	76.2873	66.7105	69.7865	59.6997	56.5511	49.6072	48.3734	51.3074	52.9161	60.5523	66.1537	75.3145	(55)
12Total per year (kWh/year)													Total per year (kWh/year) = Sum(64)m =
Electric shower(s)	43.6330	38.8774	42.4526	40.5120	41.2722	39.3696	40.6820	41.2722	40.5120	42.4526	41.6543	43.6330	(56)
													496.3227 (64a)

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Heat gains from water heating, kWh/month
29.9801 26.3970 28.0598 25.0529 24.4558 22.2442 22.2638 23.1449 23.3570 25.7512 26.9520 29.7369 (65)

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

Metabolic gains (Table 5), Watts	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
(66)m	90.2531	90.2531	90.2531	90.2531	90.2531	90.2531	90.2531	90.2531	90.2531	90.2531	90.2531	90.2531	(66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	79.5564	88.0803	79.5564	82.2083	79.5564	82.2083	79.5564	79.5564	82.2083	79.5564	82.2083	79.5564	(67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	157.3464	158.9792	154.8647	146.1054	135.0483	124.6562	117.7137	116.0809	120.1954	128.9547	140.0118	150.4039	(68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	32.0253	32.0253	32.0253	32.0253	32.0253	32.0253	32.0253	32.0253	32.0253	32.0253	32.0253	32.0253	(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)	-72.2025	-72.2025	-72.2025	-72.2025	-72.2025	-72.2025	-72.2025	-72.2025	-72.2025	-72.2025	-72.2025	-72.2025	(71)
Water heating gains (Table 5)	40.2958	39.2812	37.7147	34.7957	32.8707	30.8947	29.9245	31.1087	32.4403	34.6119	37.4333	39.9689	(72)
Total internal gains	327.2745	336.4166	322.2117	313.1853	297.5514	287.8352	277.2705	276.8220	284.9199	293.1989	309.7293	320.0051	(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		
Southeast				4.7300	36.7938	0.6300	0.7000		0.7700		53.1873	(77)	
South				3.5600	46.7521	0.6300	0.7000		0.7700		50.8654	(78)	
Southwest				3.0800	36.7938	0.6300	0.7000		0.7700		34.6336	(79)	
Solar gains	138.6863	232.8959	310.7927	373.5385	409.0369	402.2791	389.3980	363.2865	332.4723	255.1821	165.4821	119.1088	(83)
Total gains	465.9609	569.3125	633.0044	686.7238	706.5883	690.1143	666.6686	640.1085	617.3922	548.3811	475.2114	439.1139	(84)

7. Mean internal temperature (heating season)

Temperature during heating periods in the living area from Table 9, Th1 (C)													21.0000 (85)
Utilisation factor for gains for living area, nil,m (see Table 9a)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
tau	32.1580	32.2212	32.2834	32.5785	32.6344	32.8968	32.8968	32.9459	32.7952	32.6344	32.5216	32.4046	
alpha	3.1439	3.1481	3.1522	3.1719	3.1756	3.1931	3.1931	3.1964	3.1863	3.1756	3.1681	3.1603	
util living area	0.9660	0.9386	0.9006	0.8295	0.7231	0.5714	0.4318	0.4644	0.6532	0.8515	0.9430	0.9712	(86)
MIT	18.9903	19.3478	19.7645	20.2506	20.6317	20.8759	20.9618	20.9510	20.8008	20.2954	19.5573	18.9245	(87)
Th 2	19.8406	19.8426	19.8446	19.8538	19.8555	19.8635	19.8635	19.8650	19.8604	19.8555	19.8520	19.8484	(88)
util rest of house	0.9591	0.9269	0.8814	0.7963	0.6685	0.4889	0.3285	0.3604	0.5751	0.8152	0.9300	0.9653	(89)
MIT 2	18.0487	18.3977	18.8005	19.2627	19.6007	19.7983	19.8506	19.8472	19.7458	19.3168	18.6148	17.9897	(90)
Living area fraction	18.3282	18.6798	19.0867	19.5559	19.9068	20.1182	20.1805	20.1749	20.0590	19.6073	18.8945	18.2672	(91)
MIT	18.3282	18.6798	19.0867	19.5559	19.9068	20.1182	20.1805	20.1749	20.0590	19.6073	18.8945	18.2672	(92)
Temperature adjustment												0.0000	
adjusted MIT	18.3282	18.6798	19.0867	19.5559	19.9068	20.1182	20.1805	20.1749	20.0590	19.6073	18.8945	18.2672	(93)

8. Space heating requirement

Utilisation	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	(96)
Heat loss rate W	983.1882	963.8813	878.7298	737.1970	566.7863	378.0647	245.3082	258.2407	409.5279	622.0733	817.3953	978.4200	(97)
Space heating kWh	403.0808	298.7865	245.7802	141.8860	68.8483	0.0000	0.0000	0.0000	0.0000	133.9440	275.0567	416.0900	(98a)
Space heating requirement - total per year (kWh/year)												1983.4725	
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	403.0808	298.7865	245.7802	141.8860	68.8483	0.0000	0.0000	0.0000	0.0000	133.9440	275.0567	416.0900	(98c)
Space heating requirement after solar contribution - total per year (kWh/year)												1983.4725	
Space heating per m2										(98c) / (4) =		36.7991	(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	644.0172	506.9922	519.9193	0.0000	0.0000	0.0000	0.0000	(100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.8278	0.8856	0.8692	0.0000	0.0000	0.0000	0.0000	(101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	533.1472	448.9791	451.8947	0.0000	0.0000	0.0000	0.0000	(102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	777.8427	752.0153	722.4978	0.0000	0.0000	0.0000	0.0000	(103)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	176.1808	225.4589	201.3287	0.0000	0.0000	0.0000	0.0000	(104)
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	44.0452	56.3647	50.3322	0.0000	0.0000	0.0000	0.0000	(107)
Space cooling requirement												150.7421	(107)
Energy for space heating												36.7991	(99)
Energy for space cooling												2.7967	(108)

Total
Fabric Energy Efficiency (TFEE)

39.5958 (109)
39.6 (109)