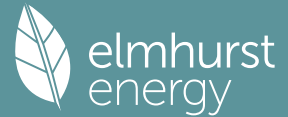


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Property Reference	UNIT 42				Issued on Date	02/07/2025	
Assessment Reference	UNIT 42			Prop Type Ref			
Property	Flat 43, Alexander House, 205 Kings Road, READING, RG1 4FW						
SAP Rating	84 B	DER	5.23	TER	15.37		
Environmental	97 A	% DER < TER				65.97	
CO ₂ Emissions (t/year)	0.19	DFEE	48.43	TFEE	50.07		
Compliance Check	See BREL	% DFEE < TFEE				3.26	
% DPER < TPER	33.10	DPER	54.92	TPER	82.09		
Assessor Details	Mr. Ondrej Gajdos				Assessor ID	W452-0001	
Client							

SAP 10 WORKSHEET FOR New Build (As Built) (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			
Ground floor	39.5000 (1b)	2.5000 (2b)	98.7500 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	39.5000		98.7500 (4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	98.7500 (5)

2. Ventilation rate

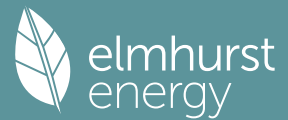
	m ³ per hour
Number of open chimneys	0 * 80 = 0.0000 (6a)
Number of open flues	0 * 20 = 0.0000 (6b)
Number of chimneys / flues attached to closed fire	0 * 10 = 0.0000 (6c)
Number of flues attached to solid fuel boiler	0 * 20 = 0.0000 (6d)
Number of flues attached to other heater	0 * 35 = 0.0000 (6e)
Number of blocked chimneys	0 * 20 = 0.0000 (6f)
Number of intermittent extract fans	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) = 0.2025 (8)
Pressure test	Yes
Pressure Test Method	Blower Door
Measured/design AP50	4.0000 (17)
Infiltration rate	0.4025 (18)
Number of sides sheltered	2 (19)
Shelter factor	(20) = 1 - [0.075 x (19)] = 0.8500 (20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) = 0.3422 (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	0.4362	0.4277	0.4191	0.3764	0.3678	0.3250	0.3250	0.3165	0.3422	0.3678	0.3849	0.4020 (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	0.5952	0.5915	0.5878	0.5708	0.5676	0.5528	0.5528	0.5501	0.5585	0.5676	0.5741	0.5808 (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							
1			6.5000	1.1450	7.4427		(27)
2			6.5000	1.1450	7.4427		(27)
1			2.1000	1.0000	2.1000		(26)
top floor exposed new	33.5000	13.0000	20.5000	0.2000	4.1000	18.0000	369.0000 (29a)
corridor new	26.2500	2.1000	24.1500	0.2300	5.5545	14.0000	338.1000 (29a)
flat roof new	21.9000		21.9000	0.1300	2.8470	9.0000	197.1000 (30)
roof terrace new	17.6000		17.6000	0.1300	2.2880	9.0000	158.4000 (30)
Total net area of external elements Aum(A, m ²)			99.2500				(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	31.7750		(33)
Main dwelling							
pw			10.7500	0.0000	0.0000	20.0000	215.0000 (32)
pf			39.5000			30.0000	1185.0000 (32d)
iw			49.0000			9.0000	441.0000 (32c)
Heat capacity Cm = Sum(A x k)						(28)...(30) + (32) + (32a)...(32e) =	2903.6000 (34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m ² K							73.5089 (35)
List of Thermal Bridges							
K1 Element				Length	Psi-value	Total	

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E2 Other lintels (including other steel lintels)	6.2000	0.0470	0.2914	
E3 Sill	5.2000	0.0150	0.0780	
E4 Jamb	14.2000	0.0470	0.6674	
E15 Flat roof with parapet	13.6000	0.1970	2.6792	
E16 Corner (normal)	2.5000	0.1800	0.4500	
E18 Party wall between dwellings	5.0000	0.2400	1.2000	
E24 Eaves (insulation at ceiling level - inverted)	13.6000	0.0500	0.6800	
Thermal bridges (Sum(L x Psi) calculated using Appendix K)			6.0460	(36)
Point Thermal bridges			0.0000	
Total fabric heat loss		(33) + (36) + (36a) =	37.8210	(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	19.3946	19.2742	19.1562	18.6018	18.4981	18.0152	18.0152	17.9258	18.2012	18.4981	18.7079	18.9273 (38)
Average = Sum(39)m / 12 =	57.2156	57.0952	56.9772	56.4228	56.3191	55.8362	55.8362	55.7468	56.0222	56.3191	56.5289	56.7483 (39)
												56.4223
HLP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
HLP (average)	1.4485	1.4454	1.4425	1.4284	1.4258	1.4136	1.4136	1.4113	1.4183	1.4258	1.4311	1.4367 (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													1.3931	(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	0.0000	(42a)
Hot water usage for baths	20.5830	20.2773	19.8469	19.0532	18.4588	17.7998	17.4439	17.8713	18.3367	19.0419	19.8520	20.5134	20.5134	(42b)
Hot water usage for other uses	28.8968	27.8461	26.7953	25.7445	24.6937	23.6429	23.6429	24.6937	25.7445	26.7953	27.8461	28.8968	28.8968	(42c)
Average daily hot water use (litres/day)													45.3536	(43)
Daily hot water use	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Energy conte	49.4799	48.1234	46.6421	44.7976	43.1525	41.4427	41.0867	42.5650	44.0812	45.8372	47.6980	49.4103	49.4103	(44)
Energy content (annual)	78.3640	68.5271	71.6872	61.3257	58.0916	50.9586	49.6908	52.7043	54.3565	62.2006	67.9546	77.3646	77.3646	(45)
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	0.0000	(46)
Water storage 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	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	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	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	0.0000	(61)
Total heat required for water heating calculated for each month	66.6094	58.2480	60.9341	52.1268	49.3778	43.3148	42.2372	44.7987	46.2031	52.8705	57.7614	65.7599	65.7599	(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	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	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	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	0.0000	(63d)
Output from w/h	66.6094	58.2480	60.9341	52.1268	49.3778	43.3148	42.2372	44.7987	46.2031	52.8705	57.7614	65.7599	65.7599	(64)
12Total per year (kWh/year)													640.2418	(64)
Electric shower(s)	38.1015	33.9487	37.0707	35.3761	36.0399	34.3786	35.5246	36.0399	35.3761	37.0707	36.3736	38.1015	38.1015	(64a)
Heat gains from water heating, kWh/month	26.1777	23.0492	24.5012	21.8757	21.3544	19.4234	19.4404	20.2097	20.3948	22.4853	23.5338	25.9653	25.9653	(65)
Total Energy used by instantaneous electric shower(s) (kWh/year) = Sum(64a)m =													433.4021	(64a)

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

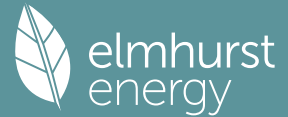
Metabolic gains (Table 5), Watts														
(66)m	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	(66)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	60.6664	67.1664	60.6664	62.6886	60.6664	62.6886	60.6664	60.6664	62.6886	60.6664	62.6886	60.6664	60.6664	(67)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	120.2780	121.5261	118.3809	111.6852	103.2330	95.2891	89.9821	88.7340	91.8792	98.5750	107.0272	114.9710	114.9710	(68)
Pumps, fans	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	(69)
Losses e.g. evaporation (negative values) (Table 5)	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	(70)
Water heating gains (Table 5)	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	(71)
Total internal gains	35.1851	34.2994	32.9317	30.3830	28.7022	26.9769	26.1296	27.1635	28.3261	30.2222	32.6858	34.8996	34.8996	(72)
	260.0262	266.8885	255.8757	248.6534	236.4983	228.8513	220.6749	220.4606	226.7906	233.3603	246.2982	254.4338	254.4338	(73)

6. Solar gains

[Jan]															
				Area	Solar flux	g		FF		Access		Gains			
				m2	Table 6a	Specific data		Specific data		factor		W			
					W/m2	or Table 6b		or Table 6c		Table 6d					
East				6.5000	19.6403	0.6300		0.8000		0.7700		44.5887 (76)			
East				6.5000	19.6403	0.6300		0.8000		0.7700		44.5887 (76)			
Solar gains				89.1773	174.4498	287.2939	419.0010	513.5015	525.6602	500.4499	429.8791	334.1347	206.9993	111.1936	73.3351 (83)
Total gains				349.2035	441.3383	543.1696	667.6545	749.9998	754.5115	721.1248	650.3397	560.9254	440.3596	357.4919	327.7688 (84)

7. Mean internal temperature (heating season)

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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	14.0968	14.1265	14.1558	14.2949	14.3212	14.4450	14.4450	14.4682	14.3971	14.3212	14.2680	14.2129
alpha	1.9398	1.9418	1.9437	1.9530	1.9547	1.9630	1.9630	1.9645	1.9598	1.9547	1.9512	1.9475
util living area	0.9050	0.8586	0.7862	0.6687	0.5387	0.4091	0.3124	0.3533	0.5345	0.7505	0.8700	0.9143 (86)
MIT	17.5102	18.0478	18.8166	19.7006	20.3405	20.7306	20.8871	20.8525	20.5210	19.5947	18.3917	17.4161 (87)
Th 2	19.7263	19.7287	19.7309	19.7416	19.7436	19.7529	19.7529	19.7547	19.7493	19.7436	19.7396	19.7353 (88)
util rest of house	0.8930	0.8416	0.7612	0.6321	0.4888	0.3436	0.2324	0.2694	0.4661	0.7118	0.8514	0.9033 (89)
MIT 2	16.6112	17.1321	17.8689	18.6981	19.2677	19.5955	19.7060	19.6893	19.4454	18.6342	17.4860	16.5251 (90)
Living area fraction	fLA = Living area / (4) =											
MIT	17.1415	17.6723	18.4280	19.2895	19.9005	20.2651	20.4027	20.3754	20.0799	19.2008	18.0203	17.0507 (92)
Temperature adjustment	0.0000											
adjusted MIT	17.1415	17.6723	18.4280	19.2895	19.9005	20.2651	20.4027	20.3754	20.0799	19.2008	18.0203	17.0507 (93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.8604	0.8071	0.7311	0.6176	0.4953	0.3714	0.2751	0.3125	0.4853	0.6926	0.8189	0.8719 (94)
Useful gains	300.4415	356.1904	397.1175	412.3231	371.5015	280.2274	198.3672	203.2354	272.2135	304.9757	292.7547	285.7771 (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	734.7321	729.2342	679.6207	586.2024	461.8457	316.3164	212.3291	221.6164	335.0052	484.3896	617.3106	729.2527 (97)
Space heating kWh	323.1122	250.6854	210.1825	125.1931	67.2161	0.0000	0.0000	0.0000	0.0000	133.4839	233.6802	329.9459 (98a)
Space heating requirement - total per year (kWh/year)												1673.4993
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	323.1122	250.6854	210.1825	125.1931	67.2161	0.0000	0.0000	0.0000	0.0000	133.4839	233.6802	329.9459 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												1673.4993
Space heating per m2												(98c) / (4) = 42.3671 (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	524.8607	413.1882	423.6759	0.0000	0.0000	0.0000	0.0000 (100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.8081	0.8522	0.8239	0.0000	0.0000	0.0000	0.0000 (101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	424.1296	352.1284	349.0743	0.0000	0.0000	0.0000	0.0000 (102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	861.5295	823.7223	742.1277	0.0000	0.0000	0.0000	0.0000 (103)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	314.9279	350.8659	292.4317	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	78.7320	87.7165	73.1079	0.0000	0.0000	0.0000	0.0000 (107)
Space cooling requirement												239.5564 (107)
Energy for space heating												42.3671 (99)
Energy for space cooling												6.0647 (108)
Total												48.4318 (109)
Fabric Energy Efficiency (DFEE)												48.4 (109)

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

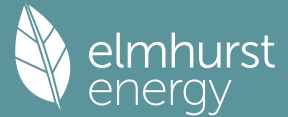
1. Overall dwelling characteristics

Main dwelling	Area (m2)	Storey height (m)	Volume (m3)
Ground floor	39.5000 (1b)	x 2.5000 (2b)	= 98.7500 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	39.5000		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	= 98.7500 (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)
		Air changes per hour
Infiltration due to chimneys, flues and fans	= (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =	20.0000 / (5) = 0.2025 (8)
Pressure test		Yes
Pressure Test Method		Blower Door

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Measured/design AP50 5.0000 (17)
Infiltration rate 0.4525 (18)
Number of sides sheltered 2 (19)

Shelter factor (20) = 1 - [0.075 x (19)] = 0.8500 (20)
Infiltration rate adjusted to include shelter factor (21) = (18) x (20) = 0.3847 (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	0.4904	0.4808	0.4712	0.4231	0.4135	0.3654	0.3654	0.3558	0.3847	0.4135	0.4327	0.4520	(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	0.6203	0.6156	0.6110	0.5895	0.5855	0.5668	0.5668	0.5633	0.5740	0.5855	0.5936	0.6021	(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			2.1000	1.0000	2.1000			(26)
TER Opening Type			7.7800	1.1450	8.9084			(27)
top floor exposed new	33.5000	7.7800	25.7200	0.1800	4.6296			(29a)
corridor new	26.2500	2.1000	24.1500	0.1800	4.3470			(29a)
flat roof new	21.9000		21.9000	0.1100	2.4090			(30)
roof terrace new	17.6000		17.6000	0.1100	1.9360			(30)
Total net area of external elements Aum (A, m2)			99.2500					(31)
Fabric heat loss, W/K = Sum (A x U)					(26)...(30) + (32) =	24.3300		(33)
Main dwelling								
pw			10.7500	0.0000	0.0000			(32)

Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K 73.5089 (35)

List of Thermal Bridges

	Length	Psi-value	Total	
K1 Element	6.2000	0.0500	0.3100	
E2 Other lintels (including other steel lintels)	5.2000	0.0500	0.2600	
E3 Sill	14.2000	0.0500	0.7100	
E4 Jamb	13.6000	0.5600	7.6160	
E15 Flat roof with parapet	2.5000	0.0900	0.2250	
E16 Corner (normal)	5.0000	0.0600	0.3000	
E18 Party wall between dwellings	13.6000	0.2400	3.2640	
E24 Eaves (insulation at ceiling level - inverted)				
Thermal bridges (Sum(L x Psi) calculated using Appendix K)				12.6850 (36)
Point Thermal bridges				(36a) = 0.0000
Total fabric heat loss				(33) + (36) + (36a) = 37.0150 (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	20.2128	20.0606	19.9114	19.2108	19.0797	18.4695	18.4695	18.3565	18.7045	19.0797	19.3449	19.6221	(38)
Heat transfer coeff	57.2278	57.0756	56.9264	56.2258	56.0947	55.4845	55.4845	55.3715	55.7195	56.0947	56.3599	56.6371	(39)
Average = Sum(39)m / 12 =												56.2252	

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP	1.4488	1.4450	1.4412	1.4234	1.4201	1.4047	1.4047	1.4018	1.4106	1.4201	1.4268	1.4339	(40)
HLP (average)												1.4234	
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31	

4. Water heating energy requirements (kWh/year)

Assumed occupancy													1.3931 (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	0.0000	(42a)
Hot water usage for baths	20.5830	20.2773	19.8469	19.0532	18.4588	17.7998	17.4439	17.8713	18.3367	19.0419	19.8520	20.5134	(42b)
Hot water usage for other uses	28.8968	27.8461	26.7953	25.7445	24.6937	23.6429	23.6429	24.6937	25.7445	26.7953	27.8461	28.8968	(42c)
Average daily hot water use (litres/day)												45.3536	(43)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daily hot water use	49.4799	48.1234	46.6421	44.7976	43.1525	41.4427	41.0867	42.5650	44.0812	45.8372	47.6980	49.4103	(44)
Energy conte	78.3640	68.5271	71.6872	61.3257	58.0916	50.9586	49.6908	52.7043	54.3565	62.2006	67.9546	77.3646	(45)
Energy content (annual)										Total = Sum(45)m =		753.2256	
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:													
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	66.6094	58.2480	60.9341	52.1268	49.3778	43.3148	42.2372	44.7987	46.2031	52.8705	57.7614	65.7599	(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	66.6094	58.2480	60.9341	52.1268	49.3778	43.3148	42.2372	44.7987	46.2031	52.8705	57.7614	65.7599	(64)
Total per year (kWh/year) = Sum(64)m =												640.2418	(64)

12Total per year (kWh/year)

Electric shower(s)	38.1015	33.9487	37.0707	35.3761	36.0399	34.3786	35.5246	36.0399	35.3761	37.0707	36.3736	38.1015	(64a)
Total Energy used by instantaneous electric shower (s) (kWh/year) = Sum(64a)m =												433.4021	(64a)

Heat gains from water heating, kWh/month	26.1777	23.0492	24.5012	21.8757	21.3544	19.4234	19.4404	20.2097	20.3948	22.4853	23.5338	25.9653	(65)
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5. Internal gains (see Table 5 and 5a)

Full SAP Calculation Printout



Metabolic gains (Table 5), Watts	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
(66)m	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	69.6555	(66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	61.1959	67.7526	61.1959	63.2358	61.1959	63.2358	61.1959	61.1959	63.2358	61.1959	63.2358	61.1959	(67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	120.2780	121.5261	118.3809	111.6852	103.2330	95.2891	89.9821	88.7340	91.8792	98.5750	107.0272	114.9710	(68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	29.9656	(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)	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	-55.7244	(71)
Water heating gains (Table 5)	35.1851	34.2994	32.9317	30.3830	28.7022	26.9769	26.1296	27.1635	28.3261	30.2222	32.6858	34.8996	(72)
Total internal gains	260.5557	267.4748	256.4052	249.2006	237.0278	229.3985	221.2043	220.9901	227.3378	233.8897	246.8454	254.9632	(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
East					7.7800	19.6403	0.6300	0.7000			0.7700			46.6980 (76)
Solar gains	46.6980	91.3513	150.4426	219.4115	268.8970	275.2640	262.0625	225.1078	174.9709	108.3960	58.2270	38.4022	(83)	
Total gains	307.2537	358.8261	406.8478	468.6121	505.9248	504.6624	483.2669	446.0980	402.3087	342.2857	305.0723	293.3654	(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	14.0938	14.1314	14.1684	14.3449	14.3785	14.5366	14.5366	14.5663	14.4753	14.3785	14.3108	14.2408		
alpha	1.9396	1.9421	1.9446	1.9563	1.9586	1.9691	1.9691	1.9711	1.9650	1.9586	1.9541	1.9494		
util living area	0.9221	0.8953	0.8536	0.7753	0.6721	0.5425	0.4301	0.4709	0.6476	0.8167	0.8970	0.9280	(86)	
MIT	17.3310	17.7338	18.3832	19.2529	19.9977	20.5486	20.7987	20.7518	20.3136	19.3234	18.1945	17.2718	(87)	
Th 2	19.7261	19.7290	19.7319	19.7454	19.7479	19.7598	19.7598	19.7619	19.7552	19.7479	19.7428	19.7375	(88)	
util rest of house	0.9119	0.8817	0.8341	0.7443	0.6237	0.4685	0.3298	0.3704	0.5794	0.7842	0.8813	0.9185	(89)	
MIT 2	16.4377	16.8326	17.4667	18.3071	18.9980	19.4831	19.6712	19.6456	19.3011	18.3976	17.3010	16.3864	(90)	
Living area fraction	16.9646	17.3642	18.0073	18.8650	19.5877	20.1117	20.3363	20.2981	19.8983	18.9437	17.8280	16.9087	(92)	
MIT	16.9646	17.3642	18.0073	18.8650	19.5877	20.1117	20.3363	20.2981	19.8983	18.9437	17.8280	16.9087	(93)	
Temperature adjustment												0.0000		
adjusted MIT	16.9646	17.3642	18.0073	18.8650	19.5877	20.1117	20.3363	20.2981	19.8983	18.9437	17.8280	16.9087	(93)	

8. Space heating requirement

Utilisation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Useful gains	0.8814	0.8486	0.8010	0.7189	0.6168	0.4909	0.3786	0.4163	0.5881	0.7589	0.8500	0.8892	(94)
Ext temp.	270.8278	304.4997	325.8715	336.8790	312.0610	247.7539	182.9738	185.7261	236.5948	259.7576	259.2976	260.8491	(95)
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	(96)
Space heating kWh	724.7666	711.4003	655.0719	560.2912	442.4568	305.8111	207.3055	215.8458	323.0809	468.0383	604.6307	719.7835	(97)
Space heating requirement - total per year (kWh/year)	337.7305	273.4372	244.9250	160.8567	97.0145	0.0000	0.0000	0.0000	0.0000	154.9609	248.6398	341.4472	(98a)
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)	337.7305	273.4372	244.9250	160.8567	97.0145	0.0000	0.0000	0.0000	0.0000	154.9609	248.6398	341.4472	(98c)
Space heating requirement after solar contribution - total per year (kWh/year)												1859.0118	(99)
Space heating per m2												47.0636	(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	521.5540	410.5851	420.8231	0.0000	0.0000	0.0000	0.0000	(100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.6916	0.7518	0.7205	0.0000	0.0000	0.0000	0.0000	(101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	360.6938	308.6588	303.2024	0.0000	0.0000	0.0000	0.0000	(102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	568.9050	545.1378	502.8498	0.0000	0.0000	0.0000	0.0000	(103)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	149.9120	175.9404	148.5377	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	37.4780	43.9851	37.1344	0.0000	0.0000	0.0000	0.0000	(107)
Space cooling requirement												118.5975	(107)
Energy for space heating												47.0636	(99)
Energy for space cooling												3.0025	(108)
Total												50.0661	(109)
Fabric Energy Efficiency (TFEE)												50.1	(109)