

Full SAP Calculation Printout



Plot Reference	UNIT 04			Issued on Date	08/07/2026
Assessment Reference	001	Plot Type Ref	UNIT 04		
Plot Address	UNIT 04, Stoney Wood Quarter, 34 The Fairway, LONDON, NW7 3HS			SAP Version	10.2
SAP Rating	82 B	DER	3.49	TER	13.55
Environmental	97 A	% DER < TER			74.24
CO ₂ Emissions (t/year)	0.29	DFEE	35.33	TFEE	39.89
Compliance Check	See BREL	% DFEE < TFEE			11.43
% DPER < TPER	48.32	DPER	37.15	TPER	71.89
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	37.3000 (1a)	x	2.7500 (2a)	=	102.5750 (1a)	- (3a)
Ground floor	30.8000 (1b)	x	2.8000 (2b)	=	86.2400 (1b)	- (3b)
First floor	22.0000 (1c)	x	2.1500 (2c)	=	47.3000 (1c)	- (3c)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	90.1000					(4)
Dwelling volume				(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =	236.1150	(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) =	30.0000 / (5) =	0.1271 (8)	
Pressure test	Yes		
Pressure Test Method	Blower Door		
Measured/design AP50	3.0000	(17)	
Infiltration rate	0.2771	(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) =	0.2147	(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	0.2738	0.2684	0.2630	0.2362	0.2308	0.2040	0.2040	0.1986	0.2147	0.2308	0.2416	0.2523	(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	0.5375	0.5360	0.5346	0.5279	0.5266	0.5208	0.5208	0.5197	0.5231	0.5266	0.5292	0.5318	(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			2.8800	1.0000	2.8800			(26)
1			32.1900	0.7940	25.5575			(27)
basement floor			37.3000	0.1000	3.7300	110.0000	4102.9999	(28)
exposed wall	76.8950	35.0700	41.8250	0.1500	6.2737	60.0000	2509.4998	(29a)
basement wall	25.6950		25.6950	0.1500	3.8542	9.0000	231.2550	(29a)
terrace above LGF	5.0000		5.0000	0.1000	0.5000	9.0000	45.0000	(30)
terrace above GF	5.8000		5.8000	0.1000	0.5800	9.0000	52.2000	(30)
pitched rafters	9.1000		9.1000	0.1000	0.9100	9.0000	81.9000	(30)
flat roof above 1F	16.5000		16.5000	0.1000	1.6500	9.0000	148.5000	(30)
Total net area of external elements Aum(A, m ²)			176.2900					(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	45.9355			(33)
Main dwelling								
pw			78.6480	0.0000	0.0000	110.0000	8651.2803	(32)
iw			189.3400			9.0000	1704.0600	(32c)
if			52.0000			18.0000	936.0000	(32d)
ic			52.0000			9.0000	468.0000	(32e)

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Heat capacity Cm = Sum(A x k)													(28)...(30) + (32) + (32a)...(32e) = 18930.6950 (34)													
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K													210.1076 (35)													
List of Thermal Bridges																										
K1 Element													Length				Psi-value				Total					
E2 Other lintels (including other steel lintels)													13.6700				0.0500				0.6835					
E3 Sill													12.5200				0.0500				0.6260					
E4 Jamb													34.8000				0.0500				1.7400					
E5 Ground floor (normal)													5.1000				0.1600				0.8160					
E22 Basement floor													8.5000				0.0700				0.5950					
E6 Intermediate floor within a dwelling													9.5000				0.0000				0.0000					
E24 Eaves (insulation at ceiling level - inverted)													9.8000				0.2400				2.3520					
E11 Eaves (insulation at rafter level)													4.7000				0.0400				0.1880					
E13 Gable (insulation at rafter level)													1.7000				0.0800				0.1360					
E14 Flat roof													8.6000				0.1600				1.3760					
E15 Flat roof with parapet													8.1000				0.5600				4.5360					
E16 Corner (normal)													9.8500				0.0900				0.8865					
E17 Corner (inverted - internal area greater than external area)													5.5000				-0.0900				-0.4950					
E18 Party wall between dwellings													26.5500				0.0600				1.5930					
Thermal bridges (Sum(L x Psi) calculated using Appendix K)													15.0330 (36)													
Point Thermal bridges													0.0000 (36a) =													
Total fabric heat loss													60.9685 (37) (33) + (36) + (36a) =													
Ventilation heat loss calculated monthly (38)m = 0.33 x (25)m x (5)																										
(38)m													(38)													
Heat transfer coeff													(39)													
Average = Sum(39)m / 12 =													102.1004													
HLP													(40)													
HLP (average)													1.1332													
Days in mont													31													

4. Water heating energy requirements (kWh/year)

Assumed occupancy												
Hot water usage for mixer showers												2.6271 (42)
Hot water usage for baths												0.0000 (42a)
Hot water usage for other uses												29.3808 (42b)
Average daily hot water use (litres/day)												41.5340 (42c)
												65.0912 (43)
Daily hot water use												
Energy conte	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Energy content (annual)	71.0144	69.0663	66.9394	64.2923	61.9307	59.4765	58.9667	61.0892	63.2662	65.7865	68.4570	70.9148 (44)
Distribution loss (46)m = 0.15 x (45)m	112.4695	98.3494	102.8834	88.0129	83.3706	73.1333	71.3151	75.6412	78.0135	89.2716	97.5296	111.0354 (45)
Total = Sum(45)m =												1081.0254
Water storage loss (or HIU loss):												
Total storage loss												0.0000 (46)
If cylinder contains dedicated solar storage												
Primary loss												0.0000 (57)
Combi loss												0.0000 (59)
Total heat required for water heating calculated for each month												0.0000 (61)
WWHRS	95.5991	83.5970	87.4508	74.8110	70.8650	62.1633	60.6178	64.2950	66.3115	75.8809	82.9001	94.3801 (62)
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 (63a)
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 (63b)
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 (63c)
Output from w/h	95.5991	83.5970	87.4508	74.8110	70.8650	62.1633	60.6178	64.2950	66.3115	75.8809	82.9001	94.3801 (64)
Total per year (kWh/year)												918.8716 (64)
Electric shower(s)												919 (64)
Total Energy used by instantaneous electric shower(s) (kWh/year) = Sum(64a)m =												621.8769 (64a)
Heat gains from water heating, kWh/month												
	37.5675	33.0773	35.1607	31.3928	30.6444	27.8731	27.8978	29.0019	29.2679	32.2682	33.7729	37.2627 (65)

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	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543 (66)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	120.6800	133.6100	120.6800	124.7027	120.6800	124.7027	120.6800	120.6800	124.7027	120.6800	124.7027	120.6800 (67)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	239.2616	241.7444	235.4878	222.1684	205.3550	189.5528	178.9959	176.5131	182.7697	196.0891	212.9025	228.7047 (68)
Pumps, fans	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354 (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 (70)
Water heating gains (Table 5)	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835 (71)
Total internal gains	50.4939	49.2222	47.2589	43.6011	41.1888	38.7126	37.4970	38.9811	40.6499	43.3712	46.9068	50.0843 (72)
	472.8418	486.9828	465.8331	452.8785	429.6301	415.3743	399.5792	398.5805	410.5285	422.5466	446.9183	461.8753 (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
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Northeast	19.4100	11.2829	0.5300	0.7000	0.7700	56.3060 (75)
Southeast	12.7800	36.7938	0.5300	0.7000	0.7700	120.8963 (77)

Solar gains	177.2023	320.5437	488.2593	688.2439	846.8928	874.1994	828.9091	705.4389	556.7086	367.6634	215.6535	149.4444 (83)
Total gains	650.0441	807.5265	954.0924	1141.1224	1276.5229	1289.5737	1228.4883	1104.0195	967.2372	790.2100	662.5718	611.3197 (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	51.1294	51.1858	51.2413	51.5033	51.5526	51.7834	51.7834	51.8264	51.6942	51.5526	51.4529	51.3491
alpha	4.4086	4.4124	4.4161	4.4336	4.4368	4.4522	4.4522	4.4551	4.4463	4.4368	4.4302	4.4233
util living area	0.9914	0.9779	0.9446	0.8468	0.6793	0.4919	0.3611	0.4174	0.6677	0.9135	0.9815	0.9933 (86)
MIT	19.5364	19.8208	20.1992	20.6323	20.8886	20.9786	20.9957	20.9920	20.9234	20.5368	19.9478	19.4801 (87)
Th 2	19.9671	19.9681	19.9691	19.9738	19.9747	19.9788	19.9788	19.9796	19.9772	19.9747	19.9729	19.9711 (88)
util rest of house	0.9890	0.9721	0.9304	0.8122	0.6213	0.4182	0.2786	0.3274	0.5881	0.8846	0.9756	0.9915 (89)
MIT 2	18.6463	18.9271	19.2942	19.6953	19.9050	19.9693	19.9776	19.9772	19.9376	19.6231	19.0588	18.5935 (90)
Living area fraction									fLA = Living area / (4) =			0.1531 (91)
MIT	18.7825	19.0639	19.4327	19.8387	20.0555	20.1238	20.1334	20.1325	20.0884	19.7630	19.1949	18.7292 (92)
Temperature adjustment												0.0000
adjusted MIT	18.7825	19.0639	19.4327	19.8387	20.0555	20.1238	20.1334	20.1325	20.0884	19.7630	19.1949	18.7292 (93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.9853	0.9655	0.9214	0.8071	0.6261	0.4289	0.2912	0.3411	0.5973	0.8774	0.9697	0.9884 (94)
Useful gains	640.4654	779.6369	879.1024	920.9780	799.2078	553.0614	357.7555	376.5928	577.7700	693.3387	642.4861	604.2197 (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	1489.4856	1455.1164	1327.1945	1116.8513	852.2921	560.9319	358.8164	378.7160	609.1658	934.6526	1236.1067	1487.8986 (97)
Space heating kWh	631.6710	453.9222	333.3805	141.0288	39.4947	0.0000	0.0000	0.0000	0.0000	179.5375	427.4069	657.4571 (98a)
Space heating requirement - total per year (kWh/year)												2863.8988
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	631.6710	453.9222	333.3805	141.0288	39.4947	0.0000	0.0000	0.0000	0.0000	179.5375	427.4069	657.4571 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												2863.8988
Space heating per m2										(98c) / (4) =		31.7858 (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	954.5562	751.4592	771.1290	0.0000	0.0000	0.0000	0.0000 (100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.9421	0.9693	0.9517	0.0000	0.0000	0.0000	0.0000 (101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	899.2702	728.3713	733.9134	0.0000	0.0000	0.0000	0.0000 (102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	1459.9090	1390.8506	1247.7343	0.0000	0.0000	0.0000	0.0000 (103)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	403.6599	492.8846	382.2827	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	100.9150	123.2211	95.5707	0.0000	0.0000	0.0000	0.0000 (107)
Space cooling requirement												319.7068 (107)
Energy for space heating												31.7858 (99)
Energy for space cooling												3.5484 (108)
Total												35.3341 (109)
Fabric Energy Efficiency (DFEE)												35.3 (109)

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

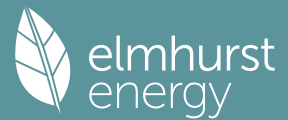
1. Overall dwelling characteristics

Main dwelling	Area (m2)	Storey height (m)	Volume (m3)
Basement floor	37.3000 (1a)	x 2.7500 (2a)	= 102.5750 (1a) - (3a)
Ground floor	30.8000 (1b)	x 2.8000 (2b)	= 86.2400 (1b) - (3b)
First floor	22.0000 (1c)	x 2.1500 (2c)	= 47.3000 (1c) - (3c)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	90.1000		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =	236.1150 (5)

2. Ventilation rate

m3 per hour

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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) =	30.0000	Air changes per hour	0.1271 (8)
Pressure test			Yes	
Pressure Test Method			Blower Door	
Measured/design AP50			5.0000	(17)
Infiltration rate			0.3771	(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) =		0.2922	(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)
	0.3726	0.3653	0.3580	0.3214	0.3141	0.2776	0.2776	0.2703	0.2922	0.3141	0.3287	0.3434	(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	0.5694	0.5667	0.5641	0.5517	0.5493	0.5385	0.5385	0.5365	0.5427	0.5493	0.5540	0.5589	(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			2.8800	1.0000	2.8800		(26)
TER Opening Type			19.6500	1.1450	22.5000		(27)
basement floor			37.3000	0.1300	4.8490		(28)
exposed wall	76.8950	22.5300	54.3650	0.1800	9.7857		(29a)
basement wall	25.6950		25.6950	0.1800	4.6251		(29a)
terrace above LGF	5.0000		5.0000	0.1100	0.5500		(30)
terrace above GF	5.8000		5.8000	0.1100	0.6380		(30)
pitched rafters	9.1000		9.1000	0.1100	1.0010		(30)
flat roof above 1F	16.5000		16.5000	0.1100	1.8150		(30)
Total net area of external elements Aum(A, m2)			176.2900				(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	48.6438		(33)
Main dwelling							
pw			78.6480	0.0000	0.0000		(32)

Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K 210.1076 (35)

List of Thermal Bridges	Length	Psi-value	Total
K1 Element	13.6700	0.0500	0.6835
E2 Other lintels (including other steel lintels)	12.5200	0.0500	0.6260
E3 Sill	34.8000	0.0500	1.7400
E4 Jamb	5.1000	0.1600	0.8160
E5 Ground floor (normal)	8.5000	0.0700	0.5950
E22 Basement floor	9.5000	0.0000	0.0000
E6 Intermediate floor within a dwelling	9.8000	0.2400	2.3520
E24 Eaves (insulation at ceiling level - inverted)	4.7000	0.0400	0.1880
E11 Eaves (insulation at rafter level)	1.7000	0.0800	0.1360
E13 Gable (insulation at rafter level)	8.6000	0.0800	0.6880
E14 Flat roof	8.1000	0.5600	4.5360
E15 Flat roof with parapet	9.8500	0.0900	0.8865
E16 Corner (normal)	5.5000	-0.0900	-0.4950
E17 Corner (inverted - internal area greater than external area)	26.5500	0.0600	1.5930
E18 Party wall between dwellings			
Thermal bridges (Sum(L x Psi) calculated using Appendix K)			14.3450 (36)
Point Thermal bridges			0.0000 (36a) =
Total fabric heat loss			(33) + (36) + (36a) = 62.9888 (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	44.3671	44.1571	43.9512	42.9844	42.8035	41.9614	41.9614	41.8055	42.2858	42.8035	43.1694	43.5520	(38)
Average = Sum(39)m / 12 =	107.3559	107.1459	106.9400	105.9732	105.7923	104.9502	104.9502	104.7943	105.2746	105.7923	106.1582	106.5408	(39)
												105.9723	
HLP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP (average)	1.1915	1.1892	1.1869	1.1762	1.1742	1.1648	1.1648	1.1631	1.1684	1.1742	1.1782	1.1825	(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													2.6271 (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	29.4804	29.0426	28.4260	27.2892	26.4380	25.4941	24.9843	25.5965	26.2632	27.2731	28.4334	29.3808	(42b)
Hot water usage for other uses	41.5340	40.0237	38.5133	37.0030	35.4927	33.9824	33.9824	35.4927	37.0030	38.5133	40.0237	41.5340	(42c)
Average daily hot water use (litres/day)													65.0912 (43)
Daily hot water use	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Energy conte	71.0144	69.0663	66.9394	64.2923	61.9307	59.4765	58.9667	61.0892	63.2662	65.7865	68.4570	70.9148	(44)
Energy content (annual)	112.4695	98.3494	102.8834	88.0129	83.3706	73.1333	71.3151	75.6412	78.0135	89.2716	97.5296	111.0354	(45)
Distribution loss (46)m = 0.15 x (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	(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													

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	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													
	95.5991	83.5970	87.4508	74.8110	70.8650	62.1633	60.6178	64.2950	66.3115	75.8809	82.9001	94.3801	(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													
	95.5991	83.5970	87.4508	74.8110	70.8650	62.1633	60.6178	64.2950	66.3115	75.8809	82.9001	94.3801	(64)
12Total per year (kWh/year)	Total per year (kWh/year) = Sum(64)m =											918.8716	(64)
Electric shower(s)												919	(64)
	54.6708	48.7121	53.1918	50.7602	51.7127	49.3289	50.9732	51.7127	50.7602	53.1918	52.1916	54.6708	(64a)
	Total Energy used by instantaneous electric shower(s) (kWh/year) = Sum(64a)m =											621.8769	(64a)
Heat gains from water heating, kWh/month													
	37.5675	33.0773	35.1607	31.3928	30.6444	27.8731	27.8978	29.0019	29.2679	32.2682	33.7729	37.2627	(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	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	131.3543	(66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	120.7591	133.6975	120.7591	124.7844	120.7591	124.7844	120.7591	120.7591	124.7844	120.7591	124.7844	120.7591	(67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	239.2616	241.7444	235.4878	222.1684	205.3550	189.5528	178.9959	176.5131	182.7697	196.0891	212.9025	228.7047	(68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	36.1354	(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)	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	-105.0835	(71)
Water heating gains (Table 5)	50.4939	49.2222	47.2589	43.6011	41.1888	38.7126	37.4970	38.9811	40.6499	43.3712	46.9068	50.0843	(72)
Total internal gains	472.9209	487.0704	465.9122	452.9602	429.7091	415.4560	399.6583	398.6596	410.6103	422.6257	447.0000	461.9544	(73)

6. Solar gains

[Jan]				Area m2	Solar flux Table 6a W/m2	g		FF	Access factor Table 6d		Gains W	
Northeast				11.8500	11.2829	0.6300		0.7000	0.7700		40.8613 (75)	
Southeast				7.8000	36.7938	0.6300		0.7000	0.7700		87.7085 (77)	
Solar gains	128.5698	232.5744	354.2694	499.3838	614.5064	634.3233	601.4592	511.8635	403.9380	266.7645	156.4686	108.4296 (83)
Total gains	601.4907	719.6447	820.1815	952.3440	1044.2155	1049.7794	1001.1175	910.5232	814.5483	689.3902	603.4687	570.3840 (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	48.9822	49.0782	49.1727	49.6213	49.7061	50.1050	50.1050	50.1795	49.9506	49.7061	49.5348	49.3569	
alpha	4.2655	4.2719	4.2782	4.3081	4.3137	4.3403	4.3403	4.3453	4.3300	4.3137	4.3023	4.2905	
util living area	0.9937	0.9859	0.9680	0.9100	0.7869	0.6033	0.4525	0.5132	0.7631	0.9458	0.9873	0.9949	(86)
MIT	19.3868	19.6286	19.9776	20.4372	20.7803	20.9479	20.9881	20.9799	20.8579	20.3928	19.8091	19.3469	(87)
Th 2	19.9268	19.9287	19.9305	19.9391	19.9407	19.9482	19.9482	19.9496	19.9453	19.9407	19.9375	19.9340	(88)
util rest of house	0.9919	0.9820	0.9588	0.8846	0.7323	0.5176	0.3486	0.4036	0.6847	0.9250	0.9830	0.9935	(89)
MIT 2	18.4676	18.7084	19.0525	19.4958	19.7955	19.9240	19.9449	19.9435	19.8672	19.4659	18.8958	18.4334	(90)
Living area fraction	18.6083	18.8493	19.1941	19.6399	19.9463	20.0807	20.1046	20.1021	20.0188	19.6077	19.0356	18.5732	(91)
MIT	18.6083	18.8493	19.1941	19.6399	19.9463	20.0807	20.1046	20.1021	20.0188	19.6077	19.0356	18.5732	(92)
Temperature adjustment	18.6083	18.8493	19.1941	19.6399	19.9463	20.0807	20.1046	20.1021	20.0188	19.6077	19.0356	18.5732	(93)
adjusted MIT	18.6083	18.8493	19.1941	19.6399	19.9463	20.0807	20.1046	20.1021	20.0188	19.6077	19.0356	18.5732	(93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Utilisation	0.9888	0.9767	0.9507	0.8762	0.7326	0.5290	0.3644	0.4200	0.6908	0.9166	0.9780	0.9909	(94)
Useful gains	594.7341	702.8469	779.7507	834.4135	764.9678	555.3011	364.7786	382.4358	562.7199	631.9257	590.2135	565.1846	(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	1536.0787	1494.6056	1357.5047	1138.1415	872.3910	575.2000	367.8081	387.9597	623.1035	952.9494	1267.0614	1531.3367	(97)
Space heating kWh	700.3604	532.0618	429.8489	218.6842	79.9229	0.0000	0.0000	0.0000	0.0000	238.8417	487.3305	718.8172	(98a)
Space heating requirement - total per year (kWh/year)												3405.8676	
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	700.3604	532.0618	429.8489	218.6842	79.9229	0.0000	0.0000	0.0000	0.0000	238.8417	487.3305	718.8172	(98c)
Space heating requirement after solar contribution - total per year (kWh/year)												3405.8676	
Space heating per m2												(98c) / (4) =	37.8010 (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	

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Heat loss rate W												
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	986.5318	776.6314	796.4363	0.0000	0.0000	0.0000	0.0000 (100)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.8775	0.9281	0.8984	0.0000	0.0000	0.0000	0.0000 (101)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	865.6511	720.7627	715.5431	0.0000	0.0000	0.0000	0.0000 (102)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	1179.5414	1125.0075	1021.4870	0.0000	0.0000	0.0000	0.0000 (103)
Cooled fraction	0.0000	0.0000	0.0000	0.0000	0.0000	226.0010	300.7582	227.6223	0.0000	0.0000	0.0000	0.0000 (104)
Intermittency factor (Table 10b)	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	FC = cooled area / (4) =			1.0000 (105)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	56.5002	75.1895	56.9056	0.2500	0.2500	0.2500	0.2500 (106)
Space cooling requirement									0.0000	0.0000	0.0000	0.0000 (107)
Energy for space heating												188.5954 (107)
Energy for space cooling												37.8010 (99)
Total												2.0932 (108)
Fabric Energy Efficiency (TFEE)												39.8942 (109)
												39.9 (109)