

Full SAP Calculation Printout



Plot Reference	UNIT 10			Issued on Date	08/07/2026
Assessment Reference	001	Plot Type Ref	UNIT 10		
Plot Address	UNIT 10, Stoney Wood Quarter, 34 The Fairway, LONDON, NW7 3HS			SAP Version	10.2
SAP Rating	85 B	DER	14.06	TER	14.39
Environmental	90 B	% DER < TER			2.29
CO ₂ Emissions (t/year)	0.78	DFEE	35.49	TFEE	33.35
Compliance Check	See BREL	% DFEE < TFEE			-6.40
% DPER < TPER	-3.81	DPER	79.82	TPER	76.89
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 DWELLING EMISSIONS FOR REGULATIONS COMPLIANCE

1. Overall dwelling characteristics

	Area (m ²)	Storey height (m)	Volume (m ³)
Main dwelling			
Ground floor	60.6000 (1b)	2.7500 (2b)	166.6500 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	60.6000		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	166.6500 (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	0 * 10 = 0.0000 (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) =	0.0000 / (5) = 0.0000 (8)
Pressure test	Yes
Pressure Test Method	Blower Door
Measured/design AP50	3.0000 (17)
Infiltration rate	0.1500 (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) = 0.1162 (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	0.1482	0.1453	0.1424	0.1279	0.1250	0.1104	0.1104	0.1075	0.1162	0.1250	0.1308	0.1366 (22b)
Balanced mechanical ventilation with heat recovery												
If mechanical ventilation												0.5000 (23a)
If exhaust air heat pump using Appendix N, (23b) = (23a) x Fmv (equation (N5)), otherwise (23b) = (23a)												0.5000 (23b)
If balanced with heat recovery: efficiency in % allowing for in-use factor (from Table 4h) =												81.0000 (23c)
Effective ac	0.2432	0.2403	0.2374	0.2229	0.2200	0.2054	0.2054	0.2025	0.2112	0.2200	0.2258	0.2316 (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)
l			32.8600	0.7940	26.0895		(27)
exposed wall	48.4000	32.8600	15.5400	0.1500	2.3310	60.0000	932.4001 (29a)
corridor wall	19.8000	2.1000	17.7000	0.3100	5.4870	14.0000	247.8000 (29a)
Total net area of external elements Aum(A, m ²)			68.2000				(31)
Fabric heat loss, W/K = Sum (A x U)					(26)...(30) + (32) = 36.0075		(33)
Main dwelling							
pw			38.2250	0.0000	0.0000	110.0000	4204.7498 (32)
pf			60.6000			40.0000	2423.9999 (32d)
pc			60.6000			30.0000	1818.0000 (32b)
iw			100.1000			9.0000	900.9000 (32c)
Heat capacity Cm = Sum(A x k)						(28)...(30) + (32) + (32a)...(32e) =	10527.8498 (34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m ² K							173.7269 (35)
List of Thermal Bridges							

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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	51.8661	52.0136	52.1619	52.9161	53.0696	53.8506	53.8506	54.0095	53.5354	53.0696	52.7635	52.4610
alpha	4.4577	4.4676	4.4775	4.5277	4.5380	4.5900	4.5900	4.6006	4.5690	4.5380	4.5176	4.4974
util living area	0.9435	0.8745	0.7573	0.5722	0.4035	0.2745	0.1983	0.2296	0.3946	0.6848	0.8914	0.9544 (86)
MIT	20.1026	20.4393	20.7371	20.9316	20.9871	20.9983	20.9997	20.9995	20.9916	20.8805	20.4797	20.0378 (87)
Th 2	20.1417	20.1439	20.1462	20.1573	20.1596	20.1708	20.1708	20.1730	20.1663	20.1596	20.1551	20.1506 (88)
util rest of house	0.9333	0.8558	0.7286	0.5374	0.3682	0.2391	0.1610	0.1884	0.3482	0.6425	0.8716	0.9460 (89)
MIT 2	19.1235	19.5309	19.8757	20.0937	20.1492	20.1697	20.1707	20.1728	20.1606	20.0505	19.5964	19.0506 (90)
Living area fraction	19.1235	19.5309	19.8757	20.0937	20.1492	20.1697	20.1707	20.1728	20.1606	20.0505	19.5964	19.0506 (90)
MIT	19.6777	20.0451	20.3633	20.5680	20.6235	20.6387	20.6399	20.6407	20.6309	20.5203	20.0964	19.6094 (92)
Temperature adjustment												-0.1500
adjusted MIT	19.5277	19.8951	20.2133	20.4180	20.4735	20.4887	20.4899	20.4907	20.4809	20.3703	19.9464	19.4594 (93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.9248	0.8499	0.7310	0.5483	0.3814	0.2527	0.1754	0.2043	0.3658	0.6535	0.8661	0.9378 (94)
Useful gains	565.5471	658.4446	681.7033	614.3138	479.5516	319.3574	211.1862	221.3759	346.2595	500.8097	543.9305	537.0434 (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	858.5922	843.0805	768.8197	636.5400	483.4625	319.7928	211.2453	221.4944	348.5627	538.3904	712.0058	850.6237 (97)
Space heating kWh	218.0255	124.0753	64.8146	16.0029	2.9097	0.0000	0.0000	0.0000	0.0000	27.9601	121.0142	233.3037 (98a)
Space heating requirement - total per year (kWh/year)												808.1059
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	218.0255	124.0753	64.8146	16.0029	2.9097	0.0000	0.0000	0.0000	0.0000	27.9601	121.0142	233.3037 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												808.1059
Space heating per m2										(98c) / (4) =		13.3351 (99)

9a. Energy requirements - Individual heating systems, including micro-CHP

Fraction of space heat from secondary/supplementary system (Table 11)

0.0000 (201)

Fraction of space heat from main system(s)

1.0000 (202)

Efficiency of main space heating system 1 (in %)

88.9000 (206)

Efficiency of main space heating system 2 (in %)

0.0000 (207)

Efficiency of secondary/supplementary heating system, %

0.0000 (208)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Space heating requirement	218.0255	124.0753	64.8146	16.0029	2.9097	0.0000	0.0000	0.0000	0.0000	27.9601	121.0142	233.3037 (98)
Space heating efficiency (main heating system 1)	88.9000	88.9000	88.9000	88.9000	88.9000	0.0000	0.0000	0.0000	0.0000	88.9000	88.9000	88.9000 (210)
Space heating fuel (main heating system)	245.2481	139.5673	72.9073	18.0010	3.2730	0.0000	0.0000	0.0000	0.0000	31.4511	136.1239	262.4339 (211)
Space heating efficiency (main heating system 2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (212)
Space heating fuel (main heating system 2)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (213)
Space heating fuel (secondary)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (215)
Water heating												
Water heating requirement	237.4844	210.1559	223.4025	196.5327	190.6383	171.7483	168.6862	176.2400	178.0445	198.4140	210.8630	234.8864 (64)
Efficiency of water heater (217)m	84.1986	83.2911	82.0857	80.8892	80.4170	80.3000	80.3000	80.3000	80.3000	81.2711	83.2361	80.3000 (216)
Fuel for water heating, kWh/month	282.0526	252.3149	272.1575	242.9654	237.0624	213.8833	210.0700	219.4770	221.7242	244.1386	253.3313	278.4105 (219)
Space cooling fuel requirement (221)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 (221)
Pumps and Fa	15.4487	13.9537	15.4487	14.9503	15.4487	14.9503	15.4487	15.4487	14.9503	15.4487	14.9503	15.4487 (231)
Lighting	18.2834	14.6676	13.2066	9.6757	7.4738	6.1061	6.8178	8.8621	11.5110	15.1030	17.0588	18.7915 (232)
Electricity generated by PVs (Appendix M) (negative quantity) (233a)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 (233a)
Electricity generated by wind turbines (Appendix M) (negative quantity) (234a)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 (234a)
Electricity generated by hydro-electric generators (Appendix M) (negative quantity) (235a)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 (235a)
Electricity used or net electricity generated by micro-CHP (Appendix N) (negative if net generation) (235c)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 (235c)
Electricity generated by PVs (Appendix M) (negative quantity) (233b)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 (233b)
Electricity generated by wind turbines (Appendix M) (negative quantity) (234b)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 (234b)
Electricity generated by hydro-electric generators (Appendix M) (negative quantity) (235b)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 (235b)
Electricity used or net electricity generated by micro-CHP (Appendix N) (negative if net generation) (235d)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 (235d)
Annual totals kWh/year												
Space heating fuel - main system 1												909.0056 (211)
Space heating fuel - main system 2												0.0000 (213)
Space heating fuel - secondary												0.0000 (215)
Efficiency of water heater												80.3000
Water heating fuel used												2927.5876 (219)
Space cooling fuel												0.0000 (221)

Electricity for pumps and fans:

(BalancedWithHeatRecovery, Database: in-use factor = 1.1000, SFP = 0.6930)

mechanical ventilation fans (SFP = 0.6930)

140.8959 (230a)

central heating pump

41.0000 (230c)

Total electricity for the above, kWh/year

181.8959 (231)

Electricity for lighting (calculated in Appendix L)

147.5573 (232)

Energy saving/generation technologies (Appendices M ,N and Q)

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PV generation	0.0000 (233)
Wind generation	0.0000 (234)
Hydro-electric generation (Appendix N)	0.0000 (235a)
Electricity generated - Micro CHP (Appendix N)	0.0000 (235)
Appendix Q - special features	
Energy saved or generated	-0.0000 (236)
Energy used	0.0000 (237)
Total delivered energy for all uses	4166.0464 (238)

12a. Carbon dioxide emissions - Individual heating systems including micro-CHP

	Energy kWh/year	Emission factor kg CO2/kWh	Emissions kg CO2/year
Space heating - main system 1	909.0056	0.2100	190.8912 (261)
Total CO2 associated with community systems			0.0000 (373)
Water heating (other fuel)	2927.5876	0.2100	614.7934 (264)
Space and water heating			805.6846 (265)
Pumps, fans and electric keep-hot	181.8959	0.1387	25.2312 (267)
Energy for lighting	147.5573	0.1443	21.2971 (268)
Total CO2, kg/year			852.2129 (272)
EPC Dwelling Carbon Dioxide Emission Rate (DER)			14.0600 (273)

13a. Primary energy - Individual heating systems including micro-CHP

	Energy kWh/year	Primary energy factor kg CO2/kWh	Primary energy kWh/year
Space heating - main system 1	909.0056	1.1300	1027.1763 (275)
Total CO2 associated with community systems			0.0000 (473)
Water heating (other fuel)	2927.5876	1.1300	3308.1740 (278)
Space and water heating			4335.3503 (279)
Pumps, fans and electric keep-hot	181.8959	1.5128	275.1721 (281)
Energy for lighting	147.5573	1.5338	226.3283 (282)
Total Primary energy kWh/year			4836.8508 (286)
Dwelling Primary energy Rate (DPER)			79.8200 (287)

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

1. Overall dwelling characteristics

	Area (m2)	Storey height (m)	Volume (m3)
Main dwelling	60.6000 (1b)	2.7500 (2b)	166.6500 (1b) - (3b)
Ground floor			
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	60.6000		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	166.6500 (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)

Infiltration due to chimneys, flues and fans = (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =	20.0000 / (5) =	0.1200 (8)
Pressure test	Yes	
Pressure Test Method	Blower Door	
Measured/design AP50	5.0000	(17)
Infiltration rate	0.3700	(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) =	0.2868 (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	0.3656	0.3584	0.3513	0.3154	0.3083	0.2724	0.2724	0.2653	0.2868	0.3083	0.3226	0.3369 (22b)
Effective ac	0.5668	0.5642	0.5617	0.5497	0.5475	0.5371	0.5371	0.5352	0.5411	0.5475	0.5520	0.5568 (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			13.0600	1.1450	14.9542		(27)
exposed wall	48.4000	13.0600	35.3400	0.1800	6.3612		(29a)

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corridor wall	19.8000	2.1000	17.7000	0.1800	3.1860	(29a)
Total net area of external elements Aum(A, m ²)			68.2000			(31)
Fabric heat loss, W/K = Sum (A x U)			(26)...(30) + (32) =		26.6014	(33)
Main dwelling						
pw			38.2250	0.0000	0.0000	(32)

Thermal mass parameter (TMP = Cm / TFA) in kJ/m²K 173.7269 (35)

List of Thermal Bridges						
K1 Element			Length	Psi-value	Total	
E2 Other lintels (including other steel lintels)			12.9500	0.0500	0.6475	
E3 Sill			11.9500	0.0500	0.5975	
E4 Jamb			42.7000	0.0500	2.1350	
E7 Party floor between dwellings (in blocks of flats)			34.5000	0.0700	2.4150	
E23 Balcony within or between dwellings, balcony support penetrates wall insulation			14.9000	0.0200	0.2980	
E16 Corner (normal)			11.0000	0.0900	0.9900	
E17 Corner (inverted - internal area greater than external area)			8.2500	-0.0900	-0.7425	
E18 Party wall between dwellings			11.0000	0.0600	0.6600	
Thermal bridges (Sum(L x Psi) calculated using Appendix K)					7.0005	(36)
Point Thermal bridges					0.0000	
Total fabric heat loss					(33) + (36) + (36a) =	33.6019 (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	31.1730	31.0303	30.8903	30.2332	30.1103	29.5379	29.5379	29.4319	29.7584	30.1103	30.3590	30.6190	(38)
Average = Sum(39)m / 12 =	64.7749	64.6322	64.4922	63.8351	63.7122	63.1398	63.1398	63.0338	63.3603	63.7122	63.9609	64.2209	(39)
												63.8345	
HLP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP (average)	1.0689	1.0665	1.0642	1.0534	1.0514	1.0419	1.0419	1.0402	1.0455	1.0514	1.0555	1.0598	(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												1.9985 (42)
Hot water usage for mixer showers												
	57.7286	56.8611	55.5969	53.1781	51.3931	49.4025	48.2710	49.5256	50.9009	53.0382	55.5090	57.5075 (42a)
Hot water usage for baths												
	24.9484	24.5779	24.0561	23.0941	22.3737	21.5749	21.1435	21.6616	22.2257	23.0805	24.0623	24.8641 (42b)
Hot water usage for other uses												
	35.0971	33.8209	32.5446	31.2683	29.9921	28.7158	28.7158	29.9921	31.2683	32.5446	33.8209	35.0971 (42c)
Average daily hot water use (litres/day)												108.2615 (43)
Daily hot water use	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	117.7742	115.2599	112.1976	107.5405	103.7589	99.6932	98.1303	101.1793	104.3950	108.6633	113.3922	117.4687 (44)
Energy conte	186.5255	164.1285	172.4436	147.2176	139.6794	122.5845	118.6801	125.2811	128.7295	147.4551	161.5479	183.9275 (45)
Energy content (annual)										Total = Sum(45)m =		1798.2004
Distribution loss (46)m = 0.15 x (45)m												
	27.9788	24.6193	25.8665	22.0826	20.9519	18.3877	17.8020	18.7922	19.3094	22.1183	24.2322	27.5891 (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	50.9589	46.0274	50.9589	49.3151	50.9589	49.1638	50.0061	50.9589	49.3151	50.9589	49.3151	50.9589 (61)
Total heat required for water heating calculated for each month												
	237.4844	210.1559	223.4025	196.5327	190.6383	171.7483	168.6862	176.2400	178.0445	198.4140	210.8630	234.8864 (62)
WWHRS	-26.3911	-23.3405	-24.4409	-20.2380	-18.8611	-16.1396	-15.1283	-16.0874	-16.6986	-19.6858	-22.3016	-25.9024 (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	211.0933	186.8154	198.9617	176.2947	171.7772	155.6087	153.5580	160.1526	161.3459	178.7282	188.5614	208.9841 (64)
12Total per year (kWh/year)										Total per year (kWh/year) = Sum(64)m =		2151.8811 (64)
Electric shower(s)												2152 (64)
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (64a)
												0.0000 (64a)
Heat gains from water heating, kWh/month												
	74.7595	66.0796	70.0772	61.2786	59.1831	53.0503	51.9627	54.3957	55.1313	61.7685	66.0435	73.8956 (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
	99.9274	99.9274	99.9274	99.9274	99.9274	99.9274	99.9274	99.9274	99.9274	99.9274	99.9274	99.9274 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5												
	88.0981	97.5372	88.0981	91.0347	88.0981	91.0347	88.0981	88.0981	91.0347	88.0981	91.0347	88.0981 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5												
	174.4576	176.2679	171.7059	161.9941	149.7346	138.2124	130.5149	128.7045	133.2665	142.9784	155.2379	166.7600 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5												
	32.9927	32.9927	32.9927	32.9927	32.9927	32.9927	32.9927	32.9927	32.9927	32.9927	32.9927	32.9927 (69)
Pumps, fans	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000 (70)
Losses e.g. evaporation (negative values) (Table 5)												
	-79.9419	-79.9419	-79.9419	-79.9419	-79.9419	-79.9419	-79.9419	-79.9419	-79.9419	-79.9419	-79.9419	-79.9419 (71)
Water heating gains (Table 5)												
	100.4832	98.3327	94.1898	85.1092	79.5472	73.6809	69.8423	73.1125	76.5713	83.0222	91.7270	99.3221 (72)
Total internal gains	419.0171	428.1160	409.9721	394.1162	373.3581	355.9063	341.4335	342.8934	353.8507	370.0769	393.9778	410.1585 (73)

6. Solar gains							
[Jan]		Area	Solar flux	g	FF	Access	Gains
		m ²	Table 6a	Specific data	Specific data	factor	W
			W/m ²	or Table 6b	or Table 6c	Table 6d	
Northeast		6.6200	11.2829	0.6300	0.7000	0.7700	22.8272 (75)
East		0.8200	19.6403	0.6300	0.7000	0.7700	4.9219 (76)

9a. Energy requirements - Individual heating systems, including micro-CHP												

Fraction of space heat from secondary/supplementary system (Table 11)												0.0000 (201)
Fraction of space heat from main system(s)												1.0000 (202)
Efficiency of main space heating system 1 (in %)												92.4000 (206)
Efficiency of main space heating system 2 (in %)												0.0000 (207)
Efficiency of secondary/supplementary heating system, %												0.0000 (208)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Space heating requirement												
	348.3490	256.9869	200.6240	97.8215	35.6569	0.0000	0.0000	0.0000	0.0000	106.2948	233.9674	359.2856 (98)
Space heating efficiency (main heating system 1)												
	92.4000	92.4000	92.4000	92.4000	92.4000	0.0000	0.0000	0.0000	0.0000	92.4000	92.4000	92.4000 (210)
Space heating fuel (main heating system)												
	377.0011	278.1243	217.1255	105.8675	38.5897	0.0000	0.0000	0.0000	0.0000	115.0377	253.2115	388.8373 (211)
Space heating efficiency (main heating system 2)												
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (212)
Space heating fuel (main heating system 2)												
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (213)
Space heating fuel (secondary)												
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (215)
Water heating												
Water heating requirement												
	211.0933	186.8154	198.9617	176.2947	171.7772	155.6087	153.5580	160.1526	161.3459	178.7282	188.5614	208.9841 (64)
Efficiency of water heater												80.3000 (216)
(217)m	85.4470	85.0651	84.3993	83.1712	81.6579	80.3000	80.3000	80.3000	80.3000	83.3054	84.8449	85.5313 (217)
Fuel for water heating, kWh/month												
	247.0460	219.6147	235.7385	211.9659	210.3621	193.7842	191.2303	199.4429	200.9289	214.5457	222.2425	244.3364 (219)
Space cooling fuel requirement												
(221)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 (221)
Pumps and Fa	7.3041	6.5973	7.3041	7.0685	7.3041	7.0685	7.3041	7.3041	7.0685	7.3041	7.0685	7.3041 (231)
Lighting	18.3051	14.6850	13.2222	9.6872	7.4826	6.1134	6.8259	8.8726	11.5246	15.1209	17.0790	18.8138 (232)
Electricity generated by PVs (Appendix M) (negative quantity)												
(233a)m	-13.4945	-20.2737	-31.0347	-37.2415	-42.2548	-40.2237	-39.7431	-36.4737	-31.0857	-24.1964	-15.2752	-11.5264 (233a)
Electricity generated by wind turbines (Appendix M) (negative quantity)												
(234a)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 (234a)
Electricity generated by hydro-electric generators (Appendix M) (negative quantity)												
(235a)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 (235a)
Electricity used or net electricity generated by micro-CHP (Appendix N) (negative if net generation)												
(235c)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 (235c)
Electricity generated by PVs (Appendix M) (negative quantity)												
(233b)m	-4.2516	-9.1906	-18.7347	-28.8371	-38.8201	-39.2512	-38.7810	-32.5107	-23.4129	-13.3596	-5.7452	-3.3434 (233b)
Electricity generated by wind turbines (Appendix M) (negative quantity)												
(234b)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 (234b)
Electricity generated by hydro-electric generators (Appendix M) (negative quantity)												
(235b)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 (235b)
Electricity used or net electricity generated by micro-CHP (Appendix N) (negative if net generation)												
(235d)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 (235d)
Annual totals kWh/year												
Space heating fuel - main system 1												1773.7945 (211)
Space heating fuel - main system 2												0.0000 (213)
Space heating fuel - secondary												0.0000 (215)
Efficiency of water heater												80.3000
Water heating fuel used												2591.2382 (219)
Space cooling fuel												0.0000 (221)

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Electricity for pumps and fans:	86.0000 (231)
Total electricity for the above, kWh/year	
Electricity for lighting (calculated in Appendix L)	147.7322 (232)

Energy saving/generation technologies (Appendices M ,N and Q)	
PV generation	-599.0614 (233)
Wind generation	0.0000 (234)
Hydro-electric generation (Appendix N)	0.0000 (235a)
Electricity generated - Micro CHP (Appendix N)	0.0000 (235)
Appendix Q - special features	
Energy saved or generated	-0.0000 (236)
Energy used	0.0000 (237)
Total delivered energy for all uses	3999.7036 (238)

----- 12a. Carbon dioxide emissions - Individual heating systems including micro-CHP -----

	Energy kWh/year	Emission factor kg CO2/kWh	Emissions kg CO2/year
Space heating - main system 1	1773.7945	0.2100	372.4968 (261)
Total CO2 associated with community systems			0.0000 (373)
Water heating (other fuel)	2591.2382	0.2100	544.1600 (264)
Space and water heating			916.6569 (265)
Pumps, fans and electric keep-hot	86.0000	0.1387	11.9293 (267)
Energy for lighting	147.7322	0.1443	21.3223 (268)
Energy saving/generation technologies			
PV Unit electricity used in dwelling	-342.8233	0.1333	-45.6868
PV Unit electricity exported	-256.2380	0.1252	-32.0786
Total			-77.7653 (269)
Total CO2, kg/year			872.1431 (272)
EPC Target Carbon Dioxide Emission Rate (TER)			14.3900 (273)

----- 13a. Primary energy - Individual heating systems including micro-CHP -----

	Energy kWh/year	Primary energy factor kg CO2/kWh	Primary energy kWh/year
Space heating - main system 1	1773.7945	1.1300	2004.3878 (275)
Total CO2 associated with community systems			0.0000 (473)
Water heating (other fuel)	2591.2382	1.1300	2928.0992 (278)
Space and water heating			4932.4870 (279)
Pumps, fans and electric keep-hot	86.0000	1.5128	130.1008 (281)
Energy for lighting	147.7322	1.5338	226.5967 (282)
Energy saving/generation technologies			
PV Unit electricity used in dwelling	-342.8233	1.4925	-511.6480
PV Unit electricity exported	-256.2380	0.4595	-117.7418
Total			-629.3898 (283)
Total Primary energy kWh/year			4659.7946 (286)
Target Primary Energy Rate (TPER)			76.8900 (287)