

Summary for Input Data



Plot Reference	Be Lean 2512002		Issued on Date	30/06/2026
Assessment Reference	00001	Plot Type Ref		
Plot Address	94a, Christchurch Road		SAP Version	10.2

SAP Rating	79 C	DER	14.53	TER	12.88
Environmental	90 B	% DER < TER			-12.81
CO ₂ Emissions (t/year)	0.67	DFEE	49.06	TFEE	50.65
Compliance Check	See BREL	% DFEE < TFEE			3.14
% DPER < TPER	-34.43	DPER	92.50	TPER	68.81

Assessor Details	Mr. Matthew Haskell	Assessor ID	6443-0001
Client			

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	North
Property Tenure	ND
Transaction Type	6
Terrain Type	Urban
1.0 Property Type	Bungalow, Detached
2.0 Number of Storeys	1
3.0 Date Built	2025
4.0 Sheltered Sides	0
5.0 Sunlight/Shade	Average or unknown
6.0 Thermal Mass Parameter	Precise calculation
Thermal Mass	95.11 kJ/m ² K
7.0 Electricity Tariff	Standard
Smart electricity meter fitted	Yes
Smart gas meter fitted	No

7.0 Measurements	Ground floor:	Heat Loss Perimeter 28.90 m	Internal Floor Area 52.00 m ²	Average Storey Height 2.57 m
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8.0 Living Area	25.00 m ²
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Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall 1	Timber Frame	Timber framed wall (one layer of plasterboard)	0.18	9.00	74.41	55.91	0.00	None	18.50	Enter Gross Area
Roof Light Tunnel	Timber Frame	Timber framed wall (one layer of plasterboard)	0.18	9.00	8.31	8.31	0.00	None	0.00	Enter Gross Area

Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Code	Shelter Factor	Calculation Type	Openings
External Roof 1	External Flat Roof	Plasterboard, insulated flat roof	0.13	9.00	52.00	52.00	None	0.00	Enter Gross Area	0.00

Description	Type	Storey Index	Construction	U-Value (W/m ² K)	Shelter Code	Shelter Factor	Kappa (kJ/m ² K)	Area (m ²)
Heatloss Floor 1	Ground Floor - Solid	Lowest occupied	Suspended concrete floor, carpeted	0.18	None	0.00	75.00	52.00

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m ² K)
Entrance	Manufacturer	Solid Door				0.00			1.00
Window	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.20
Roof Light	Manufacturer	Roof Light	Double Low-E Soft 0.05			0.63		0.70	1.30

Name	Opening Type	Location	Orientation	Area (m ²)	Pitch
Entrance	Entrance	External Wall 1	North	1.89	
Windows	Window	External Wall 1	North	3.92	
Windows	Window	External Wall 1	East	5.04	
Windows	Window	External Wall 1	South	7.65	

Summary for Input Data

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	

17.0 Thermal Bridging	Calculate Bridges
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17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	10.18	0.03	0.03 ECD	No
E3 Sill	Independently assessed	2.70	0.04	0.04 ACD	No
E4 Jamb	Independently assessed	29.36	0.05	0.05 ACD	No
E5 Ground floor (normal)	Independently assessed	28.90	0.03	0.03 ECD	No
E16 Corner (normal)	Independently assessed	10.30	0.09	0.09 ACD	No
E14 Flat roof	Independently assessed	28.90	0.04	0.04 ACD	No

Y-value	0.02	W/m²K
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19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes
Approved Installation	Yes
Mechanical Ventilation data Type	Database
Type	Balanced mechanical ventilation with heat recovery
MV Reference Number	500519
Configuration	2
Manufacturer SFP	0.71
Duct Type	Rigid
MVHR Efficiency	76.00
Wet Rooms	2
SFP from Installer Commissioning Certificate	No
MVHR System Location	Inside heated envelope (installed exclusively)
Duct Installation Specification	Level 1

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0
Number of passive vents	0
Number of flueless gas fires	0

21.0 Fixed Cooling System	No
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22.0 Pressure Testing

	Yes	
Designed AP ₅₀	2.50	m²/(h.m²) @ 50 Pa
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting	No				
	Name	Efficacy	Power	Capacity	Count
	Lighting 1	105.00	6.00	630.00	15

24.0 Main Heating 1

	Manufacturer	
Percentage of Heat	100.00	%
Fuel Type	Mains gas	
SAP Code	113	

Summary for Input Data

In Winter	89.50											
In Summer	89.50											
Model Name	SAP Default											
Manufacturer	SAP Default											
Controls SAP Code	2110											
Controls description	Time and temperature zone control by arrangement											
Delayed Start Stat	No											
Burner Control	Modulating											
Flue Type	None or Unknown											
Fan Assisted Flue	Yes											
Is MHS Pumped	Pump in heated space											
Heating Pump Age	2013 or later											
Heat Emitter	Underfloor											
Underfloor Heating	Yes - Pipes in thin screed											
Flow Temperature	Unknown											
Boiler Interlock	No											
Combi boiler type	Standard Combi											
Combi keep hot type	None											

25.0 Main Heating 2	None											
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26.0 Heat Networks	None											
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27.0 Secondary Heating	None											
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28.0 Water Heating												
Water Heating	Main Heating 1											
SAP Code	901											
Flue Gas Heat Recovery System	No											
Waste Water Heat Recovery Instantaneous System 1	No											
Waste Water Heat Recovery Instantaneous System 2	No											
Waste Water Heat Recovery Storage System	No											
Solar Panel	No											
Water use <= 125 litres/person/day	Yes											
Cold Water Source	From mains											
Bath Count	0											

28.1 Showers												
Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To							
Shower	Instantaneous electric shower		9.30	No								

28.3 Waste Water Heat Recovery System												
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29.0 Hot Water Cylinder	None											
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34.0 Small-scale Hydro	None											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	

Recommendations												
Lower cost measures	None											
Further measures to achieve even higher standards	None											

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Compliance Check	See BREL		% DFEE < TFEE				3.14
% DPER < TPER	-34.43		DPER	92.50		TPER	68.81
Assessor Details	Mr. Matthew Haskell				Assessor ID	6443-0001	
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	52.0000 (1b)	2.5700 (2b)	133.6400 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	52.0000		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	133.6400 (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	2.5000	(17)
Infiltration rate	0.1250	(18)
Number of sides sheltered	0	(19)

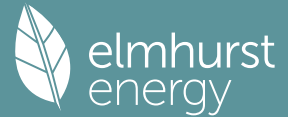
Shelter factor	(20) = 1 - [0.075 x (19)] =	1.0000 (20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) =	0.1250 (21)

	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	0.1594	0.1562	0.1531	0.1375	0.1344	0.1187	0.1187	0.1156	0.1250	0.1344	0.1406	0.1469 (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) =												68.4000 (23c)
Effective ac	0.3174	0.3142	0.3111	0.2955	0.2924	0.2767	0.2767	0.2736	0.2830	0.2924	0.2986	0.3049 (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							
Entrance			1.8900	1.0000	1.8900		(26)
Window			16.6100	1.1450	19.0191		(27)
Heatloss Floor 1			52.0000	0.1800	9.3600	75.0000	3900.0000 (28a)
External Wall 1	74.4100	18.5000	55.9100	0.1800	10.0638	9.0000	503.1900 (29a)
Roof Light Tunnel	8.3100		8.3100	0.1800	1.4958	9.0000	74.7900 (29a)
External Roof 1	52.0000		52.0000	0.1300	6.7600	9.0000	468.0000 (30)
Total net area of external elements Aum(A, m ²)			186.7200				(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	48.5887		(33)
Heat capacity Cm = Sum(A x k)				(28)...(30) + (32) + (32a)...(32e) =		4945.9800 (34)	
Thermal mass parameter (TMP = Cm / TFA) in kJ/m ² K						95.1150 (35)	
List of Thermal Bridges							
K1 Element				Length	Psi-value	Total	
E2 Other lintels (including other steel lintels)				10.1770	0.0250	0.2544	
E3 Sill				2.7000	0.0400	0.1080	

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E4 Jamb						29.3600	0.0500	1.4680				
E5 Ground floor (normal)						28.9000	0.0260	0.7514				
E16 Corner (normal)						10.3000	0.0900	0.9270				
E14 Flat roof						28.9000	0.0400	1.1560				
Thermal bridges (Sum(L x Psi) calculated using Appendix K)												4.6648 (36)
Point Thermal bridges										(36a) =		0.0000
Total fabric heat loss										(33) + (36) + (36a) =		53.2535 (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	13.9966	13.8588	13.7210	13.0319	12.8941	12.2050	12.2050	12.0672	12.4806	12.8941	13.1697	13.4454 (38)
Average = Sum(39)m / 12 =	67.2501	67.1123	66.9745	66.2854	66.1476	65.4585	65.4585	65.3207	65.7341	66.1476	66.4232	66.6989 (39)
												66.2510
HLP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
HLP (average)	1.2933	1.2906	1.2880	1.2747	1.2721	1.2588	1.2588	1.2562	1.2641	1.2721	1.2774	1.2827 (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													1.7491 (42)
Hot water usage for mixer showers													0.0000 (42a)
Hot water usage for baths													0.0000 (42b)
Hot water usage for other uses													32.5422 (42c)
Average daily hot water use (litres/day)													29.5839 (43)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daily hot water use	32.5422	31.3589	30.1755	28.9922	27.8088	26.6255	26.6255	27.8088	28.9922	30.1755	31.3589	32.5422 (44)	
Energy conte	51.5389	44.6546	46.3787	39.6888	37.4360	32.7391	32.2012	34.4331	35.7502	40.9479	44.6765	50.9533 (45)	
Energy content (annual)													491.3984
Distribution loss (46)m = 0.15 x (45)m													7.6430 (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													
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 (57)	
Combi loss	16.5832	14.4337	15.3771	14.2975	14.1711	13.1304	13.5680	14.1711	14.2975	15.3771	15.4647	16.5832 (59)	
Total heat required for water heating calculated for each month													
WWHRS	68.1221	59.0883	61.7558	53.9863	51.6071	45.8695	45.7692	48.6042	50.0478	56.3250	60.1411	67.5364 (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	68.1221	59.0883	61.7558	53.9863	51.6071	45.8695	45.7692	48.6042	50.0478	56.3250	60.1411	67.5364 (64)	
12Total per year (kWh/year)													668.8529 (64)
Electric shower(s)	55.0370	49.0384	53.5480	51.1002	52.0591	49.6593	51.3147	52.0591	51.1002	53.5480	52.5411	55.0370 (64a)	
Heat gains from water heating, kWh/month	35.0417	30.7157	32.6522	29.5460	29.0050	26.5832	26.9276	28.0066	28.2364	30.8465	31.8564	34.8470 (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	87.4535	87.4535	87.4535	87.4535	87.4535	87.4535	87.4535	87.4535	87.4535	87.4535	87.4535	87.4535 (66)	
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	76.8814	85.1187	76.8814	79.4441	76.8814	79.4441	76.8814	76.8814	79.4441	76.8814	79.4441	76.8814 (67)	
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	152.4259	154.0076	150.0218	141.5364	130.8251	120.7580	114.0326	112.4509	116.4367	124.9221	135.6334	145.7005 (68)	
Pumps, fans	31.7454	31.7454	31.7454	31.7454	31.7454	31.7454	31.7454	31.7454	31.7454	31.7454	31.7454	31.7454 (69)	
Losses e.g. evaporation (negative values) (Table 5)	3.0000	3.0000	3.0000	3.0000	3.0000	0.0000	0.0000	0.0000	0.0000	3.0000	3.0000	3.0000 (70)	
Water heating gains (Table 5)	-69.9628	-69.9628	-69.9628	-69.9628	-69.9628	-69.9628	-69.9628	-69.9628	-69.9628	-69.9628	-69.9628	-69.9628 (71)	
Total internal gains	47.0991	45.7079	43.8874	41.0361	38.9852	36.9211	36.1930	37.6432	39.2172	41.4603	44.2450	46.8374 (72)	
	328.6425	337.0702	323.0266	314.2526	298.9278	286.3593	276.3430	276.2116	284.3341	295.4999	311.5585	321.6553 (73)	

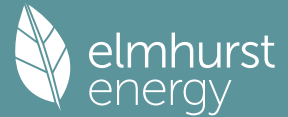
6. Solar gains

[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
North					3.9200	10.6334	0.6300	0.7000			0.7700	12.7388 (74)
East					5.0400	19.6403	0.6300	0.7000			0.7700	30.2517 (76)
South					7.6500	46.7521	0.6300	0.7000			0.7700	109.3035 (78)
Solar gains	152.2940	262.5343	366.8545	466.3060	532.2668	532.5969	511.7561	462.0426	401.2881	292.2797	182.9972	129.9455 (83)
Total gains	480.9365	599.6045	689.8811	780.5587	831.1946	818.9561	788.0991	738.2541	685.6223	587.7796	494.5557	451.6008 (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)													

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	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
tau	20.4295	20.4714	20.5135	20.7268	20.7700	20.9886	20.9886	21.0329	20.9006	20.7700	20.6838	20.5983
alpha	2.3620	2.3648	2.3676	2.3818	2.3847	2.3992	2.3992	2.4022	2.3934	2.3847	2.3789	2.3732
util living area	0.9181	0.8718	0.8115	0.7138	0.5932	0.4558	0.3440	0.3778	0.5511	0.7577	0.8803	0.9275 (86)
MIT	18.9061	19.2614	19.6833	20.1614	20.5175	20.7395	20.8235	20.8099	20.6519	20.1676	19.4574	18.8413 (87)
Th 2	19.8461	19.8482	19.8503	19.8607	19.8628	19.8732	19.8732	19.8753	19.8690	19.8628	19.8586	19.8544 (88)
util rest of house	0.9069	0.8553	0.7877	0.6786	0.5436	0.3891	0.2631	0.2947	0.4839	0.7190	0.8620	0.9175 (89)
MIT 2	17.4263	17.8669	18.3853	18.9635	19.3703	19.6106	19.6839	19.6769	19.5281	18.9903	18.1275	17.3512 (90)
Living area fraction									FLA = Living area /	(4) =		0.4808 (91)
MIT	18.1377	18.5373	19.0093	19.5394	19.9218	20.1534	20.2318	20.2216	20.0684	19.5563	18.7669	18.0676 (92)
Temperature adjustment												0.0000
adjusted MIT	18.1377	18.5373	19.0093	19.5394	19.9218	20.1534	20.2318	20.2216	20.0684	19.5563	18.7669	18.0676 (93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.8860	0.8329	0.7678	0.6678	0.5464	0.4063	0.2896	0.3212	0.4965	0.7073	0.8408	0.8975 (94)
Useful gains	426.0990	499.3889	529.7229	521.2607	454.1337	332.7707	228.2070	237.1024	340.3958	415.7511	415.8221	405.3208 (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	930.5893	915.2340	837.8045	705.2384	543.8524	363.5144	237.7309	249.6292	392.3265	592.4369	774.9535	924.9531 (97)
Space heating kWh	375.3408	279.4479	229.2127	132.4640	66.7507	0.0000	0.0000	0.0000	0.0000	131.4542	258.5746	386.6064 (98a)
Space heating requirement - total per year (kWh/year)												1859.8513
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	375.3408	279.4479	229.2127	132.4640	66.7507	0.0000	0.0000	0.0000	0.0000	131.4542	258.5746	386.6064 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												1859.8513
Space heating per m2										(98c) / (4) =		35.7664 (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 %)												84.5000 (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	375.3408	279.4479	229.2127	132.4640	66.7507	0.0000	0.0000	0.0000	0.0000	131.4542	258.5746	386.6064 (98)
Space heating efficiency (main heating system 1)	84.5000	84.5000	84.5000	84.5000	84.5000	0.0000	0.0000	0.0000	0.0000	84.5000	84.5000	84.5000 (210)
Space heating fuel (main heating system)	444.1902	330.7076	271.2577	156.7621	78.9949	0.0000	0.0000	0.0000	0.0000	155.5671	306.0054	457.5224 (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	68.1221	59.0883	61.7558	53.9863	51.6071	45.8695	45.7692	48.6042	50.0478	56.3250	60.1411	67.5364 (64)
Efficiency of water heater (217)m	89.5000	89.5000	89.5000	89.5000	89.5000	89.5000	89.5000	89.5000	89.5000	89.5000	89.5000	89.5000 (216)
Fuel for water heating, kWh/month	76.1141	66.0205	69.0009	60.3199	57.6615	51.2508	51.1388	54.3064	55.9193	62.9330	67.1968	75.4597 (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	19.5936	17.6974	19.5936	18.9615	19.5936	18.9615	19.5936	19.5936	18.9615	19.5936	18.9615	19.5936 (223)
Lighting	14.6528	11.7551	10.5841	7.7544	5.9897	4.8936	5.4640	7.1023	9.2252	12.1040	13.6714	15.0601 (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												2201.0074 (211)
Space heating fuel - main system 2												0.0000 (213)
Space heating fuel - secondary												0.0000 (215)
Efficiency of water heater												89.5000
Water heating fuel used												747.3217 (219)
Space cooling fuel												0.0000 (221)
Electricity for pumps and fans:												
(BalancedWithHeatRecovery, Database: in-use factor = 1.2500, SFP = 0.8875)												
mechanical ventilation fans (SFP = 0.8875)												144.6987 (230a)
central heating pump												41.0000 (230c)
main heating flue fan												45.0000 (230e)
Total electricity for the above, kWh/year												230.6987 (231)
Electricity for lighting (calculated in Appendix L)												118.2569 (232)
Energy saving/generation technologies (Appendices M ,N and Q)												
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)

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Appendix Q - special features

Energy saved or generated	-0.0000 (236)
Energy used	0.0000 (237)
Total delivered energy for all uses	3923.3270 (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	2201.0074	0.2100	462.2116 (261)
Total CO2 associated with community systems			0.0000 (373)
Water heating (other fuel)	747.3217	0.2100	156.9376 (264)
Energy for instantaneous electric shower(s)	626.0423	0.1391	87.0963 (264a)
Space and water heating			619.1491 (265)
Pumps, fans and electric keep-hot	230.6987	0.1387	32.0008 (267)
Energy for lighting	118.2569	0.1443	17.0681 (268)
Total CO2, kg/year			755.3143 (272)
EPC Dwelling Carbon Dioxide Emission Rate (DER)			14.5300 (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	2201.0074	1.1300	2487.1384 (275)
Total CO2 associated with community systems			0.0000 (473)
Water heating (other fuel)	747.3217	1.1300	844.4735 (278)
Energy for instantaneous electric shower(s)	626.0423	1.5143	948.0372 (278a)
Space and water heating			3331.6119 (279)
Pumps, fans and electric keep-hot	230.6987	1.5128	349.0010 (281)
Energy for lighting	118.2569	1.5338	181.3863 (282)
Total Primary energy kWh/year			4810.0365 (286)
Dwelling Primary energy Rate (DPER)			92.5000 (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	52.0000 (1b)	2.5700 (2b)	133.6400 (1b) - (3b)
Ground floor			
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	52.0000		133.6400 (4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	133.6400 (5)

2. Ventilation rate

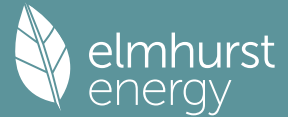
	m3 per hour
Number of open chimneys	0 * 80 = 0.0000 (6a)
Number of open flues	0 * 20 = 0.0000 (6b)
Number of chimneys / flues attached to closed fire	0 * 10 = 0.0000 (6c)
Number of flues attached to solid fuel boiler	0 * 20 = 0.0000 (6d)
Number of flues attached to other heater	0 * 35 = 0.0000 (6e)
Number 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) = 0.1497 (8)
Pressure test	Yes
Pressure Test Method	Blower Door
Measured/design AP50	5.0000 (17)
Infiltration rate	0.3997 (18)
Number of sides sheltered	0 (19)
Shelter factor	(20) = 1 - [0.075 x (19)] = 1.0000 (20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) = 0.3997 (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	0.5096	0.4996	0.4896	0.4396	0.4296	0.3797	0.3797	0.3697	0.3997	0.4296	0.4496	0.4696 (22b)
Effective ac	0.6298	0.6248	0.6198	0.5966	0.5923	0.5721	0.5721	0.5683	0.5799	0.5923	0.6011	0.6103 (25)

3. Heat losses and heat loss parameter

Element	Gross m2	Openings m2	NetArea m2	U-value W/m2K	A x U W/K	K-value kJ/m2K	A x K kJ/K
Main dwelling							
TER Opaque door			1.8900	1.0000	1.8900		(26)
TER Opening Type			11.1100	1.1450	12.7214		(27)
Heatloss Floor 1			52.0000	0.1300	6.7600		(28a)
External Wall 1	74.4100	13.0000	61.4100	0.1800	11.0538		(29a)
Roof Light Tunnel	8.3100		8.3100	0.1800	1.4958		(29a)

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External Roof 1 52.0000 52.0000 0.1100 5.7200 (30)
 Total net area of external elements Aum(A, m2) 186.7200 (31)
 Fabric heat loss, W/K = Sum (A x U) (26)...(30) + (32) = 39.6410 (33)

Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K 95.1150 (35)

List of Thermal Bridges	Length	Psi-value	Total
K1 Element	10.1770	0.0500	0.5089
E2 Other lintels (including other steel lintels)	2.7000	0.0500	0.1350
E3 Sill	29.3600	0.0500	1.4680
E4 Jamb	28.9000	0.1600	4.6240
E5 Ground floor (normal)	10.3000	0.0900	0.9270
E16 Corner (normal)	28.9000	0.0800	2.3120
E14 Flat roof			

Thermal bridges (Sum(L x Psi) calculated using Appendix K) 9.9748 (36)
 Point Thermal bridges (36a) = 0.0000
 Total fabric heat loss (33) + (36) + (36a) = 49.6158 (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 27.7761 27.5538 27.3358 26.3123 26.1207 25.2292 25.2292 25.0641 25.5726 26.1207 26.5082 26.9132 (38)
 Average = Sum(39)m / 12 = 77.3919 77.1696 76.9517 75.9281 75.7366 74.8451 74.8451 74.6800 75.1885 75.7366 76.1240 76.5290 (39)
 75.9272

HLP Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 HLP (average) 1.4883 1.4840 1.4798 1.4602 1.4565 1.4393 1.4393 1.4362 1.4459 1.4565 1.4639 1.4717 (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 1.7491 (42)
 Hot water usage for mixer showers 68.7246 67.6918 66.1868 63.3073 61.1823 58.8125 57.4655 58.9591 60.5964 63.1408 66.0822 68.4613 (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 32.5422 31.3589 30.1755 28.9922 27.8088 26.6255 26.6255 27.8088 28.9922 30.1755 31.3589 32.5422 (42c)
 Average daily hot water use (litres/day) 92.9456 (43)

Daily hot water use Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 Energy conte 101.2669 99.0507 96.3624 92.2995 88.9911 85.4380 84.0910 86.7679 89.5885 93.3163 97.4411 101.0035 (44)
 Energy content (annual) 160.3819 141.0469 148.1054 126.3534 119.7991 105.0559 101.7007 107.4368 110.4716 126.6294 138.8227 158.1471 (45)
 Distribution loss (46)m = 0.15 x (45)m Total = Sum(45)m = 1543.9510
 24.0573 21.1570 22.2158 18.9530 17.9699 15.7584 15.2551 16.1155 16.5707 18.9944 20.8234 23.7221 (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 45.5905 49.1052 45.5176 45.3489 42.1338 42.8518 44.2160 44.1806 47.5530 48.0531 50.9589 (61)
 Total heat required for water heating calculated for each month
 211.3409 186.6373 197.2106 171.8709 165.1480 147.1897 144.5526 151.6528 154.6523 174.1824 186.8758 209.1060 (62)
 WWHRS -31.4180 -27.7864 -29.0963 -24.0929 -22.4537 -19.2138 -18.0099 -19.1517 -19.8793 -23.4355 -26.5496 -30.8362 (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)
 FGHSR 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 179.9228 158.8510 168.1143 147.7781 142.6944 127.9760 126.5427 132.5011 134.7730 150.7468 160.3262 178.2698 (64)
 Total per year (kWh/year) = Sum(64)m = 1808.4961 (64)
 1808 (64)
 12Total per year (kWh/year)
 Electric shower(s) 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)
 Total Energy used by instantaneous electric shower(s) (kWh/year) = Sum(64a)m = 0.0000 (64a)
 Heat gains from water heating, kWh/month 66.0667 58.2957 61.5213 53.3919 51.1704 45.4645 44.5285 46.7767 47.7770 53.9925 58.1718 65.3237 (65)

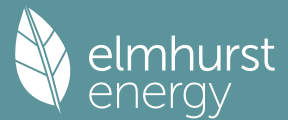
5. Internal gains (see Table 5 and 5a)

Metabolic gains (Table 5), Watts Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 (66)m 87.4535 87.4535 87.4535 87.4535 87.4535 87.4535 87.4535 87.4535 87.4535 87.4535 87.4535 (66)
 Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5
 77.0079 85.2588 77.0079 79.5748 77.0079 79.5748 77.0079 77.0079 79.5748 77.0079 79.5748 (67)
 Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5
 152.4259 154.0076 150.0218 141.5364 130.8251 120.7580 114.0326 112.4509 116.4367 124.9221 135.6334 145.7005 (68)
 Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5
 31.7454 31.7454 31.7454 31.7454 31.7454 31.7454 31.7454 31.7454 31.7454 31.7454 31.7454 (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 (70)
 Losses e.g. evaporation (negative values) (Table 5)
 -69.9628 -69.9628 -69.9628 -69.9628 -69.9628 -69.9628 -69.9628 -69.9628 -69.9628 -69.9628 -69.9628 (71)
 Water heating gains (Table 5)
 88.7994 86.7496 82.6900 74.1554 68.7775 63.1452 59.8501 62.8720 66.3569 72.5706 80.7942 87.8006 (72)
 Total internal gains 370.4693 378.2520 361.9557 347.5027 328.8466 312.7141 300.1266 301.5668 311.6046 326.7367 348.2385 362.7451 (73)

6. Solar gains

[Jan] Area Solar flux g FF Access Gains
 m2 Table 6a Specific data Specific data Access factor W
 or Table 6b or Table 6c Table 6d
 North 2.6200 10.6334 0.6300 0.7000 0.7700 8.5142 (74)
 East 3.3700 19.6403 0.6300 0.7000 0.7700 20.2278 (76)
 South 5.1200 46.7521 0.6300 0.7000 0.7700 73.1548 (78)
 Solar gains 101.8968 175.6497 245.4296 311.9395 356.0445 356.2570 342.3199 309.0796 268.4577 195.5465 122.4384 86.9447 (83)

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Total gains 472.3661 553.9017 607.3853 659.4422 684.8911 668.9712 642.4466 610.6464 580.0622 522.2832 470.6769 449.6898 (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	17.7523	17.8034	17.8538	18.0945	18.1403	18.3564	18.3564	18.3969	18.2725	18.1403	18.0480	17.9524	
alpha	2.1835	2.1869	2.1903	2.2063	2.2094	2.2238	2.2238	2.2265	2.2182	2.2094	2.2032	2.1968	
util living area	0.9266	0.8975	0.8596	0.7926	0.6980	0.5693	0.4487	0.4815	0.6500	0.8144	0.8993	0.9330 (86)	
MIT	17.9186	18.3095	18.8539	19.5593	20.1759	20.6405	20.8496	20.8186	20.4820	19.6806	18.6935	17.8610 (87)	
Th 2	19.6963	19.6995	19.7027	19.7175	19.7203	19.7333	19.7333	19.7357	19.7283	19.7203	19.7147	19.7088 (88)	
util rest of house	0.9155	0.8825	0.8383	0.7597	0.6462	0.4888	0.3394	0.3732	0.5758	0.7780	0.8820	0.9229 (89)	
MIT 2	16.1925	16.6798	17.3568	18.2245	18.9511	19.4647	19.6560	19.6361	19.3106	18.3931	17.1774	16.1258 (90)	
Living area fraction									fLA = Living area / (4) =				0.4808 (91)
MIT	17.0224	17.4633	18.0765	18.8662	19.5399	20.0300	20.2298	20.2046	19.8738	19.0121	17.9063	16.9600 (92)	
Temperature adjustment												0.0000	
adjusted MIT	17.0224	17.4633	18.0765	18.8662	19.5399	20.0300	20.2298	20.2046	19.8738	19.0121	17.9063	16.9600 (93)	

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.8842	0.8485	0.8050	0.7340	0.6380	0.5091	0.3845	0.4158	0.5852	0.7536	0.8499	0.8928 (94)
Useful gains	417.6566	470.0047	488.9592	484.0220	436.9920	340.5406	247.0091	253.9088	339.4318	393.5976	400.0052	401.4828 (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	984.6082	969.5048	890.8340	756.7144	593.7688	406.4100	271.6735	284.1269	434.1204	637.1031	822.6192	976.5140 (97)
Space heating kWh	421.8120	335.6641	298.9949	196.3385	116.6419	0.0000	0.0000	0.0000	0.0000	181.1680	304.2821	427.8232 (98a)
Space heating requirement - total per year (kWh/year)												2282.7246
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	421.8120	335.6641	298.9949	196.3385	116.6419	0.0000	0.0000	0.0000	0.0000	181.1680	304.2821	427.8232 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												2282.7246
Space heating per m2										(98c) / (4) =		43.8986 (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 %)												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	421.8120	335.6641	298.9949	196.3385	116.6419	0.0000	0.0000	0.0000	0.0000	181.1680	304.2821	427.8232 (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)	456.5065	363.2728	323.5875	212.4876	126.2359	0.0000	0.0000	0.0000	0.0000	196.0693	329.3096	463.0121 (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	179.9228	158.8510	168.1143	147.7781	142.6944	127.9760	126.5427	132.5011	134.7730	150.7468	160.3262	178.2698 (64)
Efficiency of water heater (217)m	86.1415	85.9433	85.6005	84.9910	83.9528	80.3000	80.3000	80.3000	80.3000	84.7764	85.7316	80.3000 (216)
Fuel for water heating, kWh/month	208.8690	184.8323	196.3940	173.8749	169.9698	159.3723	157.5874	165.0076	167.8368	177.8170	187.0095	86.1851 (217)
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	16.0007	12.8364	11.5577	8.4677	6.5407	5.3438	5.9666	7.7557	10.0738	13.2174	14.9290	16.4454 (232)
Electricity generated by PVs (Appendix M) (negative quantity)												
(233a)m	-41.2062	-54.6795	-74.0883	-78.4579	-80.8496	-74.2768	-73.4297	-71.1311	-66.5602	-60.2088	-44.1068	-36.0494 (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	-34.9321	-71.7349	-139.4440	-205.0477	-266.9963	-266.7045	-263.4725	-224.8415	-167.2623	-100.9223	-46.0797	-27.7484 (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												2470.4812 (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												2155.4159 (219)
Space cooling fuel												0.0000 (221)
Electricity for pumps and fans:												
Total electricity for the above, kWh/year												86.0000 (231)
Electricity for lighting (calculated in Appendix L)												129.1350 (232)

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

PV generation	-2570.2303	(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	2270.8018	(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	2470.4812	0.2100	518.8011 (261)
Total CO2 associated with community systems			0.0000 (373)
Water heating (other fuel)	2155.4159	0.2100	452.6373 (264)
Space and water heating			971.4384 (265)
Pumps, fans and electric keep-hot	86.0000	0.1387	11.9293 (267)
Energy for lighting	129.1350	0.1443	18.6382 (268)
Energy saving/generation technologies			
PV Unit electricity used in dwelling	-755.0442	0.1358	-102.5680
PV Unit electricity exported	-1815.1861	0.1265	-229.6943
Total			-332.2622 (269)
Total CO2, kg/year			669.7436 (272)
EPC Target Carbon Dioxide Emission Rate (TER)			12.8800 (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	2470.4812	1.1300	2791.6438 (275)
Total CO2 associated with community systems			0.0000 (473)
Water heating (other fuel)	2155.4159	1.1300	2435.6200 (278)
Space and water heating			5227.2637 (279)
Pumps, fans and electric keep-hot	86.0000	1.5128	130.1008 (281)
Energy for lighting	129.1350	1.5338	198.0716 (282)
Energy saving/generation technologies			
PV Unit electricity used in dwelling	-755.0442	1.5021	-1134.1694
PV Unit electricity exported	-1815.1861	0.4645	-843.1894
Total			-1977.3588 (283)
Total Primary energy kWh/year			3578.0773 (286)
Target Primary Energy Rate (TPER)			68.8100 (287)