Summary for Input Data

elmhurst energy

Property Reference	Flat 2	**Issued on Date**	06/08/2025
Assessment Reference	00001	**Prop Type Ref**	
Property	Flat 2, 67 Daisy Hill, Dewbury, WF13 1LT		

SAP Rating	72 C	**DER**	10.26	**TER**	
Environmental	94 A	**% DER < TER**			N/A
CO_2 Emissions (t/year)	0.32	**DFEE**	36.43	**TFEE**	
Compliance Check	N/A	**% DFEE < TFEE**			
% DPER < TPER		**DPER**	107.09	**TPER**	

Assessor Details	Mr. Chris Law	**Assessor ID**	AX42-0001
Client			

SUMMARY FOR INPUT DATA FOR: Conversion (As Designed)

Orientation	North	
Property Tenture	ND	
Transaction Type	5	
Terrain Type	Suburban	
1.0 Property Type	Flat, Mid-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	2	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	139.63	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	No	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	7.00 m	34.00 m²	2.60 m

8.0 Living Area	11.00	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall 1	Cavity Wall	Cavity wall : dense plaster, dense block, filled cavity, any outside structure	0.18	190.00	18.00	14.25	0.00	None	3.75	Enter Gross Area

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Timber I-joists, carpeted	20.00	34.00

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Timber I-joists, carpeted	30.00	34.00

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Window	Manufacturer	Window	Double glazed			0.76		0.70	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Front	Window	External Wall 1	North	1.94	0
Rear	Window	External Wall 1	South	1.81	0

Summary for Input Data

elmhurst energy

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	
17.0 Thermal Bridging	Default	
Y-value	0.20	W/m²K
19.0 Mechanical Ventilation		
Mechanical Ventilation		
Mechanical Ventilation System Present	No	
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	2	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	No	
Property Tested?	Yes	
Test Method	Blower Door	
22.0 Lighting		
No Fixed Lighting	No	

Name	Efficacy	Power	Capacity	Count
Lighting 1	80.00	25.00	2000.00	3

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Database Ref. No.	0	
Fuel Type	Electricity	
SAP Code	409	
In Winter	100.00	
In Summer	100.00	
Controls SAP Code	2404	
Delayed Start Stat	No	
HETAS approved System	No	

Number Of Heaters	PCDF Index
3	697101 m

25.0 Main Heating 2	None	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
28.0 Water Heating		
Water Heating	Independent	
SAP Code	909	
Fuel Type	Electricity	
Flue Gas Heat Recovery System	No	

Summary for Input Data

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	No
Summer Immersion	No
Cold Water Source	From mains
Bath Count	0
Supplementary Immersion	No
Immersion Only Heating Hot Water	No

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	None
Cylinder Stat	No
Cylinder In Heated Space	No
Independent Time Control	No
In Airing Cupboard	No

31.0 Thermal Store	None

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar water heating			0	0
			0	0
			0	0

Full SAP Calculation Printout

Property Reference	Flat 2	**Issued on Date**	06/08/2025
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Compliance Check	N/A	**% DFEE < TFEE**			
% DPER < TPER		**DPER**	107.09	**TPER**	

Assessor Details	Mr. Chris Law	**Assessor ID**	AX42-0001
Client			

SAP 10 WORKSHEET FOR Conversion (As Designed) (Version 10.2, February 2022)
CALCULATION OF DWELLING EMISSIONS FOR REGULATIONS COMPLIANCE

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1. Overall dwelling characteristics

	Area (m2)		Storey height (m)		Volume (m3)	
Main dwelling						
Ground floor	34.0000	(1b)	x 2.6000	(2b) =	88.4000	(1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	34.0000					(4)
Dwelling volume				(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =	88.4000	(5)

2. Ventilation rate

	m3 per hour		
Number of open chimneys	0 * 80 =	0.0000	(6a)
Number of open flues	0 * 20 =	0.0000	(6b)
Number of chimneys / flues attached to closed fire	0 * 10 =	0.0000	(6c)
Number of flues attached to solid fuel boiler	0 * 20 =	0.0000	(6d)
Number of flues attached to other heater	0 * 35 =	0.0000	(6e)
Number of blocked chimneys	0 * 20 =	0.0000	(6f)
Number of intermittent extract fans	2 * 10 =	20.0000	(7a)
Number of passive vents	0 * 10 =	0.0000	(7b)
Number of flueless gas fires	0 * 40 =	0.0000	(7c)
	Air changes per hour		
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =	20.0000 / (5) =	0.2262	(8)
Pressure test		No	
Pressure Test Method		Blower Door	
Measured/design AP50		15.0000	(17)
Infiltration rate		0.9762	(18)
Number of sides sheltered		2	(19)
Shelter factor	(20) = 1 - [0.075 x (19)] =	0.8500	(20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) =	0.8298	(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	1.0580	1.0373	1.0165	0.9128	0.8920	0.7883	0.7883	0.7676	0.8298	0.8920	0.9335	0.9750	(22b)
Effective ac	1.0580	1.0373	1.0165	0.9166	0.8979	0.8107	0.8107	0.7946	0.8443	0.8979	0.9357	0.9753	(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								
Window			3.7500	1.3258	4.9716			(27)
External Wall 1	18.0000	3.7500	14.2500	0.1800	2.5650	190.0000	2707.5000	(29a)
Total net area of external elements Aum(A, m2)			18.0000					(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	7.5366			(33)
Main dwelling								
Party Floor 1			34.0000			30.0000	1020.0000	(32d)
Party Ceiling 1			34.0000			20.0000	680.0000	(32b)
Heat capacity Cm = Sum(A x k)				(28)...(30) + (32) + (32a)...(32e) =			4407.5000	(34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K							129.6324	(35)
Thermal bridges (Default value 0.200 * total exposed area)							3.6000	(36)
Point Thermal bridges					(36a) =		0.0000	
Total fabric heat loss				(33) + (36) + (36a) =			11.1366	(37)

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
(38)m	30.8641	30.2589	29.6538	26.7388	26.1927	23.6504	23.6504	23.1796	24.6296	26.1927	27.2975	28.4525	(38)
Heat transfer coeff	42.0007	41.3955	40.7903	37.8754	37.3293	34.7870	34.7870	34.3162	35.7662	37.3293	38.4341	39.5891	(39)
Average = Sum(39)m / 12 =												37.8667	

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP	1.2353	1.2175	1.1997	1.1140	1.0979	1.0231	1.0231	1.0093	1.0519	1.0979	1.1304	1.1644	(40)
HLP (average)												1.1137	
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31	

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4. Water heating energy requirements (kWh/year)

Assumed occupancy												1.2576	(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													
	54.8895	54.0743	52.9264	50.8097	49.2248	47.4674	46.5182	47.6581	48.8993	50.7798	52.9400	54.7039	(42b)
Hot water usage for other uses													
	28.9568	27.9038	26.8508	25.7979	24.7449	23.6919	23.6919	24.7449	25.7979	26.8508	27.9038	28.9568	(42c)
Average daily hot water use (litres/day)												77.2156	(43)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daily hot water use													
	83.8463	81.9781	79.7772	76.6076	73.9697	71.1594	70.2101	72.4030	74.6971	77.6306	80.8438	83.6607	(44)
Energy conte	132.7920	116.7358	122.6146	104.8720	99.5775	87.4987	84.9130	89.6500	92.1091	105.3440	115.1768	130.9925	(45)
Energy content (annual)										Total = Sum(45)m =		1282.2761	
Distribution loss (46)m = 0.15 x (45)m													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(46)
Water storage loss:													
Total storage loss													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(56)
If cylinder contains dedicated solar storage													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(57)
Primary loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(59)
Combi loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(61)
Total heat required for water heating calculated for each month													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(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													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(64)
										Total per year (kWh/year) = Sum(64)m =		1089.9347	(64)
12Total per year (kWh/year)												1090	(64)
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													
	28.2183	24.8064	26.0556	22.2853	21.1602	18.5935	18.0440	19.0506	19.5732	22.3856	24.4751	27.8359	(65)

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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	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	(66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5													
	60.9060	67.4317	60.9060	62.9362	60.9060	62.9362	60.9060	60.9060	62.9362	60.9060	62.9362	60.9060	(67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5													
	106.7916	107.8997	105.1072	99.1622	91.6578	84.6046	79.8927	78.7846	81.5771	87.5221	95.0265	102.0797	(68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5													
	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	(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)													
	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	(71)
Water heating gains (Table 5)													
	37.9278	36.9142	35.0210	30.9518	28.4412	25.8243	24.2527	25.6057	27.1850	30.0882	33.9932	37.4139	(72)
Total internal gains													
	247.4893	254.1095	242.8980	234.9141	222.8688	215.2290	206.9153	207.1601	213.5621	220.3801	233.8197	242.2634	(73)

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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	1.9400	10.6334	0.7600	0.7000	0.7700	7.6053	(74)
South	1.8100	46.7521	0.7600	0.7000	0.7700	31.1978	(78)

Solar gains	38.8032	65.6282	89.7818	113.2297	130.0929	130.9770	125.4878	112.3713	97.6826	72.4107	46.3622	33.2980	(83)
Total gains	286.2924	319.7376	332.6799	348.1439	352.9617	346.2060	332.4031	319.5314	311.2447	292.7908	280.1819	275.5613	(84)

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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, ni1,m (see Table 9a)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
tau	29.1496	29.5758	30.0146	32.3246	32.7975	35.1944	35.1944	35.6772	34.2308	32.7975	31.8547	30.9253	
alpha	2.9433	2.9717	3.0010	3.1550	3.1865	3.3463	3.3463	3.3785	3.2821	3.1865	3.1236	3.0617	
util living area													
	0.9564	0.9380	0.9135	0.8517	0.7548	0.5817	0.4413	0.4698	0.6712	0.8556	0.9319	0.9594	(86)
MIT	19.2179	19.4537	19.7640	20.2562	20.5889	20.8365	20.8994	20.8943	20.7661	20.3533	19.8026	19.2948	(87)
Th 2	19.8919	19.9060	19.9202	19.9894	20.0025	20.0641	20.0641	20.0756	20.0403	20.0025	19.9761	19.9486	(88)
util rest of house													
	0.9488	0.9274	0.8981	0.8252	0.7095	0.5131	0.3547	0.3842	0.6058	0.8250	0.9188	0.9525	(89)
MIT 2	17.8312	18.1365	18.5347	19.1884	19.5878	19.9021	19.9555	19.9637	19.8153	19.3228	18.6272	17.9671	(90)
Living area fraction										fLA = Living area / (4) =		0.3235	(91)
MIT	18.2798	18.5626	18.9324	19.5339	19.9117	20.2044	20.2609	20.2648	20.1229	19.6562	19.0074	18.3966	(92)
Temperature adjustment												0.0000	
adjusted MIT	18.2798	18.5626	18.9324	19.5339	19.9117	20.2044	20.2609	20.2648	20.1229	19.6562	19.0074	18.3966	(93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Utilisation	0.9343	0.9109	0.8809	0.8115	0.7050	0.5239	0.3734	0.4023	0.6118	0.8127	0.9035	0.9391	(94)
Useful gains	267.4723	291.2622	293.0483	282.5110	248.8434	181.3736	124.1329	128.5620	190.4277	237.9550	253.1434	258.7918	(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	587.1613	565.5713	507.1223	402.7623	306.5362	194.9610	127.3518	132.6253	215.4178	338.0617	457.6516	562.0316	(97)
Space heating kWh	237.8486	184.3357	159.2711	86.5810	42.9234	0.0000	0.0000	0.0000	0.0000	74.4794	147.2459	225.6104	(98a)
Space heating requirement - total per year (kWh/year)												1158.2956	
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	237.8486	184.3357	159.2711	86.5810	42.9234	0.0000	0.0000	0.0000	0.0000	74.4794	147.2459	225.6104	(98c)
Space heating requirement after solar contribution - total per year (kWh/year)												1158.2956	
Space heating per m2											(98c) / (4) =	34.0675	(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 %)												100.0000	(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	237.8486	184.3357	159.2711	86.5810	42.9234	0.0000	0.0000	0.0000	0.0000	74.4794	147.2459	225.6104	(98)
Space heating efficiency (main heating system 1)	100.0000	100.0000	100.0000	100.0000	100.0000	0.0000	0.0000	0.0000	0.0000	100.0000	100.0000	100.0000	(210)
Space heating fuel (main heating system)	237.8486	184.3357	159.2711	86.5810	42.9234	0.0000	0.0000	0.0000	0.0000	74.4794	147.2459	225.6104	(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	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(64)
Efficiency of water heater												100.0000	(216)
(217)m	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	(217)
Fuel for water heating, kWh/month	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(231)
Lighting	12.6551	10.1524	9.1411	6.6971	5.1731	4.2264	4.7190	6.1340	7.9675	10.4537	11.8075	13.0068	(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	1158.2956	(211)
Space heating fuel - main system 2	0.0000	(213)
Space heating fuel - secondary	0.0000	(215)
Efficiency of water heater	100.0000	
Water heating fuel used	1089.9347	(219)
Space cooling fuel	0.0000	(221)
Electricity for pumps and fans:		
Total electricity for the above, kWh/year	0.0000	(231)
Electricity for lighting (calculated in Appendix L)	102.1337	(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)
Appendix Q - special features		
Energy saved or generated	-0.0000	(236)
Energy used	0.0000	(237)
Total delivered energy for all uses	2350.3639	(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	1158.2956	0.1552	179.8163	(261)
Total CO2 associated with community systems			0.0000	(373)
Water heating (other fuel)	1089.9347	0.1415	154.2727	(264)
Space and water heating			334.0891	(265)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(267)
Energy for lighting	102.1337	0.1443	14.7410	(268)
Total CO2, kg/year			348.8301	(272)

EPC Dwelling Carbon Dioxide Emission Rate (DER) 10.2600 (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	1158.2956	1.5747	1824.0187	(275)
Total CO2 associated with community systems			0.0000	(473)
Water heating (other fuel)	1089.9347	1.5234	1660.4137	(278)
Space and water heating			3484.4324	(279)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(281)
Energy for lighting	102.1337	1.5338	156.6560	(282)
Total Primary energy kWh/year			3641.0885	(286)
Dwelling Primary energy Rate (DPER)			107.0900	(287)

Full SAP Calculation Printout

Property Reference	Flat 2	**Issued on Date**	06/08/2025
Assessment Reference	00001	**Prop Type Ref**	
Property	Flat 2, 67 Daisy Hill, Dewbury, WF13 1LT		

SAP Rating	72 C	**DER**	10.26	**TER**	
Environmental	94 A	**% DER < TER**			N/A
CO_2 Emissions (t/year)	0.32	**DFEE**	36.43	**TFEE**	
Compliance Check	N/A	**% DFEE < TFEE**			
% DPER < TPER		**DPER**	107.09	**TPER**	

Assessor Details	Mr. Chris Law	**Assessor ID**	AX42-0001
Client			

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

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1. Overall dwelling characteristics

	Area (m2)		Storey height (m)		Volume (m3)	
Main dwelling						
Ground floor	34.0000	(1b)	x 2.6000	(2b) =	88.4000	(1b) - (3b)
						(4)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	34.0000					
Dwelling volume			(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =		88.4000	(5)

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2. Ventilation rate

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	m3 per hour		
Number of open chimneys	0 * 80 =	0.0000	(6a)
Number of open flues	0 * 20 =	0.0000	(6b)
Number of chimneys / flues attached to closed fire	0 * 10 =	0.0000	(6c)
Number of flues attached to solid fuel boiler	0 * 20 =	0.0000	(6d)
Number of flues attached to other heater	0 * 35 =	0.0000	(6e)
Number of blocked chimneys	0 * 20 =	0.0000	(6f)
Number of intermittent extract fans	2 * 10 =	20.0000	(7a)
Number of passive vents	0 * 10 =	0.0000	(7b)
Number of flueless gas fires	0 * 40 =	0.0000	(7c)
	Air changes per hour		
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =	20.0000 / (5) =	0.2262	(8)
Pressure test		No	
Pressure Test Method		Blower Door	
Measured/design AP50		15.0000	(17)
Infiltration rate		0.9762	(18)
Number of sides sheltered		2	(19)
Shelter factor	(20) = 1 - [0.075 x (19)] =	0.8500	(20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) =	0.8298	(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	1.0580	1.0373	1.0165	0.9128	0.8920	0.7883	0.7883	0.7676	0.8298	0.8920	0.9335	0.9750	(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	1.0580	1.0373	1.0165	0.9166	0.8979	0.8107	0.8107	0.7946	0.8443	0.8979	0.9357	0.9753	(25)

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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								
Window			3.7500	1.3258	4.9716			(27)
External Wall 1	18.0000	3.7500	14.2500	0.1800	2.5650	190.0000	2707.5000	(29a)
Total net area of external elements Aum(A, m2)			18.0000					(31)
Fabric heat loss, W/K = Sum (A x U)			(26)...(30) + (32) =		7.5366			(33)
Main dwelling								
Party Floor 1			34.0000			30.0000	1020.0000	(32d)
Party Ceiling 1			34.0000			30.0000	1020.0000	(32b)
Heat capacity Cm = Sum(A x k)					(28)...(30) + (32) + (32a)...(32e) =		4747.5000	(34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K							139.6324	(35)
Thermal bridges (Default value 0.200 * total exposed area)							3.6000	(36)
Point Thermal bridges						(36a) =	0.0000	
Total fabric heat loss					(33) + (36) + (36a) =		11.1366	(37)

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
(38)m	30.8641	30.2589	29.6538	26.7388	26.1927	23.6504	23.6504	23.1796	24.6296	26.1927	27.2975	28.4525	(38)
Heat transfer coeff													

	42.0007	41.3955	40.7903	37.8754	37.3293	34.7870	34.7870	34.3162	35.7662	37.3293	38.4341	39.5891 (39)
Average = Sum(39)m / 12 =												37.8667
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
HLP	1.2353	1.2175	1.1997	1.1140	1.0979	1.0231	1.0231	1.0093	1.0519	1.0979	1.1304	1.1644 (40)
HLP (average)												1.1137
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31

4. Water heating energy requirements (kWh/year)

Assumed occupancy												1.2576 (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												
	19.6059	19.3147	18.9046	18.1486	17.5825	16.9548	16.6157	17.0229	17.4662	18.1379	18.9095	19.5396 (42b)
Hot water usage for other uses												
	27.5090	26.5086	25.5083	24.5080	23.5077	22.5073	22.5073	23.5077	24.5080	25.5083	26.5086	27.5090 (42c)
Average daily hot water use (litres/day)												43.1859 (43)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Daily hot water use												
	47.1148	45.8233	44.4130	42.6566	41.0902	39.4621	39.1231	40.5305	41.9742	43.6462	45.4181	47.0485 (44)
Energy conte	74.6184	65.2518	68.2611	58.3948	55.3153	48.5233	47.3159	50.1853	51.7584	59.2275	64.7065	73.6666 (45)
Energy content (annual)										Total = Sum(45)m =		717.2247
Distribution loss (46)m = 0.15 x (45)m												
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (46)
Water storage loss:												
Total storage loss												
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (56)
If cylinder contains dedicated solar storage												
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (57)
Primary loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (59)
Combi loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (61)
Total heat required for water heating calculated for each month												
	63.4256	55.4640	58.0219	49.6355	47.0180	41.2448	40.2186	42.6575	43.9946	50.3434	55.0005	62.6166 (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												
	63.4256	55.4640	58.0219	49.6355	47.0180	41.2448	40.2186	42.6575	43.9946	50.3434	55.0005	62.6166 (64)
										Total per year (kWh/year) = Sum(64)m =		609.6410 (64)
12Total per year (kWh/year)												610 (64)
Electric shower(s)												
	36.2817	32.3273	35.3002	33.6865	34.3187	32.7367	33.8279	34.3187	33.6865	35.3002	34.6364	36.2817 (64a)
Total Energy used by instantaneous electric shower(s) (kWh/year) = Sum(64a)m =												412.7026 (64a)
Heat gains from water heating, kWh/month												
	24.9268	21.9478	23.3305	20.8305	20.3342	18.4954	18.5116	19.2440	19.4203	21.4109	22.4092	24.7246 (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	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5												
	60.9060	67.4317	60.9060	62.9362	60.9060	62.9362	60.9060	60.9060	62.9362	60.9060	62.9362	60.9060 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5												
	106.7916	107.8997	105.1072	99.1622	91.6578	84.6046	79.8927	78.7846	81.5771	87.5221	95.0265	102.0797 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5												
	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879 (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)												
	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035 (71)
Water heating gains (Table 5)												
	33.5038	32.6605	31.3582	28.9313	27.3309	25.6880	24.8812	25.8656	26.9726	28.7781	31.1239	33.2320 (72)
Total internal gains												
	243.0652	249.8557	239.2353	232.8936	221.7585	215.0927	207.5438	207.4201	213.3498	219.0700	230.9505	238.0815 (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	1.9400	10.6334	0.7600	0.7000	0.7700	7.6053	(74)
South	1.8100	46.7521	0.7600	0.7000	0.7700	31.1978	(78)

Solar gains	38.8032	65.6282	89.7818	113.2297	130.0929	130.9770	125.4878	112.3713	97.6826	72.4107	46.3622	33.2980 (83)
Total gains	281.8684	315.4839	329.0171	346.1233	351.8514	346.0697	333.0315	319.7914	311.0324	291.4807	277.3127	271.3795 (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, ni1,m (see Table 9a)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
tau	31.3983	31.8573	32.3300	34.8181	35.3275	37.9093	37.9093	38.4294	36.8714	35.3275	34.3120	33.3109
alpha	3.0932	3.1238	3.1553	3.3212	3.3552	3.5273	3.5273	3.5620	3.4581	3.3552	3.2875	3.2207
util living area												
	0.9635	0.9466	0.9236	0.8629	0.7652	0.5873	0.4431	0.4726	0.6790	0.8664	0.9407	0.9662 (86)
MIT	18.9668	19.2516	19.6263	20.2190	20.6170	20.9027	20.9724	20.9660	20.8228	20.3331	19.6688	19.0566 (87)
Th 2	19.8919	19.9060	19.9202	19.9894	20.0025	20.0641	20.0641	20.0756	20.0403	20.0025	19.9761	19.9486 (88)
util rest of house												
	0.9566	0.9369	0.9090	0.8367	0.7193	0.5172	0.3554	0.3856	0.6122	0.8361	0.9285	0.9600 (89)
MIT 2	18.0697	18.3582	18.7340	19.3514	19.7232	20.0084	20.0533	20.0614	19.9304	19.4753	18.8201	18.1979 (90)
Living area fraction										fLA = Living area / (4) =		0.3235 (91)
MIT	18.3599	18.6473	19.0227	19.6321	20.0124	20.2977	20.3506	20.3541	20.2191	19.7529	19.0947	18.4757 (92)

Temperature adjustment												0.0000	
adjusted MIT	18.3599	18.6473	19.0227	19.6321	20.0124	20.2977	20.3506	20.3541	20.2191	19.7529	19.0947	18.4757	(93)

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8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Utilisation	0.9442	0.9226	0.8942	0.8261	0.7198	0.5355	0.3829	0.4125	0.6255	0.8274	0.9155	0.9487	(94)
Useful gains	266.1527	291.0748	294.1946	285.9413	253.2685	185.3137	127.5197	131.9273	194.5493	241.1670	253.8791	257.4668	(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													
	590.5264	569.0763	510.8044	406.4833	310.2952	198.2069	130.4737	135.6884	218.8585	341.6692	461.0036	565.1634	(97)
Space heating kWh													
	241.3340	186.8170	161.1576	86.7903	42.4278	0.0000	0.0000	0.0000	0.0000	74.7737	149.1296	228.9263	(98a)
Space heating requirement - total per year (kWh/year)												1171.3563	
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													
	241.3340	186.8170	161.1576	86.7903	42.4278	0.0000	0.0000	0.0000	0.0000	74.7737	149.1296	228.9263	(98c)
Space heating requirement after solar contribution - total per year (kWh/year)												1171.3563	
Space heating per m2											(98c) / (4) =	34.4517	(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	326.9976	257.4236	260.8030	0.0000	0.0000	0.0000	0.0000	(100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.8330	0.8921	0.8800	0.0000	0.0000	0.0000	0.0000	(101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	272.3919	229.6361	229.4970	0.0000	0.0000	0.0000	0.0000	(102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	379.3375	365.5112	351.2373	0.0000	0.0000	0.0000	0.0000	(103)
Space cooling kWh													
	0.0000	0.0000	0.0000	0.0000	0.0000	77.0008	101.0911	90.5748	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	19.2502	25.2728	22.6437	0.0000	0.0000	0.0000	0.0000	(107)
Space cooling requirement												67.1667	(107)
Energy for space heating												34.4517	(99)
Energy for space cooling												1.9755	(108)
Total												36.4271	(109)
Fabric Energy Efficiency (DFEE)												36.4	(109)

Full SAP Calculation Printout

Property Reference	Flat 2	**Issued on Date**	06/08/2025
Assessment Reference	00001	**Prop Type Ref**	
Property	Flat 2, 67 Daisy Hill, Dewbury, WF13 1LT		

SAP Rating	72 C	**DER**	10.26	**TER**	
Environmental	94 A	**% DER < TER**			N/A
CO_2 Emissions (t/year)	0.32	**DFEE**	36.43	**TFEE**	
Compliance Check	N/A	**% DFEE < TFEE**			
% DPER < TPER		**DPER**	107.09	**TPER**	

Assessor Details	Mr. Chris Law	**Assessor ID**	AX42-0001
Client			

SAP 10 WORKSHEET FOR Conversion (As Designed) (Version 10.2, February 2022)
CALCULATION OF DWELLING EMISSIONS FOR REGULATIONS COMPLIANCE

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1. Overall dwelling characteristics

	Area (m2)		Storey height (m)		Volume (m3)	
Main dwelling						
Ground floor	34.0000	(1b)	x 2.6000	(2b) =	88.4000	(1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	34.0000					(4)
Dwelling volume				(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =	88.4000	(5)

2. Ventilation rate

	m3 per hour		
Number of open chimneys	0 * 80 =	0.0000	(6a)
Number of open flues	0 * 20 =	0.0000	(6b)
Number of chimneys / flues attached to closed fire	0 * 10 =	0.0000	(6c)
Number of flues attached to solid fuel boiler	0 * 20 =	0.0000	(6d)
Number of flues attached to other heater	0 * 35 =	0.0000	(6e)
Number of blocked chimneys	0 * 20 =	0.0000	(6f)
Number of intermittent extract fans	2 * 10 =	20.0000	(7a)
Number of passive vents	0 * 10 =	0.0000	(7b)
Number of flueless gas fires	0 * 40 =	0.0000	(7c)
	Air changes per hour		
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =	20.0000 / (5) =	0.2262	(8)
Pressure test		No	
Pressure Test Method		Blower Door	
Measured/design AP50		15.0000	(17)
Infiltration rate		0.9762	(18)
Number of sides sheltered		2	(19)
Shelter factor	(20) = 1 - [0.075 x (19)] =	0.8500	(20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) =	0.8298	(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	1.0580	1.0373	1.0165	0.9128	0.8920	0.7883	0.7883	0.7676	0.8298	0.8920	0.9335	0.9750	(22b)
Effective ac	1.0580	1.0373	1.0165	0.9166	0.8979	0.8107	0.8107	0.7946	0.8443	0.8979	0.9357	0.9753	(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								
Window			3.7500	1.3258	4.9716			(27)
External Wall 1	18.0000	3.7500	14.2500	0.1800	2.5650	190.0000	2707.5000	(29a)
Total net area of external elements Aum(A, m2)			18.0000					(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	7.5366			(33)
Main dwelling								
Party Floor 1			34.0000			30.0000	1020.0000	(32d)
Party Ceiling 1			34.0000			20.0000	680.0000	(32b)
Heat capacity Cm = Sum(A x k)				(28)...(30) + (32) + (32a)...(32e) =			4407.5000	(34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K							129.6324	(35)
Thermal bridges (Default value 0.200 * total exposed area)							3.6000	(36)
Point Thermal bridges					(36a) =		0.0000	
Total fabric heat loss				(33) + (36) + (36a) =			11.1366	(37)

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
(38)m	30.8641	30.2589	29.6538	26.7388	26.1927	23.6504	23.6504	23.1796	24.6296	26.1927	27.2975	28.4525	(38)
Heat transfer coeff	42.0007	41.3955	40.7903	37.8754	37.3293	34.7870	34.7870	34.3162	35.7662	37.3293	38.4341	39.5891	(39)
Average = Sum(39)m / 12 =												37.8667	

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP	1.2353	1.2175	1.1997	1.1140	1.0979	1.0231	1.0231	1.0093	1.0519	1.0979	1.1304	1.1644	(40)
HLP (average)												1.1137	
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31	

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4. Water heating energy requirements (kWh/year)

Assumed occupancy												1.2576	(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													
	54.8895	54.0743	52.9264	50.8097	49.2248	47.4674	46.5182	47.6581	48.8993	50.7798	52.9400	54.7039	(42b)
Hot water usage for other uses													
	28.9568	27.9038	26.8508	25.7979	24.7449	23.6919	23.6919	24.7449	25.7979	26.8508	27.9038	28.9568	(42c)
Average daily hot water use (litres/day)												77.2156	(43)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daily hot water use													
	83.8463	81.9781	79.7772	76.6076	73.9697	71.1594	70.2101	72.4030	74.6971	77.6306	80.8438	83.6607	(44)
Energy conte	132.7920	116.7358	122.6146	104.8720	99.5775	87.4987	84.9130	89.6500	92.1091	105.3440	115.1768	130.9925	(45)
Energy content (annual)										Total = Sum(45)m =		1282.2761	
Distribution loss (46)m = 0.15 x (45)m													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(46)
Water storage loss:													
Total storage loss													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(56)
If cylinder contains dedicated solar storage													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(57)
Primary loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(59)
Combi loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(61)
Total heat required for water heating calculated for each month													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(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													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(64)
										Total per year (kWh/year) = Sum(64)m =		1089.9347	(64)
12Total per year (kWh/year)												1090	(64)
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													
	28.2183	24.8064	26.0556	22.2853	21.1602	18.5935	18.0440	19.0506	19.5732	22.3856	24.4751	27.8359	(65)

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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	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	62.8794	(66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5													
	60.9060	67.4317	60.9060	62.9362	60.9060	62.9362	60.9060	60.9060	62.9362	60.9060	62.9362	60.9060	(67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5													
	106.7916	107.8997	105.1072	99.1622	91.6578	84.6046	79.8927	78.7846	81.5771	87.5221	95.0265	102.0797	(68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5													
	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	29.2879	(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)													
	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	(71)
Water heating gains (Table 5)													
	37.9278	36.9142	35.0210	30.9518	28.4412	25.8243	24.2527	25.6057	27.1850	30.0882	33.9932	37.4139	(72)
Total internal gains													
	247.4893	254.1095	242.8980	234.9141	222.8688	215.2290	206.9153	207.1601	213.5621	220.3801	233.8197	242.2634	(73)

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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	1.9400	10.6334	0.7600	0.7000	0.7700	7.6053	(74)
South	1.8100	46.7521	0.7600	0.7000	0.7700	31.1978	(78)

Solar gains	38.8032	65.6282	89.7818	113.2297	130.0929	130.9770	125.4878	112.3713	97.6826	72.4107	46.3622	33.2980	(83)
Total gains	286.2924	319.7376	332.6799	348.1439	352.9617	346.2060	332.4031	319.5314	311.2447	292.7908	280.1819	275.5613	(84)

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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, ni1,m (see Table 9a)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
tau	29.1496	29.5758	30.0146	32.3246	32.7975	35.1944	35.1944	35.6772	34.2308	32.7975	31.8547	30.9253	
alpha	2.9433	2.9717	3.0010	3.1550	3.1865	3.3463	3.3463	3.3785	3.2821	3.1865	3.1236	3.0617	
util living area													
	0.9564	0.9380	0.9135	0.8517	0.7548	0.5817	0.4413	0.4698	0.6712	0.8556	0.9319	0.9594	(86)
MIT	19.2179	19.4537	19.7640	20.2562	20.5889	20.8365	20.8994	20.8943	20.7661	20.3533	19.8026	19.2948	(87)
Th 2	19.8919	19.9060	19.9202	19.9894	20.0025	20.0641	20.0641	20.0756	20.0403	20.0025	19.9761	19.9486	(88)
util rest of house													
	0.9488	0.9274	0.8981	0.8252	0.7095	0.5131	0.3547	0.3842	0.6058	0.8250	0.9188	0.9525	(89)
MIT 2	17.8312	18.1365	18.5347	19.1884	19.5878	19.9021	19.9555	19.9637	19.8153	19.3228	18.6272	17.9671	(90)
Living area fraction										fLA = Living area / (4) =		0.3235	(91)
MIT	18.2798	18.5626	18.9324	19.5339	19.9117	20.2044	20.2609	20.2648	20.1229	19.6562	19.0074	18.3966	(92)
Temperature adjustment												0.0000	
adjusted MIT	18.2798	18.5626	18.9324	19.5339	19.9117	20.2044	20.2609	20.2648	20.1229	19.6562	19.0074	18.3966	(93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Utilisation	0.9343	0.9109	0.8809	0.8115	0.7050	0.5239	0.3734	0.4023	0.6118	0.8127	0.9035	0.9391	(94)
Useful gains	267.4723	291.2622	293.0483	282.5110	248.8434	181.3736	124.1329	128.5620	190.4277	237.9550	253.1434	258.7918	(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	587.1613	565.5713	507.1223	402.7623	306.5362	194.9610	127.3518	132.6253	215.4178	338.0617	457.6516	562.0316	(97)
Space heating kWh	237.8486	184.3357	159.2711	86.5810	42.9234	0.0000	0.0000	0.0000	0.0000	74.4794	147.2459	225.6104	(98a)
Space heating requirement - total per year (kWh/year)												1158.2956	
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	237.8486	184.3357	159.2711	86.5810	42.9234	0.0000	0.0000	0.0000	0.0000	74.4794	147.2459	225.6104	(98c)
Space heating requirement after solar contribution - total per year (kWh/year)												1158.2956	
Space heating per m2											(98c) / (4) =	34.0675	(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 %)												100.0000	(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	237.8486	184.3357	159.2711	86.5810	42.9234	0.0000	0.0000	0.0000	0.0000	74.4794	147.2459	225.6104	(98)
Space heating efficiency (main heating system 1)	100.0000	100.0000	100.0000	100.0000	100.0000	0.0000	0.0000	0.0000	0.0000	100.0000	100.0000	100.0000	(210)
Space heating fuel (main heating system)	237.8486	184.3357	159.2711	86.5810	42.9234	0.0000	0.0000	0.0000	0.0000	74.4794	147.2459	225.6104	(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	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(64)
Efficiency of water heater												100.0000	(216)
(217)m	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	(217)
Fuel for water heating, kWh/month	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(231)
Lighting	12.6551	10.1524	9.1411	6.6971	5.1731	4.2264	4.7190	6.1340	7.9675	10.4537	11.8075	13.0068	(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	1158.2956	(211)
Space heating fuel - main system 2	0.0000	(213)
Space heating fuel - secondary	0.0000	(215)
Efficiency of water heater	100.0000	
Water heating fuel used	1089.9347	(219)
Space cooling fuel	0.0000	(221)
Electricity for pumps and fans:		
Total electricity for the above, kWh/year	0.0000	(231)
Electricity for lighting (calculated in Appendix L)	102.1337	(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)
Appendix Q - special features		
Energy saved or generated	-0.0000	(236)
Energy used	0.0000	(237)
Total delivered energy for all uses	2350.3639	(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	1158.2956	0.1552	179.8163	(261)
Total CO2 associated with community systems			0.0000	(373)
Water heating (other fuel)	1089.9347	0.1415	154.2727	(264)
Space and water heating			334.0891	(265)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(267)
Energy for lighting	102.1337	0.1443	14.7410	(268)
Total CO2, kg/year			348.8301	(272)

EPC Dwelling Carbon Dioxide Emission Rate (DER) 10.2600 (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	1158.2956	1.5747	1824.0187	(275)
Total CO2 associated with community systems			0.0000	(473)
Water heating (other fuel)	1089.9347	1.5234	1660.4137	(278)
Space and water heating			3484.4324	(279)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(281)
Energy for lighting	102.1337	1.5338	156.6560	(282)
Total Primary energy kWh/year			3641.0885	(286)
Dwelling Primary energy Rate (DPER)			107.0900	(287)

Full SAP Calculation Printout

Property Reference	Flat 2	**Issued on Date**	06/08/2025
Assessment Reference	00001	**Prop Type Ref**	
Property	Flat 2, 67 Daisy Hill, Dewbury, WF13 1LT		

SAP Rating	72 C	**DER**	10.26	**TER**	
Environmental	94 A	**% DER < TER**			N/A
CO_2 Emissions (t/year)	0.32	**DFEE**	36.43	**TFEE**	
Compliance Check	N/A	**% DFEE < TFEE**			
% DPER < TPER		**DPER**	107.09	**TPER**	

Assessor Details	Mr. Chris Law	**Assessor ID**	AX42-0001
Client			

SAP 10 WORKSHEET FOR Conversion (As Designed) (Version 10.2, February 2022)
CALCULATION OF ENERGY RATING

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1. Overall dwelling characteristics

	Area (m2)		Storey height (m)		Volume (m3)	
Main dwelling						
Ground floor	34.0000	(1b)	x 2.6000	(2b) =	88.4000	(1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	34.0000					(4)
Dwelling volume				(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =	88.4000	(5)

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2. Ventilation rate

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		m3 per hour	
Number of open chimneys	0 * 80 =	0.0000	(6a)
Number of open flues	0 * 20 =	0.0000	(6b)
Number of chimneys / flues attached to closed fire	0 * 10 =	0.0000	(6c)
Number of flues attached to solid fuel boiler	0 * 20 =	0.0000	(6d)
Number of flues attached to other heater	0 * 35 =	0.0000	(6e)
Number of blocked chimneys	0 * 20 =	0.0000	(6f)
Number of intermittent extract fans	2 * 10 =	20.0000	(7a)
Number of passive vents	0 * 10 =	0.0000	(7b)
Number of flueless gas fires	0 * 40 =	0.0000	(7c)

	Air changes per hour		
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =	20.0000 / (5) =	0.2262	(8)
Pressure test		No	
Pressure Test Method		Blower Door	
Measured/design AP50		15.0000	(17)
Infiltration rate		0.9762	(18)
Number of sides sheltered		2	(19)
Shelter factor	(20) = 1 - [0.075 x (19)] =	0.8500	(20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) =	0.8298	(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	1.0580	1.0373	1.0165	0.9128	0.8920	0.7883	0.7883	0.7676	0.8298	0.8920	0.9335	0.9750	(22b)
Effective ac	1.0580	1.0373	1.0165	0.9166	0.8979	0.8107	0.8107	0.7946	0.8443	0.8979	0.9357	0.9753	(25)

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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								
Window			3.7500	1.3258	4.9716			(27)
External Wall 1	18.0000	3.7500	14.2500	0.1800	2.5650	190.0000	2707.5000	(29a)
Total net area of external elements Aum(A, m2)			18.0000					(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	7.5366			(33)
Main dwelling								
Party Floor 1			34.0000			30.0000	1020.0000	(32d)
Party Ceiling 1			34.0000			30.0000	1020.0000	(32b)

Heat capacity Cm = Sum(A x k)	(28)...(30) + (32) + (32a)...(32e) =	4747.5000 (34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K		139.6324 (35)
Thermal bridges (Default value 0.200 * total exposed area)		3.6000 (36)
Point Thermal bridges	(36a) =	0.0000
Total fabric heat loss	(33) + (36) + (36a) =	11.1366 (37)

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
(38)m	30.8641	30.2589	29.6538	26.7388	26.1927	23.6504	23.6504	23.1796	24.6296	26.1927	27.2975	28.4525	(38)
Heat transfer coeff	42.0007	41.3955	40.7903	37.8754	37.3293	34.7870	34.7870	34.3162	35.7662	37.3293	38.4341	39.5891	(39)
Average = Sum(39)m / 12 =												37.8667	

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP	1.2353	1.2175	1.1997	1.1140	1.0979	1.0231	1.0231	1.0093	1.0519	1.0979	1.1304	1.1644	(40)
HLP (average)												1.1137	
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31	

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4. Water heating energy requirements (kWh/year)

Assumed occupancy												1.2576	(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													
	54.8895	54.0743	52.9264	50.8097	49.2248	47.4674	46.5182	47.6581	48.8993	50.7798	52.9400	54.7039	(42b)
Hot water usage for other uses													
	28.9568	27.9038	26.8508	25.7979	24.7449	23.6919	23.6919	24.7449	25.7979	26.8508	27.9038	28.9568	(42c)
Average daily hot water use (litres/day)												77.2156	(43)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daily hot water use													
	83.8463	81.9781	79.7772	76.6076	73.9697	71.1594	70.2101	72.4030	74.6971	77.6306	80.8438	83.6607	(44)
Energy conte	132.7920	116.7358	122.6146	104.8720	99.5775	87.4987	84.9130	89.6500	92.1091	105.3440	115.1768	130.9925	(45)
Energy content (annual)										Total = Sum(45)m =		1282.2761	
Distribution loss (46)m = 0.15 x (45)m													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(46)
Water storage loss:													
Total storage loss													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(56)
If cylinder contains dedicated solar storage													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(57)
Primary loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(59)
Combi loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(61)
Total heat required for water heating calculated for each month													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(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													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(64)
										Total per year (kWh/year) = Sum(64)m =		1089.9347	(64)
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													
	28.2183	24.8064	26.0556	22.2853	21.1602	18.5935	18.0440	19.0506	19.5732	22.3856	24.4751	27.8359	(65)

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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	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	(66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5													
	14.4581	12.8415	10.4434	7.9064	5.9101	4.9896	5.3914	7.0079	9.4060	11.9431	13.9394	14.8599	(67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5													
	159.3904	161.0444	156.8764	148.0033	136.8027	126.2756	119.2429	117.5889	121.7568	130.6299	141.8306	152.3577	(68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5													
	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	(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)													
	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	(71)
Water heating gains (Table 5)													
	37.9278	36.9142	35.0210	30.9518	28.4412	25.8243	24.2527	25.6057	27.1850	30.0882	33.9932	37.4139	(72)
Total internal gains													
	280.7312	279.7550	271.2957	255.8164	240.1088	226.0443	217.8418	219.1574	227.3027	241.6161	258.7180	273.5863	(73)

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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	1.9400	10.6334	0.7600	0.7000	0.7700	7.6053	(74)
South	1.8100	46.7521	0.7600	0.7000	0.7700	31.1978	(78)

Solar gains	38.8032	65.6282	89.7818	113.2297	130.0929	130.9770	125.4878	112.3713	97.6826	72.4107	46.3622	33.2980	(83)
Total gains	319.5344	345.3832	361.0775	369.0461	370.2017	357.0213	343.3296	331.5287	324.9853	314.0268	305.0802	306.8843	(84)

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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, ni1,m (see Table 9a)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
tau	31.3983	31.8573	32.3300	34.8181	35.3275	37.9093	37.9093	38.4294	36.8714	35.3275	34.3120	33.3109	
alpha	3.0932	3.1238	3.1553	3.3212	3.3552	3.5273	3.5273	3.5620	3.4581	3.3552	3.2875	3.2207	
util living area													
	0.9502	0.9338	0.9058	0.8439	0.7450	0.5733	0.4311	0.4578	0.6596	0.8444	0.9252	0.9536	(86)
MIT	19.4152	19.6134	19.9117	20.3512	20.6461	20.8580	20.9099	20.9062	20.7996	20.4428	19.9435	19.4864	(87)
Th 2	19.8919	19.9060	19.9202	19.9894	20.0025	20.0641	20.0641	20.0756	20.0403	20.0025	19.9761	19.9486	(88)
util rest of house													
	0.9412	0.9221	0.8887	0.8156	0.6978	0.5038	0.3453	0.3728	0.5925	0.8112	0.9106	0.9455	(89)
MIT 2	18.0704	18.3280	18.7094	19.2966	19.6481	19.9218	19.9643	19.9737	19.8471	19.4228	18.7948	18.2001	(90)
Living area fraction										fLA = Living area / (4) =		0.3235	(91)
MIT	18.5055	18.7438	19.0984	19.6378	19.9710	20.2247	20.2702	20.2754	20.1552	19.7528	19.1664	18.6162	(92)
Temperature adjustment												0.0000	
adjusted MIT	18.5055	18.7438	19.0984	19.6378	19.9710	20.2247	20.2702	20.2754	20.1552	19.7528	19.1664	18.6162	(93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Utilisation	0.9270	0.9068	0.8731	0.8044	0.6962	0.5163	0.3647	0.3917	0.6011	0.8017	0.8964	0.9324	(94)
Useful gains	296.2174	313.1774	315.2431	296.8687	257.7342	184.3194	125.2000	129.8637	195.3418	251.7698	273.4890	286.1386	(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	596.6407	573.0734	513.8928	406.6966	308.7493	195.6660	127.6762	132.9889	216.5726	341.6681	463.7626	570.7252	(97)
Space heating kWh	223.5150	174.6501	147.7954	79.0761	37.9552	0.0000	0.0000	0.0000	0.0000	66.8843	136.9970	211.7324	(98a)
Space heating requirement - total per year (kWh/year)												1078.6055	
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	223.5150	174.6501	147.7954	79.0761	37.9552	0.0000	0.0000	0.0000	0.0000	66.8843	136.9970	211.7324	(98c)
Space heating requirement after solar contribution - total per year (kWh/year)												1078.6055	
Space heating per m2											(98c) / (4) =	31.7237	(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 %)	100.0000	(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	223.5150	174.6501	147.7954	79.0761	37.9552	0.0000	0.0000	0.0000	0.0000	66.8843	136.9970	211.7324	(98)
Space heating efficiency (main heating system 1)	100.0000	100.0000	100.0000	100.0000	0.0000	0.0000	0.0000	0.0000	100.0000	100.0000	100.0000	100.0000	(210)
Space heating fuel (main heating system)	223.5150	174.6501	147.7954	79.0761	37.9552	0.0000	0.0000	0.0000	0.0000	66.8843	136.9970	211.7324	(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	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(64)
Efficiency of water heater												100.0000	(216)
(217)m	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	(217)
Fuel for water heating, kWh/month	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(231)
Lighting	12.6551	10.1524	9.1411	6.6971	5.1731	4.2264	4.7190	6.1340	7.9675	10.4537	11.8075	13.0068	(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	1078.6055	(211)
Space heating fuel - main system 2	0.0000	(213)
Space heating fuel - secondary	0.0000	(215)
Efficiency of water heater	100.0000	
Water heating fuel used	1089.9347	(219)
Space cooling fuel	0.0000	(221)
Electricity for pumps and fans:		
Total electricity for the above, kWh/year	0.0000	(231)
Electricity for lighting (calculated in Appendix L)	102.1337	(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)
Appendix Q - special features		
Energy saved or generated	-0.0000	(236)
Energy used	0.0000	(237)
Total delivered energy for all uses	2270.6739	(238)

10a. Fuel costs - using Table 12 prices

	Fuel kWh/year	Fuel price p/kWh	Fuel cost £/year	
Space heating - main system 1	1078.6055	16.4900	177.8621	(240)
Total CO2 associated with community systems			0.0000	(473)
Water heating (other fuel)	1089.9347	16.4900	179.7302	(247)
Energy for instantaneous electric shower(s)	0.0000	16.4900	0.0000	(247a)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(249)
Energy for lighting	102.1337	16.4900	16.8418	(250)
Additional standing charges			0.0000	(251)
Total energy cost			374.4341	(255)

11a. SAP rating - Individual heating systems

Energy cost deflator (Table 12):		0.3600	(256)
Energy cost factor (ECF)	[(255) x (256)] / [(4) + 45.0] =	1.7063	(257)
SAP value		72.3412	
SAP rating (Section 12)		72	(258)
SAP band		C	

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	1078.6055	0.1554	167.6028	(261)
Total CO2 associated with community systems			0.0000	(373)
Water heating (other fuel)	1089.9347	0.1415	154.2727	(264)
Space and water heating			321.8756	(265)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(267)
Energy for lighting	102.1337	0.1443	14.7410	(268)
Total CO2, kg/year			336.6166	(272)
CO2 emissions per m2			9.9000	(273)
EI value			94.2903	
EI rating			94	(274)
EI band			A	

SAP 10 WORKSHEET FOR Conversion (As Designed) (Version 10.2, February 2022)
CALCULATION OF EPC COSTS, EMISSIONS AND PRIMARY ENERGY

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1. Overall dwelling characteristics

	Area (m2)		Storey height (m)		Volume (m3)	
Main dwelling						
Ground floor	34.0000	(1b) x	2.6000	(2b) =	88.4000	(1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	34.0000					(4)
Dwelling volume				(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =	88.4000	(5)

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2. Ventilation rate

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		m3 per hour	
Number of open chimneys	0 * 80 =	0.0000	(6a)
Number of open flues	0 * 20 =	0.0000	(6b)
Number of chimneys / flues attached to closed fire	0 * 10 =	0.0000	(6c)
Number of flues attached to solid fuel boiler	0 * 20 =	0.0000	(6d)
Number of flues attached to other heater	0 * 35 =	0.0000	(6e)
Number of blocked chimneys	0 * 20 =	0.0000	(6f)
Number of intermittent extract fans	2 * 10 =	20.0000	(7a)
Number of passive vents	0 * 10 =	0.0000	(7b)
Number of flueless gas fires	0 * 40 =	0.0000	(7c)

		Air changes per hour	
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =	20.0000 / (5) =	0.2262	(8)
Pressure test		No	
Pressure Test Method		Blower Door	
Measured/design AP50		15.0000	(17)
Infiltration rate		0.9762	(18)
Number of sides sheltered		2	(19)
Shelter factor	(20) = 1 - [0.075 x (19)] =	0.8500	(20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) =	0.8298	(21)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Wind speed	4.7000	4.7000	4.6000	4.0000	3.9000	3.6000	3.7000	3.5000	3.7000	3.9000	4.2000	4.4000	(22)
Wind factor	1.1750	1.1750	1.1500	1.0000	0.9750	0.9000	0.9250	0.8750	0.9250	0.9750	1.0500	1.1000	(22a)
Adj infilt rate	0.9750	0.9750	0.9543	0.8298	0.8091	0.7468	0.7676	0.7261	0.7676	0.8091	0.8713	0.9128	(22b)
Effective ac	0.9753	0.9753	0.9553	0.8443	0.8273	0.7789	0.7946	0.7636	0.7946	0.8273	0.8796	0.9166	(25)

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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								
Window			3.7500	1.3258	4.9716			(27)
External Wall 1	18.0000	3.7500	14.2500	0.1800	2.5650	190.0000	2707.5000	(29a)
Total net area of external elements Aum(A, m2)			18.0000					(31)
Fabric heat loss, W/K = Sum (A x U)			(26)...(30) + (32) =		7.5366			(33)
Main dwelling								
Party Floor 1			34.0000			30.0000	1020.0000	(32d)
Party Ceiling 1			34.0000			30.0000	1020.0000	(32b)
Heat capacity Cm = Sum(A x k)					(28)...(30) + (32) + (32a)...(32e) =		4747.5000	(34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K							139.6324	(35)
Thermal bridges (Default value 0.200 * total exposed area)							3.6000	(36)
Point Thermal bridges						(36a) =	0.0000	

Total fabric heat loss (33) + (36) + (36a) = 11.1366 (37)

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
(38)m	28.4525	28.4525	27.8687	24.6296	24.1337	22.7213	23.1796	22.2757	23.1796	24.1337	25.6591	26.7388	(38)
Heat transfer coeff	39.5891	39.5891	39.0053	35.7662	35.2703	33.8579	34.3162	33.4123	34.3162	35.2703	36.7957	37.8754	(39)
Average = Sum(39)m / 12 =												36.2553	

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP	1.1644	1.1644	1.1472	1.0519	1.0374	0.9958	1.0093	0.9827	1.0093	1.0374	1.0822	1.1140	(40)
HLP (average)												1.0663	
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31	

4. Water heating energy requirements (kWh/year)

Assumed occupancy 1.2576 (42)

Hot water usage for mixer showers

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
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

54.8895	54.0743	52.9264	50.8097	49.2248	47.4674	46.5182	47.6581	48.8993	50.7798	52.9400	54.7039	(42b)

Hot water usage for other uses

28.9568	27.9038	26.8508	25.7979	24.7449	23.6919	23.6919	24.7449	25.7979	26.8508	27.9038	28.9568	(42c)

Average daily hot water use (litres/day) 77.2156 (43)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daily hot water use	83.8463	81.9781	79.7772	76.6076	73.9697	71.1594	70.2101	72.4030	74.6971	77.6306	80.8438	83.6607	(44)
Energy conte	132.7920	116.7358	122.6146	104.8720	99.5775	87.4987	84.9130	89.6500	92.1091	105.3440	115.1768	130.9925	(45)
Energy content (annual)										Total = Sum(45)m =		1282.2761	

Distribution loss (46)m = 0.15 x (45)m

0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(46)

Water storage loss:

Total storage loss

0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(56)

If cylinder contains dedicated solar storage

0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(57)

Primary loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(59)
Combi loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(61)

Total heat required for water heating calculated for each month

112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(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

112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(64)
								Total per year (kWh/year) = Sum(64)m =			1089.9347	(64)

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

28.2183	24.8064	26.0556	22.2853	21.1602	18.5935	18.0440	19.0506	19.5732	22.3856	24.4751	27.8359	(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	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	(66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	14.4581	12.8415	10.4434	7.9064	5.9101	4.9896	5.3914	7.0079	9.4060	11.9431	13.9394	14.8599	(67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	159.3904	161.0444	156.8764	148.0033	136.8027	126.2756	119.2429	117.5889	121.7568	130.6299	141.8306	152.3577	(68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	(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)	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	(71)
Water heating gains (Table 5)	37.9278	36.9142	35.0210	30.9518	28.4412	25.8243	24.2527	25.6057	27.1850	30.0882	33.9932	37.4139	(72)
Total internal gains	280.7312	279.7550	271.2957	255.8164	240.1088	226.0443	217.8418	219.1574	227.3027	241.6161	258.7180	273.5863	(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	1.9400	10.6614	0.7600	0.7000	0.7700	7.6253	(74)
South	1.8100	47.0290	0.7600	0.7000	0.7700	31.3826	(78)

Solar gains	39.0080	64.7417	90.1728	110.5411	126.2602	127.8759	121.0292	109.0636	96.3541	71.6629	43.7813	31.8798	(83)
Total gains	319.7392	344.4967	361.4686	366.3575	366.3689	353.9202	338.8711	328.2210	323.6568	313.2790	302.4993	305.4661	(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, ni1,m (see Table 9a)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
tau	33.3109	33.3109	33.8095	36.8714	37.3898	38.9495	38.4294	39.4691	38.4294	37.3898	35.8398	34.8181	
alpha	3.2207	3.2207	3.2540	3.4581	3.4927	3.5966	3.5620	3.6313	3.5620	3.4927	3.3893	3.3212	
util living area	0.9486	0.9316	0.9012	0.8327	0.7281	0.5598	0.4402	0.4607	0.6532	0.8375	0.9235	0.9518	(86)

MIT	19.5275	19.7024	19.9945	20.4343	20.6984	20.8699	20.9096	20.9084	20.8146	20.4975	20.0107	19.5882	(87)
Th 2	19.9486	19.9486	19.9625	20.0403	20.0523	20.0868	20.0756	20.0978	20.0756	20.0523	20.0154	19.9894	(88)

util rest of house													
	0.9397	0.9198	0.8838	0.8038	0.6810	0.4912	0.3558	0.3790	0.5889	0.8048	0.9088	0.9435	(89)
MIT 2	18.2511	18.4696	18.8423	19.4357	19.7484	19.9544	19.9758	19.9976	19.8942	19.5265	18.9070	18.3573	(90)
Living area fraction										fLA = Living area / (4) =		0.3235	(91)
MIT	18.6640	18.8684	19.2151	19.7588	20.0558	20.2506	20.2779	20.2923	20.1920	19.8407	19.2641	18.7556	(92)
Temperature adjustment												0.0000	
adjusted MIT	18.6640	18.8684	19.2151	19.7588	20.0558	20.2506	20.2779	20.2923	20.1920	19.8407	19.2641	18.7556	(93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Utilisation	0.9261	0.9050	0.8690	0.7943	0.6812	0.5040	0.3748	0.3971	0.5975	0.7966	0.8953	0.9308	(94)
Useful gains	296.1027	311.7697	314.1205	291.0131	249.5619	178.3652	126.9986	130.3330	193.3802	249.5433	270.8403	284.3243	(95)
Ext temp.	4.2000	4.9000	6.5000	9.0000	11.8000	14.7000	16.5000	16.3000	14.0000	10.5000	7.1000	4.3000	(96)
Heat loss rate W													
	572.6181	552.9973	495.9544	384.8006	291.1835	187.9323	129.6437	133.3908	212.4847	329.4481	447.5854	547.5103	(97)
Space heating kWh													
	205.7275	162.1050	135.2844	67.5270	30.9664	0.0000	0.0000	0.0000	0.0000	59.4491	127.2565	195.8104	(98a)
Space heating requirement - total per year (kWh/year)												984.1263	
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													
	205.7275	162.1050	135.2844	67.5270	30.9664	0.0000	0.0000	0.0000	0.0000	59.4491	127.2565	195.8104	(98c)
Space heating requirement after solar contribution - total per year (kWh/year)												984.1263	
Space heating per m2											(98c) / (4) =	28.9449	(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 %)												100.0000	(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													
	205.7275	162.1050	135.2844	67.5270	30.9664	0.0000	0.0000	0.0000	0.0000	59.4491	127.2565	195.8104	(98)
Space heating efficiency (main heating system 1)													
	100.0000	100.0000	100.0000	100.0000	100.0000	0.0000	0.0000	0.0000	0.0000	100.0000	100.0000	100.0000	(210)
Space heating fuel (main heating system)													
	205.7275	162.1050	135.2844	67.5270	30.9664	0.0000	0.0000	0.0000	0.0000	59.4491	127.2565	195.8104	(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													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(64)
Efficiency of water heater												100.0000	(216)
(217)m	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	(217)
Fuel for water heating, kWh/month													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(231)
Lighting	12.6551	10.1524	9.1411	6.6971	5.1731	4.2264	4.7190	6.1340	7.9675	10.4537	11.8075	13.0068	(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												984.1263	(211)
Space heating fuel - main system 2												0.0000	(213)
Space heating fuel - secondary												0.0000	(215)
Efficiency of water heater												100.0000	
Water heating fuel used												1089.9347	(219)
Space cooling fuel												0.0000	(221)
Electricity for pumps and fans:													
Total electricity for the above, kWh/year												0.0000	(231)
Electricity for lighting (calculated in Appendix L)												102.1337	(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)
Appendix Q - special features													
Energy saved or generated												-0.0000	(236)
Energy used												0.0000	(237)
Total delivered energy for all uses												2176.1947	(238)

10a. Fuel costs - using BEDF prices (577)

	Fuel kWh/year	Fuel price p/kWh	Fuel cost £/year	

Space heating - main system 1	984.1263	28.4300	279.7871	(240)
Total CO2 associated with community systems			0.0000	(473)
Water heating (other fuel)	1089.9347	28.4300	309.8684	(247)
Energy for instantaneous electric shower(s)	0.0000	28.4300	0.0000	(247a)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(249)
Energy for lighting	102.1337	28.4300	29.0366	(250)
Additional standing charges			0.0000	(251)
Total energy cost			618.6921	(255)

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	984.1263	0.1556	153.1307	(261)
Total CO2 associated with community systems			0.0000	(373)
Water heating (other fuel)	1089.9347	0.1415	154.2727	(264)
Space and water heating			307.4035	(265)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(267)
Energy for lighting	102.1337	0.1443	14.7410	(268)
Total CO2, kg/year			322.1445	(272)

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	984.1263	1.5761	1551.0550	(275)
Total CO2 associated with community systems			0.0000	(473)
Water heating (other fuel)	1089.9347	1.5234	1660.4137	(278)
Space and water heating			3211.4687	(279)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(281)
Energy for lighting	102.1337	1.5338	156.6560	(282)
Total Primary energy kWh/year			3368.1248	(286)

SAP 10 EPC IMPROVEMENTS

00001

Current energy efficiency rating: C 72
Current environmental impact rating: A 94

N	Solar water heating	Not applicable
U	Solar photovoltaic panels	Not applicable
V2	Wind turbine	Not applicable

Recommended measures:	SAP change	Cost change	CO2 change
(none)			

	Typical annual savings	Energy efficiency	Environmental impact
Recommended measures			
(none)			
Total Savings	£0	0.00 kg/m²	

Potential energy efficiency rating: C 72
Potential environmental impact rating: A 94

Fuel prices for cost data on this page from database revision number 577 TEST (01 Aug 2025)
Recommendation texts revision number 6.1 (11 Jun 2019)

Typical heating and lighting costs of this home (per year, East Pennines):

	Current	Potential	Saving
Electricity	£619	£619	£0
Space heating	£280	£280	£0
Water heating	£310	£310	£0
Lighting	£29	£29	£0
Total cost of fuels	£619	£619	£0
Total cost of uses	£619	£619	£0
Delivered energy	64 kWh/m²	64 kWh/m²	0 kWh/m²
Carbon dioxide emissions	0.3 tonnes	0.3 tonnes	0.0 tonnes
CO2 emissions per m²	9 kg/m²	9 kg/m²	0 kg/m²
Primary energy	99 kWh/m²	99 kWh/m²	0 kWh/m²

SAP 10 WORKSHEET FOR Conversion (As Designed) (Version 10.2, February 2022)
CALCULATION OF ENERGY RATING FOR IMPROVED DWELLING

1. Overall dwelling characteristics

	Area (m2)		Storey height (m)		Volume (m3)	
Main dwelling						
Ground floor	34.0000	(1b)	x 2.6000	(2b) =	88.4000	(1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	34.0000					(4)
Dwelling volume			(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =		88.4000	(5)

2. Ventilation rate

		m3 per hour	
Number of open chimneys	0 * 80 =	0.0000	(6a)
Number of open flues	0 * 20 =	0.0000	(6b)
Number of chimneys / flues attached to closed fire	0 * 10 =	0.0000	(6c)
Number of flues attached to solid fuel boiler	0 * 20 =	0.0000	(6d)
Number of flues attached to other heater	0 * 35 =	0.0000	(6e)
Number of blocked chimneys	0 * 20 =	0.0000	(6f)
Number of intermittent extract fans	2 * 10 =	20.0000	(7a)
Number of passive vents	0 * 10 =	0.0000	(7b)
Number of flueless gas fires	0 * 40 =	0.0000	(7c)
	Air changes per hour		
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =	20.0000 / (5) =	0.2262	(8)
Pressure test		No	
Pressure Test Method		Blower Door	
Measured/design AP50		15.0000	(17)
Infiltration rate		0.9762	(18)
Number of sides sheltered		2	(19)
Shelter factor	(20) = 1 - [0.075 x (19)] =	0.8500	(20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) =	0.8298	(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	1.0580	1.0373	1.0165	0.9128	0.8920	0.7883	0.7883	0.7676	0.8298	0.8920	0.9335	0.9750	(22b)
Effective ac	1.0580	1.0373	1.0165	0.9166	0.8979	0.8107	0.8107	0.7946	0.8443	0.8979	0.9357	0.9753	(25)

3. Heat losses and heat loss parameter

Element	Gross	Openings	NetArea	U-value	A x U	K-value	A x K	
Main dwelling	m2	m2	m2	W/m2K	W/K	kJ/m2K	kJ/K	
Window			3.7500	1.3258	4.9716			(27)
External Wall 1	18.0000	3.7500	14.2500	0.1800	2.5650	190.0000	2707.5000	(29a)
Total net area of external elements Aum(A, m2)			18.0000					(31)
Fabric heat loss, W/K = Sum (A x U)			(26)...(30) + (32) =		7.5366			(33)
Main dwelling								
Party Floor 1			34.0000			30.0000	1020.0000	(32d)
Party Ceiling 1			34.0000			30.0000	1020.0000	(32b)
Heat capacity Cm = Sum(A x k)					(28)...(30) + (32) + (32a)...(32e) =		4747.5000	(34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K							139.6324	(35)
Thermal bridges (Default value 0.200 * total exposed area)							3.6000	(36)
Point Thermal bridges						(36a) =	0.0000	
Total fabric heat loss					(33) + (36) + (36a) =		11.1366	(37)

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
(38)m	30.8641	30.2589	29.6538	26.7388	26.1927	23.6504	23.6504	23.1796	24.6296	26.1927	27.2975	28.4525	(38)
Heat transfer coeff	42.0007	41.3955	40.7903	37.8754	37.3293	34.7870	34.7870	34.3162	35.7662	37.3293	38.4341	39.5891	(39)
Average = Sum(39)m / 12 =												37.8667	

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP	1.2353	1.2175	1.1997	1.1140	1.0979	1.0231	1.0231	1.0093	1.0519	1.0979	1.1304	1.1644	(40)
HLP (average)												1.1137	
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31	

4. Water heating energy requirements (kWh/year)

Assumed occupancy												1.2576	(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	54.8895	54.0743	52.9264	50.8097	49.2248	47.4674	46.5182	47.6581	48.8993	50.7798	52.9400	54.7039	(42b)
Hot water usage for other uses	28.9568	27.9038	26.8508	25.7979	24.7449	23.6919	23.6919	24.7449	25.7979	26.8508	27.9038	28.9568	(42c)
Average daily hot water use (litres/day)												77.2156	(43)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daily hot water use	83.8463	81.9781	79.7772	76.6076	73.9697	71.1594	70.2101	72.4030	74.6971	77.6306	80.8438	83.6607	(44)
Energy conte	132.7920	116.7358	122.6146	104.8720	99.5775	87.4987	84.9130	89.6500	92.1091	105.3440	115.1768	130.9925	(45)
Energy content (annual)										Total = Sum(45)m =		1282.2761	
Distribution loss (46)m = 0.15 x (45)m	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(46)
Water storage loss:													
Total storage loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(56)
If cylinder contains dedicated solar storage	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(57)
Primary loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(59)
Combi loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(61)
Total heat required for water heating calculated for each month	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(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	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(64)
									Total per year (kWh/year) = Sum(64)m =			1089.9347	(64)
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

28.2183	24.8064	26.0556	22.2853	21.1602	18.5935	18.0440	19.0506	19.5732	22.3856	24.4751	27.8359	(65)

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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	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	(66)

Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5

14.4581	12.8415	10.4434	7.9064	5.9101	4.9896	5.3914	7.0079	9.4060	11.9431	13.9394	14.8599	(67)

Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5

159.3904	161.0444	156.8764	148.0033	136.8027	126.2756	119.2429	117.5889	121.7568	130.6299	141.8306	152.3577	(68)

Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5

43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	(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)

-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	(71)

Water heating gains (Table 5)

37.9278	36.9142	35.0210	30.9518	28.4412	25.8243	24.2527	25.6057	27.1850	30.0882	33.9932	37.4139	(72)

Total internal gains

280.7312	279.7550	271.2957	255.8164	240.1088	226.0443	217.8418	219.1574	227.3027	241.6161	258.7180	273.5863	(73)

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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	1.9400	10.6334	0.7600	0.7000	0.7700	7.6053	(74)
South	1.8100	46.7521	0.7600	0.7000	0.7700	31.1978	(78)

Solar gains	38.8032	65.6282	89.7818	113.2297	130.0929	130.9770	125.4878	112.3713	97.6826	72.4107	46.3622	33.2980	(83)
Total gains	319.5344	345.3832	361.0775	369.0461	370.2017	357.0213	343.3296	331.5287	324.9853	314.0268	305.0802	306.8843	(84)

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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, ni1,m (see Table 9a)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
tau	31.3983	31.8573	32.3300	34.8181	35.3275	37.9093	37.9093	38.4294	36.8714	35.3275	34.3120	33.3109	
alpha	3.0932	3.1238	3.1553	3.3212	3.3552	3.5273	3.5273	3.5620	3.4581	3.3552	3.2875	3.2207	
util living area	0.9502	0.9338	0.9058	0.8439	0.7450	0.5733	0.4311	0.4578	0.6596	0.8444	0.9252	0.9536	(86)
MIT	19.4152	19.6134	19.9117	20.3512	20.6461	20.8580	20.9099	20.9062	20.7996	20.4428	19.9435	19.4864	(87)
Th 2	19.8919	19.9060	19.9202	19.9894	20.0025	20.0641	20.0641	20.0756	20.0403	20.0025	19.9761	19.9486	(88)
util rest of house	0.9412	0.9221	0.8887	0.8156	0.6978	0.5038	0.3453	0.3728	0.5925	0.8112	0.9106	0.9455	(89)
MIT 2	18.0704	18.3280	18.7094	19.2966	19.6481	19.9218	19.9643	19.9737	19.8471	19.4228	18.7948	18.2001	(90)
Living area fraction									fLA = Living area / (4) =			0.3235	(91)
MIT	18.5055	18.7438	19.0984	19.6378	19.9710	20.2247	20.2702	20.2754	20.1552	19.7528	19.1664	18.6162	(92)
Temperature adjustment												0.0000	
adjusted MIT	18.5055	18.7438	19.0984	19.6378	19.9710	20.2247	20.2702	20.2754	20.1552	19.7528	19.1664	18.6162	(93)

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8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Utilisation	0.9270	0.9068	0.8731	0.8044	0.6962	0.5163	0.3647	0.3917	0.6011	0.8017	0.8964	0.9324	(94)
Useful gains	296.2174	313.1774	315.2431	296.8687	257.7342	184.3194	125.2000	129.8637	195.3418	251.7698	273.4890	286.1386	(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	596.6407	573.0734	513.8928	406.6966	308.7493	195.6660	127.6762	132.9889	216.5726	341.6681	463.7626	570.7252	(97)
Space heating kWh	223.5150	174.6501	147.7954	79.0761	37.9552	0.0000	0.0000	0.0000	0.0000	66.8843	136.9970	211.7324	(98a)
Space heating requirement - total per year (kWh/year)												1078.6055	
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	223.5150	174.6501	147.7954	79.0761	37.9552	0.0000	0.0000	0.0000	0.0000	66.8843	136.9970	211.7324	(98c)
Space heating requirement after solar contribution - total per year (kWh/year)												1078.6055	
Space heating per m2											(98c) / (4) =	31.7237	(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 %)	100.0000	(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	223.5150	174.6501	147.7954	79.0761	37.9552	0.0000	0.0000	0.0000	0.0000	66.8843	136.9970	211.7324	(98)
Space heating efficiency (main heating system 1)	100.0000	100.0000	100.0000	100.0000	0.0000	0.0000	0.0000	0.0000	100.0000	100.0000	100.0000	100.0000	(210)
Space heating fuel (main heating system)	223.5150	174.6501	147.7954	79.0761	37.9552	0.0000	0.0000	0.0000	0.0000	66.8843	136.9970	211.7324	(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													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(64)
Efficiency of water heater												100.0000	(216)
(217)m	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	(217)
Fuel for water heating, kWh/month													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(231)
Lighting	12.6551	10.1524	9.1411	6.6971	5.1731	4.2264	4.7190	6.1340	7.9675	10.4537	11.8075	13.0068	(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	1078.6055	(211)
Space heating fuel - main system 2	0.0000	(213)
Space heating fuel - secondary	0.0000	(215)
Efficiency of water heater	100.0000	
Water heating fuel used	1089.9347	(219)
Space cooling fuel	0.0000	(221)
Electricity for pumps and fans:		
Total electricity for the above, kWh/year	0.0000	(231)
Electricity for lighting (calculated in Appendix L)	102.1337	(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)
Appendix Q - special features		
Energy saved or generated	-0.0000	(236)
Energy used	0.0000	(237)
Total delivered energy for all uses	2270.6739	(238)

10a. Fuel costs - using Table 12 prices

	Fuel kWh/year	Fuel price p/kWh	Fuel cost £/year	
Space heating - main system 1	1078.6055	16.4900	177.8621	(240)
Total CO2 associated with community systems			0.0000	(473)
Water heating (other fuel)	1089.9347	16.4900	179.7302	(247)
Energy for instantaneous electric shower(s)	0.0000	16.4900	0.0000	(247a)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(249)
Energy for lighting	102.1337	16.4900	16.8418	(250)
Additional standing charges			0.0000	(251)
Total energy cost			374.4341	(255)

11a. SAP rating - Individual heating systems

Energy cost deflator (Table 12):	0.3600	(256)
Energy cost factor (ECF) [(255) x (256)] / [(4) + 45.0] =	1.7063	(257)
SAP value	72.3412	
SAP rating (Section 12)	72	(258)
SAP band	C	

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	1078.6055	0.1554	167.6028	(261)
Total CO2 associated with community systems			0.0000	(373)
Water heating (other fuel)	1089.9347	0.1415	154.2727	(264)
Space and water heating			321.8756	(265)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(267)
Energy for lighting	102.1337	0.1443	14.7410	(268)
Total CO2, kg/year			336.6166	(272)
CO2 emissions per m2			9.9000	(273)
EI value			94.2903	
EI rating			94	(274)
EI band			A	

SAP 10 WORKSHEET FOR Conversion (As Designed) (Version 10.2, February 2022)
CALCULATION OF EPC COSTS, EMISSIONS AND PRIMARY ENERGY FOR IMPROVED DWELLING

1. Overall dwelling characteristics

	Area (m2)		Storey height (m)		Volume (m3)	
Main dwelling						
Ground floor	34.0000	(1b)	x 2.6000	(2b) =	88.4000	(1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	34.0000					(4)
Dwelling volume			(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =		88.4000	(5)

2. Ventilation rate

	m3 per hour		
Number of open chimneys	0 * 80 =	0.0000	(6a)
Number of open flues	0 * 20 =	0.0000	(6b)
Number of chimneys / flues attached to closed fire	0 * 10 =	0.0000	(6c)
Number of flues attached to solid fuel boiler	0 * 20 =	0.0000	(6d)
Number of flues attached to other heater	0 * 35 =	0.0000	(6e)
Number of blocked chimneys	0 * 20 =	0.0000	(6f)
Number of intermittent extract fans	2 * 10 =	20.0000	(7a)
Number of passive vents	0 * 10 =	0.0000	(7b)
Number of flueless gas fires	0 * 40 =	0.0000	(7c)
	Air changes per hour		
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =	20.0000 / (5) =	0.2262	(8)
Pressure test		No	
Pressure Test Method		Blower Door	
Measured/design AP50		15.0000	(17)
Infiltration rate		0.9762	(18)
Number of sides sheltered		2	(19)
Shelter factor	(20) = 1 - [0.075 x (19)] =	0.8500	(20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) =	0.8298	(21)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Wind speed	4.7000	4.7000	4.6000	4.0000	3.9000	3.6000	3.7000	3.5000	3.7000	3.9000	4.2000	4.4000	(22)
Wind factor	1.1750	1.1750	1.1500	1.0000	0.9750	0.9000	0.9250	0.8750	0.9250	0.9750	1.0500	1.1000	(22a)
Adj infilt rate	0.9750	0.9750	0.9543	0.8298	0.8091	0.7468	0.7676	0.7261	0.7676	0.8091	0.8713	0.9128	(22b)
Effective ac	0.9753	0.9753	0.9553	0.8443	0.8273	0.7789	0.7946	0.7636	0.7946	0.8273	0.8796	0.9166	(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								
Window			3.7500	1.3258	4.9716			(27)
External Wall 1	18.0000	3.7500	14.2500	0.1800	2.5650	190.0000	2707.5000	(29a)
Total net area of external elements Aum(A, m2)			18.0000					(31)
Fabric heat loss, W/K = Sum (A x U)			(26)...(30) + (32) =		7.5366			(33)
Main dwelling								
Party Floor 1			34.0000			30.0000	1020.0000	(32d)
Party Ceiling 1			34.0000			30.0000	1020.0000	(32b)
Heat capacity Cm = Sum(A x k)					(28)...(30) + (32) + (32a)...(32e) =		4747.5000	(34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K							139.6324	(35)
Thermal bridges (Default value 0.200 * total exposed area)							3.6000	(36)
Point Thermal bridges						(36a) =	0.0000	
Total fabric heat loss					(33) + (36) + (36a) =		11.1366	(37)

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
(38)m	28.4525	28.4525	27.8687	24.6296	24.1337	22.7213	23.1796	22.2757	23.1796	24.1337	25.6591	26.7388	(38)
Heat transfer coeff	39.5891	39.5891	39.0053	35.7662	35.2703	33.8579	34.3162	33.4123	34.3162	35.2703	36.7957	37.8754	(39)
Average = Sum(39)m / 12 =												36.2553	

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP	1.1644	1.1644	1.1472	1.0519	1.0374	0.9958	1.0093	0.9827	1.0093	1.0374	1.0822	1.1140	(40)
HLP (average)												1.0663	
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31	

4. Water heating energy requirements (kWh/year)

Assumed occupancy	1.2576	(42)

Hot water usage for mixer showers

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
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

54.8895	54.0743	52.9264	50.8097	49.2248	47.4674	46.5182	47.6581	48.8993	50.7798	52.9400	54.7039	(42b)

Hot water usage for other uses

28.9568	27.9038	26.8508	25.7979	24.7449	23.6919	23.6919	24.7449	25.7979	26.8508	27.9038	28.9568	(42c)

Average daily hot water use (litres/day)	77.2156	(43)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daily hot water use	83.8463	81.9781	79.7772	76.6076	73.9697	71.1594	70.2101	72.4030	74.6971	77.6306	80.8438	83.6607	(44)
Energy conte	132.7920	116.7358	122.6146	104.8720	99.5775	87.4987	84.9130	89.6500	92.1091	105.3440	115.1768	130.9925	(45)
Energy content (annual)										Total = Sum(45)m =		1282.2761	
Distribution loss (46)m = 0.15 x (45)m													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(46)
Water storage loss:													
Total storage loss													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(56)
If cylinder contains dedicated solar storage													
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(57)
Primary loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(59)
Combi loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(61)
Total heat required for water heating calculated for each month													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(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													
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436	(64)
									Total per year (kWh/year) = Sum(64)m =			1089.9347	(64)
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													
	28.2183	24.8064	26.0556	22.2853	21.1602	18.5935	18.0440	19.0506	19.5732	22.3856	24.4751	27.8359	(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	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	75.4553	(66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5													
	14.4581	12.8415	10.4434	7.9064	5.9101	4.9896	5.3914	7.0079	9.4060	11.9431	13.9394	14.8599	(67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5													
	159.3904	161.0444	156.8764	148.0033	136.8027	126.2756	119.2429	117.5889	121.7568	130.6299	141.8306	152.3577	(68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5													
	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	43.8031	(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)													
	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	-50.3035	(71)
Water heating gains (Table 5)													
	37.9278	36.9142	35.0210	30.9518	28.4412	25.8243	24.2527	25.6057	27.1850	30.0882	33.9932	37.4139	(72)
Total internal gains													
	280.7312	279.7550	271.2957	255.8164	240.1088	226.0443	217.8418	219.1574	227.3027	241.6161	258.7180	273.5863	(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	1.9400	10.6614	0.7600	0.7000	0.7700	7.6253	(74)
South	1.8100	47.0290	0.7600	0.7000	0.7700	31.3826	(78)

Solar gains	39.0080	64.7417	90.1728	110.5411	126.2602	127.8759	121.0292	109.0636	96.3541	71.6629	43.7813	31.8798	(83)
Total gains	319.7392	344.4967	361.4686	366.3575	366.3689	353.9202	338.8711	328.2210	323.6568	313.2790	302.4993	305.4661	(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, ni1,m (see Table 9a)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
tau	33.3109	33.3109	33.8095	36.8714	37.3898	38.9495	38.4294	39.4691	38.4294	37.3898	35.8398	34.8181	
alpha	3.2207	3.2207	3.2540	3.4581	3.4927	3.5966	3.5620	3.6313	3.5620	3.4927	3.3893	3.3212	
util living area													
	0.9486	0.9316	0.9012	0.8327	0.7281	0.5598	0.4402	0.4607	0.6532	0.8375	0.9235	0.9518	(86)
MIT	19.5275	19.7024	19.9945	20.4343	20.6984	20.8699	20.9096	20.9084	20.8146	20.4975	20.0107	19.5882	(87)
Th 2	19.9486	19.9486	19.9625	20.0403	20.0523	20.0868	20.0756	20.0978	20.0756	20.0523	20.0154	19.9894	(88)
util rest of house													
	0.9397	0.9198	0.8838	0.8038	0.6810	0.4912	0.3558	0.3790	0.5889	0.8048	0.9088	0.9435	(89)
MIT 2	18.2511	18.4696	18.8423	19.4357	19.7484	19.9544	19.9758	19.9976	19.8942	19.5265	18.9070	18.3573	(90)
Living area fraction										fLA = Living area / (4) =		0.3235	(91)
MIT	18.6640	18.8684	19.2151	19.7588	20.0558	20.2506	20.2779	20.2923	20.1920	19.8407	19.2641	18.7556	(92)
Temperature adjustment												0.0000	
adjusted MIT	18.6640	18.8684	19.2151	19.7588	20.0558	20.2506	20.2779	20.2923	20.1920	19.8407	19.2641	18.7556	(93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Utilisation	0.9261	0.9050	0.8690	0.7943	0.6812	0.5040	0.3748	0.3971	0.5975	0.7966	0.8953	0.9308	(94)
Useful gains	296.1027	311.7697	314.1205	291.0131	249.5619	178.3652	126.9986	130.3330	193.3802	249.5433	270.8403	284.3243	(95)
Ext temp.	4.2000	4.9000	6.5000	9.0000	11.8000	14.7000	16.5000	16.3000	14.0000	10.5000	7.1000	4.3000	(96)
Heat loss rate W													
	572.6181	552.9973	495.9544	384.8006	291.1835	187.9323	129.6437	133.3908	212.4847	329.4481	447.5854	547.5103	(97)
Space heating kWh													
	205.7275	162.1050	135.2844	67.5270	30.9664	0.0000	0.0000	0.0000	0.0000	59.4491	127.2565	195.8104	(98a)
Space heating requirement - total per year (kWh/year)												984.1263	
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													
	205.7275	162.1050	135.2844	67.5270	30.9664	0.0000	0.0000	0.0000	0.0000	59.4491	127.2565	195.8104	(98c)
Space heating requirement after solar contribution - total per year (kWh/year)												984.1263	
Space heating per m2											(98c) / (4) =	28.9449	(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 %)	100.0000 (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													
	205.7275	162.1050	135.2844	67.5270	30.9664	0.0000	0.0000	0.0000	0.0000	59.4491	127.2565	195.8104	(98)
Space heating efficiency (main heating system 1)													

	100.0000	100.0000	100.0000	100.0000	100.0000	0.0000	0.0000	0.0000	0.0000	100.0000	100.0000	100.0000 (210)
Space heating fuel (main heating system)												
	205.7275	162.1050	135.2844	67.5270	30.9664	0.0000	0.0000	0.0000	0.0000	59.4491	127.2565	195.8104 (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												
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436 (64)
Efficiency of water heater												100.0000 (216)
(217)m	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000 (217)
Fuel for water heating, kWh/month												
	112.8732	99.2254	104.2224	89.1412	84.6409	74.3739	72.1761	76.2025	78.2927	89.5424	97.9003	111.3436 (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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (231)
Lighting	12.6551	10.1524	9.1411	6.6971	5.1731	4.2264	4.7190	6.1340	7.9675	10.4537	11.8075	13.0068 (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	984.1263 (211)
Space heating fuel - main system 2	0.0000 (213)
Space heating fuel - secondary	0.0000 (215)
Efficiency of water heater	100.0000
Water heating fuel used	1089.9347 (219)
Space cooling fuel	0.0000 (221)
Electricity for pumps and fans:	
Total electricity for the above, kWh/year	0.0000 (231)
Electricity for lighting (calculated in Appendix L)	102.1337 (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)
Appendix Q - special features	
Energy saved or generated	-0.0000 (236)
Energy used	0.0000 (237)
Total delivered energy for all uses	2176.1947 (238)

10a. Fuel costs - using BEDF prices (577)

	Fuel kWh/year	Fuel price p/kWh	Fuel cost £/year	
Space heating - main system 1	984.1263	28.4300	279.7871	(240)
Total CO2 associated with community systems			0.0000	(473)
Water heating (other fuel)	1089.9347	28.4300	309.8684	(247)
Energy for instantaneous electric shower(s)	0.0000	28.4300	0.0000	(247a)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(249)
Energy for lighting	102.1337	28.4300	29.0366	(250)
Additional standing charges			0.0000	(251)
Total energy cost			618.6921	(255)

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	984.1263	0.1556	153.1307	(261)
Total CO2 associated with community systems			0.0000	(373)
Water heating (other fuel)	1089.9347	0.1415	154.2727	(264)
Space and water heating			307.4035	(265)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(267)
Energy for lighting	102.1337	0.1443	14.7410	(268)
Total CO2, kg/year			322.1445	(272)

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	984.1263	1.5761	1551.0550	(275)
Total CO2 associated with community systems			0.0000	(473)
Water heating (other fuel)	1089.9347	1.5234	1660.4137	(278)
Space and water heating			3211.4687	(279)
Pumps, fans and electric keep-hot	0.0000	0.0000	0.0000	(281)
Energy for lighting	102.1337	1.5338	156.6560	(282)
Total Primary energy kWh/year			3368.1248	(286)

Predicted Energy Assessment

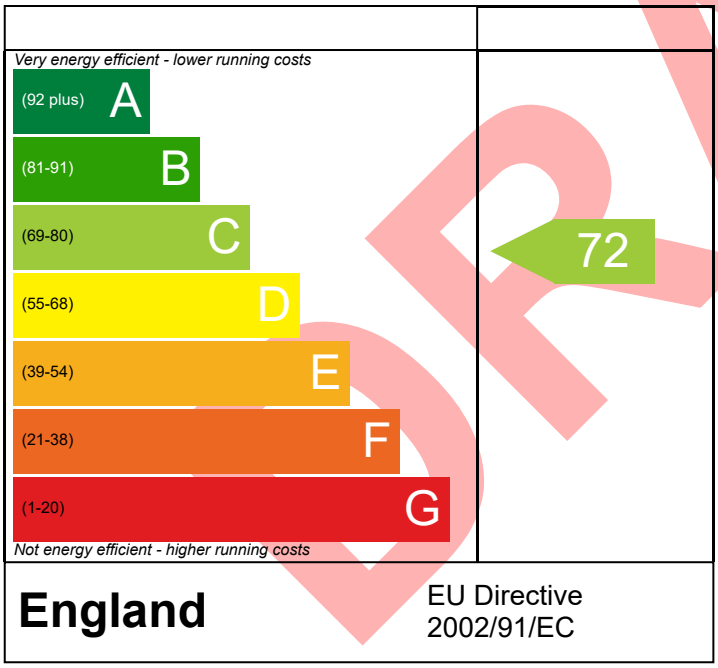
Flat 2, 67 Daisy Hill, Dewbury, WF13 1LT

Dwelling type:	Flat, Mid-Terrace
Date of assessment:	06/08/2025
Produced by:	Chris Law
Total floor area:	34 m²
DRRN:	

This document is a Predicted Energy Assessment for properties marketed when they are incomplete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, this rating will be updated and an official Energy Performance Certificate will be created for the property. This will include more detailed information about the energy performance of the completed property.

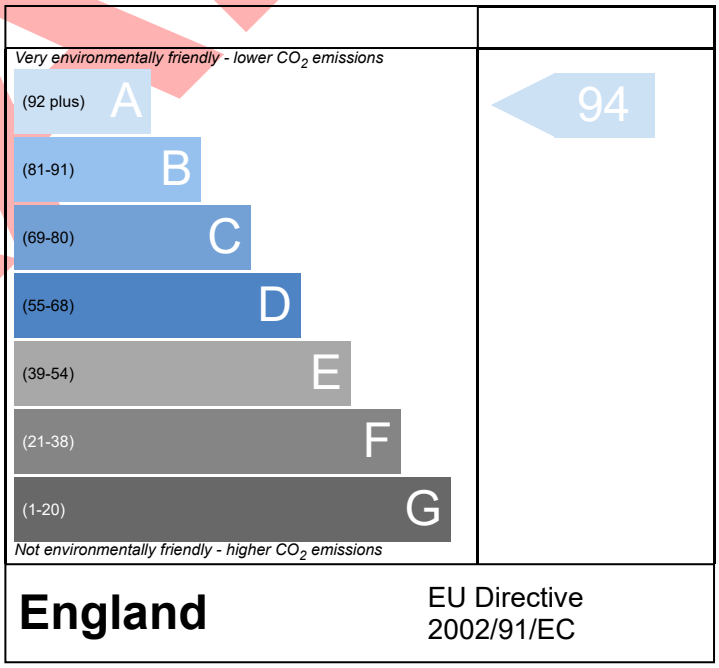
The energy performance has been assessed using the Government approved SAP 10 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO2) emissions.

Energy Efficiency Rating



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

Environmental Impact (CO_2) Rating



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO_2) emissions. The higher the rating the less impact it has on the environment.

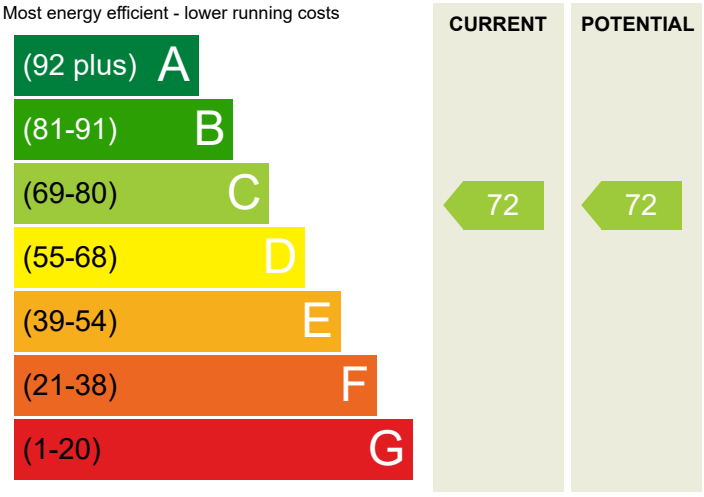
Energy Report

Dwelling Address	Flat 2, 67 Daisy Hill, Dewbury, WF13 1LT
Reference	Flat 2-00001
Assessment Date	06/08/2025
Submission Date	
Property Type	Flat, Mid-Terrace
Total Floor Area	34

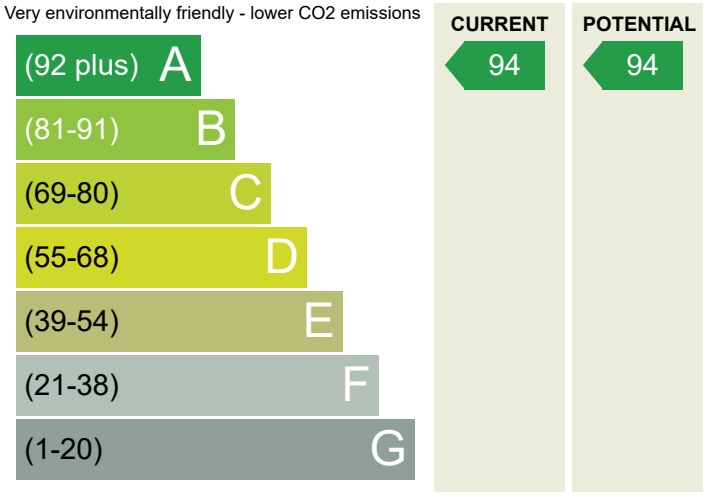
This Energy Report has been generated using the UK's National Calculation Methodology for dwellings, Standard Assessment Procedure (SAP). This methodology is used to assess the energy efficiency of dwellings which is calculated based on a dwelling's heating, hot water, ventilation and lighting usage.

This document is not an Energy Performance Certificate (EPC) as required by the Energy Performance of Buildings Regulations

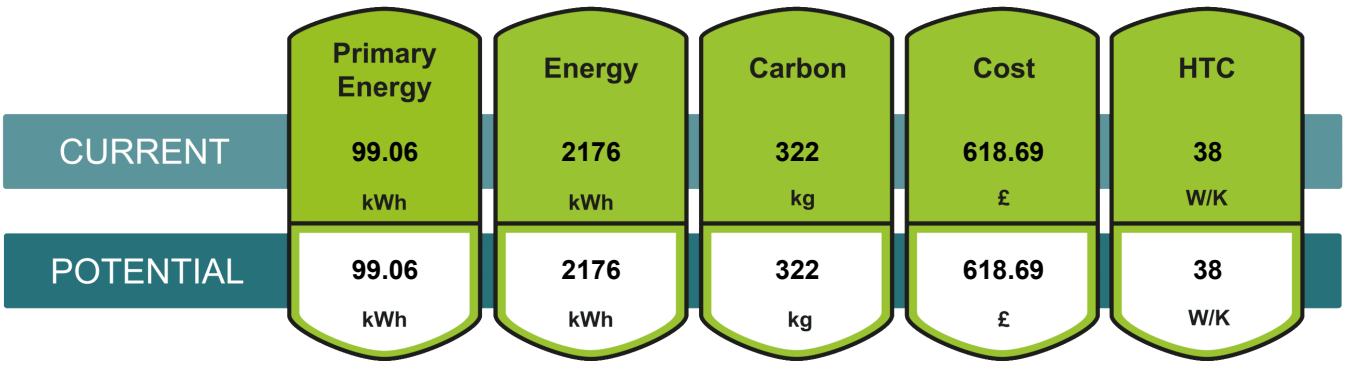
Energy Efficiency Rating



Carbon Dioxide (CO2) Emissions Rating



Additional ratings for your home



Energy Report

Breakdown of property's energy performance

Each feature is assessed as one of the following:

Very Poor	Poor	Average	Good	Very Good

Feature	Description	Energy Performance
Walls	Average thermal transmittance 0.18 W/m²K	Very Good
Windows	High performance glazing	Good
Main heating	Electric storage heaters	Very Poor
Main heating controls	Controls for high heat retention storage heaters	Good
Secondary heating	None	
Hot water	Electric instantaneous at point of use	Very Poor
Lighting	Good lighting efficiency	Good
Air tightness	(not tested)	

Recommendations

The recommended measures provided below will help to improve the energy efficiency of the dwelling.
To reach the dwelling's potential energy rating all of the recommended measures shown below would need to be installed.
Having these measures installed individually or in any other order may give a different result when compared with the cumulative potential rating.

Recommended measures	Cumulative savings (per year)	Cumulative rating	Typical costs	Incremental savings (per year)	Cumulative CO2 rating

The typical cost is based on average installation prices across the country so may not be representative of the actual costs in your area.

Estimated energy costs of the dwelling

The table below shows the estimated running costs of the space and water heating and lighting within the dwelling. It does not include the energy used from household appliances. The estimated annual costs after potential improvements indicates the total energy cost if all recommended measures named above were installed.

Energy Report

	Estimated annual costs	Estimated annual costs after potential improvements	Potential future savings
Lighting	£29	£29	
Heating	£280	£280	
Hot Water	£310	£310	
New Technologies e.g. Impact of PV	£0	£0	
TOTAL	£619	£619	

Estimated energy use and potential savings

Space Heating
984
kWh per year

Water Heating
1090
kWh per year

About this document

Created by:	
Company/Trading name:	
Phone number:	
Email address:	

Disclaimer

This Energy Report should not under any circumstances be treated as a Condition Survey and cannot be used to indicate that any element of the dwelling (e.g.heating system) is working correctly.
This Energy Report must not be used in situations where an Energy Performance Certificate (EPC) is required.
This Energy Report is generated from a set of data inputs which may not reflect the actual dimensions, services or construction of the dwelling.
The calculation used to generate this report reflects the SAP Methodology current at the time of report generation.

Glossary terms for additional metrics

Primary Energy	The measure of the energy required for lighting, heating and hot water in a property. This includes the efficiency of the property's heating system, power station efficiency for electricity and the energy used to produce the fuel and deliver it to the property.
Energy Used	The estimated amount of fuel energy for lighting, heating and hot water for the property. The estimate is based on typical usage which is likely to be different to actual consumption.
Carbon (CO2)	The current emissions based on the energy estimates.
Cost	The estimated cost of energy. The cost of each unit of fuel is based on an industry standard which is likely to be different to those the occupier actually pays.
Heat Transfer Coefficient	Heat flow through the property envelope where internal and external temperatures are different.

Dwelling Sign Off Report

Property Reference	Flat 2	**Issued on Date**	06/08/2025
Assessment Reference	00001	**Prop Type Ref**	Mid-Terrace Flat
Property	Flat 2, 67 Daisy Hill, Dewbury, WF13 1LT		

SAP Rating	72 C	**DER**	10.26	**TER**	
Environmental	94 A	**% DER < TER**			N/A
CO_2 Emissions (t/year)	0.32	**DFEE**	36.43	**TFEE**	
Compliance Check	N/A	**% DFEE < TFEE**			
% DPER < TPER		**DPER**	107.09	**TPER**	

Assessor Details	Mr. Chris Law	**Assessor ID**	AX42-0001
Client			

This report should be used for a client to confirm key assessment details for production of Energy Performance Certificates and should be retained as documentary evidence. It cannot be used in lieu of a BREL/BRWL/Compliance report for demonstrating Building Regulation compliance.

Section 1: Dwelling Information

Dwelling Address (Please confirm final postal address and post code of the dwelling.)

House Name	
House Number	Flat 2
Postcode	WF13 1LT
Street	67 Daisy Hill
Town	Dewbury
County	

Dwelling Orientation North (Please confirm orientation of main entrance door of the dwelling.)

Comments

Terrain Type Suburban

Property Type Flat, Mid-Terrace

Comments

Electricity Tariff Standard

Smart electricity meter fitted: No

Smart gas meter fitted: No

Comments

Section 2: Dwelling Construction Details

External Walls

Description	External Wall 1	
Type	Cavity Wall	
Construction	Cavity wall : dense plaster, dense block, filled cavity, any outside structure	
U-value	0.18	W/m²K U-value calculations should be provided to verify the u-value entered into the Assessment
Gross Area	18.00	m²

Comments

Opening Types

Description	Data Source	Type	Glazing	G-value	Frame Type	U-Value (W/m²K)
Window	Manufacturer	Window	Double glazed	0.76		1.40

Comments

Openings

Name	Opening Type	Location	Orientation	Area (m²)
Front	Window	External Wall 1	North	1.94
Rear	Window	External Wall 1	South	1.81

Comments

Thermal Bridging Default

Y-value 0.200

Comments

Where specific construction details have been used documentary evidence should be provided to the SAP assessor, usually in the form of signed checklists.

Pressure Testing No

Property Tested? Yes

Test Method Blower Door

Where an air pressure test has been carried out a copy of the test certificate should be forwarded to the SAP assessor.

Comments

Section 3: Dwelling Systems

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	2
Number of passive vents	0
Number of flueless gas fires	0

Comments

Fixed Cooling System No

Comments

Lighting

No Fixed Lighting: No

Name	Efficacy (lm/W)	Power (W)	Capacity (lm)	Count
Lighting 1	80.00	25.00	2000.00	3

Comments

Main Heating 1 SAP table

Fuel Type	Electricity	
Winter Efficiency	100.00	%
Summer Efficiency	100.00	%
Model Name		
Manufacturer		
System Type		
Flue Type		
Fan Assisted Flue	No	
Heat Emitter		
Flow Temperature		
Flow Temperature Value		

Comments

Heating Controls

Description	Controls for high heat retention storage heaters
Boiler Interlock	No
Delayed Start Stat	No
PCDF Control Description	

Comments

Main Heating 2

Secondary Heating	None

Water Heating System

Water Heating	Independent
Supplementary Immersion	No
SAP Code	909
Water use <= 125 l/p/day	No
Cold Water Source	From mains
Number of baths	0

Comments

Hot Water Cylinder	None

Comments

Waste Water Heat Recovery System

Comments

Section 4: Dwelling Renewable Energy

Photovoltaic Unit	None

Section 5: Declaration

I confirm to the best of my knowledge the details provided in this report are an accurate representation of how the dwelling has been constructed.

Signed .....

Date .....