

28/04/2023

Heat Loss Report

Project Reference: fold cottage

Heating Type: ASHP

Installation Address

mr, unknown

fold cottage

ol115up

This report has been completed by SIMP Services, 23 Brinkburn Chester-Le-Street, 07868605182



The methods used in these calculations are from the Chartered Institution of Building Services Engineers (CIBSE) The Domestic Heating Design Guide 2014 and EN 12831. The UK standards for MCS MIS 3005 and MIS 3004 have also been met ensuring heat pumps and Biomass calculations can be presented.

It's important for the relevant persons to read this report and notify SIMP Services of any corrections that need to be made before the heating system is installed. SIMP Services is not liable for any inaccurate calculations made due to incorrect information, therefore it's important that the information provided is to the best knowledge available from the home owner, architect or builder.

28/04/2023

Heat Loss Report

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Appendix A

Summary of Results

When the external temperature is -2.2°C

The total heat source required to heat the building must provide an output of 6.48 kW

Heating Type: ASHP

Manufacture: Samsung

Model: AE080RXYDGG

Output at designed external temperature: 6 kW

Maximum designed flow temperature: 50°C

Worst Performing Room

Room name: Bathroom 1

Floor Area: 2.9 m²

Power demand: 285.09 watts

Specific room heat loss: 98.31 W/m²

Emitter type: Standard Radiators

Seasonal Performance Factor (SPF): 3.4

Temperature Star Rating: ***

Calculated Energy using Degree Day Data: The energy calculation method is worst case scenario, therefore assuming all rooms to be heated to their designed temperatures throughout the heating season. Of course most people don't use all the rooms and don't have the heating on within all rooms throughout a year at maximum. As a result, the calculated energy figure can be overestimated, therefore running costs may be higher with this calculation than actual.

Appendix B Room Features

Number of rooms: 10 and total floor area: 137.8 m²
 Approx location (Degree Day): W Pennines (Ringway)
 Approx City (Ext Temp): Manchester -2.2C
 Altitude adjustment <50 meters
 Ground Temperature 10C
 Outside Temperature -2.20C
 Degree Day Data 2228
 Is property > 2006? NO
 If property has thermal bridging? NO
 Does the building have MVHR? NO

Room Names	Designed Temperature	Fireplace	Throat restriction	Year room was built	Air Changes Per Hour	Exposed Location	Intermittent Heating	Vaulted Ceiling?	Vaulted Ceiling Type	Room Below	Room Above	Emitter Type
Lounge	21	NO	NO	1900	1.5	NO	NO	NO	-	None	Bedroom 4	Standard Radiators
Kitchen	18	NO	NO	1900	2	NO	NO	NO	-	None	Bedroom 3	Standard Radiators
Bedroom 1	18	NO	NO	1900	1	NO	NO	NO	-	None	None	Standard Radiators
Entrance Hall	18	NO	NO	1900	1.5	NO	NO	NO	-	None	None	Standard Radiators
Toilet 1	18	NO	NO	1900	2	NO	NO	NO	-	None	None	Standard Radiators
Bedroom 2	18	NO	NO	1900	1	NO	NO	NO	-	None	None	Standard Radiators
Bedroom 3	18	NO	NO	1900	1	NO	NO	NO	-	Kitchen	None	Standard Radiators
Bedroom 4	18	NO	NO	1900	1	NO	NO	NO	-	Lounge	None	Standard Radiators
Bathroom 1	22	NO	NO	1900	2	NO	NO	NO	-	Kitchen	None	Standard Radiators

Landing	18	NO	NO	1900	1.5	NO	NO	NO	-	Lounge	None	Standard Radiators
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Appendix C

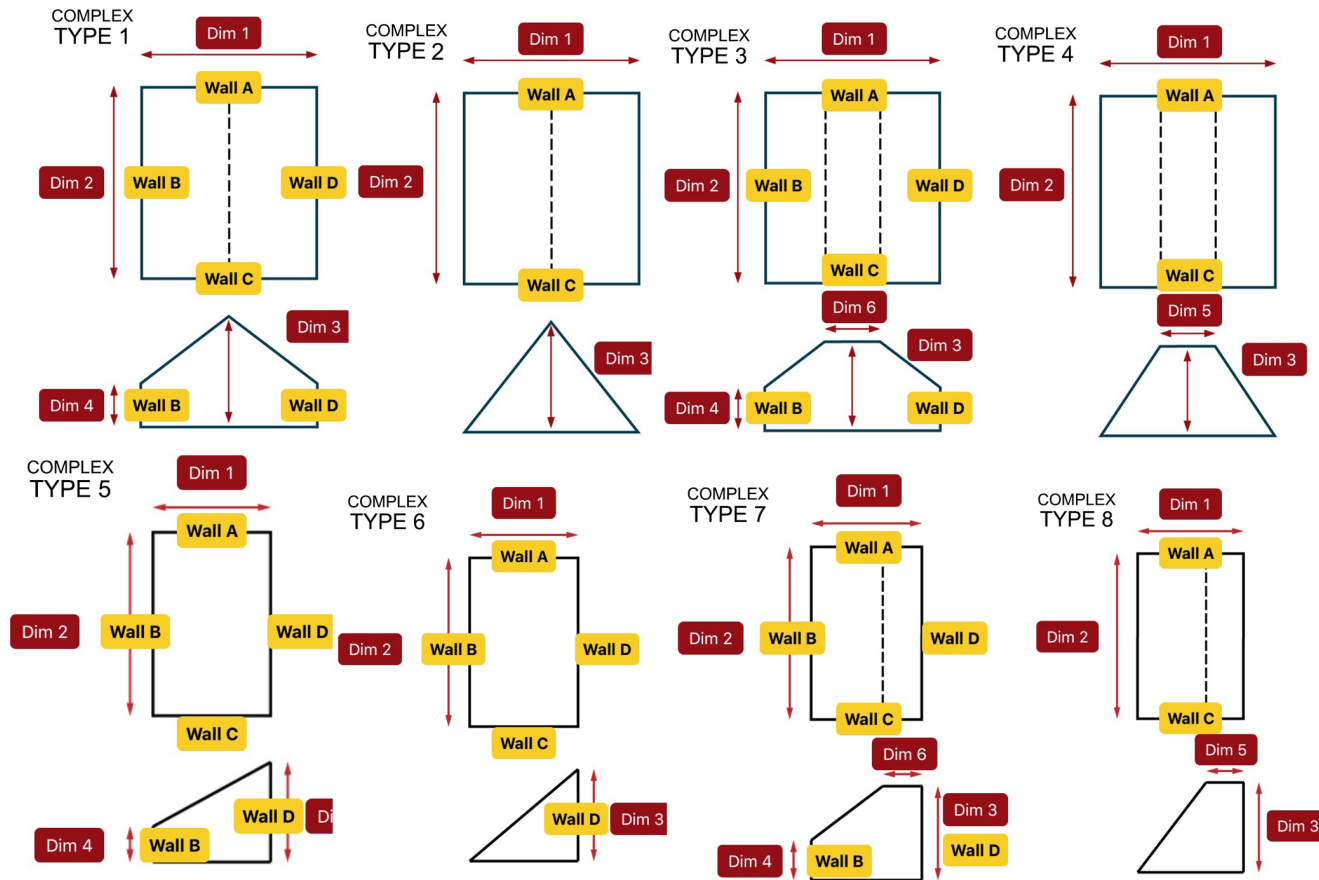
Room Dimensions

Room Names	Floor Areas m ²	Room Height m	External wall(Type A) m	External wall(Type B) m	Window (Type A) m ²	Window (Type B) m ²	Internal Wall m	Party wall m	External Door Area m ²	Roof Glazing Area m ²	Lowest Parallel room temp	High ceiling % increase
Lounge	25.77	2.3	4.89	0	1.5	0	15.3	0	0	0	18°C	0
Kitchen	19.76	2.3	9	0	0	0	9	0	4	0	18°C	0
Bedroom 1	14	2.3	8	0	0	0	8	0	3.78	0	18°C	0
Entrance Hall	10.95	2.3	7.7	0	2	0	7.7	0	0	0	18°C	0
Toilet 1	4.76	2.3	4.45	0	0	0	4.45	0	0	0	18°C	0
Bedroom 2	13.09	2.3	7.6	0	1.46	0	7.6	0	0	0	18°C	0
Bedroom 3	12.81	2.3	6.75	0	0.64	0	6.75	0	0	0	18°C	0
Bedroom 4	27.92	2.3	15.49	0	1.7	0	5.71	0	0	0	18°C	0
Bathroom 1	2.9	2.3	3.55	0	0	0	3.55	0	0	0	18°C	0
Landing	5.84	2.3	2.95	0	0.64	0	4.95	0	0	0	18°C	0

Appendix D Vaulted Rooms

Room Names	Vaulted Room Type	Dimensions						Wall Type or Roof			
		Dim 1	Dim 2	Dim 3	Dim 4	Dim 5	Dim 6	Wall A	Wall B	Wall C	Wall D
Lounge	-	0	0	0	0	0	0	-	-	-	-
Kitchen	-	0	0	0	0	0	0	-	-	-	-
Bedroom 1	-	0	0	0	0	0	0	-	-	-	-
Entrance Hall	-	0	0	0	0	0	0	-	-	-	-
Toilet 1	-	0	0	0	0	0	0	-	-	-	-
Bedroom 2	-	0	0	0	0	0	0	-	-	-	-
Bedroom 3	-	0	0	0	0	0	0	-	-	-	-
Bedroom 4	-	0	0	0	0	0	0	-	-	-	-
Bathroom 1	-	0	0	0	0	0	0	-	-	-	-
Landing	-	0	0	0	0	0	0	-	-	-	-

Complex Room Types



Appendix E External Walls

Room Names	External Wall (A)	External Wall (B)	Internal Wall	Party Wall
Lounge	solid wall with 50mm pir (0.3)	-	Solid Stone 305mm 12" (2.78)	-
Kitchen	solid wall with 50mm pir (0.3)	-	Solid Stone 305mm 12" (2.78)	-
Bedroom 1	solid wall with 50mm pir (0.3)	-	Solid Stone 305mm 12" (2.78)	-
Entrance Hall	solid wall with 50mm pir (0.3)	-	Solid Stone 305mm 12" (2.78)	-
Toilet 1	solid wall with 50mm pir (0.3)	-	Solid Stone 305mm 12" (2.78)	-
Bedroom 2	solid wall with 50mm pir (0.3)	-	Solid Stone 305mm 12" (2.78)	-
Bedroom 3	solid wall with 50mm pir (0.3)	-	Solid Stone 305mm 12" (2.78)	-
Bedroom 4	solid wall with 50mm pir (0.3)	-	Solid Stone 305mm 12" (2.78)	-
Bathroom 1	solid wall with 50mm pir (0.3)	-	Solid Stone 305mm 12" (2.78)	-
Landing	solid wall with 50mm pir (0.3)	-	Solid Stone 305mm 12" (2.78)	-

Appendix F

Internal and Party walls, Windows and doors

Room Names	Window Type (A)	Window Type (B)	Roof Glazing	Door
Lounge	Single Glazing Wood/PVC frame (4.8)	-	-	-
Kitchen	Single Glazing Wood/PVC frame (4.8)	-	-	Solid Wood Door (3)
Bedroom 1	Single Glazing Wood/PVC frame (4.8)	-	-	Solid Wood Door (3)
Entrance Hall	Standard Double Glazing Wood/PVC frame (2.8)	-	-	Solid Wood Door (3)
Toilet 1	Standard Double Glazing Wood/PVC frame (2.8)	-	-	Solid Wood Door (3)
Bedroom 2	Standard Double Glazing Wood/PVC frame (2.8)	-	-	Solid Wood Door (3)
Bedroom 3	Single Glazing Wood/PVC frame (4.8)	-	-	Solid Wood Door (3)
Bedroom 4	Single Glazing Wood/PVC frame (4.8)	-	-	Solid Wood Door (3)
Bathroom 1	Single Glazing Wood/PVC frame (4.8)	-	-	Solid Wood Door (3)
Landing	Single Glazing Wood/PVC frame (4.8)	-	-	Solid Wood Door (3)

Appendix G

Floors, Ceilings and Roof

Room Names	Floor	Roof or Ceiling
Lounge	Ground Floor No Insulation (1.15)	Intermediate Floor Timber without insulation (1.73)
Kitchen	Ground Floor No Insulation (1.15)	Intermediate Floor Timber without insulation (1.73)
Bedroom 1	Ground Floor No Insulation (1.15)	Pitched roof with tiles, 300mm Insulation (0.12)
Entrance Hall	Ground Floor No Insulation (1.15)	Pitched roof with tiles, 300mm Insulation (0.12)
Toilet 1	Ground Floor No Insulation (1.15)	Pitched roof with tiles, 300mm Insulation (0.12)
Bedroom 2	Ground Floor No Insulation (1.15)	Pitched roof with tiles, 300mm Insulation (0.12)
Bedroom 3	Intermediate Floor Timber without insulation (1.73)	Pitched roof with tiles, 300mm Insulation (0.12)
Bedroom 4	Intermediate Floor Timber without insulation (1.73)	Pitched roof with tiles, 300mm Insulation (0.12)
Bathroom 1	Intermediate Floor Timber without insulation (1.73)	Pitched roof with tiles, 300mm Insulation (0.12)
Landing	Intermediate Floor Timber without insulation (1.73)	Pitched roof with tiles, 300mm Insulation (0.12)

Appendix H

Review of Heat Loss Part 1

Room Names	W/m²	Floor (watts)	External wall Type A (watts)	External wall Type B (watts)	Window Type A (watts)	Window Type B (watts)	Internal Wall (watts)	Party Wall (watts)	External Door (watts)	Roof Glazing (watts)	Roof or Ceiling (watts)
Lounge	64.76	325.99	67.84	0	167.04	0	293.48	0	0	0	133.75
Kitchen	57.25	181.79	101.2	0	0	0	0	0	242.4	0	0
Bedroom 1	49.65	128.8	88.6	0	0	0	0	0	229.07	0	33.94
Entrance Hall	53.65	100.74	95.2	0	113.12	0	0	0	0	0	26.54
Toilet 1	55.32	43.79	62.02	0	0	0	0	0	0	0	11.54
Bedroom 2	40.68	120.43	97.08	0	82.58	0	0	0	0	0	31.73
Bedroom 3	29.64	0	90.2	0	62.05	0	0	0	0	0	31.05
Bedroom 4	25.83	-144.9	205.6	0	164.83	0	0	0	0	0	67.68
Bathroom 1	98.31	20.07	59.28	0	0	0	90.79	0	0	0	8.42
Landing	37.24	-30.31	37.24	0	62.05	0	0	0	0	0	14.16

Review of Heat Loss Part 2

Room Names	High Ceiling Increase (watts)	Amount of Air Heated per hour (m³/hour)	Ventilation (watts)	Exposed Location (watts)	Intermittent Heating (watts)	Thermal Bridges (watts)	Total Watts	Total kWh
Lounge	0	88.91	680.69	0	0	0	1668.79	3694.91
Kitchen	0	90.9	605.94	0	0	0	1131.33	3792.82
Bedroom 1	0	32.2	214.65	0	0	0	695.06	2420.46
Entrance Hall	0	37.78	251.84	0	0	0	587.44	1961.72
Toilet 1	0	21.9	145.99	0	0	0	263.34	873.88
Bedroom 2	0	30.11	200.71	0	0	0	532.53	1895.82
Bedroom 3	0	29.46	196.38	0	0	0	379.68	1005.09
Bedroom 4	0	64.22	428.09	0	0	0	721.3	2292.93
Bathroom 1	0	13.34	106.53	0	0	0	285.09	384.98
Landing	0	20.15	134.32	0	0	0	217.46	655.88

Appendix I

Summary of U values (W/m²K) Part 1

Room Names	Floor	External Wall Type A	External Wall Type B	Window Type A	Window Type B	Internal Wall	Party Wall	External Door
Lounge	1.15	0.3	0	4.8	0	2.78	0	0
Kitchen	1.15	0.3	0	4.8	0	2.78	0	3
Bedroom 1	1.15	0.3	0	4.8	0	2.78	0	3
Entrance Hall	1.15	0.3	0	2.8	0	2.78	0	3
Toilet 1	1.15	0.3	0	2.8	0	2.78	0	3
Bedroom 2	1.15	0.3	0	2.8	0	2.78	0	3
Bedroom 3	1.73	0.3	0	4.8	0	2.78	0	3
Bedroom 4	1.73	0.3	0	4.8	0	2.78	0	3
Bathroom 1	1.73	0.3	0	4.8	0	2.78	0	3
Landing	1.73	0.3	0	4.8	0	2.78	0	3

Summary of U values (W/m²K) Part 2

Room Names	Roof Glazing	Roof or Ceiling	Exposed Location	Intermittent Heating	Thermal Bridges	Room Temp Below (If none then average Ground temp)	Room Temp Above (through Ceiling or Roof)
Lounge	0	1.73	0	0	0	10	18.00
Kitchen	0	1.73	0	0	0	10	18.00
Bedroom 1	0	0.12	0	0	0	10	-2.20
Entrance Hall	0	0.12	0	0	0	10	-2.20
Toilet 1	0	0.12	0	0	0	10	-2.20
Bedroom 2	0	0.12	0	0	0	10	-2.20
Bedroom 3	0	0.12	0	0	0	18	-2.20
Bedroom 4	0	0.12	0	0	0	21	-2.20
Bathroom 1	0	0.12	0	0	0	18	-2.20
Landing	0	0.12	0	0	0	21	-2.20

Appendix J

DHW (Domestic Hot Water)

Number of bedrooms: 4
Number of occupants per bedroom: 1
Flow temperature for hot water (DHW): 50 °C (55 for heat pump others 70)
Hot water per occupant: 45 litres (if heat pump use 45, if other use 35)
η efficiency pipework loss to cylinder: 70 %
Electricity Cost: 34 pence per kWh
SHC Water: 4187 J/kgK
J to kWh: 3600000
water mains input temp: 10 C
kg to litres water: 1
Hot water energy demand per day: 15 kWh

OIL RESULTS

Oil hot water demand per day 22 kWh
Annual Demand 8030 kWh

LPG RESULTS

LPG hot water demand per day 22 kWh
Annual Demand 8030 kWh

DIRECT ELECTRIC RESULTS

Electric hot water demand per day 22 kWh
Annual Demand 8030 kWh

MAIN GAS RESULTS

Main gas hot water demand per day 22 kWh
Annual Demand 8030 kWh

Appendix K Emitters and Performance

Room Names	Type of Emitter	Current Emitter watts (70°C)	Current Rad Oversize %	Flow Temperature °C	W/m²	Room Heat Loss watts	Oversize Factor based on heat pump flow temp	MCS Heat emitter guide watts1	Underfloor Heating Details			Likely SPF	Star Rating
									Floor Type	Floor Surface	Max Pipe Spacing	ASHP	
Lounge	Standard Radiators	0	-%	50	64.76	1668.79	2.4	4005.1	0	0	N/A	3.4	***
Kitchen	Standard Radiators	0	-%	50	57.25	1131.33	2.4	2715.19	0	0	N/A	3.4	***
Bedroom 1	Standard Radiators	0	-%	50	49.65	695.06	2.4	1668.14	0	0	N/A	3.4	***
Entrance Hall	Standard Radiators	0	-%	50	53.65	587.44	2.4	1409.86	0	0	N/A	3.4	***
Toilet 1	Standard Radiators	0	-%	50	55.32	263.34	2.4	632.02	0	0	N/A	3.4	***
Bedroom 2	Standard Radiators	0	-%	50	40.68	532.53	2.4	1278.07	0	0	N/A	3.4	***
Bedroom 3	Standard Radiators	0	-%	50	29.64	379.68	2.4	911.23	0	0	N/A	3.4	***
Bedroom 4	Standard Radiators	0	-%	50	25.83	721.3	2.4	1731.12	0	0	N/A	3.4	***
Bathroom 1	Standard Radiators	0	-%	50	98.31	285.09	2.4	684.22	0	0	N/A	3.4	***
Landing	Standard Radiators	0	-%	50	37.24	217.46	2.4	521.9	0	0	N/A	3.4	***

Appendix L Current Radiators

Room Temperature °C	Room Names	Radiator Type	Height (mm)	Length (mm)	Output at 50K MW-Air delta T	Mean (Flow/Return) Water Temperature and Outputs					
					70°C Watts	35°C Output Watts	40°C Output Watts	45°C Output Watts	50°C Output Watts	55°C Output Watts	60°C Output Watts
21	Lounge	-	-	-	-	-	-	-	-	-	-
				Total Output:	-	-	-	-	-	-	-
18	Kitchen	-	-	-	-	-	-	-	-	-	-
				Total Output:	-	-	-	-	-	-	-
18	Bedroom 1	-	-	-	-	-	-	-	-	-	-
				Total Output:	-	-	-	-	-	-	-
18	Entrance Hall	-	-	-	-	-	-	-	-	-	-
				Total Output:	-	-	-	-	-	-	-
18	Toilet 1	-	-	-	-	-	-	-	-	-	-
				Total Output:	-	-	-	-	-	-	-
18	Bedroom 2	-	-	-	-	-	-	-	-	-	-
				Total Output:	-	-	-	-	-	-	-
18	Bedroom 3	-	-	-	-	-	-	-	-	-	-
				Total Output:	-	-	-	-	-	-	-
18	Bedroom 4	-	-	-	-	-	-	-	-	-	-
				Total Output:	-	-	-	-	-	-	-
22	Bathroom 1	-	-	-	-	-	-	-	-	-	-
				Total Output:	-	-	-	-	-	-	-
18	Landing	-	-	-	-	-	-	-	-	-	-
				Total Output:	-	-	-	-	-	-	-

Appendix M Fuel Comparison

Heating Type	Efficiency %	Annual Energy Demand kWh			Number of kWh in unit			Price per Tonne	Price per unit		Pence per kWh	£ / kWh	Total annual running cost	CO2 emissions	
		Hot water	Heating	Total										factor (kg/kWh)	Total kg
Oil	85%	8030	18978.49	27008.49	10.35			0	101	Pence/Litre	9.76	0.1	£3105.98	0.314	8480.67
Mains Gas	85%	8030	18978.49	27008.49	1			0	10.3	Pence/kWh	10.3	0.1	£3105.98	0.227	6130.93
LPG	90%	8030	18978.49	27008.49	7.11			0	87	Pence/Litre	12.24	0.12	£3565.12	0.259	6995.2
Direct Electric	100%	8030	18978.49	27008.49	1			0	34	Pence/kWh	34	0.34	£9182.89	0.233	6292.98
Biomass Wood Pellets	90%	8030	18978.49	27008.49	4.8			250	25	Kg	5.21	0.05	£1485.46	0.08	2160.68
Biomass Logs	90%	8030	18978.49	27008.49	4.1			150	15	Kg	3.66	0.04	£1188.37	0.018	486.15
Biomass Chips	90%	8030	18978.49	27008.49	3.5	DHW SPF	Heating SPF	100	10	Kg	2.86	0.03	£891.28	0.018	486.15
Air Source Heat Pump	see SCOP	5475	18978.49	24453.49	see SPF	3.4	3.4	0	34	Pence/kWh	34	0.34	£2445.35	0.233	1675.78
Ground Source Heat Pump	see SCOP	5475	18978.49	24453.49	see SPF	3.4	3.7	0	34	Pence/kWh	34	0.34	£2291.47	0.233	1570.33

Appendix N Heat Pump Summary

SPACE HEATING

101		Demand:	18978.49 kWh/yr
102	Heat supplied by HP, excluding auxiliary heaters:		18978.49 kWh/yr
103		SPF(2):	3.4
	Electricity consumed by HP, excluding auxiliary		
104		heaters:	5581.91 kWh/yr
105	Renewable heat supplied by HP:		13396.58 kWh/yr
	Remaining heat to be supplied by auxiliary heaters		
106		and other heat sources:	0
107	Remaining heat, supplied by other heat sources:		0
108	Remaining heat, supplied by auxiliary heaters:		0
	Electricity consumed by HP, including auxiliary		
109		heaters:	5581.91 kWh/yr

WHERE OTHER HEAT SOURCES ARE USED

110		Fuel used:	0
111	Efficiency of other heat sources:		N/A
112	Consumed by other heat sources:		N/A

WATER HEATING

	No. of bedrooms:	4 Rooms	
	No of occupants / bedroom:	1 Person/s	
	HP flow temperature in DHW mode:	50°C	
	Hot water / occupant:	45 Litres/day	
	Final HP secondary HW temperature:	45°C	
201		Demand:	5679.4 kWh/yr
202	Heat supplied by HP, excluding immersion heater:		5475 kWh/yr
203		SPF(2):	3.4
	Electricity consumed by HP, excluding immersion		
204		heater:	1610.29 kWh/yr
205	Renewable heat supplied by HP:		3864.71 kWh/yr
	Remaining heat to be supplied by immersion heater		
206		and other heat sources:	204.40 kWh/yr
207	Remaining heat, supplied by other heat sources:		0
208	Remaining heat, supplied by immersion heater:		204.40 kWh/yr
	Electricity consumed by HP, including immersion		
209		heater:	1814.69 kWh/yr

WHERE OTHER HEAT SOURCES ARE USED

210		Fuel used:	0
211	Efficiency of other heat sources:		0
212	Consumed by other heat sources:		0

PROPORTIONS, ENERGY CONSUMPTION, AND PERFORMANCE

	Proportion of space heating and water heating		
	demand provided by heat pump (excluding		
301		auxiliary/immersion heaters):	99%
302		Renewable heat:	17261.29 kWh/yr
	Electricity consumed by HP (excluding auxiliary/		
303		immersion heaters):	7192.2 kWh/yr

	Electricity consumed by auxiliary/immersion	
304	heaters (supplied as part of HP):	204.4 kWh/yr
305	Fuel consumed by other heat sources:	N/A
306	HP combined performance SPF(4):	N/A

RUNNING COST

401	Cost per unit of electricity for HP:	34 pence/kWh
402	Cost per unit of fuel for other heat sources:	N/A
403	Cost of electricity for HP (including auxiliary/ immersion heaters):	2514.84 £ / year
404	Cost of fuel for other heat sources:	N/A

Disclaimer:

'The performance of Microgeneration heat pump systems is impossible to predict with certainty due to the variability of the climate and its subsequent effect on both heat supply and demand. This estimate is based upon the best available information but is given as guidance only and should not be considered as a guarantee.'

Appendix O New Radiators

Room Temperature °C	Room Names	Room Heat Loss	Radiator Type	Height (mm)	Length (mm)	Output at 50K MW-Air delta T	Custom defined MWT °C	Mean (Flow/Return) Water Temperature and Outputs					
						70°C Watts	47.5°C Output Watts	35°C Output Watts	40°C Output Watts	45°C Output Watts	50°C Output Watts	55°C Output Watts	60°C Output Watts
21	Lounge	1668.79	-	-	-	-		-	-	-	-	-	-
					Total Output:	-		-	-	-	-	-	-
21	Lounge	1668.79	K2	600	1200	2112	925	404	600	813	1040	1279	1529
			K2	600	1000	1760	771	336	500	678	867	1066	1274
					Total Output:	3872	-	740	1100	1491	1907	2345	2803
18	Kitchen	1131.33	-	-	-	-		-	-	-	-	-	-
					Total Output:	-		-	-	-	-	-	-
18	Kitchen	1131.33	K2	600	1400	2464	1241	606	847	1106	1379	1666	1964
					Total Output:	2464	-	606	847	1106	1379	1666	1964
18	Bedroom 1	695.06	-	-	-	-		-	-	-	-	-	-
					Total Output:	-		-	-	-	-	-	-
18	Bedroom 1	695.06	P+	600	1000	1450	730	357	499	651	812	980	1156
					Total Output:	1450	-	357	499	651	812	980	1156
18	Entrance Hall	587.44	-	-	-	-		-	-	-	-	-	-
					Total Output:	-		-	-	-	-	-	-
18	Entrance Hall	587.44	P+	600	1000	1450	730	357	499	651	812	980	1156

					Total Output:	1450	-	357	499	651	812	980	1156
18	Toilet 1	263.34	-	-	-	-	-	-	-	-	-	-	-
					Total Output:	-	-	-	-	-	-	-	-
18	Toilet 1	263.34	K1	600	600	576	290	142	198	259	322	389	459
					Total Output:	576	-	142	198	259	322	389	459
18	Bedroom 2	532.53	-	-	-	-	-	-	-	-	-	-	-
					Total Output:	-	-	-	-	-	-	-	-
18	Bedroom 2	532.53	K1	600	1200	1152	580	283	396	517	645	779	918
					Total Output:	1152	-	283	396	517	645	779	918
18	Bedroom 3	379.68	-	-	-	-	-	-	-	-	-	-	-
					Total Output:	-	-	-	-	-	-	-	-
18	Bedroom 3	379.68	K1	600	1000	960	483	236	330	431	537	649	765
					Total Output:	960	-	236	330	431	537	649	765
18	Bedroom 4	721.3	-	-	-	-	-	-	-	-	-	-	-
					Total Output:	-	-	-	-	-	-	-	-
18	Bedroom 4	721.3	P+	600	1000	1450	730	357	499	651	812	980	1156
					Total Output:	1450	-	357	499	651	812	980	1156
22	Bathroom 1	285.09	-	-	-	-	-	-	-	-	-	-	-
					Total Output:	-	-	-	-	-	-	-	-
22	Bathroom 1	285.09	P+	600	600	870	363	151	231	317	409	507	609
					Total Output:	870	-	151	231	317	409	507	609
			-	-	-	-	-	-	-	-	-	-	-

18	Landing	217.46											
					Total Output:	-		-	-	-	-	-	-
18	Landing	217.46	K1	600	600	576	290	142	198	259	322	389	459
					Total Output:	576	-	142	198	259	322	389	459