



MCS

Project Design Details & Data Input



Project Reference:	6507	BUS Grant No.	N/A	Company Info. & MCS Designer:	Andrew J. Pugh
Date:	31 August 2022			Company Name:	MJS Energy Ltd
Client Name:	MR	A. N.	Other	M. C. S. Accreditation Number:	APH46496
Site Address Line 1	No Where House			Address:	Presteigne Mill
Line 2	Any Road				Leominster Road
City	Somewhere Town				Presteigne,
County	Countyshire				Powys
Post Code:	NP7 7NN			Post Code:	LD8 2HG
Contact Nos.	12345 678 910			Contact Nos.	01568 760075/ 07990 318043
Email Address:	ANOther@email.com			Email Address:	Andrew.Pugh@mjsenergy.co.uk

Heat Pump System Performance Estimates & MCS Web Questions					
EPC No.	4632-0920-8209-0285-0206			Total Installation Value (Inc. VAT)	£30,963.76
kWh/Yr required to heat property (EPC)	48500			Commissioning Date	TBC
kWh/Yr required for hot water (EPC)	2911			Domestic or Commercial for RHI	Domestic
Total Floor Area m ² (EPC)	208			Estimated KW of HP from EPC M ²	Old Build - Poor 14.56 kW
Total kWh/Yr according to EPC Calc.	51411	Total kWh/Yr according to MCS Calc.	36682	Difference of MCS Less EPC kWh/Yr	-14729
Designed and Installed to provide...	Space Heating & DHW			MPAN Number	21-9999-1819-891
Flow Temp/Scope	45/4.11			Compliance Cert 3.2 -	Compliance Cert 3.2 - A. N. Other
Existing Heating System Fuel	Oil			Hot Water heated by	
Age of existing system	1994-2007				
Date of Installation	TBC			Is this a BUS Grant Installation?	Yes

Property Details				
House Type	Detached		Amount of Bedrooms	4
Built (year)	Pre 2000		Occupants per Bedroom	1
Electrical Supply	Single Phase		Total Floor Area (m ²)	176.12
			Total Volume (m ³)	435.11

Design Data				
Outside Design Temp - ODT (°C)	-2.8		Altitude (m)	230
Degree Days (DD)	2425		Min Hot Water Cylinder (litres)	210
Mean air temp - MAT (°C)	9.8		Hot water per occupant (l/day)	42
MAT Location	Midland (Elmdon)		Legionnaires' protection (days)	7

Building Requirements				
Space Heating load (kW)	13.04		Annual Hot water heating demand (kWh/yr)	3571
Heat loss W/m ²	74.03		Immersion Energy (kWh)	127
Space Heating (kWh/yr)	33111		Total Energy Usage (kWh/yr)	36682

Heat Pump Selection & Data				
Type of Heat Pump	Air Source Heat Pump		Buffer Vessel (litres)	300
Manufacturer	Heliotherm		Hot Water Cylinder (litres)	500
MSC Cert No. - Model & Quantity	BBA 0136/19 - S 18 L-M-CC	1	Type of Emitters	UFH/Radiators
Output @ ODT/DFT (kW)	19.80		Design Flow Temp - DFT (°C)	45.00
Output @ 0°C/HW (kW)	21.90		CH pump power (W)	60
Manufacturers htg SCOP @ DFT	4.11		Hot Water Storage Temp (°C)	50
Manufacturers HW SCOP @ HWST	3.58		Hot Water system efficiency	75.00%

Property 'assumed' U Values		
Ground Floor	U' Value	Construction
Ground/Foundation Floor	1.20	From Building Regs
Windows	4.80	Wood/PVC Single Glazed
Door	3.00	solid wood door (external)
External Wall	1.34	From U VALUE CALCULATOR
Roof Glazing	2.80	Wood/PVC Double Glazed
Upper-Floor	U' Value	Construction
Windows	4.80	Wood/PVC Single Glazed
External Wall	1.34	From U VALUE CALCULATOR
Roof	0.12	Pitched roof - Slates or tiles, ventilated air space, 300mm insulation between joists, 9.5 mm plasterboard
Pitched Roof	0.12	Pitched roof - Slates or tiles, sarking felt, ventilated air space, 300mm insulation between rafters, 9.5 mm plasterboard
Roof Glazing	2.80	Wood/PVC Double Glazed
Single Storey	U' Value	Construction
Floor	0.22	From Building Regs
Windows	4.80	Wood/PVC Single Glazed
Door	3.00	solid wood door (external)
External Wall	1.34	From U VALUE CALCULATOR
Roof	0.12	Pitched roof - Slates or tiles, ventilated air space, 300mm insulation between joists, 9.5 mm plasterboard
Pitched Roof	0.12	Pitched roof - Slates or tiles, sarking felt, ventilated air space, 300mm insulation between rafters, 9.5 mm plasterboard
Roof Glazing	2.80	Wood/PVC Double Glazed

Space Heating Calculations - Room By Room								
Room	Heat loss (W)	Energy usage (kWh)	Design Temp	Open Flue	ac/h	Floor Area (m ²)	Volume (m ³)	W/m ²
Kitchen	2038.84	5701.38	18		2.0	21.89	48.41	93.12
Hall 1	364.27	1021.94	18		2.0	5.03	10.94	72.41
Hall 2	195.58	551.71	18		2.0	4.96	10.69	39.44
Utility	612.85	1269.60	18		3.0	4.80	12.56	127.75
Bath 1	421.54	465.61	22		3.0	5.50	14.56	76.69
Living	1420.63	3813.96	21		1.5	22.68	51.91	62.65
Bedroom 1	393.91	1160.81	18		1.0	7.56	18.73	52.12
Office	1370.05	3630.42	21		1.5	17.59	38.56	77.88
Sung	845.76	1905.71	21		1.5	9.80	23.84	86.30
Landing 1	622.39	1294.36	18		2.0	8.36	23.28	74.43
Bedroom 2	1236.69	3460.36	18		1.0	18.63	51.76	66.39
Ensuite	398.55	1027.45	18		1.5	3.65	9.14	109.07
Bath 2	497.20	695.15	22		3.0	4.39	12.28	113.22
Bedroom 3	696.11	1947.78	18		1.0	16.47	44.50	42.27
Landing 2	468.08	1090.77	18		2.0	4.53	11.40	103.26
Bedroom 4	1456.17	4074.48	18		1.0	20.28	52.55	71.80
Totals	13.04	33111.49				176.12	435.11	74.03



Project U Value Calcs.

U VALUE CALCULATOR		External wallExternal wall		Project Reference: 6507	
Fabric Type:		External wall			
Layer	Element	Material	Thickness (mm)	Thermal Conductivity (W/mK)	Resistance R m ² K/W
1	Walls	Limestone (hard)	700	1.7	0.412
2	Surface Finishes	Plaster (lightweight)	28	0.18	0.156
3					
4					
5					
6					
7					
8					
				Total Resistance	0.747
				U value of construction (W/m²K)	1.34

Heat Pump Radiator Sizing - MCS Heat Pump Calculator 1.9

Room	Room Temp (°C)	Heat Loss for room (Watts)	Mean Rad temp (°C)	Delta T (°C)	Radiator Height	Radiator Size (HxW)	Radiator Panel/Convactor	No. of Rads in room	Output of Rad @ delta t 50°C (Watts)	Output of Rad at required delta t (Watts)	Heat Loss for room (Watts)	Difference (Watts)
<i>Kitchen</i>	18	2038.84	41	23								
<i>Hall 1</i>	18	364.27	41	23								
<i>Hall 2</i>	18	195.58	41	23								
<i>Utility</i>	18	612.85	41	23								
<i>Bath 1</i>	22	421.54	41	19								
<i>Living</i>	21	1420.63	41	20								
<i>Bedroom 1</i>	18	393.91	41	23								
<i>Office</i>	21	1370.05	41	20								
<i>Sung</i>	21	845.76	41	20								
<i>Landing 1</i>	18	622.39	41	23	600	600x1200	K2	1	2078.00	631.71	622.39	✓ 9.32
<i>Bedroom 2</i>	18	1236.69	41	23	600	600x1200	K2	2	4156.00	1263.42	1236.69	✓ 26.73
<i>Ensuite</i>	18	398.55	41	23					Towel Rail			
<i>Bath 2</i>	22	497.20	41	19	600	600x0700	K3	1	1672.00	508.29	497.20	✓ 11.09
<i>Bedroom 3</i>	18	696.11	41	23	600	600x1400	K2	1	2425.00	737.20	696.11	✓ 41.09
<i>Landing 2</i>	18	468.08	41	23	600	600x0900	K2	1	1559.00	473.94	468.08	✓ 5.85
<i>Bedroom 4</i>	18	1456.17	41	23	600	600x0800	K3	1	1911.00	580.94	1456.17	⚠ -3.66
	18		41	23	600	600x1200	K3	1	2867.00	871.57		
									Total:	5067.07	4976.64	✓ 90.43

Radiator sizing good

Under Floor Heating Guide - MCS Heat Pump Calculator 1.9

Room	Room Temp (°C)	Heat Loss for room (Watts)	Floor Type	MWT @ DOT (°C)	UFH active area (m ²)	Unheated area by UFH (m ²)	Pipe diameter (mm)	Pipe Spacing (mm)	Floor covering (W/(m ² x K))	Amount of pipe required in room (m)	UFH output (W/m ²)	Average surface temp (°C)	Total output by UFH (W)	Difference (W)
Kitchen	18	2038.84	Solid	45.00	21.89	0	16	100	0.05	218.94	107.90	27.70	2362.36	323.52
Hall 1	18	364.27	Solid	45.00	5.03	0	16	100	0.05	50.31	107.90	27.70	542.79	178.52
Hall 2	18	195.58	Solid	45.00	4.96	0	16	100	0.05	49.59	107.90	27.70	535.10	339.52
Utility	18	612.85	Solid	45.00	4.80	0	16	100	0.05	47.97	107.90	27.70	517.62	-95.23
Bath 1	22	421.54	Solid	45.00	5.50	0	16	100	0.05	54.97	88.30	30.00	485.35	63.81
Living	20	1420.63	Solid	45.00	22.68	0	16	100	0.05	226.77	98.10	28.80	2224.57	803.94
Bedroom 1	18	393.91	Solid	45.00	7.56	0	16	100	0.05	75.58	107.90	27.70	815.46	421.55
Office	20	1370.05	Solid	45.00	17.59	0	16	100	0.05	175.91	98.10	28.80	1725.71	355.66
Sung	20	845.76	Solid	45.00	9.80	0	16	100	0.05	98.00	98.10	28.80	961.40	115.64
Landing 1	18	622.39												
Bedroom 2	18	1236.69												
Ensuite	18	398.55												
Bath 2	22	497.20												
Bedroom 3	18	696.11												
Landing 2	18	468.08												
Bedroom 4	22	1456.17												

Radiators



Room Information		Ventilation Heat Loss		Fabric		Additional heat loss		Addition		
Room		Air Changes an hour		Floor	Heat Loss (W)	Usage (kWh)		Watts	kWh	
Room	Kitchen	Air Changes an hour	2.00	Floor	215.44	1529.08	Thermal Bridging (New Build >2006)	0.00	0.00	0.00
Level	Ground floor	Air Change Factor (W/m³K)	0.33	Ext Wall	695.99	1947.44	Exposed location	0.00	0.00	0.00
Design Room Temp (°C)	18.00	Total Volume (m³)	48.41	Roof	0.00	0.00	High ceiling	0.00	0.00	0.00
Outside Design Temp (°C)	-2.80	Heat loss (W)	664.54	Glazing	462.87	1295.15	Intermittent heating	0.00	0.00	0.00
Temp Difference (°C)	20.80	Estimated Energy usage (kWh)	929.72	Int./Party Wall	0.00	0.00				
Degree Days	2425									
								Total Room Heat Loss (W)	2039	
								Total Room Energy Usage (kWh)		5701

Room Dimensions															
Length (m)	Width (m)	Height (m)	Volume (m³)	Temp Difference	Heat Loss (W)	Usage (kWh)	Type of Ground Floor								
Length (m)	4.27	Width (m)	5.13	Height (m)	2.21	Volume (m³)	48.41								
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00								
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00								
Floor															
Length (m)	4.27	Width (m)	5.13	Area (m²)	21.89	U Value (W/m²K)	1.20	8.20	215.44	1529.08	Solid Floor (in contact with ground)				
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	1.20	8.20	0.00	0.00	Exposed floor (external)				
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	1.20	8.20	0.00	0.00					
External Wall															
Length (m)	4.27	Height (m)	2.21	Area (m²)	9.45										
Length (m)	4.27	Height (m)	2.21	Area (m²)	9.44										
Length (m)	5.13	Height (m)	2.21	Area (m²)	11.33										
		Total		Area (m²)	25.01	U Value (W/m²K)	1.34	20.80	695.99	1947.44					
Roof															
Length (m)	4.27	Width (m)	5.13	Area (m²)	21.89										
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00										
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00										
		Total		Area (m²)	21.89	U Value (W/m²K)	0.00	20.80	0.00	0.00					
Windows															
Width (m)	1.81	Height (m)	1.17	Area (m²)	2.12	U Value (W/m²K)	4.80	20.80	211.32	591.30					
Width (m)	1.20	Height (m)	1.13	Area (m²)	1.36	U Value (W/m²K)	4.80	20.80	135.51	379.17					
Width (m)	0.45	Height (m)	0.45	Area (m²)	0.20	U Value (W/m²K)	4.80	20.80	20.26	56.69					
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	20.80	0.00	0.00					
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	20.80	0.00	0.00					
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	20.80	0.00	0.00					
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	20.80	0.00	0.00					
Doors															
Width (m)	0.82	Height (m)	1.88	Area (m²)	1.53	U Value (W/m²K)	3.00	20.80	95.78	267.99					
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	3.00	20.80	0.00	0.00					



Room Information		Ventilation Heat Loss		Fabric		Heat Loss (W)		Usage (kWh)		Additional heat loss		Addition		
Room	Hall	1	Air Changes a hour	2.0	Floor	49.50	351.33	Thermal Bridging (New Build >2006)	0.00%	0.00	0.00	0.00%	0.00	0.00
Level	Ground floor		Air Change Factor (W/m³K)	0.33	Ext Wall	68.79	192.47	Exposed location	0.00%	0.00	0.00	0.00%	0.00	0.00
Design Room Temp (°C)	18.00		Total Volume (m³)	10.94	Roof	0.00	0.00	High ceiling	0.00%	0.00	0.00	0.00%	0.00	0.00
Outside Design Temp (°C)	-2.80		Heat loss (W)	150.20	Glazing	95.78	267.99	Intermittent heating	0.00%	0.00	0.00	0.00%	0.00	0.00
Temp Difference (°C)	20.80		Estimated Energy usage (kWh)	210.14	Int./Party Wall	0.00	0.00							
Degree Days	2425													
											Total Room Heat Loss (W)	364		
											Total Room Energy Usage (kWh)	1022		

Room Dimensions		Length (m)		Width (m)		Height (m)		Volume (m³)									
Length (m)	2.73	Width (m)	1.84	Height (m)	2.18	Volume (m³)	10.94										
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00										
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00										
Floor		Length (m)		Width (m)		Area (m²)		U Value (W/m²K)		Temp Difference		Heat Loss (W)		Usage (kWh)		Type of Ground Floor	
Length (m)	2.73	Width (m)	1.84	Area (m²)	5.03	U Value (W/m²K)	1.20	8.20	49.50	351.33	Solid Floor (in contact with ground)						
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	1.20	8.20	0.00	0.00	Exposed floor (external)						
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	1.20	8.20	0.00	0.00							
External Wall		Length (m)		Height (m)		Area (m²)		U Value (W/m²K)		Temp Difference		Heat Loss (W)		Usage (kWh)			
Length (m)	1.84	Height (m)	2.18	Area (m²)	4.01	U Value (W/m²K)	1.34	20.80	68.79	192.47							
Total				Area (m²)		2.47											
Roof		Length (m)		Width (m)		Area (m²)		U Value (W/m²K)		Temp Difference		Heat Loss (W)		Usage (kWh)			
Length (m)	2.73	Width (m)	1.84	Area (m²)	5.03	U Value (W/m²K)	0.00	20.80	0.00	0.00							
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.00	20.80	0.00	0.00							
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.00	20.80	0.00	0.00							
Total				Area (m²)		5.03											
Windows		Width (m)		Height (m)		Area (m²)		U Value (W/m²K)		Temp Difference		Heat Loss (W)		Usage (kWh)			
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	20.80	0.00	0.00							
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	20.80	0.00	0.00							
Doors		Width (m)		Height (m)		Area (m²)		U Value (W/m²K)		Temp Difference		Heat Loss (W)		Usage (kWh)			
Width (m)	0.82	Height (m)	1.88	Area (m²)	1.53	U Value (W/m²K)	3.00	20.80	95.78	267.99							
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	3.00	20.80	0.00	0.00							



Room Information		Ventilation Heat Loss		Fabric		Additional heat loss		Addition			
Room	Hall	2	Air Changes a hour	2.0	Floor	Heat Loss (W)	Usage (kWh)	Thermal Bridging (New Build >2006)	0.00%	0.00	0.00
Level	Ground floor		Air Change Factor (W/m³K)	0.33	Ext Wall	0.00	0.00	Exposed location	0.00%	0.00	0.00
Design Room Temp (°C)	18.00		Total Volume (m³)	10.69	Roof	0.00	0.00	High ceiling	0.00%	0.00	0.00
Outside Design Temp (°C)	-2.80		Heat loss (W)	146.78	Glazing	0.00	0.00	Intermittent heating	0.00%	0.00	0.00
Temp Difference (°C)	20.80		Estimated Energy usage (kWh)	205.35	Int./Party Wall	0.00	0.00				
Degree Days	2425										
								Total Room Heat Loss (W)		196	
								Total Room Energy Usage (kWh)		552	

Room Dimensions		Floor		External Wall		Roof		Windows		Doors					
Length (m)	1.59	Width (m)	0.96	Height (m)	2.16	Volume (m³)	3.29								
Length (m)	1.46	Width (m)	2.35	Height (m)	2.16	Volume (m³)	7.40								
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00								
								Temp Difference		Heat Loss (W)		Usage (kWh)		Type of Ground Floor	
Length (m)	1.59	Width (m)	0.96	Area (m²)	1.53	U Value (W/m²K)	1.20	8.20	15.03	106.69	Solid Floor (in contact with ground)				
Length (m)	1.46	Width (m)	2.35	Area (m²)	3.43	U Value (W/m²K)	1.20	8.20	33.77	239.66	Exposed floor (external)				
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	1.20	8.20	0.00	0.00					
External Wall		Length (m)		Height (m)		Area (m²)		0.00							
				Total		Area (m²)		0.00		U Value (W/m²K)		1.34 20.80 0.00 0.00			
Roof		Length (m)		Width (m)		Area (m²)		1.53							
		Length (m)		Width (m)		Area (m²)		3.43							
		Length (m)		Width (m)		Area (m²)		0.00							
				Total		Area (m²)		4.96		U Value (W/m²K)		0.00 20.80 0.00 0.00			
Windows		Width (m)		Height (m)		Area (m²)		0.00		U Value (W/m²K)		4.80 20.80 0.00 0.00			
		Width (m)		Height (m)		Area (m²)		0.00		U Value (W/m²K)		4.80 20.80 0.00 0.00			
Doors		Width (m)		Height (m)		Area (m²)		0.00		U Value (W/m²K)		3.00 20.80 0.00 0.00			
		Width (m)		Height (m)		Area (m²)		0.00		U Value (W/m²K)		3.00 20.80 0.00 0.00			



Room	Room Information		Ventilation Heat Loss		Fabric	Heat Loss (W)		Usage (kWh)		Additional heat loss		
	Utility	Single storey	Air Changes a hour	Air Change Factor (W/m³K)		8.65	61.42	277.83	777.40	Thermal Bridging (New Build >2006)	Addition	Watts
Level			3.00	0.33	Floor					0.00%	0.00	0.00
Design Room Temp (°C)	18.00		Total Volume (m³)	12.56	Ext Wall	12.60	35.25	High ceiling		0.00%	0.00	0.00
Outside Design Temp (°C)	-2.80		Heat loss (W)	258.62	Roof	55.15	154.31	Intermittent heating		0.00%	0.00	0.00
Temp Difference (°C)	20.80		Estimated Energy usage (kWh)	241.21	Glazing	0.00	0.00					
Degree Days	2425				Int./Party Wall							
											Total Room Heat Loss (W)	613
											Total Room Energy Usage (kWh)	1270

Room Dimensions															
Length (m)	1.86	Width (m)	2.58	Height (m)	2.20	Volume (m³)	10.54								
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00								
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00								
Awkward Room Dimensions															
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00	<i>Pitched</i>							
Length (m)	1.86	Width (m)	2.58	Height (m)	0.84	Volume (m³)	2.02	<i>Single Pitch</i>							
Length (m)		Height (m)		Depth (m)		Volume (m³)	0.00	<i>Dormer 1</i>							
Length (m)		Height (m)		Depth (m)		Volume (m³)	0.00	<i>Dormer 2</i>							
Length (m)		Height (m)		Depth (m)		Volume (m³)	0.00	<i>Dormer 3</i>							
Floor															
Length (m)	1.86	Width (m)	2.58	Area (m²)	4.80	U Value (W/m²K)	0.22	Temp Difference	8.20	Heat Loss (W)	8.65	Usage (kWh)	61.42	Type of Ground Floor	Solid Floor (in contact with ground)
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.22	8.20	0.00	0.00	0.00			Exposed floor (external)	
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.22	8.20	0.00	0.00	0.00				
External Wall															
Length (m)	2.58	Height (m)	2.20	Area (m²)	5.66										
Length (m)	1.86	Height (m)	2.62	Area (m²)	4.88										
Length (m)		Height (m)		Area (m²)	0.00										
Total				Area (m²)	9.98	U Value (W/m²K)	1.34	20.80	277.83	777.40					
Roof															
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00										
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00										
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00										
Total				Area (m²)	0.00	U Value (W/m²K)	0.12	20.80	0.00	0.00					
Length (m)	0.00	Pitch (m)	0.00	Area (m²)	0.00	<i>Pitched</i>									
Length (m)	1.86	Pitch (m)	2.71	Area (m²)	5.05	<i>Single Pitch</i>									
Total				Area (m²)	5.05	U Value (W/m²K)	0.12	20.80	12.60	35.25					
Windows															
Width (m)	0.88	Height (m)	0.63	Area (m²)	0.55	U Value (W/m²K)	4.80	20.80	55.15	154.31					
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	20.80	0.00	0.00					
Doors															
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	3.00	20.80	0.00	0.00					
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	3.00	20.80	0.00	0.00					



Room Information		Ventilation Heat Loss		Fabric		Heat Loss (W)		Usage (kWh)		Additional heat loss		Addition		Watts		kWh	
Room	Bath	1	Air Changes an hour	3.00	Floor	14.75	70.38	Thermal Bridging (New Build >2006)	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00
Level	Single storey		Air Change Factor (W/m³K)	0.33	Ext Wall	0.00	0.00	Exposed location	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00
Design Room Temp (°C)	22.00		Total Volume (m³)	14.56	Roof	31.88	74.81	High ceiling	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00
Outside Design Temp (°C)	-2.80		Heat loss (W)	357.56	Glazing	17.35	40.72	Intermittent heating	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00
Temp Difference (°C)	24.80		Estimated Energy usage (kWh)	279.70	Int./Party Wall	0.00	0.00										
Degree Days	2425																
												Total Room Heat Loss (W)		422			
												Total Room Energy Usage (kWh)		466			

Room Dimensions		Awkward Room Dimensions		Floor		External Wall		Roof		Windows		Roof Glazing		Doors	
Length (m)	2.01	Width (m)	2.74	Height (m)	2.26	Volume (m³)	12.42								
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00								
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00								
Awkward Room Dimensions															
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00	<i>Pitched</i>							
Length (m)	2.01	Width (m)	2.74	Height (m)	0.78	Volume (m³)	2.14	<i>Single Pitch</i>							
Floor															
Length (m)	2.01	Width (m)	2.74	Area (m²)	5.50	U Value (W/m²K)	0.22	Temp Difference	12.20	Heat Loss (W)	14.75	Usage (kWh)	70.38	Type of Ground Floor	Solid Floor (in contact with ground)
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.22	Temp Difference	12.20	Heat Loss (W)	0.00	Usage (kWh)	0.00	Type of Ground Floor	Exposed floor (external)
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.22	Temp Difference	12.20	Heat Loss (W)	0.00	Usage (kWh)	0.00	Type of Ground Floor	Exposed floor (external)
External Wall															
Length (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)									
		Total		Area (m²)	0.00	U Value (W/m²K)	1.34	Temp Difference	24.80	Heat Loss (W)	0.00	Usage (kWh)	0.00		
Roof															
Length (m)	2.01	Width (m)	2.74	Area (m²)	5.50	U Value (W/m²K)									
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)									
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)									
		Total		Area (m²)	5.25	U Value (W/m²K)	0.12	Temp Difference	24.80	Heat Loss (W)	15.61	Usage (kWh)	36.64		
Length (m)	0.00	Pitch (m)	0.00	Area (m²)	0.00	U Value (W/m²K)									
Length (m)	2.01	Pitch (m)	2.84	Area (m²)	5.72	U Value (W/m²K)									
		Total		Area (m²)	5.47	U Value (W/m²K)	0.12	Temp Difference	24.80	Heat Loss (W)	16.26	Usage (kWh)	38.17		
Windows															
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	Temp Difference	24.80	Heat Loss (W)	0.00	Usage (kWh)	0.00		
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	Temp Difference	24.80	Heat Loss (W)	0.00	Usage (kWh)	0.00		
Roof Glazing															
Width (m)	0.56	Height (m)	0.44	Area (m²)	0.25	U Value (W/m²K)	2.80	Temp Difference	24.80	Heat Loss (W)	17.35	Usage (kWh)	40.72		
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	2.80	Temp Difference	24.80	Heat Loss (W)	0.00	Usage (kWh)	0.00		
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	2.80	Temp Difference	24.80	Heat Loss (W)	0.00	Usage (kWh)	0.00		
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	2.80	Temp Difference	24.80	Heat Loss (W)	0.00	Usage (kWh)	0.00		
Doors															
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	3.00	Temp Difference	24.80	Heat Loss (W)	0.00	Usage (kWh)	0.00		
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	3.00	Temp Difference	24.80	Heat Loss (W)	0.00	Usage (kWh)	0.00		



Room Information			Ventilation Heat Loss		Fabric		Additional heat loss			
Room			Air Changes a hour		Heat Loss (W)	Usage (kWh)				
Level	Living	Ground floor	0.33	1.50	304.77	1583.73	Thermal Bridging (New Build >2006)	0.00%	0.00	0.00
Design Room Temp (°C)	21.00		Air Change Factor (W/m³K)	0.33	332.57	813.25	Exposed location	0.00%	0.00	0.00
Outside Design Temp (°C)	-2.80		Total Volume (m³)	51.91	0.00	0.00	High ceiling	0.00%	0.00	0.00
Temp Difference (°C)	23.80		Heat loss (W)	611.51	171.78	420.06	Intermittent heating	0.00%	0.00	0.00
Degree Days	2425		Estimated Energy usage (kWh)	996.92	0.00	0.00				
								Total Room Heat Loss (W)		1421
								Total Room Energy Usage (kWh)		3814

Room Dimensions			Floor			External Wall			Roof			Windows			Doors		
Length (m)	Width (m)	Height (m)	Length (m)	Width (m)	Height (m)	Length (m)	Height (m)	Area (m²)	U Value (W/m²K)	Temp Difference	Heat Loss (W)	Usage (kWh)	Type of Ground Floor				
5.21	4.01	2.29	5.21	4.01	2.29	4.01	2.29	9.19		1.20	11.20	280.95	1459.92	Solid Floor (in contact with ground)			
1.47	1.21	2.29	1.47	1.21	2.29	1.21	2.29	2.76		1.20	11.20	23.83	123.81	Exposed floor (external)			
			0.00	0.00				0.00		1.20	11.20	0.00	0.00				
			Total			Area (m²)			U Value (W/m²K)								
						10.44				1.34		23.80		332.57	813.25		
			Total			22.68			U Value (W/m²K)	0.00		23.80		0.00	0.00		
										4.80		23.80		171.78	420.06		
										4.80		23.80		0.00	0.00		
										3.00		23.80		0.00	0.00		
										3.00		23.80		0.00	0.00		



Room	Room Information		Ventilation Heat Loss		Fabric	Heat Loss (W)	Usage (kWh)	Additional heat loss	Addition	Watts	kWh
	Bedroom	1	Air Changes a hour	1.0							
Level	Single storey		Air Change Factor (W/m ³ K)	0.33	Ext Wall	135.86	380.15	Exposed location	0.00%	0.00	0.00
Design Room Temp (°C)	18.00		Total Volume (m ³)	18.73	Roof	19.84	55.50	High ceiling	0.00%	0.00	0.00
Outside Design Temp (°C)	-2.80		Heat loss (W)	128.57	Glazing	96.01	268.64	Intermittent heating	0.00%	0.00	0.00
Temp Difference (°C)	20.80		Estimated Energy usage (kWh)	359.76	Int./Party Wall	0.00	0.00				
Degree Days	2425										
Total Room Heat Loss (W)										394	
Total Room Energy Usage (kWh)										1161	

Room Dimensions															
Length (m)	2.85	Width (m)	2.65	Height (m)	2.05	Volume (m ³)	15.48								
Length (m)		Width (m)		Height (m)		Volume (m ³)	0.00								
Length (m)		Width (m)		Height (m)		Volume (m ³)	0.00								
Awkward Room Dimensions															
Length (m)		Width (m)		Height (m)		Volume (m ³)	0.00	<i>Pitched</i>							
Length (m)	2.85	Width (m)	2.65	Height (m)	0.86	Volume (m ³)	3.25	<i>Single Pitch</i>							
Length (m)		Height (m)		Depth (m)		Volume (m ³)	0.00	<i>Dormer 1</i>							
Length (m)		Height (m)		Depth (m)		Volume (m ³)	0.00	<i>Dormer 2</i>							
Length (m)		Height (m)		Depth (m)		Volume (m ³)	0.00	<i>Dormer 3</i>							
Floor															
Length (m)	2.85	Width (m)	2.65	Area (m ²)	7.56	U Value (W/m ² K)	0.22	Temp Difference	8.20	Heat Loss (W)	13.63	Usage (kWh)	96.77	Type of Ground Floor	Solid Floor (in contact with ground)
Length (m)	0.00	Width (m)	0.00	Area (m ²)	0.00	U Value (W/m ² K)	0.22	8.20	0.00	0.00	0.00			Exposed floor (external)	
Length (m)	0.00	Width (m)	0.00	Area (m ²)	0.00	U Value (W/m ² K)	0.22	8.20	0.00	0.00	0.00				
External Wall															
Length (m)	2.85	Height (m)	2.05	Area (m ²)	5.84										
				Total	4.88	U Value (W/m ² K)	1.34	20.80	135.86	380.15					
Roof															
Length (m)	0.00	Width (m)	0.00	Area (m ²)	0.00										
Length (m)	0.00	Width (m)	0.00	Area (m ²)	0.00										
Length (m)	0.00	Width (m)	0.00	Area (m ²)	0.00										
				Total	0.00	U Value (W/m ² K)	0.12	20.80	0.00	0.00					
Length (m)	0.00	Pitch (m)	0.00	Area (m ²)	0.00	<i>Pitched</i>									
Length (m)	2.85	Pitch (m)	2.79	Area (m ²)	7.95	<i>Single Pitch</i>									
				Total	7.95	U Value (W/m ² K)	0.12	20.80	19.84	55.50					
Windows															
Width (m)	0.74	Height (m)	1.30	Area (m ²)	0.96	U Value (W/m ² K)	4.80	20.80	96.01	268.64					
Width (m)		Height (m)		Area (m ²)	0.00	U Value (W/m ² K)	4.80	20.80	0.00	0.00					
Doors															
Width (m)		Height (m)		Area (m ²)	0.00	U Value (W/m ² K)	3.00	20.80	0.00	0.00					
Width (m)		Height (m)		Area (m ²)	0.00	U Value (W/m ² K)	3.00	20.80	0.00	0.00					



Room Information		Ventilation Heat Loss		Fabric		Additional heat loss				
Room	Office	Air Changes a hour	1.50	Floor	Heat Loss (W)	Usage (kWh)	Thermal Bridging (New Build >2006)	Addition	Watts	kWh
Level	Ground floor	Air Change Factor (W/m ³ K)	0.33	Ext Wall	571.57	1397.70	Exposed location	0.00%	0.00	0.00
Design Room Temp (°C)	21.00	Total Volume (m ³)	38.56	Roof	0.00	0.00	High ceiling	0.00%	0.00	0.00
Outside Design Temp (°C)	-2.80	Heat loss (W)	454.28	Glazing	107.78	263.55	Intermittent heating	0.00%	0.00	0.00
Temp Difference (°C)	23.80	Estimated Energy usage (kWh)	740.59	Int./Party Wall	0.00	0.00				
Degree Days	2425									
								Total Room Heat Loss (W)		1370
								Total Room Energy Usage (kWh)		3630

Room Dimensions															
Length (m)	5.30	Width (m)	3.32	Height (m)	2.19	Volume (m ³)	38.56								
Length (m)		Width (m)		Height (m)		Volume (m ³)	0.00								
Length (m)		Width (m)		Height (m)		Volume (m ³)	0.00								
Floor								Temp Difference		Heat Loss (W)		Usage (kWh)		Type of Ground Floor	
Length (m)	5.30	Width (m)	3.32	Area (m ²)	17.59	U Value (W/m ² K)	1.20	11.20	236.43	1228.58	Solid Floor (in contact with ground)				
Length (m)	0.00	Width (m)	0.00	Area (m ²)	0.00	U Value (W/m ² K)	1.20	11.20	0.00	0.00	Exposed floor (external)				
Length (m)	0.00	Width (m)	0.00	Area (m ²)	0.00	U Value (W/m ² K)	1.20	11.20	0.00	0.00					
External Wall															
Length (m)	5.30	Height (m)	2.19	Area (m ²)	11.61										
Length (m)	3.32	Height (m)	2.19	Area (m ²)	7.28										
Length (m)		Height (m)		Area (m ²)	0.00										
		Total		Area (m ²)	17.95	U Value (W/m ² K)	1.34	23.80	571.57	1397.70					
Roof															
Length (m)	5.30	Width (m)	3.32	Area (m ²)	17.59										
Length (m)	0.00	Width (m)	0.00	Area (m ²)	0.00										
Length (m)	0.00	Width (m)	0.00	Area (m ²)	0.00										
		Total		Area (m ²)	17.59	U Value (W/m ² K)	0.00	23.80	0.00	0.00					
Windows															
Width (m)	0.89	Height (m)	1.07	Area (m ²)	0.94	U Value (W/m ² K)	4.80	23.80	107.78	263.55					
Width (m)		Height (m)		Area (m ²)	0.00	U Value (W/m ² K)	4.80	23.80	0.00	0.00					
Doors															
Width (m)		Height (m)		Area (m ²)	0.00	U Value (W/m ² K)	3.00	23.80	0.00	0.00					
Width (m)		Height (m)		Area (m ²)	0.00	U Value (W/m ² K)	3.00	23.80	0.00	0.00					





Room Information		Ventilation Heat Loss		Fabric		Heat Loss (W)		Usage (kWh)		Additional heat loss		Addition		
Room	Sung	Air Changes a hour	1.50	Floor	24.15	125.48	Thermal Bridging (New Build >2006)	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
Level	Single storey	Air Change Factor (W/m³K)	0.33	Ext Wall	418.83	1024.20	Exposed location	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
Design Room Temp (°C)	21.00	Total Volume (m³)	23.84	Roof	29.28	71.59	High ceiling	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
Outside Design Temp (°C)	-2.80	Heat loss (W)	280.85	Glazing	92.66	226.58	Intermittent heating	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
Temp Difference (°C)	23.80	Estimated Energy usage (kWh)	457.85	Int./Party Wall	0.00	0.00								
Degree Days	2425													
											Total Room Heat Loss (W)		846	
											Total Room Energy Usage (kWh)		1906	

Room Dimensions		Awkward Room Dimensions		Floor		External Wall		Roof		Windows		Doors			
Length (m)	3.73	Width (m)	2.63	Height (m)	2.03	Volume (m³)	19.89								
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00								
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00								
Awkward Room Dimensions		Awkward Room Dimensions		Awkward Room Dimensions		Awkward Room Dimensions		Awkward Room Dimensions		Awkward Room Dimensions		Awkward Room Dimensions			
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00	Pitched							
Length (m)	3.73	Width (m)	2.63	Height (m)	0.81	Volume (m³)	3.94	Single Pitch							
Length (m)		Height (m)		Depth (m)		Volume (m³)	0.00	Dormer 1							
Length (m)		Height (m)		Depth (m)		Volume (m³)	0.00	Dormer 2							
Length (m)		Height (m)		Depth (m)		Volume (m³)	0.00	Dormer 3							
Floor		Floor		Floor		Floor		Floor		Floor		Floor			
Length (m)	3.73	Width (m)	2.63	Area (m²)	9.80	U Value (W/m²K)	0.22	Temp Difference	11.20	Heat Loss (W)	24.15	Usage (kWh)	125.48	Type of Ground Floor	
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.22	11.20	0.00	0.00	0.00	0.00	0.00	Solid Floor (in contact with ground)	
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.22	11.20	0.00	0.00	0.00	0.00	0.00	Exposed floor (external)	
External Wall		External Wall		External Wall		External Wall		External Wall		External Wall		External Wall		External Wall	
Length (m)	3.73	Height (m)	2.03	Area (m²)	7.58										
Length (m)	2.63	Height (m)	2.43	Area (m²)	6.39										
Length (m)		Height (m)		Area (m²)	0.00										
		Total		Area (m²)	13.15	U Value (W/m²K)	1.34	23.80	418.83	1024.20					
Roof		Roof		Roof		Roof		Roof		Roof		Roof		Roof	
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00										
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00										
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00										
		Total		Area (m²)	0.00	U Value (W/m²K)	0.12	23.80	0.00	0.00					
Length (m)		Pitch (m)		Area (m²)	0.00	Pitched									
Length (m)	3.73	Pitch (m)	2.75	Area (m²)	10.25	Single Pitch									
		Total		Area (m²)	10.25	U Value (W/m²K)	0.12	23.80	29.28	71.59					
Windows		Windows		Windows		Windows		Windows		Windows		Windows		Windows	
Width (m)	0.74	Height (m)	1.10	Area (m²)	0.81	U Value (W/m²K)	4.80	23.80	92.66	226.58					
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	23.80	0.00	0.00					
Doors		Doors		Doors		Doors		Doors		Doors		Doors		Doors	
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	3.00	23.80	0.00	0.00					
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	3.00	23.80	0.00	0.00					



Room Information		Ventilation Heat Loss		Fabric		Heat Loss (W)		Usage (kWh)		Additional heat loss		Addition		Watts	kWh
Room	Landing	1	Air Changes a hour	2.0	Floor	0.00	0.00	Thermal Bridging (New Build >2006)	0.00%	0.00	0.00				
Level	Upper floor		Air Change Factor (W/m³K)	0.33	Ext Wall	269.19	753.21	Exposed location	0.00%	0.00	0.00				
Design Room Temp (°C)	18.00		Total Volume (m³)	23.28	Roof	19.68	55.06	High ceiling	0.00%	0.00	0.00				
Outside Design Temp (°C)	-2.80		Heat loss (W)	319.60	Glazing	13.92	38.96	Intermittent heating	0.00%	0.00	0.00				
Temp Difference (°C)	20.80		Estimated Energy usage (kWh)	447.13	Int./Party Wall	0.00	0.00								
Degree Days	2425														
												Total Room Heat Loss (W)	622		
												Total Room Energy Usage (kWh)	1294		

Room Dimensions				Temp Difference				Heat Loss (W)				Usage (kWh)				Type of Ground Floor			
Length (m)	3.13	Width (m)	1.87	Height (m)	2.78	Volume (m³)	16.23												
Length (m)	1.58	Width (m)	1.61	Height (m)	2.78	Volume (m³)	7.06												
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00												
Floor																			
Length (m)	3.13	Width (m)	1.87	Area (m²)	5.83	U Value (W/m²K)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/a					
Length (m)	1.58	Width (m)	1.61	Area (m²)	2.53	U Value (W/m²K)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Exposed floor (external)					
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
External Wall																			
Length (m)	1.87	Height (m)	2.78	Area (m²)	5.19														
Length (m)	1.61	Height (m)	2.78	Area (m²)	4.48														
Length (m)		Height (m)		Area (m²)	0.00														
		Total		Area (m²)	9.67	U Value (W/m²K)	1.34	20.80	269.19	753.21									
Roof																			
Length (m)	3.13	Width (m)	1.87	Area (m²)	5.83														
Length (m)	1.58	Width (m)	1.61	Area (m²)	2.53														
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00														
		Total		Area (m²)	8.12	U Value (W/m²K)	0.12	20.80	20.28	56.73									
Windows																			
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	20.80	0.00	0.00									
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	20.80	0.00	0.00									
Roof Glazing																			
Width (m)	0.56	Height (m)	0.43	Area (m²)	0.24	U Value (W/m²K)	2.80	20.80	13.92	38.96									
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	2.80	20.80	0.00	0.00									
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	2.80	20.80	0.00	0.00									
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	2.80	20.80	0.00	0.00									
Doors																			
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	0.00	20.80	0.00	0.00									
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	0.00	20.80	0.00	0.00									



Room Information		Ventilation Heat Loss		Fabric		Heat Loss (W)		Usage (kWh)		Additional heat loss		Addition		Watts		kWh		
Room	Bedroom	2	Air Changes a hour	1.0	Floor	0.00	0.00	Thermal Bridging (New Build >2006)	0.00%	0.00	0.00							
Level	Upper floor		Air Change Factor (W/m³K)	0.33	Ext Wall	603.02	1687.30	Exposed location	0.00%	0.00	0.00							
Design Room Temp (°C)	18.00		Total Volume (m³)	51.76	Roof	46.49	130.09	High ceiling	0.00%	0.00	0.00							
Outside Design Temp (°C)	-2.80		Heat loss (W)	355.30	Glazing	231.88	648.81	Intermittent heating	0.00%	0.00	0.00							
Temp Difference (°C)	20.80		Estimated Energy usage (kWh)	994.16	Int./Party Wall	0.00	0.00											
Degree Days	2425																	
												Total Room Heat Loss (W)	1237					
												Total Room Energy Usage (kWh)	3460					

Room Dimensions		Floor		External Wall		Roof		Windows		Doors		Temp Difference		Heat Loss (W)		Usage (kWh)		Type of Ground Floor	
Length (m)	4.35	Width (m)	4.28	Height (m)	2.78	Volume (m³)	51.76												
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00												
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00												
Length (m)	4.35	Width (m)	4.28	Area (m²)	18.63	U Value (W/m²K)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/a	
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Exposed floor (external)	
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Length (m)	4.35	Height (m)	2.78	Area (m²)	12.09														
Length (m)	4.28	Height (m)	2.78	Area (m²)	11.89														
Length (m)		Height (m)		Area (m²)	0.00														
		Total		Area (m²)	21.67	U Value (W/m²K)	1.34	20.80	603.02	1687.30									
Length (m)	4.35	Width (m)	4.28	Area (m²)	18.63														
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00														
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00														
		Total		Area (m²)	18.63	U Value (W/m²K)	0.12	20.80	46.49	130.09									
Width (m)	1.55	Height (m)	0.88	Area (m²)	1.35	U Value (W/m²K)	4.80	20.80	135.15	378.15									
Width (m)	1.26	Height (m)	0.77	Area (m²)	0.97	U Value (W/m²K)	4.80	20.80	96.73	270.66									
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	0.00	20.80	0.00	0.00									
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	0.00	20.80	0.00	0.00									



Room Information		Ventilation Heat Loss		Fabric		Heat Loss (W)		Usage (kWh)		Additional heat loss		Addition		Watts		kWh			
Room	Ensuite	Air Changes a hour	1.5	Floor	0.00	0.00	Thermal Bridging (New Build >2006)	0.00%	0.00	0.00									
Level	Upper floor	Air Change Factor (W/m³K)	0.33	Ext Wall	295.38	826.48	Exposed location	0.00%	0.00	0.00									
Design Room Temp (°C)	18.00	Total Volume (m³)	9.14	Roof	9.12	25.52	High ceiling	0.00%	0.00	0.00									
Outside Design Temp (°C)	-2.80	Heat loss (W)	94.05	Glazing	0.00	0.00	Intermittent heating	0.00%	0.00	0.00									
Temp Difference (°C)	20.80	Estimated Energy usage (kWh)	175.45	Int./Party Wall	0.00	0.00													
Degree Days	2425																		
												Total Room Heat Loss (W)		399					
												Total Room Energy Usage (kWh)		1027					

Room Dimensions		Floor		External Wall		Roof		Windows		Doors		Temp Difference		Heat Loss (W)		Usage (kWh)		Type of Ground Floor	
Length (m)	1.20	Width (m)	3.05	Length (m)	1.20	Width (m)	3.05	Length (m)	1.20	Height (m)	2.50	Area (m²)	3.65	U Value (W/m²K)	0.00	0.00	0.00	0.00	n/a
Length (m)		Width (m)		Length (m)	0.00	Width (m)	0.00	Length (m)	0.00	Height (m)	2.50	Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00	Exposed floor (external)
Length (m)		Width (m)		Length (m)	0.00	Width (m)	0.00	Length (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00	
		Total				Total						10.61		U Value (W/m²K)	1.34	20.80	295.38	826.48	
						Total						3.65		U Value (W/m²K)	0.12	20.80	9.12	25.52	
												0.00		U Value (W/m²K)	4.80	20.80	0.00	0.00	
												0.00		U Value (W/m²K)	4.80	20.80	0.00	0.00	
												0.00		U Value (W/m²K)	0.00	20.80	0.00	0.00	
												0.00		U Value (W/m²K)	0.00	20.80	0.00	0.00	



Room Information		Ventilation Heat Loss		Fabric		Heat Loss (W)		Usage (kWh)		Additional heat loss		Addition		
Room	Bath	2	Air Changes a hour	3.00	Floor	0.00	0.00	Thermal Bridging (New Build >2006)	0.00%	0.00	0.00	0.00%	0.00	0.00
Level	Upper floor		Air Change Factor (W/m³K)	0.33	Ext Wall	167.48	393.03	Exposed location	0.00%	0.00	0.00	0.00%	0.00	0.00
Design Room Temp (°C)	22.00		Total Volume (m³)	12.28	Roof	11.65	27.33	High ceiling	0.00%	0.00	0.00	0.00%	0.00	0.00
Outside Design Temp (°C)	-2.80		Heat loss (W)	301.47	Glazing	16.60	38.96	Intermittent heating	0.00%	0.00	0.00	0.00%	0.00	0.00
Temp Difference (°C)	24.80		Estimated Energy usage (kWh)	235.83	Int./Party Wall	0.00	0.00							
Degree Days	2425													
											Total Room Heat Loss (W)		497	
											Total Room Energy Usage (kWh)		695	

Room Dimensions					Temp Difference					Heat Loss (W)		Usage (kWh)		Type of Ground Floor		
Length (m)	1.81	Width (m)	2.43	Height (m)	2.80	Volume (m³)	12.28									
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00									
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00									
Floor					Area (m²)	4.39	U Value (W/m²K)	0.00	0.00	0.00	0.00			n/a		
Length (m)	1.81	Width (m)	2.43	Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00	0.00			Exposed floor (external)		
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00	0.00					
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00	0.00					
External Wall					Area (m²)	5.05										
Length (m)	1.81	Height (m)	2.80	Area (m²)	5.05	U Value (W/m²K)	1.34	24.80	167.48	393.03						
Roof					Area (m²)	4.39										
Length (m)	1.81	Width (m)	2.43	Area (m²)	0.00											
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00											
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00											
Windows					Area (m²)	4.15	U Value (W/m²K)	0.12	24.80	12.36	29.00					
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	24.80	0.00	0.00						
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	24.80	0.00	0.00						
Roof Glazing					Area (m²)	0.24	U Value (W/m²K)	2.80	24.80	16.60	38.96					
Width (m)	0.56	Height (m)	0.43	Area (m²)	0.00	U Value (W/m²K)	2.80	24.80	0.00	0.00						
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	2.80	24.80	0.00	0.00						
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	2.80	24.80	0.00	0.00						
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	2.80	24.80	0.00	0.00						
Doors					Area (m²)	0.00	U Value (W/m²K)	0.00	24.80	0.00	0.00					
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	0.00	24.80	0.00	0.00						



Room Information		Ventilation Heat Loss		Fabric		Heat Loss (W)		Usage (kWh)		Additional heat loss			
Room	Bedroom	3	Air Changes a hour	1.0	Floor	0.00	0.00	Thermal Bridging (New Build >2006)	0.00%	0.00	0.00		
Level	Upper floor		Air Change Factor (W/m³K)	0.33	Ext Wall	255.07	713.70	Exposed location	0.00%	0.00	0.00		
Design Room Temp (°C)	18.00		Total Volume (m³)	44.50	Roof	41.11	115.02	High ceiling	0.00%	0.00	0.00		
Outside Design Temp (°C)	-2.80		Heat loss (W)	305.43	Glazing	94.51	264.43	Intermittent heating	0.00%	0.00	0.00		
Temp Difference (°C)	20.80		Estimated Energy usage (kWh)	854.63	Int./Party Wall	0.00	0.00						
Degree Days	2425												
											Total Room Heat Loss (W)		696
											Total Room Energy Usage (kWh)		1948

Room Dimensions		Floor		External Wall		Roof		Windows		Doors			
Length (m)	3.74	Width (m)	4.40	Height (m)	2.70	Volume (m³)	44.50						
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00						
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00						
Floor						Temp Difference		Heat Loss (W)		Usage (kWh)		Type of Ground Floor	
Length (m)	3.74	Width (m)	4.40	Area (m²)	16.47	U Value (W/m²K)	0.00	0.00	0.00	0.00	n/a		
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00	Exposed floor (external)		
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00			
External Wall													
Length (m)	3.74	Height (m)	2.70	Area (m²)	10.11								
		Total		Area (m²)	9.16	U Value (W/m²K)	1.34	20.80	255.07	713.70			
Roof													
Length (m)	3.74	Width (m)	4.40	Area (m²)	16.47								
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00								
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00								
		Total		Area (m²)	16.47	U Value (W/m²K)	0.12	20.80	41.11	115.02			
Windows													
Width (m)	0.78	Height (m)	1.21	Area (m²)	0.95	U Value (W/m²K)	4.80	20.80	94.51	264.43			
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	4.80	20.80	0.00	0.00			
Doors													
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	0.00	20.80	0.00	0.00			
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	0.00	20.80	0.00	0.00			



Room Information		Ventilation Heat Loss		Fabric		Additional heat loss		Addition		
Room		Air Changes a hour		Fabric	Heat Loss (W)	Usage (kWh)		Watts	Watts	kWh
Landing	2	2.0		Floor	0.00	0.00	Thermal Bridging (New Build >2006)	0.00	0.00	0.00
Level	Upper floor	Air Change Factor (W/m³K)	0.33	Ext Wall	254.60	712.39	Exposed location	0.00	0.00	0.00
Design Room Temp (°C)	18.00	Total Volume (m³)	11.40	Roof	11.31	31.66	High ceiling	0.00	0.00	0.00
Outside Design Temp (°C)	-2.80	Heat loss (W)	156.51	Glazing	45.66	127.75	Intermittent heating	0.00	0.00	0.00
Temp Difference (°C)	20.80	Estimated Energy usage (kWh)	218.97	Int./Party Wall	0.00	0.00				
Degree Days	2425									
								Total Room Heat Loss (W)	468	
								Total Room Energy Usage (kWh)	1091	

Room Dimensions		Floor		External Wall		Roof		Windows		Doors	
Length (m)	Width (m)	Length (m)	Width (m)	Length (m)	Height (m)	Length (m)	Width (m)	Width (m)	Height (m)	Width (m)	Height (m)
3.82	1.19	3.82	1.19	3.82	2.52	3.82	1.19	0.75	0.61		
		0.00	0.00		Total	0.00	0.00				
		0.00	0.00								
		Area (m²)		Area (m²)		Area (m²)		Area (m²)		Area (m²)	
		4.53		9.60		4.53		0.46		0.00	
		0.00		9.15		0.00		0.00		0.00	
		0.00		U Value (W/m²K)		0.00		U Value (W/m²K)		U Value (W/m²K)	
		0.00		1.34		0.12		4.80		0.00	
		0.00		20.80		20.80		20.80		20.80	
		0.00		254.60		11.31		45.66		0.00	
		0.00		712.39		31.66		127.75		0.00	
		Temp Difference		Usage (kWh)		Heat Loss (W)		Usage (kWh)		Type of Ground Floor	
		0.00		0.00		0.00		0.00		n/a	
		0.00		0.00		0.00		0.00		Exposed floor (external)	
		0.00		0.00		0.00		0.00			



Room Information		Ventilation Heat Loss		Fabric		Heat Loss (W)		Usage (kWh)		Additional heat loss		Addition		
Room	Bedroom	4	Air Changes a hour	1.0	Floor	0.00	0.00	Thermal Bridging (New Build >2006)	0.00%	0.00	0.00	Watts	kWh	
Level	Upper floor		Air Change Factor (W/m³K)	0.33	Ext Wall	875.00	2448.31	Exposed location	0.00%	0.00	0.00			
Design Room Temp (°C)	18.00		Total Volume (m³)	52.55	Roof	50.62	141.65	High ceiling	0.00%	0.00	0.00			
Outside Design Temp (°C)	-2.80		Heat loss (W)	360.70	Glazing	169.85	475.26	Intermittent heating	0.00%	0.00	0.00			
Temp Difference (°C)	20.80		Estimated Energy usage (kWh)	1009.27	Int./Party Wall	0.00	0.00							
Degree Days	2425													
											Total Room Heat Loss (W)	1456		
											Total Room Energy Usage (kWh)	4074		

Room Dimensions		Floor		External Wall		Roof		Windows		Doors		Temp Difference		Heat Loss (W)		Usage (kWh)		Type of Ground Floor	
Length (m)	3.49	Width (m)	5.82	Height (m)	2.59	Volume (m³)	52.55												
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00												
Length (m)		Width (m)		Height (m)		Volume (m³)	0.00												
Length (m)	3.49	Width (m)	5.82	Area (m²)	20.28	U Value (W/m²K)	0.00	0.00	0.00	0.00	n/a								
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00	Exposed floor (external)								
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00	U Value (W/m²K)	0.00	0.00	0.00	0.00									
Length (m)	3.49	Height (m)	2.59	Area (m²)	9.03														
Length (m)	3.49	Height (m)	2.59	Area (m²)	9.03														
Length (m)	5.82	Height (m)	2.59	Area (m²)	15.07														
		Total		Area (m²)	31.44	U Value (W/m²K)	1.34	20.80	875.00	2448.31									
Length (m)	3.49	Width (m)	5.82	Area (m²)	20.28														
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00														
Length (m)	0.00	Width (m)	0.00	Area (m²)	0.00														
		Total		Area (m²)	20.28	U Value (W/m²K)	0.12	20.80	50.62	141.65									
Width (m)	1.23	Height (m)	0.81	Area (m²)	0.99	U Value (W/m²K)	4.80	20.80	98.66	276.05									
Width (m)	1.03	Height (m)	0.69	Area (m²)	0.71	U Value (W/m²K)	4.80	20.80	71.20	199.21									
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	0.00	20.80	0.00	0.00									
Width (m)		Height (m)		Area (m²)	0.00	U Value (W/m²K)	0.00	20.80	0.00	0.00									