

Building Heat Loss

Project Reference: 11 Sheldon Avenue - N6 4JS

Building Heat Loss Results

Fabric Heat Loss (W)	5687	Floor Area (m ²)	733.0800000000002
Ventilation Heat Loss (W)	6976	Heat Loss per m ² (W/m ²)	18
Total Heat Loss (W)	12947	Annual Heat Loss (kWh)	27318

Room by Room Heat Loss

Room	Design Temp (°C)	Heat loss per m ² (W/m ²)	Floor Area (m ²)	Total Heat Loss (W)	Fabric Heat Loss (W)	Ventilation Heat Loss (W)
Bar	21	14.00	11.92	172	39	131
Boot Room	21	60.00	9.74	585	269	302
Cinema Room	21	14.00	26.68	375	70	301
Drawing / Dining Room	21	21.00	97.02	1990	853	1095
Family Coats	21	60.00	4.97	300	110	185
Kitchen / Breakfast Room	21	41.00	58.29	2388	450	1915
Laundry Room	21	15.00	13.32	206	57	146
Lobby	21	49.00	4.44	219	90	125
Pantry	21	16.00	8.27	134	37	96
Plant Room (Ground Floor)	21	41.00	4.97	203	117	80
Reception Hall	21	16.00	46.48	750	215	525
Snug / TV Room	21	18.00	23.53	419	146	266

WC	21	35.00	4.54	158	4	154
WC (Boot Room)	21	58.00	1.42	83	33	48
Bedroom 1	21	17.00	36.79	641	225	405
Bedroom 2	21	32.00	26.07	830	247	570
Bedroom 3	21	32.00	26.07	830	247	570
Dressing Room (Bedroom 1)	21	14.00	30.37	440	85	351
Dressing Room (Bedroom 2)	21	10.00	6.98	70	0	70
Dressing Room (Bedroom 3)	21	8.00	7.06	57	-13	70
Dressing Room (Bedroom 1 / Study)	21	10.00	6.98	70	0	70
En-suite (Bedroom 1)	22	47.00	17.52	826	281	531
En-suite (Bedroom 2)	22	45.00	6.28	281	86	190
En-suite (Bedroom 3)	22	45.00	6.28	281	86	190
Landing (First Floor)	21	14.00	43.73	613	168	436
Plant Room (First Floor)	21	24.00	5.70	138	29	107
Study	21	46.00	16.73	774	312	447
WC (Study First Floor)	21	59.00	3.21	188	58	127
Bedroom 4	21	33.00	28.90	959	214	734
Bedroom 5	21	37.00	19.69	731	159	564
Dressing Room (Bedroom 4)	21	31.00	10.86	333	68	262
En-suite (Bedroom 4)	22	34.00	7.54	260	80	176
Games Room	21	33.00	49.77	1654	333	1304
Landing (Second Floor)	21	23.00	30.57	693	228	453
Plant Room (Second Floor)	21	40.00	13.14	524	111	407
Shower Room (Bedroom 5)	22	37.00	5.43	202	68	130
Store Room	21	50.00	9.20	463	116	342
WC (Games Room)	21	34.00	2.62	89	9	79
Totals			733.08	n/a	5687	n/a

Note: Within the BS12831 standard for heat loss calculation, the Ventilation Heat Loss for the building (or zone) is calculated differently to the Ventilation Heat Loss for each room. Therefore, the

Ventilation Heat Loss for the building (or zone) is not usually equal to the Ventilation Heat Losses for each room added together.

Ventilation Heat Loss (per Zone)				
Zone	Ventilation Type	Volume (m ³)	Envelope Area (m ²)	Ventilation Heat Loss (W)
Zone 1	Natural Ventilation	1862.40	742.26	6976
Building Total Ventilation Heat Loss				6976

Design Inputs			
Regulations Region	England	Heat loss methodology	BS12831:2017
Date property built	2023 onwards	Ventilation type	Natural Ventilation
Outside design temperature source	99% dry-bulb (CIBSE Guide A Table 2.5)	Supply / extract flow rate	N/A
Outside design temperature (°C)	-2.29	MVHR recovery rate (%)	N/A
Degree days	2033	Air permeability method	Estimated (CIBSE DHDG)
Altitude (m)	105.86	Air permeability (m ³ /hm ²)	10.40
Average ground temperature (°C)	11.3	Allowance for intermittent heat (%)	5
Design flow temperature (°C)	45	Thermal bridging parameter (W/m ² K) *	0.05

* Thermal bridging parameter may vary by room in the case of partial renovation / extension.

Proposed Underfloor Heating Log

Project REF: 11 Sheldon Avenue - N6 4JS

Room Name	Power Loss (W)	Watts per metre squared (W/m²)	Emitter Description	Pipe Spacing Recommendation (Heat Emitter Guide)	Pipe Spacing Selected (mm)
Bar	172	14.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Boot Room	585	60.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Cinema Room	375	14.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Drawing / Dining Room	1990	21.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Family Coats	300	60.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Kitchen / Breakfast Room	2388	41.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Laundry Room	206	15.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Lobby	219	49.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null

	GO AHEAD - System can perform at the stated efficiencies with the selected emitter design.
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Proposed Underfloor Heating Log

Project REF: 11 Sheldon Avenue - N6 4JS

Room Name	Power Loss (W)	Watts per metre squared (W/m²)	Emitter Description	Pipe Spacing Recommendation (Heat Emitter Guide)	Pipe Spacing Selected (mm)
Pantry	134	16.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Plant Room (Ground Floor)	203	41.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Reception Hall	750	16.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Snug / TV Room	419	18.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
WC	158	35.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
WC (Boot Room)	83	58.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Bedroom 1	641	17.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Bedroom 2	830	32.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null

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Proposed Underfloor Heating Log

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Room Name	Power Loss (W)	Watts per metre squared (W/m²)	Emitter Description	Pipe Spacing Recommendation (Heat Emitter Guide)	Pipe Spacing Selected (mm)
Bedroom 3	830	32.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Dressing Room (Bedroom 1)	440	14.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Dressing Room (Bedroom 2)	70	10.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Dressing Room (Bedroom 3)	57	8.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Dressing Room (Bedroom 1 / Study)	70	10.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
En-suite (Bedroom 1)	826	47.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
En-suite (Bedroom 2)	281	45.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
En-suite (Bedroom 3)	281	45.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null

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Proposed Underfloor Heating Log

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Room Name	Power Loss (W)	Watts per metre squared (W/m²)	Emitter Description	Pipe Spacing Recommendation (Heat Emitter Guide)	Pipe Spacing Selected (mm)
Landing (First Floor)	613	14.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Plant Room (First Floor)	138	24.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Study	774	46.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
WC (Study First Floor)	188	59.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Bedroom 4	959	33.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Bedroom 5	731	37.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Dressing Room (Bedroom 4)	333	31.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
En-suite (Bedroom 4)	260	34.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null

GO AHEAD - System can perform at the stated efficiencies with the selected emitter design.

QDSGROUP LTD, 35 Grafton Way, London, W1T 5DB

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Proposed Underfloor Heating Log

Project REF: 11 Sheldon Avenue - N6 4JS

Room Name	Power Loss (W)	Watts per metre squared (W/m²)	Emitter Description	Pipe Spacing Recommendation (Heat Emitter Guide)	Pipe Spacing Selected (mm)
Games Room	1654	33.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Landing (Second Floor)	693	23.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Plant Room (Second Floor)	524	40.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Shower Room (Bedroom 5)	202	37.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
Store Room	463	50.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null
WC (Games Room)	89	34.00	UFH (Screed with Tile)	PS≤300 UFH pipes should be placed at 300mm or less to achieve the design condition.	null

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DHW Design Calculations	
Project Reference: 11 Sheldon Avenue - N6 4JS	

System Details	
Hot Water Temperature Required (°C)	45
Heat losses associated with hot water storage (°C)	5
Incoming water temperature (°C)	10
Pipework Efficiency from HP to Cylinder (%)	85
Legionella purge	Yes
Legionella purge frequency	Weekly
Legionella purge hours (per day or per week)	2
Legionella total purge hours	104
Legionella purge demand (Annual) (kWh/yr)	312
Legionella purge demand (Daily) (kWh/yr)	0.85
Total annual demand (kWh/yr)	4720
Heat supplied by primary heat source (kWh/yr)	4720
Heat supplied by auxiliary heat source (kWh/yr)	0
Heat supplied by immersion heater (kWh/yr)	312

Primary & Auxiliary Heat Source Details	
Output Capacity of Primary Heat Source (kW)	17
Flow temp while providing hot water (°C)	50
Efficiency of Auxiliary Heat Sources (%)	0
kW Capacity (kW)	0

DHW Cylinder Details	
Make	Stiebel Eltron
Model	SBB 501 WP SOL
BS EN 8558 capacity calculation (ltr)	270
DHW chosen cylinder capacity (ltr)	500
Electric immersion heater size (kW)	3
DHW Cylinder Recovery Rate (mins)	82

Heat Pump Design Calculations		
Project Reference: 11 Sheldon Avenue - N6 4JS		

SPACE HEATING ANNUAL HEAT DEMAND		
Demand	kWh/yr	27318
Heat supplied by HP, excluding auxiliary heaters	kWh/yr	27318
Seasonal Coefficient of performance SCOP	SCOP	4.06
Electricity consumed by HP, excluding auxiliary heaters	kWh/yr	6729
Renewable heat supplied by HP	kWh/yr	20589
Remaining heat to be supplied by auxiliary heaters and other heat source	kWh/yr	0
Remaining heat, supplied by other heat sources	kWh/yr	0
Remaining heat, supplied by auxiliary heaters	kWh/yr	0
Electricity consumed by HP, including auxiliary heaters	kWh/yr	6729
Where other heat sources are used:		
Fuel used	N/A	
Efficiency of other heat sources	%	0
Consumed by other heat sources	kWh/yr	0

WATER HEATING ANNUAL HEAT DEMAND		
Demand	kWh/yr	4720
Heat Supplied by HP, excluding immersion heater	kWh/yr	4720
SCOP of HP in Hot water mode	SPF/SCOP	1.7
Electricity consumed by HP, excluding immersion heater	kWh/yr	2776
Renewable heat supplied by HP	kWh/yr	1944
Remaining heat to be supplied by immersion heater and other heat sources	kWh/yr	312
Remaining heat, supplied by other heat sources	kWh/yr	0
Remaining heat, supplied by immersion heater	kWh/yr	312
Electricity consumed by HP, including immersion heater	kWh/yr	3088
Where other heat sources are used:		
Fuel used	N/A	
Efficiency of other heat sources	%	0
Consumed by other heat sources	kWh/yr	0

Heat Pump Design Calculations

PROPORTIONS, ENERGY CONSUMPTION, AND PERFORMANCE

Proportion of space heating and water heating demand provided by heat pump (excluding auxiliary/immersion heaters)	%	100
Capacity @ design conditions	kW	17
Renewable heat	kWh/yr	22532
Electricity consumed by HP (excluding auxiliary/immersion heaters)	kWh/yr	9505
Electricity consumed by immersion (supplied as part of HP)	kWh/yr	312
Fuel consumed by auxiliary/other heat sources	kWh/yr	0
HP combined performance SCOP	SCOP	3.30
Star Rating / Flow Temperature	4 / 45°C	
Outside air temperature	-2.29°C	

RUNNING COSTS (Based on Calculations)

Cost per unit of electricity for HP	p/kWh	28
Cost per unit of fuel for other heat sources	p/kWh	0
Cost of electricity for HP (including auxiliary/immersion heaters)	£/yr	2749
Cost of fuel for other heat sources	£/yr	0

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.

Heat Pump System Performance Estimate

Installer Project Reference	11 Sheldon Avenue - N6 4JS
Client Name	Mr & Mrs Lauffer
Installation Address Line 1	11 Sheldon Avenue
Installation Address Line 2	
Installation Address Line 3	Middlesex
Installation Postcode	N6 4JS



Energy Performance Certificate (EPC) Information

Does this estimate relate to a new build or proposal for extension or reduction in size of an existing building? No

Estimate based on draft EPC

Energy required to heat property 27,318 kWh

Energy required for hot water 4,720 kWh

New Renewable System Information

Type of System	Air Source Heat Pump	* This calculator is not designed to be used for Solar Assisted Heat Pumps
Manufacturer Name	Stibel Eltron HPA-O 17.02	
Manufacturer Model	HPA-O 17.2 Trend HC 400	
MCS Certification Number	011-1W1166_01	* Available from the MCS Product Directory
Flow Temperature	45 °C	* Determined by the temp. of the water leaving the HP when supplying space heating at the external design temp.
MCS SCOP Heating	4.06	* SCoP - Seasonal Coefficient of Performance. This value is based on the MCS HP SCoP Table below
MCS SCOP Hot Water	1.7	* If providing space heating and DHW, default value from SAP2012. IF DHW only see methodology in MIS3005
Renewable System Provides	Heating and Hot Water	
Hot Water Immersion Use	Once per week	* based on 50°C up to 60°C, 3kW
Size of Hot Water Cylinder	500 ltr	

Existing Heating System

Existing heating system fuel	Electric	* If new build model the most likely alternative fuel.
Hot Water heated by	Electric	* If new build model the most likely alternative fuel.
Age of existing system	Post-2007	
Efficiency of existing system	100 %	

Estimated System Performance / Comparison

Energy Requirement for the building

	Heating	Hot water	Total	
Net Energy required to heat property	27,318	4,720	32,038	kWh
Existing System Consumption	27,318	4,720	32,038	kWh

New HP System Estimated Consumption

Full Heat Pump System (if selected above)

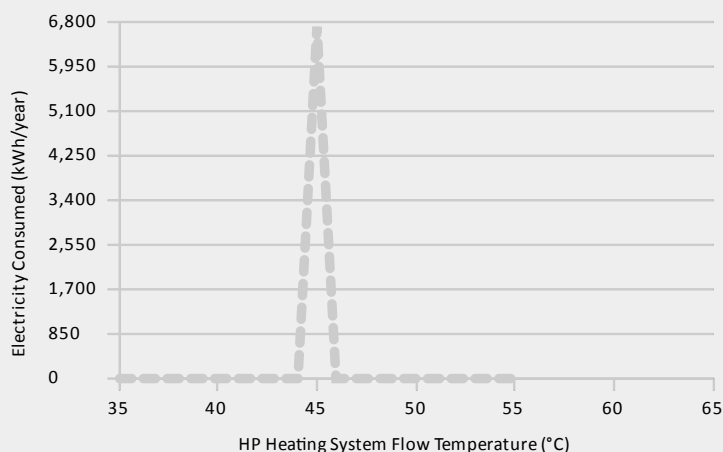
HP System Electricity Consumption	6,729	3,079	9,808	kWh
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Hybrid System (if selected above)

HP System Electricity Consumption	0	0	0	kWh
Hybrid system other Consumption	0	0	0	kWh
Hybrid Total Consumption			0	kWh

Note: There are different types of hybrid system. This calculation presumes a hybrid where both sources of heat supply the same hydraulic circuits (heating and hot water) according to the proportion selected above.

Electricity Consumption of Proposed Heat Pump for Space Heating versus Flow Temperature



Flow temperature	SCoP
35°C	0
36°C	0
37°C	0
38°C	0
39°C	0
40°C	0
41°C	0
42°C	0
43°C	0
44°C	0
45°C	4.06
46°C	0
47°C	0
48°C	0
49°C	0
50°C	0
51°C	0
52°C	0
53°C	0
54°C	0
55°C	0
56°C	0
57°C	0
58°C	0
59°C	0
60°C	0
61°C	0
62°C	0
63°C	0
64°C	0
65°C	0

SCoP Definition

SCoP = Seasonal Coefficient of Performance:

MCS SCoP is a theoretical indication of the anticipated efficiency of a heat pump aggregated over a year using standard climate data across Europe. It indicates the units of total heat energy generated (output) for each unit of energy (electricity) consumed (input). It is slightly different to ErP SCoP as it contains efficiency losses due to controls and brine pumps (for a GSHP). As a guide a heat pump with a MCS SCoP of 3 generates 3 kWh of heat energy for every 1 kWh of electrical energy it consumes.

This also means that 2/3rds of the heat output could be eligible for RHI payments. MCS SCoP is based on stringent factory based tests for equipment but does not specifically include the energy consumption of heating circulating pump(s) nor does it model the transient conditions typically experienced in practice in the consumers home and hence the overall final system efficiency is likely to be different from the MCS SCoP.

Important Information

This performance estimate should be accompanied by the Key Facts which explain the factors that can affect the performance of a heat pump.

Any technical variation to the specification could affect the performance of the Heat Pump System in which case the MCS Contractor MUST update and re-issue this document and advise the customer of their Consumer Rights.