

Building Construction		
Element	Input to Model	Evidence Reference
External Opaque Elements		
External Walls (W/m2.K)	0.10	Construction build-ups layout 2303_P_06
External Walls Build-up	Plasterboard Insulation Board Structural Insulated Panel Brick	Construction build-ups layout 2303_P_06
Ground Floor (W/m2.K)	0.11	PMA Email – 09.11.23
Ground Floor Build-up	Concrete Slab Insulated Raft System	Construction build-ups layout 2303_P_06
Roof (W/m2.K)	0.14	Construction build-ups layout 2303_P_06
Roof Build-up	Pitch roof Insulated Slope	Construction build-ups layout 2303_P_06
Windows		
Windows (W/m2.K)	Option 1: 1.2 Option 2: 0.8	PMA Email – 09.11.23
Windows - Thermal Transmission (g-value)	0.5	Assumed
Rooflights (W/m2.K)	Option 1: 1.2 Option 2: 0.8	PMA Email – 09.11.23
Rooflights - Thermal Transmission (g-value)	0.5	Assumed
Openings – Front Doors		
External Door (Solid) (W/m2.K)	1.2	Assumed
General Construction Details		
Air Pressure Target@50Pa (m <sup>3</sup> /hr/m <sup>2</sup> )	1	LETI / Passivhaus Guide typical value
Thermal Bridging (γ-value)	0.04	LETI / Passivhaus Guide typical value

Electrical Services		
Element	Input to Model	Evidence Reference
Light Fittings	LED	Lighting calculations to be carried out during design development in accordance with CIBSE lighting guides.
Lamp Lumens per Circuit Watt	100	

HVAC Strategy		
Element	Input to Model	Evidence Reference
Heating	Option A: LTHW Underfloor Heating Option B: Direct Electric Panels	
Hot Water	Electric Immersion Cylinder	
Ventilation	Mechanical Ventilation with Heat Recovery	

Heating Services (Option A)		
Element	Input to Model	Evidence Reference
Generator Type	Air Source Heat Pump	
Fuel	Electricity	
System Emitters	Underfloor Heating	
Seasonal Efficiency (SCOP)	3.51	Daikin EDLA04EV3 Datasheet
Heating Controls	Programmer and at least two room thermostats	

Heating Services (Option B)		
Element	Input to Model	Evidence Reference
Generator Type	Direct Electric	
Fuel	Electricity	
System Emitters	Electric Panels	
Seasonal Efficiency (SCOP)	1.00	
Heating Controls	Programmer and room thermostat	

Domestic Hot Water		
Element	Input to Model	Evidence Reference
Generator Type	Direct Electric Cylinder	
Fuel	Electric	
Seasonal Efficiency	1.00	
Storage Tank Size	170	
Storage Tank Losses	1.34 kWh/day	Mixergy Xc 180 Direct Datasheet
Energy Saved (kWh/hr)	239.03	SAP 10 App. Q Smart Hot Water Tank Calculation Tool
Additional Energy Used (kWh/hr)	70.44	

Ventilation		
Element	Input to Model	Evidence Reference
Ventilation and Fan Strategy	Mechanical Ventilation with Heat Recovery	
Ventilation and Fan Specific Fan Powers (W/(l/s))	0.65	Lossnay VL-250CZPVU-L-E Datasheet
Heat Recovery Efficiency (%)	85	Lossnay VL-250CZPVU-L-E Datasheet
Ventilation Rate	21 l/s	Building Regs Approved Document F – 1 bathroom, 1 kitchen

Renewables		
Element	Input to Model	Evidence Reference
kW Peak Output	390 W	VertexS TSM-390 Datasheet
No. of Panels	Option A: 8 Option B: 16	Elevations 2303_P_05
Azimuth (° clockwise from north)	180	
Inclination (° from horizontal)	30	