

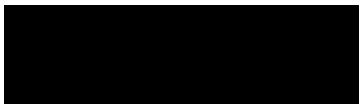


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Our Reference : DB-01

Sent By : E-Mail


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7 April 2025

Dear Chris

Re : 5 Dwellings, R/O Karenza, Hook Lane, Aldingbourne - Thermal Calculations (Part L)

Further to receipt of drawings, and subsequent correspondence, please find enclosed thermal (SAP) calculations reference DB0101-DB0105, prepared in accordance with Approved Document L 2021 (effective 15 June 2022) of the Building Regulations Part L1.

The SAP calculations show Part L1 compliance ($DER < TER$, $DFEE < TFEE$ and $DPER < TPER$), and expected energy rating for the development.

Attached is the specification upon which the calculations are based. In particular, please note :

- (1) Windows and doors to achieve a U-value of $1.20W/m^2K$ (or better). BRFC certified.
- (2) Air source heat pumps (Product Characteristic Database listed & MCS installer).
- (3) No solar (unless required by Planning).
- (4) Dwelling designed/built to ROI timbre frame construction details (thermal bridging/air leakage).
- (5) Design air permeability is $5m^3/h/m^2$ at 50 Pa - to be achieved by air pressure test.

Additional Services (relevant to this project) - please ask for a quote

- > Air Testing, Sound Testing, Extract Fan Testing
- > Water Calculations
- > Overheating Calculations

If you have any questions, or would like to discuss anything, please do not hesitate to contact us.

Joe Solti (Project Director)

Construction and Insulation

<u>Element</u>	<u>U-Value</u> (W/m ² K)
<u>Exposed Wall</u> (cavity wall) 102.5mm facing brick (or tiles on 100mm block) outer leaf + 50mm clear cavity + reflective breather membrane + external grade plywood + 140mm timber frame (120mm PIR insulation between) + 12.7mm plasterboard (2 layers).	0.18
<u>Exposed Wall</u> (dormers) Cladding + battens + reflective breather membrane + timber frame (120mm PIR insulation between) + 37.5mm insulated plasterboard (25mm PIR insulation + 12.5mm plasterboard).	0.16
<u>Exposed Wall</u> (ashlar walls) Timber frame (120mm PIR insulation between) + 37.5mm insulated plasterboard (25mm PIR insulation + 12.5mm plasterboard).	0.17
<u>Internal Partitions</u> Timber studwork + plasterboard finish both sides.	NA
<u>Party Walls</u> Two skins of 100mm timber frame (fully-filled with 100mm acoustic mineral wool insulation) + 75mm cavity fully-filled with 75mm acoustic mineral wool insulation + 12.7mm plasterboard (2 layers) both sides. Note 1 : Effective edge sealing at all exposed edges, and in line with insulation layers in abutting elements. Note 2 : Therm Energy Can Provide Sound Testing.	0.00
<u>Ground Floor</u> Screed (UFH) + 150mm PIR insulation + suspended concrete beam and block floor.	0.12
<u>First Floor</u> (exposed) 200mm mineral wool insulation quilt (between suspended timber floor joists).	0.20
<u>Roof</u> (roof voids) 400mm mineral wool insulation quilt (100mm between joists + 300mm cross-laid over, or 200mm + 200mm).	0.11
<u>Roof</u> (sloping ceilings) breather membrane (unventilated) 120mm PIR insulation (between rafters) + 37.5mm insulated plasterboard (25mm insulation + 12.5mm plasterboard).	0.17
<u>Windows/French Doors</u> PVC-u frame double-glazed + 16mm cavity (argon gas fill) + soft coat low-E glass + warm edge spacer, or similar to achieve U-value of 1.20W/m ² K (or better). BRFC Certified.	1.20
<u>Front Doors</u> PVC-u frame (or composite) double-glazed + 16mm cavity (argon gas fill) + soft coat low-E glass + warm edge spacer, or similar to achieve U-value of 0.90W/m ² K (or better).	0.90
<u>Bi-Fold Doors</u> Aluminium thermally-broken frame double-glazed + 16mm cavity (argon gas fill) + soft coat low-E glass + warm edge spacer, or similar to achieve U-value of 1.20W/m ² K (or better).	1.20
<u>Rooflights</u> Velux (or equal) timber or PVC-u frame double-glazed + 16mm cavity (argon gas fill) + soft coat low-E glass + warm edge spacer.	1.30
Note 1 : U-Value must be frame + glass (not centre-pane). Note 2 : U-value certification will be required from the supplier for the windows, doors & rooflights upon completion. Note 3 : French doors are at least 60% glazed (ie less than 40% is frame).	

Heating, Ventilation & Renewables

Main Heating System

Electric air source heat pump (ground floor = underfloor heating, first floor = radiators). Flow temperature TBC°.

Note : The heat pumps must be Product Characteristic Database (SAP Appendix Q) listed, or the installer must be MCS certified (or both).

Secondary Heating System

Not applicable.

Water Heating (mains water)

From electric air source heat pump. Hot water cylinder (factory PIR insulation, heat loss TBC kWh/day) + thermostat.

Fully insulated primary pipework.

Heating Controls

Time and temperature zone controls (delayed start room thermostat required in each zone, min 2 zones).

Ventilation

Background ventilators + intermittent extract fans (Approved Document F1, 2021).

Solar PV

Not required, unless Planning do not accept heat pumps as "renewables".

Other

Detailing

Block/insulation construction details (limiting thermal bridging and air leakage) fully adopted in accordance with ROI Timber Frame Construction Details.

Electricity Tariff

Standard tariff electric.

Lighting

Low energy lighting with minimum luminous efficacy of 75 light source lumens/circuit-watt (per light fitting).

Water Use

Total water use < 125 litres/person/day.

Air Tightness

Design air permeability is 5m³/h/m² at 50 Pa - to be achieved by air pressure test.

Note : Therm Energy Can Provide Air Leakage Testing.

Photographic Evidence

Building Regulations Part L 2021 (June 2022) requires that the builder/developer collates photographic evidence of all construction elements and junctions throughout the build process. Building Control have the right to request this on completion, and this may be needed to enable the as-built SAP and EPC to be produced, and for us to be able to sign the BREL (compliance) report.