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Land to the rear of 7 The Stocks

– Sustainability Report

Project Details:

The proposed new dwelling at the land rear of 7 The Stocks, Seend, Melksham, SN12 6PL has been designed using the Honka HCL134 non-settling log and comprises of a two-storey dwelling accessed via a new private driveway off Trowbridge Rd. We have taken a fabric first approach to this project, as well as incorporating modern onsite energy generation methods and high efficiency heating systems to push for a sustainable, zero-carbon ready self-build home.

This methodology is critical in tackling modern housing demands for low energy, low emission dwellings. This is a core design feature of Honka solid logs and thermal mass this provides the building to help regulate temperature fluctuations and maintain a comfortable internal temperature.

Wiltshire Core Strategy 2011 – 2026 has Core Policy 41 which directly relates to any new dwellings energy efficiency standards.

Core Policy 41:

The proposed dwelling has been designed to comply with the objectives of Core Policy 41 of the Wiltshire Core Strategy by incorporating sustainable construction principles and measures to minimise energy demand and carbon emissions. Whilst Core Policy 41 refers to achieving Level 4 of the former Code for Sustainable Homes, this standard was withdrawn in March 2015 and replaced by a national framework of Building Regulations revisions and optional technical standards. Accordingly, compliance with the sustainability aims of the policy is demonstrated through adherence to current Building Regulations and the incorporation of energy-efficient design measures.

The dwelling will achieve the applicable requirements of Building Regulations Part L and will adopt a fabric-first approach through high levels of insulation, improved airtightness and efficient building services to reduce energy consumption. Low-carbon technologies, including photovoltaic panels and an air source heat pump, will further reduce operational carbon emissions. The proposal will also incorporate water-efficient fittings designed to minimise potable water consumption and support the efficient use of natural resources.

The proposal therefore demonstrates compliance with the sustainability and energy-efficiency objectives of Core Policy 41 and is consistent with current national policy and building standards relating to sustainable construction and low-carbon development.

Building Fabric:

Ground Floor: (Calculation in Appendix 1A)

- Our standard floor construction pushes above and beyond the standards set out in Building Regulation Approved Document L Table 4.1 and the Notional Dwelling Specification for new dwellings Table D1.
- Maximum U-Value for floors of $0.18 \text{ W}/(\text{m}^2\text{K})$
- Notional Dwelling Specification for floors of $0.13 \text{ W}/(\text{m}^2\text{K})$
- Our method using 150mm PIR below a 75mm screed achieves a U-Value of $0.12 \text{ W}/(\text{m}^2\text{K})$
- We pushed for a highly insulated floor on this project to maximise the efficiency of the under-floor heating (UFH) we are installing throughout the dwelling.
- This floor structure creates a thermal mass heat store for the UFH and allows the whole system to work at a more consistent lower temperature when compared to a traditional radiator room heating system reducing the overall energy demands.

Walls: (Calculation in Appendix 2A)

- Our wall construction method uses the Honka HCL log as the internal surface, we wrap this externally with a layer of 160mm rigid wood fibre boards to exceed the standard set out in Approved Document L Table 4.1 and match the Notional Dwelling Specification Table D1.
- Maximum U-Value for walls of $0.26 \text{ W}/(\text{m}^2\text{K})$
- Notional Dwelling Specification for walls of $0.18 \text{ W}/(\text{m}^2\text{K})$
- By using 134mm solid timber log and 160mm wood fibre insulation we achieve a U-Value of $0.18 \text{ W}/(\text{m}^2\text{K})$
- This method pushes for a temperature regulated dwelling through the natural density and thermal mass of the wall materials, this density helps the dwelling absorb excess heat and maximise solar heat gain.

Roof: (Calculation in Appendix 3A)

- Our standard roof construction pushes above and beyond the standards set out in Building Regulation Approved Document L Table 4.1 and match the Notional Dwelling Specification for new dwellings Table D1.
- Maximum U-Value for roofs of $0.16 \text{ W}/(\text{m}^2\text{K})$
- Notional Dwelling Specification for roofs of $0.11 \text{ W}/(\text{m}^2\text{K})$
- Our roof insulation system achieves a U-Value of $0.11 \text{ W}/(\text{m}^2\text{K})$
- For a warm deck flat roof we use 210mm PIR insulation above rafters.
- This method follows recommended best practise for flat roof construction as well as minimising heat loss via reduced thermal bridging.

Renewable energy generation:

Solar PV System:

- As part of this proposal, we are also incorporating roof mounted solar PV panels which are connected to a battery storage system. This system will be a minimal 3.68 kWp, with the potential for a higher capacity subject to DNO approval and installer guidance on system size and performance.
- These panels are to be fitted to the garage roof for the first phase with the capacity for further panels to the dwelling roof to increase the system capacity.

Air Source Heat Pump (ASHP):

- To run the UFH system and provide the dwellings hot water we are installing a ASHP which will be powered by the solar PV panels for near carbon free heating.
- By having the heating and hot water system electricity fed the dwelling is ready for grid decarbonisation, although it is predicted that the dwelling will have minimal dependency on grid electricity.

Sustainable Building System:

Honka Log System:

- Honka uses renewable wood from Finnish sawmills as raw material for our logs. Our raw material is PEFC-certified, we are pushing to increase the percentage of FSC-certified wood whenever more of it becomes available.
- Our operations are certified under the ISO 9001 quality standard and the ISO 14001 environmental standard.
- Our production is largely automated; accurately dimensioned wooden elements ready to be installed make construction easier and reduce wastage at the construction site.
- We use our wood raw material accurately, minimising waste. Any wasted wood material is used for heat energy production and recycled products.
- Log buildings act as efficient carbon sinks throughout their life cycle. The buildings we delivered in 2021 have sequestered 30,560,000kg of carbon dioxide (This is equivalent to an average of 14,220 passenger cars' annual CO2 emissions)
- At the end of its life cycle, a timber frame and log structure can be made into other wood products, used as biofuel or converted into energy by burning.

STEICO Wood Fibre Insulation:

- Makes a clear commitment to implement Chain of Custody systems – FSC and PEFC that target environmental improvements and monitor performance by regular review.
- Promotes waste minimisation by recycling or finding other uses of by-products whenever economically viable
- STEICO SE has, since its foundation endorsed an ecological policy of forest preservation and sustainable use of timber. This dedication has led to the certification of STEICO's entire production range of softboard products by the Forest Stewardship Council (FSC).

Appendix:

1A - Floor Calculation:



Recticel Insulation Products

Enterprise Way, Whittle Road, Meir Park
Stoke-on-Trent
Staffordshire

technicalservices@recticel.com

Project Information

Reference

Date 29 September 2026

Project 7 The Stocks

Construction Type

Element : Solid ground floor - Floor - insulation on slab under screed

Internal surface emissivity : High External surface emissivity : High

	Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m²K/W)	Pitch (°)	Bridge details Air gaps (Level, Delta U")
Inside surface	-	-	0.170		
Screed - cast (BS5250)	75.0	1.150	0.065		
Polythene VCL, 500 gauge	-	-	-		
Eurothane GP	150.0	0.022	6.818		L:0 0.000W/m²K
Concrete, high density (BS 10456)	100.0	2.000	0.050		
Polythene DPM, 1200 gauge	-	-	-		
Ground	-	-	0.040		

Ground Floor Details

Floor type : Solid floor

Calculation method : EN ISO 13370:2007

P/A : 0.500 Characteristic dimension, B' : 4.000

Thermal conductivity of ground: : 2.000 W/mK Width of walls, w: : 0.300 m

Edge insulation position : None

U-value = 0.12W/m²K

U-value, Combined Method : 0.122W/m²K (upper/lower limit 7.143 / 7.143m²K/W, dUf 0.0000, dUg 0.0000, dUp0.0000, dUr0.0000, dUrc1 0.0000, dUrc2 0.0000)

Correction factors

Mechanical fasteners :-

Alpha : 0.00 per m λf : 0.0000W/mK $n f$: 0.000 per m² $A f$: 0.000mm² Recess : 0.0mm

Delta Uf for Eurothane GP : 0.0000

$n f$ = fasteners per m² $A f$ = fasteners cross-sectional area

Air gaps, Delta Ug = 0.000W/m²K

BuildDesk U 3.4



Documentation of the component
Thermal transmittance (U-value) according to BS EN ISO 6946

8. August 2024

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Source: own catalogue - External walls

Component: Log + Steico 0.18

OUTSIDE

INSIDE



Assignment: External wall

	Manufacturer	Name	Thickness [m], number	Lambda [W/(mK)]	Q	R [m²K/W]
		R _{se}				0.1300
☐	1	Inhomogeneous material layer	0.0480	0.010		4.0029
	1a	BS EN ISO 6946	Well ventilated air layer	92.59 %	0.000	-
	1b	BS EN 12524	Softwood Timber [500 kg/m³]	07.41 %	0.130	-
☒	2	BS EN 12524	Breather membrane	0.0001	0.170	0.0006
☒	3	Steico	Steico Thermdry	0.1600	0.037	4.3243
☒	4	Honka	FXL134	0.1340	0.120	1.1167
		R _{si}				0.1300
			0.3421			

☐ was not taken into consideration in the calculation

$$R_T = R_{si} + \sum R_i + R_{se} = 5.70 \text{ m}^2\text{K/W}$$

$$U = 1/R_T = 0.18 \text{ W/(m}^2\text{K)}$$

Q ... The physical values of the building materials has been graded by their level of quality. These 5 levels are the following

- A** ... A: Data is entered and validated by the manufacturer or supplier. Data is continuously tested by 3rd party.
- B** ... B: Data is entered and validated by the manufacturer or supplier. Data is certified by 3rd party
- C** ... C: Data is entered and validated by the manufacturer or supplier.
- D** ... D: Information is entered by BuildDesk without special agreement with the manufacturer, supplier or others.
- E** ... E: Information is entered by the user of the BuildDesk software without special agreement with the manufacturer, supplier or others.

$$U = 0.18 \text{ W/(m}^2\text{K)} \quad R_T = 5.70 \text{ m}^2\text{K/W}$$

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Project Information

Reference

Date 29 September 2026

Project 7 The Stocks

Construction Type

Element : Flat roof - Flat roof - Warm Deck

Internal surface emissivity : High External surface emissivity : High

	Thickness (mm)	Thermal Conductivity (W/mK)	Thermal Resistance (m ² K/W)	Pitch (°)	Bridge details Air gaps (Level, Delta U")
Outside surface resistance	-	-	0.040		
Single ply membrane	1.5	-	0.010		
Powerdeck F	120.0	0.024	5.000		L:0 0.000W/m ² K
Powerdeck F	90.0	0.025	3.600		L:0 0.000W/m ² K
Bituminous VCL	-	-	-		
Plywood (BS10456)	18.0	0.170	0.106		
Clear cavity, unvented (roof)	50.0	-	0.160		13.500% Timber (50.0mm)
Plasterboard - standard wallboard	12.5	0.210	0.060		
Inside surface resistance	-	-	0.100		

U-value = 0.11W/m²K

U-value, Combined Method : 0.110W/m²K (upper/lower limit 9.106 / 9.090m²K/W, dUf 0.0000, dUg 0.0000, dUp0.0000, dUr0.0000, dUrc1 0.0000, dUrc2 0.0000)

Correction factors

Air gaps, Delta Ug = 0.000W/m²K

(Based on the combined method for determining U-values of structures containing repeating thermal bridges)