

SAP Calculations Compliance Summary

(England Approved Document L (2021 edition) Building Regulations)

Project:	Orchard End, Sill Bridge Lane, Waltham, St Lawrence, RG10 0NT
Assessment Date:	18/08/2023
Assessor:	TM

The above project has **PASSED** the SAP assessment(s) based on the specification outlined below.

Please review this document as it outlines the specification used within the design-stage SAP assessment, as well as the requirements during and post construction.

The specification has been derived by following the details on the drawings provided and/or communication with the architect/client/contractor. If necessary, Energytest recommends the drawings to be updated to match the specification outlined on this summary.

Energytest strongly recommends any proposed deviations from this specification to be communicated with the assessor to ensure compliance in perpetuity. Energytest cannot be held responsible for any deviations from this specification that result in non-compliance.

Also included alongside this summary will be the following documents:

- BREL Report
- Design SAP Calculations
- Thermal Bridging (if applicable)

Specification Summary

Table 1 - Construction / Insulation Specification

Element	U Value	Specification
Ground Floor	0.11	65mm screed on 150mm EcoTherm Eco-Versal, beam and block system
External Walls	0.19	102.5mm brick, 90mm EcoTherm Eco-Cavity full fill (10mm cavity), 100mm Aerated Block (0.15 W/m ² K), 12.5mm plasterboard on dabs, 3mm plaster skim
Internal Walls	-	Timber stud (upstairs) & blockwork (downstairs)
Joisted Roof	0.11	400mm loft roll insulation, (200mm between joists), 12.5mm plasterboard
Flat Roof	0.17	18mm plywood, 120mm rigid insulation (0.022 W/m ² K) 18mm plywood, timber joists, 12.5mm plasterboard
Rafter Roof	0.13	150mm EcoTherm Eco-Versal between rafters, 62.5mm EcoTherm Eco-Liner insulated plasterboard

* Where specific products are listed, an alternative with the same thermal conductivity (W/mK) may be used

Table 2 - Openings Specification

Element	U Value	Specification
Windows	1.20	Double glazed, low E (G Value 0.63)
Doors	1.20	Solid
Glazed Doors	1.20	Double glazed, low E (G Value 0.63)

* The U Value stated is the "whole window" U Value (not centre pane)

Table 3 - Thermal Bridging

Lintels	Catnic CG90/100
Thermal Bridging	Recognised construction details to be followed

* Refer to the photo requirements of Appendix B of ADL - as detailed further on in this document

Table 4 - Air Tightness

Design air permeability rate	3.01 m ³ h ⁻¹ m ² @ 50PA - To be tested post construction
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Table 5 - Space Heating

Main heating system	ASHP (Air-to-water) - *Clivet S.p.A.EDGE EVO 2.0 Exc WiSAN-YME 1S 8.1
Emitters	Underfloor heating and radiators
Controls	Time and temperature zone control
Secondary heating system	N/A
Common area heating	N/A

*Please check any alternative models, to ensure compliance

Table 6 - Domestic Hot Water

Water heating	From main - ASHP Cylinder 300.00L / standing heat loss 2.86 kwh\day or less
Waste water heat recovery system	Showersave, Linear Drain J3-630-3P

Table 7 - Ventilation

Ventilation system	Mechanical Extract Ventilation - Decentralised <ul style="list-style-type: none"> • SFP - 0.2 • 4 Wet rooms • 1 Through Kitchen Wall
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Table 8 - Lighting

Lighting type	Low energy lighting installed throughout - Power = 10 W - Efficiency = 80 lm / W - Capacity = 800 lm
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Table 9 - Renewable Technology

Technology type	Solar PV: <ul style="list-style-type: none">• 0.6 kW Peak• East Facing - None or little shading• Non battery
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Post Construction Requirements

In order to produce the as-built SAP calculations and EPC, we will require the following points answering/confirming:

1. Full registered postal address
 - send council confirmation if there are multiple plots
2. Confirmation that the construction/insulation specification (as per table 1) have been followed - Y/N? -
 - advise us of any changes -
3. Confirmation that the U Values for the openings (as per table 2) have been followed - Y/N? -
 - send a copy of the U Value certification (i.e. BFRC certificate)
4. Confirmation that the thermal bridging details (as per table 3) have been followed - Y/N? -
 - send photographs as per the requirements of Appendix B (see next page)
5. A copy of the air test certificate
 - the design air permeability rate is outlined in table 4
6. Heating specification
 - boiler make and model -
7. Confirmation that the heating emitters and controls are as per table 5
 - advise us of any changes -
8. Details of any secondary heating -
9. (If applicable) - Are the common areas heated via the landlord supply - Y/N? -
10. Cylinder specification
 - make, model and capacity in litres -
11. Ventilation details
 - number of intermittent extract fans or make/model of any centralised systems -
12. Confirmation that low energy lighting (as per table 8) has been installed - Y/N? -
 - please confirm the total number of units -
13. Details of any renewable technology
 - i.e. output of PV (send a copy of the MCS certificate)
14. Any other details that may affect the calculations -

Appendix B - Photographic Evidence

For new dwellings, a signed copy of the BREL (Building Regulations England Part L) compliance report and photographic evidence of the build quality should be provided to the homeowner as part of the sign-off process. This is a new requirement under AD L1 (2021). The photographs must be consistent with the specification used within the SAP calculations i.e. the thermal bridging details (Psi values) need to match what has been built on site.

What photographs are needed?

The following is taken from Appendix B of Approved Document L (2021) - Volume 1 for England, which came into force on 15th June 2022:

B6 - Photographs should be digital and of sufficient quality and high enough resolution to allow a qualitative audit of the subject detail. Close-up photographs may be needed where a long shot image provides insufficient detail. More than one image of each detail may be needed. Geolocation should be enabled to confirm the location, date and time of each image. Each image file should include a plot number and detail reference according to the numbers used in paragraph B7. For example, Plot 1 eaves detail would be P1/3b.

B7 - Photographs should be taken of typical details as listed below and should be unique to each property. One photograph per detail should be recorded. Additional images, such as a closeup detail, should be provided only when necessary (see below). Photographs should be taken at appropriate construction stages for each detail when completed, but prior to closing-up works

1. Foundations / substructure and ground floor, to show thermal continuity and quality of insulation in the following places:
 - a. At ground floor perimeter edge insulation
 - b. At external door threshold
 - c. Below damp-proof course on external walls
2. External walls: for each main wall type, to show thermal continuity and quality of insulation for the following:
 - a. Ground floor to wall junction
 - b. Structural penetrating elements

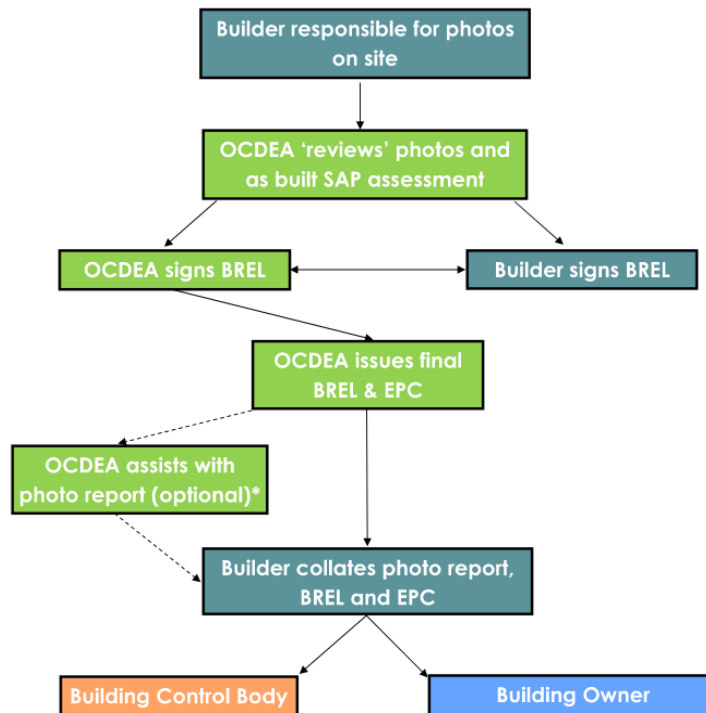
Note. For blown fill, photos should show clean cavities and clean brick ties with very limited mortar droppings

1. Roof: for each main roof type, to show thermal continuity and quality of insulation at the following:
 - a. Joist / rafter level
 - b. Eaves and gable edges
2. Openings: for each opening type (one image per wall or roof type is sufficient), to show thermal continuity and quality of insulation with photographs of the following:
 - a. Window positioning in relation to cavity closer or insulation line
 - b. External doorset positioning in relation to cavity closer or insulation line
3. Airtightness: additional photographs for all details 1-4 to show airtightness details (only if not included or visible in continuity of insulation image)
4. Building services: for all plant associated with space heating, hot water, ventilation and low or zero carbon technology within or on the building, to show the following:
 - a. Plant / equipment identification label(s), including make / model and serial number
 - b. Primary pipework continuity of insulation
 - c. Mechanical ventilation ductwork continuity of insulation (for duct sections outside the thermal envelope)

B8 - Photographs should be digital and of sufficient quality and high enough resolution to allow a qualitative audit of the subject detail. Close-up photographs may be needed where a long shot image provides insufficient detail. More than one image of each detail may be needed. Geolocation should be enabled to confirm the location, date and time of each image. Each image file should include a plot number and detail reference according to the numbers used in paragraph B7. For example, Plot 1 eaves detail would be P1/3b.

Who will take the photographs

The following diagram indicates how photographs will flow from site to OCDEA (SAP Assessor) and eventually to the Building Control Body and the future occupant. It is the responsibility of the building / contractor to organise the photos:

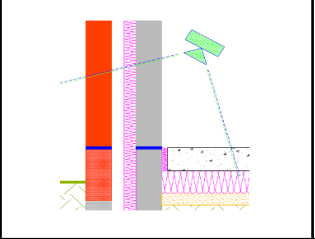

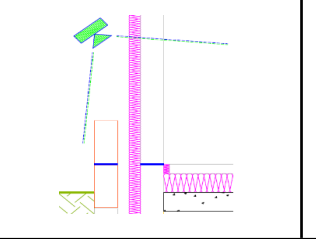

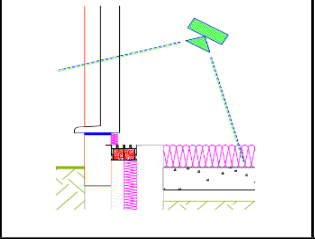


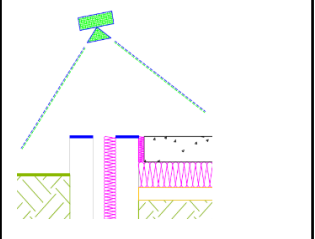

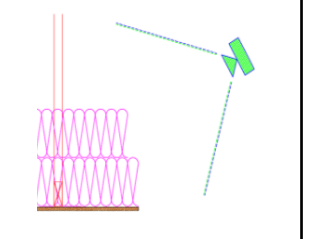



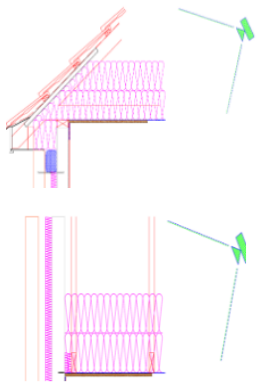


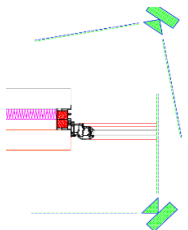

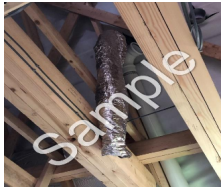
- OCDEA - On-construction domestic energy assessor (SAP assessor)
- BREL - Building Regulations England Part L report
- EPC - Energy Performance Certificate

When should photographs be taken?

The below is a guide as to what photographs can be taken based on an example of typical build stages of a new dwelling:

Build Stage	AD L Photo Reference
Oversite - Foundations / sub-masonry / drains etc	1A , 1B , 1C
Roofed - Masonry to plate / joists / roofing etc	2A , 2B , 3A , 3B , 4A , 4B
1st Fix - Plumbing / electrics / plastering etc	
2nd Fix - Plumbing / electrics / kitchen / sanitary ware etc	
Completion - Carpets / decorations / CML etc	6A , 6B , 6C

	Direction of Photograph	Typical Example	AD L Photo Reference	Direction of Photograph	Typical Example
1 A - GF perimeter insulation (SAP ref. E5)			2 A - GF to external wall junction (SAP ref. E5)		
Photograph should show a continuous strip of insulation in contact with the walls around the perimeter of the ground floor.			External or cavity wall insulation should extend below the damp proof course.		
1 B - Door threshold (SAP ref. E3)			2 B - Structural penetrating elements (SAP ref. E1/2)		
Photographs should show a strip of insulation or insulated cavity closer in the threshold zone.			Lintel type - one photo required per opening type.		
1 C - Below DPC on external walls			3 A - Roof at joist / rafter level		
Moisture-resistant insulation should be fitted below damp-proof course level and extend to the foundation block / structure.			Insulation should be installed tight to the structure, without air gaps , and should extend to the wall insulation.		

<p>3 B - Roof at eaves / gables edges (SAP ref. E10, E11, E12, E13)</p>			<p>6 A - Plant / equipment identification</p>		
<p>Eaves photographs should show loft insulation extending beyond the wall insulation to minimise cold bridging. Gable photographs should show the insulation against the inner surface of the external / part walls to minimise cold bridging.</p>			<p>Photos should show the labels clearly identifying the make and model of the heating system and hot water and hot water cylinder. Other plant could be included too, such as MVHR etc.</p>		
			<p>6 B - Primary pipework insulation</p>	<p>Photos to show that all primary pipework is insulated accordingly.</p>	
<p>4 A , 4 B - Window / door position to cavity closer / insulation line (SAP ref. E4)</p>			<p>6 C - Ventilation ductwork insulation</p>		
<p>One photo per window / door type is sufficient. Good practice to show a tape measure to check the window / door is in line with the cavity closer / insulation</p>			<p>Only needed for ductwork in unheated spaces and should show the insulated ductwork used.</p>		
			<p>Summary Photographs are required in order to comply with Approved Document L1. They are the responsibility of the builder / contractor to provide and will be "reviewed" by the assessor. Failure to provide photographs, or if the photographs do not match the design stage specification, may affect the SAP calculations and compliance with Part L. Please contact us once the dwelling(s) is nearing completion so we can arrange the as-built calculations and EPC.</p>		
<p>5 - Airtightness issues</p>	<p>Other photographs showing items that penetrate the air barrier are sealed. (if not covered by other photographs).</p>				