# Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Array SAP 10 program, Array

**Date:** Fri 18 Aug 2023 10:26:01

| Project Information | | | |
|---|---|---|---|
| Assessed By | Thomas McMahon | Building Type | House, Detached |
| OCDEA Registration | EES/022313 | Assessment Date | 2023-08-18 |

| Dwelling Details | | | |
|---|---|---|---|
| Assessment Type | As designed | Total Floor Area | 213 $m^2$ |
| Site Reference | Orchard End | Plot Reference | DSv1 |
| Address | 1 Plot 1 Orchard End, St Lawrence, RG10 0NT | | |

| Client Details | |
|---|---|
| Name | |
| Company | |
| Address | , , , , |

**This report covers items included within the SAP calculations. It is not a complete report of regulations compliance.**

| 1a Target emission rate and dwelling emission rate | | |
|---|---|---|
| Fuel for main heating system | Electricity | |
| *Target carbon dioxide emission rate* | *8.81 $kgCO_2/m^2$* | |
| Dwelling carbon dioxide emission rate | 2.97 $kgCO_2/m^2$ | **OK** |
| **1b Target primary energy rate and dwelling primary energy** | | |
| *Target primary energy* | *46.66 $kWh_{PE}/m^2$* | |
| Dwelling primary energy | 30.81 $kWh_{PE}/m^2$ | **OK** |
| **1c Target fabric energy efficiency and dwelling fabric energy efficiency** | | |
| *Target fabric energy efficiency* | *44.3 $kWh/m^2$* | |
| Dwelling fabric energy efficiency | 43.7 $kWh/m^2$ | **OK** |

| 2a Fabric U-values | | | | |
|---|---|---|---|---|
| **Element** | ***Maximum permitted average U-Value [$W/m^2K$]*** | **Dwelling average U-Value [$W/m^2K$]** | **Element with highest individual U-Value** | |
| External walls | *0.26* | 0.19 | Walls (1) (0.19) | **OK** |
| Party walls | *0.2* | N/A | N/A | **N/A** |
| Curtain walls | *1.6* | N/A | N/A | **N/A** |
| Floors | *0.18* | 0.11 | Heat Loss Floor 1 (0.11) | **OK** |
| Roofs | *0.16* | 0.13 | Roof (2) (0.17) | **OK** |
| Windows, doors, and roof windows | *1.6* | 1.2 | Opening 1 (1.2) | **OK** |
| Rooflights | *2.2* | N/A | N/A | **N/A** |

| 2b Envelope elements (better than typically expected values are flagged with a subsequent (!)) | | |
|---|---|---|
| **Name** | **Net area [$m^2$]** | **U-Value [$W/m^2K$]** |
| Exposed wall: Walls (1) | 170.27 | 0.19 |
| Ground floor: Heat Loss Floor 1, Heat Loss Floor 1 | 115.7 | 0.11 |
| Exposed roof: Roof (1) | 115.52 | 0.13 |
| Exposed roof: Roof (2) | 18.5 | 0.17 |
| Exposed roof: Roof (3) | 3.69 | 0.11 |

| 2c Openings (better than typically expected values are flagged with a subsequent (!)) | | | | |
|---|---|---|---|---|
| **Name** | **Area [$m^2$]** | **Orientation** | **Frame factor** | **U-Value [$W/m^2K$]** |
| Opening 1, Semi glazed door | 4.12 | East | N/A | 1.2 |
| Opening 2, Windows | 16.22 | East | 0.7 | 1.2 |
| Opening 3, Solid Door | 1.89 | North | N/A | 1.2 |
| Opening 4, Windows | 1.24 | North | 0.7 | 1.2 |
| Opening 5, Windows | 23.82 | West | 0.7 | 1.2 |
| Opening 6, Windows | 7.31 | South | 0.7 | 1.2 |

| 2d Thermal bridging (better than typically expected values are flagged with a subsequent (!)) |
|---|
| Building part **1 - Main Dwelling**: Thermal bridging calculated from linear thermal transmittances for each junction |

| Main element | Junction detail | Source | Psi value [W/mK] | Drawing / reference |
|---|---|---|---|---|
| External wall | E1: Steel lintel with perforated steel base plate | Calculated by person with suitable expertise | 0.268 | RCD (90mm in 100mm cavity) |
| External wall | E3: Sill | Calculated by person with suitable expertise | 0.077 | RCD (90mm in 100mm cavity) |
| External wall | E4: Jamb | Calculated by person with suitable expertise | 0.015 **(!)** | RCD (90mm in 100mm cavity) |
| External wall | E5: Ground floor (normal) | Calculated by person with suitable expertise | 0.067 | RCD (90mm in 100mm cavity) |
| External wall | E6: Intermediate floor within a dwelling | Calculated by person with suitable expertise | 0.001 **(!)** | RCD (90mm in 100mm cavity) |
| External wall | E11: Eaves (insulation at rafter level) | Calculated by person with suitable expertise | 0.018 **(!)** | RCD (90mm in 100mm cavity) |
| External wall | E14: Flat roof | SAP table default | 0.16 | |
| External wall | E16: Corner (normal) | Calculated by person with suitable expertise | 0.038 **(!)** | RCD (90mm in 100mm cavity) |
| External wall | E17: Corner (inverted - internal area greater than external area) | Calculated by person with suitable expertise | -0.074 | RCD (90mm in 100mm cavity) |
| Roof | R4: Ridge (vaulted ceiling) | SAP table default | 0.12 | |
| Roof | R6: Flat ceiling | SAP table default | 0.12 | |

| 3 Air permeability (better than typically expected values are flagged with a subsequent (!)) | | |
|---|---|---|
| *Maximum permitted air permeability at 50Pa* | *8 $m^3/hm^2$* | |
| Dwelling air permeability at 50Pa | 3.01 $m^3/hm^2$, Design value **(!)** | OK |
| Air permeability test certificate reference | | |

| 4 Space heating | |
|---|---|
| **Main heating system 1**: Heat pump with radiators or underfloor heating - Electricity | |
| Efficiency | 371.5% |
| Emitter type | Both radiators and underfloor |
| Flow temperature | 35°C |
| System type | Heat Pump |
| Manufacturer | GD Midea Heating & ventilating Equipment Co Ltd |
| Model | EDGE EVO 2.0 Exc |
| Commissioning | |
| **Secondary heating system**: Closed room heater with boiler (no radiators) | |
| Fuel | Wood logs |
| Efficiency | 67.0% |
| Commissioning | |

| 5 Hot water | |
|---|---|
| **Cylinder/store** - type: Cylinder | |
| Capacity | 300 litres |
| Declared heat loss | 2.86 kWh/day |
| Primary pipework insulated | Yes |
| Manufacturer | |
| Model | |
| Commissioning | |
| **Waste water heat recovery system 1** - type: Instantaneous | |
| Efficiency | 26.6% |
| Manufacturer | Joulia SA |
| Model | Linear Drain J3-630-3P |

| 6 Controls | |
|---|---|
| **Main heating 1** - type: Time and temperature zone control by arrangement of plumbing and electrical services | |
| Function | |
| Ecodesign class | |
| Manufacturer | |
| Model | |
| **Water heating** - type: Cylinder thermostat and HW separately timed | |
| Manufacturer | |
| Model | |

| 7 Lighting | | |
|---|---|---|
| *Minimum permitted light source efficacy* | *75 lm/W* | |
| Lowest light source efficacy | 80 lm/W | **OK** |
| External lights control | N/A | |

| 8 Mechanical ventilation | | |
|---|---|---|
| **System type:** Decentralised mechanical extract | | |
| *Maximum permitted specific fan power* | *0.7 W/(l/s)* | |
| Specific fan power | 0.23 W/(l/s) | **OK** |
| *Minimum permitted heat recovery efficiency* | *N/A* | |
| Heat recovery efficiency | N/A | **N/A** |
| Manufacturer/Model | tbc | |
| Commissioning | | |

| 9 Local generation | |
|---|---|
| Technology type: **Photovoltaic system (1)** | |
| Peak power | 0.6 kWp |
| Orientation | East |
| Pitch | 30° |
| Overshading | None or very little |
| Manufacturer | |
| MCS certificate | |

| 10 Heat networks |
|---|
| N/A |

| 11 Supporting documentary evidence |
|---|
| N/A |

| 12 Declarations | |
|---|---|
| **a. Assessor Declaration** | |
| This declaration by the assessor is confirmation that the contents of this BREL Compliance Report are a true and accurate reflection based upon the design information submitted for this dwelling for the purpose of carrying out the "As designed" assessment, and that the supporting documentary evidence (SAP Conventions, Appendix 1 (documentary evidence) schedules the minimum documentary evidence required) has been reviewed in the course of preparing this BREL Compliance Report. | |
| Signed:<br><br>Name: | Assessor ID:<br><br>Date: |
| **b. Client Declaration** | |
| N/A | |