# Building Regulations England Part L (BREL) Compliance Report

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

**Date:** Fri 08 Nov 2024 19:39:09

| Project Information | | | |
|---|---|---|---|
| Assessed By | Rory Bergin | Building Type | House, Semi-detached |
| OCDEA Registration | EES/022586 | Assessment Date | 2024-11-08 |

| Dwelling Details | | | |
|---|---|---|---|
| Assessment Type | As designed | Total Floor Area | 151 $m^2$ |
| Site Reference | Semi-detached_Type D_4B-8P_29 | Plot Reference | Semi-detached_Type D_4B-8P_29 |
| Address | | | |

| Client Details | |
|---|---|
| Name | Francis Construction |
| Company | Francis Construction |
| Address | Armour House, Thatcham, RG19 4PD |

**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* | *11.19 $kgCO_2/m^2$* | |
| Dwelling carbon dioxide emission rate | 1.15 $kgCO_2/m^2$ | OK |
| **1b Target primary energy rate and dwelling primary energy** | | |
| *Target primary energy* | *58.76 $kWh_{PE}/m^2$* | |
| Dwelling primary energy | 11.38 $kWh_{PE}/m^2$ | OK |
| **1c Target fabric energy efficiency and dwelling fabric energy efficiency** | | |
| *Target fabric energy efficiency* | *46.9 $kWh/m^2$* | |
| Dwelling fabric energy efficiency | 35.8 $kWh/m^2$ | 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* | 0.13 | Walls (1) (0.13) | OK |
| Party walls | *0.2* | N/A | N/A | **N/A** |
| Curtain walls | *1.6* | N/A | N/A | **N/A** |
| Floors | *0.18* | 0.13 | GF-01 (0.13) | OK |
| Roofs | *0.16* | 0.1 | Roof (1) (0.1) | OK |
| Windows, doors, and roof windows | *1.6* | 0.89 | D1 (1) | 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) | 140.67684 | 0.13 **(!)** |
| Ground floor: GF-01, GF-01 | 69.79 | 0.13 |
| Exposed roof: Roof (1) | 40.78 | 0.1 **(!)** |
| Exposed roof: Roof (2) | 28.57 | 0.1 **(!)** |

**2c Openings (better than typically expected values are flagged with a subsequent (!))**

| Name | Area [$m^2$] | Orientation | Frame factor | U-Value [$W/m^2K$] |
|---|---|---|---|---|
| W7, D2, W6, W2, Window | 1.78233 | North | 0.8 | 0.88 **(!)** |
| W7, D2, W6, W2, Window | 4.0906 | North | 0.8 | 0.88 **(!)** |
| W7, D2, W6, W2, Window | 0.82885 | North | 0.8 | 0.88 **(!)** |
| W7, D2, W6, W2, Window | 0.82885 | North | 0.8 | 0.88 **(!)** |
| W7, D2, W6, W2, Window | 2.22423 | North | 0.8 | 0.88 **(!)** |
| W6, W2, W3, Window | 0.82885 | West | 0.8 | 0.88 **(!)** |
| W6, W2, W3, Window | 0.82885 | West | 0.8 | 0.88 **(!)** |
| W6, W2, W3, Window | 0.82885 | West | 0.8 | 0.88 **(!)** |
| W6, W2, W3, Window | 2.22423 | West | 0.8 | 0.88 **(!)** |
| W6, W2, W3, Window | 1.23783 | West | 0.8 | 0.88 **(!)** |
| W6, W2, W3, Window | 1.23783 | West | 0.8 | 0.88 **(!)** |
| D1 , Door | 3.3796 | West | N/A | 1 **(!)** |

| Name | Area [m²] | Orientation | Frame factor | U-Value [W/m²K] |
|---|---|---|---|---|
| W9, W5 / W4, W10, Window | 3.41185 | South | 0.8 | 0.88 **(!)** |
| W9, W5 / W4, W10, Window | 3.41185 | South | 0.8 | 0.88 **(!)** |
| W9, W5 / W4, W10, Window | 1.928355 | South | 0.8 | 0.88 **(!)** |
| W9, W5 / W4, W10, Window | 1.928355 | South | 0.8 | 0.88 **(!)** |
| W9, W5 / W4, W10, Window | 3.41185 | South | 0.8 | 0.88 **(!)** |

## 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 | E5: Ground floor (normal) | Calculated by person with suitable expertise | 0.268 | |
| External wall | E6: Intermediate floor within a dwelling | Not government-approved scheme | 0.07 | |
| External wall | E18: Party wall between dwellings | Not government-approved scheme | 0.12 | |
| Party wall | P4: Roof (insulation at ceiling level) | Not government-approved scheme | 0.24 | |
| External wall | E15: Flat roof with parapet | Not government-approved scheme | 0.15 | |
| External wall | E16: Corner (normal) | Not government-approved scheme | 0.09 | |
| Party wall | P1: Ground floor | Not government-approved scheme | 0.16 | |
| External wall | E2: Other lintels (including other steel lintels) | Calculated by person with suitable expertise | 0.003 **(!)** | |
| External wall | E3: Sill | Calculated by person with suitable expertise | 0.02 **(!)** | |
| External wall | E4: Jamb | Calculated by person with suitable expertise | 0.02 **(!)** | |
| External wall | E24: Eaves (insulation at ceiling level - inverted) | Not government-approved scheme | 0.075 | |
| Party wall | P2: Intermediate floor within a dwelling | SAP table default | 0 **(!)** | |

## 3 Air permeability (better than typically expected values are flagged with a subsequent (!))

| | | |
|---|---|---|
| *Maximum permitted air permeability at 50Pa* | *8 m³/hm²* | |
| Dwelling air permeability at 50Pa | 1 m³/hm², Design value **(!)** | OK |
| Air permeability test certificate reference | | |

## 4 Space heating

**Main heating system 1**: Heat pump with radiators or underfloor heating - Electricity

| | |
|---|---|
| Efficiency | 337.9% |
| Emitter type | Underfloor |
| Flow temperature | 35°C |
| System type | Heat Pump |
| Manufacturer | Mitsubishi Electric Europe B.V. |
| Model | Ecodan 6.0 kW |
| Commissioning | |

**Secondary heating system**: N/A

| | |
|---|---|
| Fuel | N/A |
| Efficiency | N/A |
| Commissioning | |

## 5 Hot water

**Cylinder/store** - type: Cylinder

| | |
|---|---|
| Capacity | 250 litres |
| Declared heat loss | 1.15 kWh/day |
| Primary pipework insulated | Yes |
| Manufacturer | |
| Model | |
| Commissioning | |

| **Waste water heat recovery system 1** - type: N/A | |
|---|---|
| Efficiency | |
| Manufacturer | |
| Model | |

| 6 Controls | |
|---|---|
| **Main heating 1** - type: Programmer and room thermostat | |
| Function | |
| Ecodesign class | |
| Manufacturer | |
| Model | |
| **Water heating** - type: Cylinder thermostat | |
| Manufacturer | Mitsubishi |
| Model | |

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

| 8 Mechanical ventilation | | |
|---|---|---|
| **System type:** Balanced whole-house mechanical ventilation with heat recovery | | |
| *Maximum permitted specific fan power* | *1.5 W/(l/s)* | |
| Specific fan power | 0.68 W/(l/s) | OK |
| *Minimum permitted heat recovery efficiency* | *73%* | |
| Heat recovery efficiency | 88% | OK |
| Manufacturer/Model | MRXBOXAB-ECO5 | |
| Commissioning | | |

| 9 Local generation | |
|---|---|
| Technology type: **Photovoltaic system (1)** | |
| Peak power | 4.83 kWp |
| Orientation | South |
| 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 | |

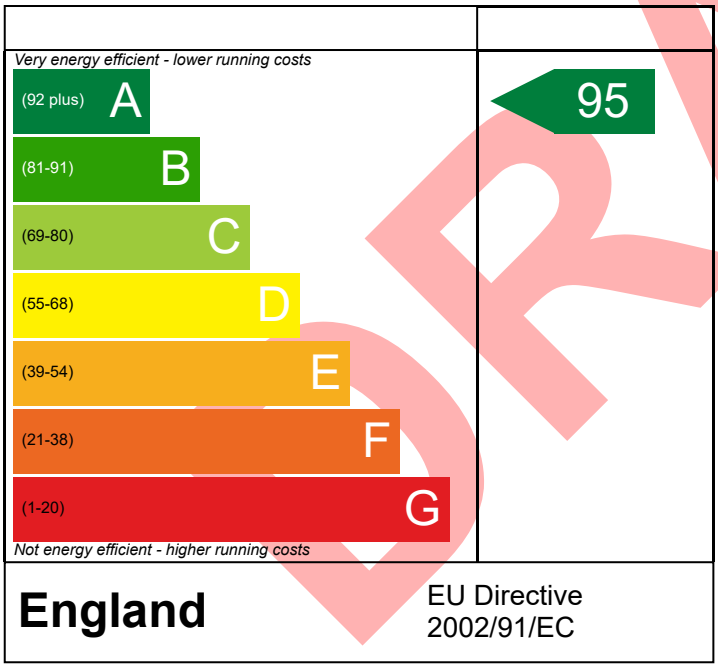
# Predicted Energy Assessment

| | |
|---|---|
| Dwelling type: | House, Semi-Detached |
| Date of assessment: | 08/11/2024 |
| Produced by: | Rory Bergin |
| Total floor area: | 151.35 m² |
| DRRN: | |

This document is a Predicted Energy Assessment for properties marketed when they are incomplete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, this rating will be updated and an official Energy Performance Certificate will be created for the property. This will include more detailed information about the energy performance of the completed property.

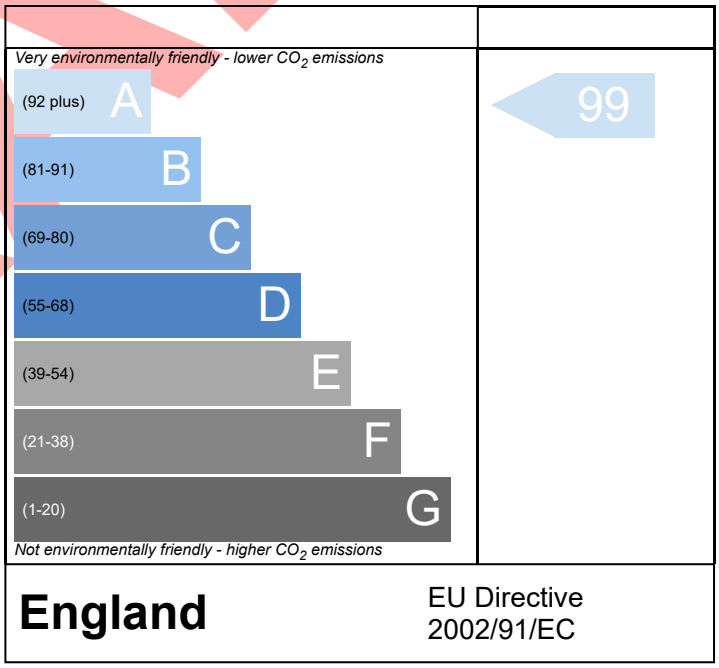
The energy performance has been assessed using the Government approved SAP 10 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO2) emissions.

## Energy Efficiency Rating




The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

## Environmental Impact ($CO_2$) Rating




The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide ($CO_2$) emissions. The higher the rating the less impact it has on the environment.

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