**CSS:XXX**
**Date: 01/08/2019**

**SAMPLE**

# Part L1B Extension Compliance Summary
# Whole House Calculation Method

**Client: Sample**

# Part L1B Extension Compliance Summary

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**1.0 Introduction:**

This report has been produced by xxxxx xxxxxx (BSc, OCDEA) of Complete Sustainability Solutions (CSS) to investigate whether Part L1B of the Building Regulations can be achieved when an extension is to be built that exceeds the glazing threshold.

**2.0 Site Description:**

The development is a single house in Cheshire which is to have an extension to the rear. The extension will be heavily glazed and therefore need an L1B calculation.

In order to comply with Part L1B of the Building Regulations, the existing house with the proposed heavily glazed extension must achieve a dwelling CO2 emissions rate (DER) lower than that of the existing house with a notional extension.

The proposed heavily glazed extension has passed the SAP assessment and is based on the following design criteria:

- Thermal elements specification / U-Values:

| Element | Specification | U-Value ($W/m^2K$) |
|---|---|---|
| Extension ground floor | Concrete floor slab, on 120mm PIR insulation (by Ecotherm) to achieve the U-value opposite | 0.14 |
| Dwelling-garage separating floor | Floor board, 150mm mineral wool insulation between 150mm floor joists (U-value adjusted for un-heated integral garage separating floor) to achieve the U-value opposite | 0.15 |
| New cavity walls | Dense blocks cavity walls with 100mm PIR insulation (by Ecotherm) fitted in the 150mm cavity to achieve the U-value opposite | 0.17 |
| Dormer walls | 75mm PIR insulation between 75mm studs, 25mm PIR insulation internally, battened service void, plasterboard to achieve the U-value opposite | 0.24 |
| Dwelling-garage separating wall | 62.5mm “Eco-Liner” onto 215mm dense block wall (U-value adjusted for un-heated integral garage separating wall) to achieve the U-value opposite | 0.26 |
| New terrace (top) / flat roofs | 140mm or 150mm PIR insulation (by Ecotherm) on a warm timber roof deck construction to achieve the U-value opposite. | 0.15 |
| New terrace (bottom) | Beam and block floor deck, 100mm PIR insulation underside | 0.18 |
| New glazing / roof lights | Double glazed, low E glass | 1.6 |
| New Door | Composite external door | 1.8 |

Any improvement on the specification / U-Values stated above, or further upgrade to insulation or heating within the existing dwelling will have a positive effect on the result of this SAP calculation.

## 3.0 Criterion One

The emissions for the dwelling with its actual extension must not exceed the target (notional extension). The following results have been calculated:

| | |
|---|---|
| **Existing dwelling + proposed extension DER =** | **25.14 kg CO2/m2/year** |
| **Existing dwelling + notional extension DER =** | **25.99 kg CO2/m2/year** |

**Result: PASS**

In defining the notional extension our SAP assessor has adhered to the guidelines outlined in Approved Document Part L1B as follows:

- The area of openings has been set as 25% of the floor area of the extension plus the area of any windows and doors which, as a result of the extension works, no longer exist or are no longer exposed.

| | |
|---|---|
| In this case 25% of the floor area of the extension = | 17.30m2 |
| Openings which no longer exist or are no longer exposed = | 14.91m2 |
| **Total area of openings =** | **32.21m2** |

- The orientation of the notional glazing has been proportioned to the same ratio as the proposed glazing.
- Elemental U-values have been set as follows:

| | |
|---|---|
| Floor | 0.22 |
| Walls | 0.28 |
| Pitched roof - insulation at ceiling level | 0.15 |
| Pitched roof - insulation between rafters | 0.17 |
| Flat roof | 0.18 |
| Door | 1.60 |
| Windows | 1.60 |

## 4.0 Criterion Two

The U-value of each thermal element within the existing dwelling that if upgraded as part of the extension works must not exceed the following threshold limits as prescribed in Part L1B[#]:

| | Improved U-Value (W/m²K) |
|---|---|
| Floor | 0.70 |
| Walls | 0.70 |
| Pitched roof - insulation at ceiling level | 0.35 |
| Pitched roof - insulation between rafters | 0.35 |
| Flat roof | 0.35 |
| Door | 3.30 |
| Windows | 3.30 |

**Result: PASS**

Please refer to the corresponding Proposed and Notional SAP Worksheets for a full detailed breakdown on the calculations. If you have any questions, then please contact the office.

## 5.0 Summary

In summary, if the above specification has been implemented, the proposed DER will be lower than the notional DER ensuring that the extension will achieve a Pass rating.

# If achieving the relevant U-value is not technically or functionally feasible or will not achieve a simple payback of 15 years or less, then the element should be upgraded to the best standard that is technically and functionally feasible and which can be achieved within a simple payback of no greater than 15 years.