

## Isambard Environmental

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## Over-glazed extensions: what are they and how to make them comply with Part L1B of the Building Regulations?

### The requirements

Part L1B of the Building Regulations applies to the conservation of fuel and power in existing dwellings. Where a new extension (see notes regarding a conservatory below) is proposed Part L1B limits the total area of openings or glazed elements such as windows, roof windows and doors to a maximum of 25% of the extension's floor area.



### The issue

Many new extensions exceed this allowance due to the aspiration to have a large amount of glazing to provide a view out and high levels of daylight. A small extension with a set of patio doors and lantern light will easily exceed the allowance. An extension which exceeds this allowance are generally known as 'over-glazed extensions'.

For example: if an extension has a floor area of 20m<sup>2</sup> and is covering an existing patio door with an area of 4m<sup>2</sup> then the extension is allowed to have 5m<sup>2</sup> (25% rule) plus 4m<sup>2</sup> (existing openings rule) making an allowable area of 9m<sup>2</sup>.

### Ways to comply with the requirements

There are four main ways to comply with the requirements of Part L1B:

1. Elemental method

In most circumstances reasonable provision would be to limit the total area of windows, roof windows and doors in extensions so that it does not exceed the sum of:

25% of the floor area of the extension + the total area of any windows or doors which as a result of the extension works no longer exist or are no longer exposed.

Going this route will limit a lot of people's ambitions in which case it is necessary to look at:

2. Area weighted U-value method

This is the next option. This seeks to demonstrate that the proposed extension is no less compliant than if the extension of the same size and shape was constructed as per the design criteria of the 25% rule (elemental method) above. To achieve this the thermal resistance (U-value) of the walls, roof, floor and/or glazing elements are likely to need to be increased above the default values in order to increase the area of glazing in the extension.

This can be calculated by the using the following formula:

$$\{(U_1 \times A_1) + (U_2 \times A_2) + (U_3 \times A_3) + \dots\} \div \{(A_1 + A_2 + A_3 + \dots)\}$$

where **U** is the U-value of each thermal element and **A** represents that thermal elements' area

3. Whole dwelling calculation method

A further option where the area weighted U-value does not produce the required results is to use SAP (Standard Assessment Procedure) calculations which are required to be completed by an accredited SAP assessor such as Isambard Environmental. These demonstrate that the calculated carbon dioxide (CO<sub>2</sub>) emission rate from the dwelling with its proposed extension is no greater than the dwelling with a notional fully compliant extension of the same size and shape. This method allows you to keep almost 100% glazing by upgrading existing elements and services within the original part of the dwelling, for example by installing a more efficient heating system or adding additional loft insulation.

#### 4. Thermal separation

An alternative solution is to form the extension as a thermally separate element from the main dwelling with external quality doors and windows (to current standards and draught proofed) installed between the existing dwelling and the extension. In addition, the heating to the extension needs to be independent to the heating in the main house which can be achieved by installing separate controls.

### Thermal standards for new and retained elements

Where new elements are being provided such as in the extension the following U-values are required to be achieved:

Element	U-value (W/m <sup>2</sup> .K)
Wall	0.28
Pitched roof – insulated at ceiling level	0.16
Pitched roof – insulated at rafter level	0.18
Flat roof or roof with integral insulation	0.18
Ground floor	0.22
Windows, roof windows or rooflights	1.6 or WER Band C or better
Swimming pool basin	0.25

Where existing elements in the original dwelling are being retained, if the U-value exceeds the threshold value then that element needs to be upgraded to meet the improved U-value as shown below:

Element	Threshold U-value (W/m <sup>2</sup> .K)	Improved U-value (W/m <sup>2</sup> .K)
Wall – cavity insulation	0.70	0.55
Wall – external or internal insulation	0.70	0.30
Pitched roof – insulated at ceiling level	0.35	0.16
Pitched roof – insulated at rafter level	0.35	0.18
Flat roof or roof with integral insulation	0.35	0.18
Ground floor	0.70	0.25

### Information required to carry out excess glazing calculations

The following information is required to be able to complete the excess glazing calculations and applies to both the existing dwelling and the proposed dwelling to include the new extension:

- Full set of dimensioned drawings to scale in pdf format to include floor plans, elevations and sections;
- Site location map;
- Construction details for the opaque elements to include ground floor, external walls and roof;
- Construction details for the openings to include front door, windows, roof lights, velux (or other roof type) windows;
- Type of ventilation – openable windows, mechanical extract;
- Type of fuel – gas, electricity, oil, biomass;
- Type of heating system (main and secondary) – gas combination boiler, radiators, underfloor;
- Type of cooling system (if any) – air conditioning
- Type of water heating system – from the boiler or a separate hot water cylinder;
- Any renewable energy such as photovoltaics, micro wind turbine and other technology;
- Summer overheating parameters; and
- Building type.

### Exemptions from excess glazing calculations - conservatories

Where the extension is a conservatory it may be exempt from Part L1B if it meets all the following criteria:

- The extension has a floor area of less than 30m<sup>2</sup>;
- The extension is at ground floor level and single storey;
- The walls are a minimum of 50% translucent material;
- The roof is a minimum of 75% translucent material;
- Any glazing in critical locations is suitable safety glass (see Approved Document K);
- The extension is thermally separated from the rest of the house and the doors and windows linking the house to the extension are of external quality; and
- The extension is not heated by the same system that heats the rest of the dwelling.

As accredited SAP assessors we can provide guidance on the complexity of complying with the requirements of Part L1B of the Building Regulations. If you have any questions regarding over-glazing or require a quotation please contact Andrew Francis on 07725 553 607 or [af@isambardconsulting.com](mailto:af@isambardconsulting.com)