

## History

In 1997 the Government gave a commitment at the Kyoto Conference to reduce the carbon emissions produced in the UK as a result of burning fossil fuels, by 20% before 2010.

As buildings account for approximately 50% of the UK energy use and dwellings account for about two thirds of this, the government has amended the Building Regulations in order to reduce the energy consumption of buildings.

To enable designers to accurately predict the energy use and total carbon emission from a proposed dwelling, specialist software has been developed called SAP 2005.

## SAP 2005

- **SAP 2005 Software will consider:**
  - The building type, shape and size.
  - Thermal insulation levels.
  - Window numbers, orientation, size and type.
  - Primary heating type, efficiency, fuel type, controls, water heating etc.
  - Secondary heating type and fuel used.
  - Quality of construction e.g. 'Accredited Details'.
  - Air tightness testing.
  - Internal and external energy efficient lighting.
  - Low/zero carbon technologies e.g. solar panels or wind turbines.

## New dwellings

- **For new dwellings, an outline of the procedure to show compliance is:**
  1. Establish the Target Carbon Dioxide Emissions Rate (TER) using the SAP 2005 software.
  2. Produce a detailed design of the dwelling to produce a Dwelling Emission Rate (DER) using the SAP 2005 software. Note: the DER must be less than or equal to the TER, or the design fails. If the design fails, measures to reduce the DER must be used such as reducing the U-values of elements or decreasing window areas etc.
  3. Consider solar gains to reduce any need for air conditioning equipment.
  4. On site, the quality of work needs to be "Quality Assured", most likely using Accredited Details and air permeability testing.
  5. Operation and maintenance manuals must be provided to the end user and commissioning certification to Building Control Services. A final calculation of the DER, as built and an "Energy Rating" for the dwelling is to be displayed.

- **Where the extension is a conservatory that is not exempt from the Building Regulations, it shall have:**
  - Effective thermal separation from the dwelling by having separating walls, doors and windows between the dwelling and the conservatory that are insulated and draught-proofed to at least the same standard as the same elements in the existing dwelling.
  - Glazed elements and thermal elements that achieve certain thermal standards, dictated by the new Regulations (please contact Building Control Services to discuss).
  - Where a heating system is installed, it should achieve the standards set out in our guidance leaflet entitled '10. Domestic heating'. The heating system in the conservatory shall have independent on/off and temperature controls.
- **Where the extension is highly glazed, such as a sunroom, it shall have:**
  - Compliance with the above items, (thermal separation, element U-values and heating controls).
  - It may then be treated in a similar manner to a conservatory.
- **Where the highly glazed extension, such as a sunroom, is not thermally separated it shall be treated as a conventional extension and should demonstrate compliance in one of the following three ways:**
  - Standards Based Approach.
  - Calculated Trade-off Approach.
  - Equivalent Carbon Target Approach.

NOTE: None of the above methods are straight forward in their approach to compliance. A qualified person may need to be consulted, as proof of compliance in terms of calculations and SAP 2005 may be required.

- **Additional works now requiring an application to Building Control:**
  - Replacement of services such as oil or gas heating.
  - Renovation of thermal elements such as external walls.
  - Replacement of thermal elements such as roof coverings.
  - Newly constructed flues, re-lined flues and flues brought back into use, need an application and testing.

**If you require any further advice please contact...**

**Building Control Services**  
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**Island Civic Centre**  
**The Island**  
**Lisburn BT27 4RL**

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