

Code for Sustainable Homes

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What is the Code For Sustainable Homes?

The Code for Sustainable Homes is an environmental assessment method for rating and certifying the performance of new homes. It is a national standard for use in the design and construction of new homes with a view to encouraging continuous improvement in sustainable home building. The code became operational in April 2007 in England*, and having a Code rating for new build homes, mandatory from 1st May 2008. This mandatory requirement came into effect for all developments where a local authority received the building notice, initial notice or full plans application after 1st May 2008. Developments where a local authority had received these stages on or before 30th April 2008 are exempt.

*The Code does not apply in Scotland. From 1st May 2008 a minimum of Code level 3 is required for all housing promoted or supported by the Welsh Assembly Government or Assembly Government Sponsored Bodies. From 2nd June 2008 Code Level 3 is required for all new self-contained social housing in Northern Ireland.

The Code is split into 9 different categories for sustainable design, each with their own sub-categories. Each sub category has credits available which in turn are weighted depending on their designated importance to the overall scheme. Some categories are mandatory and some categories have performance standards which must be met as a minimum to reach certain levels of the Code. To determine the actual percentage multiply the category credits by the weighted factor for that category.

Energy and CO₂ Emissions (Ene)

29 credits available, 36.4% of total (weighted factor = 1.26)

1. Dwelling Emission Rate
2. Building Fabric
3. Internal Lighting
4. Drying Space
5. Energy Labelled White Goods
6. External Lighting
7. Low or Zero Carbon Technologies
8. Cycle Storage
9. Home Office

Water (Wat)

6 credits available, 9% of total (weighted factor = 1.50)

1. Indoor Water Use
2. External Water Use

Materials (Mat)

24 credits available, 7.2% of total (weighted factor = 0.30)

1. Environmental Impact of Materials
2. Responsible Sourcing of Materials – Basic Building Elements
3. Responsible Sourcing of Materials – Finishing Elements

Surface Run-off (Sur)

4 credits available, 2.2% of total (weighted factor = 0.55)

1. Management of Surface Water Run-Off from developments
2. Flood Risk

Waste (Was)

7 credits available, 6.4% of total (weighted factor = 0.91)

1. Storage of non-recyclable weight and recyclable household waste
2. Construction Site Waste Management

Pollution (Pol)

4 credits available, 2.8% of total (weighted factor = 0.70)

1. Global Warming Potential of Insulates
2. NO_x Emissions

Health and Wellbeing (Hea)

12 credits available, 14% of total (weighted factor = 1.17)

1. Daylighting
2. Sound Insulation
3. Private Space
4. Lifetime Homes

Management (Man)

9 credits available, 10% of total (weighted factor = 1.11)

1. Home Users Guide
2. Considerate Constructors Scheme
3. Construction Site Impacts
4. Security

Ecology (Eco)

9 credits available, 12% of total (weighted factor = 1.33)

1. Ecological value of Site
2. Ecological enhancement
3. Protection of ecological features
4. Change in ecological value of site
5. Building footprint

Percentage Scores

- 36 % Code Level 1 (*)
- 48 % Code Level 2 (**)
- 57 % Code Level 3 (***)
- 68 % Code Level 4 (****)

84 % Code Level 5 (****)
90 % Code Level 6 (*****)

In order to obtain a certain Code Level the score must be equal to or higher than the percentages in the table above as well as achieving the following mandatory levels:

Code Level	Minimum percentage reduction in dwelling emission rate over target emission rate (DER/TER)
Code Level 1 (*)	10%
Code Level 2 (**)	18%
Code Level 3 (***)	25%
Code Level 4 (****)	44%
Code Level 5 (*****)	100%
Code Level 6 (*****)	'Zero Carbon Home'

Code Level	Maximum indoor water consumption in litres per person per day
Code Level 1 (*)	120
Code Level 2 (**)	120
Code Level 3 (***)	105
Code Level 4 (****)	105
Code Level 5 (*****)	80
Code Level 6 (*****)	80

Lifetime Homes compliance is also mandatory for Code Level 6. Please visit www.lifetimehomes.org.uk for more information.

What is a Zero Carbon Home?

Where net carbon dioxide emissions resulting from ALL energy used in the dwelling are zero or better. This includes the energy consumed in the operation of the space heating/cooling and hot water systems, ventilation, all internal lighting, cooking and all electrical appliances, these are now dealt with under section 14 SAP 2005 extension for Stamp Duty Land Tax. The calculation can take account of contributions from onsite renewable/low carbon installations.

Dwellings must meet the minimum mandatory energy requirements for Level 5. This means that emissions as calculated by SAP, including the contributions from any special cases should be zero or better. A 'zero carbon home' is also required to have a Heat Loss Parameter (covering walls, windows, air tightness and other building design issues) of 0.8W/m²K or less, and net zero carbon dioxide emissions from use of appliances and cooking in the homes (i.e. on average over a year).

What Level needs to be met?

At present there is no minimum requirement level for private house builders to meet. Although the Home Information Pack must include a certificate this can be a nil rated certificate if no assessment is made. The Government initiative is set out to reach Zero Carbon Homes by 2016. The timeline is as follows:

2007:

Public Sector: Level 3 Mandatory
Private Sector: Voluntary

2010:

Public Sector: Level 4 Mandatory
Private Sector: Level 3 Mandatory

2013:

Public Sector: Level 6 Mandatory
Private Sector: Level 4 Mandatory

2016:

Public Sector: Level 6 Mandatory

How is a Code assessment obtained?

The implication of the Code is managed by BRE Global under contract to the Department for Communities and Local Government. The BRE issues licences to assessors and other Code service providers. BRE Global then provide training, licensing and registration of Code assessors to standards ISO 14001 and ISO 9001, within a UKAS registered 'competent person scheme'. The client for the assessment can find a service provider from the register at www.communities.gov.uk. The service provider will then offer a register of licensed and trained assessors for the client to choose and appoint. The site is then formally registered with a service provider; the registration is valid for a maximum of five years between expiration of the Technical Guide version at the time of registration and submission of Design Stage report.

The Code Assessment itself is split into two phases. The Design Stage, with an interim certificate, and the Post Construction Stage leading to a final certificate. To achieve the design stage a full report is submitted to the Code assessor who will determine how many credits are to be awarded for each category. The design stage drawings need to be finalised and fully detailed as even the choice of taps to be used can determine the score. The Post Construction stage is to determine the final score for the dwelling. If a Design Stage has been carried out then this can be the starting basis for the assessment. It is possible to skip the design stage and go straight for the post construction assessment but this has its obvious disadvantages if any major issues arise.

How can Timber Frame help to meet the Code?

Due to the way in which the code is written it is possible to achieve any of the Code levels from a multitude of ways. Timber Frame can make significant contributions in the following categories.

Ene 1 – Dwelling Emission Rate

Aim: To limit emissions of carbon dioxide to the atmosphere arising from the operation of a dwelling and its services.

Credits are awarded based on percentage improvement in the Dwelling Emission Rate over the Target Emission Rate for the dwelling where DER and TER are as defined in Approved Document L1A, 2006 edition of the building regulations.

% improvement of DER/TER	Credit	Mandatory Levels
≥10%	1	Level 1
≥14%	2	
≥18%	3	
≥22%	4	Level 2
≥25%	5	
≥31%	6	
≥37%	7	Level 3
≥44%	8	
≥52%	9	
≥60%	10	Level 4
≥69%	11	
≥79%	12	
≥89%	13	Level 5
≥100%	14	
'Zero Carbon Home'	15	

By specifying Timber Frame as the building envelope, and with careful detailing, it is possible to greatly reduce U values and air changes and help to achieve a better percentage score. A possible 15 credits are available which, when multiplied by the weighted factor of 1.26, allows for 18.9% of the overall score.

Ene 2 – Building Fabric

Aim: To future proof the energy efficiency of dwellings over their whole life by limiting heat losses across the building envelope.

Credits are awarded based on the Heat Loss Parameter for each dwelling.

The Heat Loss Parameter is the total fabric and ventilation heat losses from the dwelling divided by the total floor area ($\text{W/m}^2\text{K}$). With careful detailing of the timber frame it is possible to get air changes below $5\text{m}^3/\text{m}^2/\text{hr}$ and U values around $0.15\text{ W/m}^2\text{K}$.

Mat 1 – Environmental Impact of Materials

Aim: To encourage the use of materials with lower environmental impacts over their lifecycle.

There is a mandatory requirement with no available credits to achieve a Green Guide rating of between A+ and D for at least three of the following five elements of the building envelope:

- **Roof**
- **External Walls**
- **Internal Walls (including separating walls)**
- **Upper and ground floors (including separating floors)**
- **Windows**

Between 1 and 15 credits are available depending on the Green Guide ratings and relative distributions of different materials across the five main elements of the building envelope. The method for determining the credits to award for any given situation is determined by use of the assessor tool Code Mat 1 Calculator.

The Green Guide is a rating system for the embodied environmental impacts of construction products and materials. It is based on extensive quantitative data for materials, which has been translated into simple environmental profiles for building elements. An A+ to E rating represents the assessed lifecycle environmental impact, with A+ rated specifications having the lowest overall environmental impact. It is used to assess the major building elements. Please visit www.thegreenguide.org.uk for more information.

Green Guide Rating	Credits
A+	3
A	2
B	1
C	0.5
D	0.25
E	0

Timber frame has the following categories within the Green Guide when specified for domestic use:

Roof

Typical trussed rafter, flat timber joist roofs or SIPS achieve a rating of A+ but it must be checked as the finishes can reduce the rating to an A.

External Walls

Typically an A+ rating for all timber frame or SIPS walls but check guide when using cladding direct off timber frame as some options are rated A.

Internal Walls

Timber separating and internal walls are typically A+ rated as long as OSB is specified for any racking requirements. When plywood is specified the rating may reduce to an A rating.

Upper and Ground Floors

Upper floors and separating floors are typically A+ rated with a few examples in the A category. Suspended timber ground floors vary from A+ to B, depending on the concrete element below.

Windows

All timber windows achieve a rating of A or A+.

These elements are listed as a guide; please refer to the Green Guide website for the latest information.

Mat 2 – Responsible Sourcing of Materials – Basic Building Elements

Aim: To recognise and encourage the specification of responsibly sourced materials for the basic building elements.

Credits are awarded where 80% of the assessed materials in the following 'Building Elements' are responsibly sourced:

- a) Frame
- b) Ground Floor
- c) Upper floors (Including separating floors)
- d) Roof
- e) External Walls
- f) Internal walls (including separating walls)
- g) Foundation/substructure (excluding sub-base materials)
- h) Staircase

Timber frame should be sourced from sustained environments. As such they will be part of a protection scheme such as PEFC or FSC. Timbers which are part of these schemes will have a Chain of Custody certificate which will put these elements into the highest point scoring tier of this category. All timber must be legally sourced.

Hea 2 – Sound Insulation

Aim: To ensure the provision of improved sound insulation to reduce the likelihood of noise complaints from the neighbours.

Credits are awarded for achieving higher standards of sound insulation than those given in Approved Document E of the Building regulations and demonstrating it by either using pre-completion testing or Robust Details as follows:

Airborne sound insulation values are at least 3dB higher	
Impact sound insulation values are at least 3dB lower	1 credit
Airborne sound insulation values are at least 5dB higher	
Impact sound insulation values are at least 5dB lower	3 credits
Airborne sound insulation values are at least 8dB higher	
Impact sound insulation values are at least 8dB lower	4 credits
Default cases:	
Detached dwellings	4 credits
Attached dwellings where separating walls or floors only occur between non habitable rooms	3 credits

At the time of writing this the following Robust Details are assessed, for more information or for quarterly updates please visit www.robustdetails.com.

Timber frame separating walls: E-WT-1	3 credits
Timber frame separating walls: E-WT-2	1 credit
Timber frame separating floor: E-FT-1	1 credit

The information in this document was taken from the October 2008 issue of the Code for Sustainable Homes Technical Guide. For the current version please visit:
www.communities.gov.uk/publications/planningandbuilding/codeguide