

Energy Performance of Buildings Directive (EPBD)

The background to Energy Labelling

By John Ogle of Faber Maunsell



- What is EPBD?
- Legislation that evolved from EPBD
- Labelling
 - DECs
 - EPCs
 - Advising on improvements
 - Energy Assessors and Accreditation



EPBD

European Energy Performance of Buildings Directive

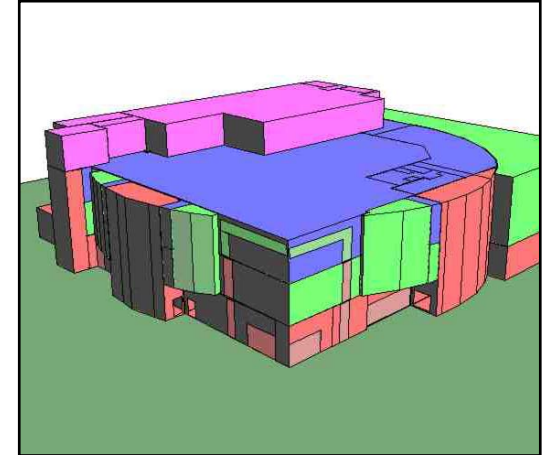
EN

Official Journal of the European Communities

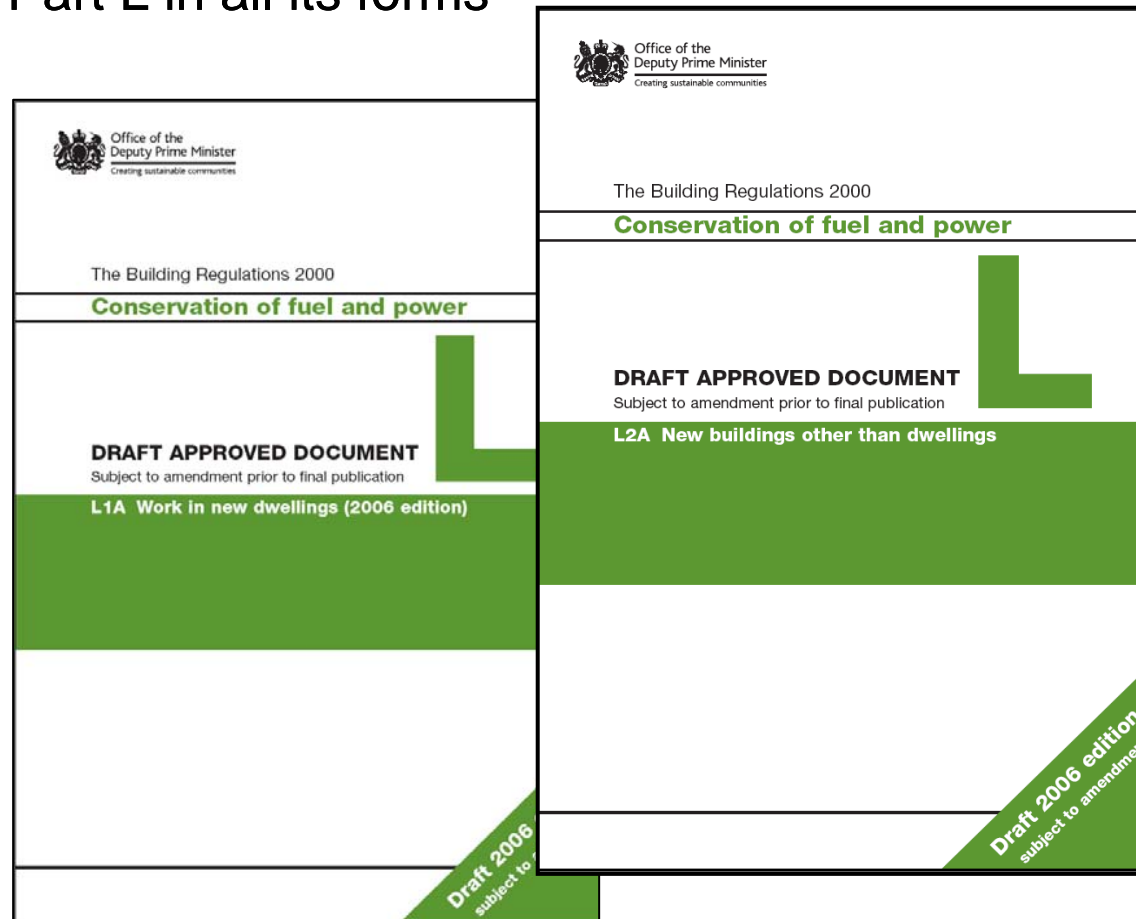
**DIRECTIVE 2002/91/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 16 December 2002
on the energy performance of buildings**

- Energy Performance of Building Directive (EPBD)
 - EU Legislation (**DIRECTIVE 2002/91/EC**)
 - Article 3 : National calculation methodology.
 - Article 4 : Setting standards for the overall energy performance of new and existing buildings.
 - Article 5 : Encouraging greater use of Low and Zero Carbon (LZC) energy sources.
 - Article 6 : Improvements during major renovations
 - Article 7(1) and (2) : Energy Performance Certificates (EPCs) when buildings are constructed, sold or rented out
 - Article 7(3) : EPCs – display requirement for public buildings
 - Articles 8 and 9 : Regular plant inspection
 - Article 10: Qualified and accredited assessors/inspectors

- ARTICLE 3 – National Calculation Methodology
 - Various approved software available
 - BRE - SBEM
 - Hevacomp
 - IES
 - TAS
 - etc
 - Gives Part L compliance confirmation in addition to being a design tool
 - The need for two stages of compliance checking- design and construction stages – first introduced

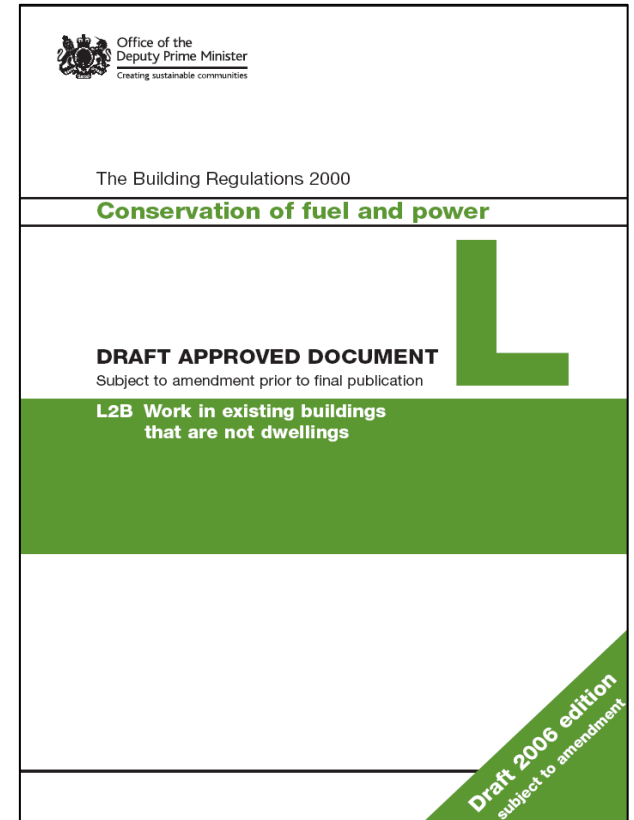


- ARTICLE 4 – Setting Standards For Energy Performance
 - Covered by Part L in all its forms



- ARTICLE 5 – New Buildings - Encouraging Low and Zero Carbon Energy Sources
 - Low Carbon Buildings Programme (formerly Clear Skies)
 - Enhanced Capital Allowances
 - Widespread application of Merton Rule - 10% of energy produced on site
 - Carbon Trust and EST support for homeowners and industry

- ARTICLE 6 –
Improvements During Renovation
 - If over 1000m²
 - Recognises the key impact of existing buildings
 - Part L2B, including “consequential improvements”



ARTICLE 7 – Energy Performance Certificate

Residential

- HIPs – Gradually staged in
- Initially just 4 bedroom houses or larger
- This is the compulsory part of home information pack from August 1st 2007
- Trained assessors(DEAs) now in place
- SAP 2005 – calculation methodology

Dwelling type: House
 Home Inspector's name: Mr James Cartwright
 Date of making the report: 30 October 2006
 Certificate number: 18228
 Floor area: 129.95999999999998 m²

The home's performance is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.

Energy Efficiency Rating

UK 2005
 The energy efficiency rating is a measure of the energy efficiency of a home. The higher the rating, the more energy efficient the home is and the lower the fuel bills will be.

Environmental Impact Rating (CO₂)

UK 2005
 The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide emissions. The higher the rating, the less impact it has on the environment.

Estimated energy use, carbon dioxide (CO₂) emissions and fuel costs for this home

	Current	Potential
Energy use	164 kWh/m ²	100 kWh/m ²
Carbon dioxide emissions	4.93 tonnes per year	3.03 tonnes per year
Lighting	£38.70 per year	£38.70 per year
Heating	£347.54 per year	£279.43 per year
Hot water	£55.77 per year	£55.77 per year

The above table provides an indication of how much it will cost to provide lighting, heating and hot water to this home. The fuel costs and carbon dioxide emissions are calculated based on an assessment of the energy use. This makes standard assumptions about occupancy, heating patterns and geographical location. The energy use includes the energy used in providing hot water to the home. The fuel costs used to calculate the cost of fuel do not include any government subsidies, rebates or energy incentives. To compare the cost of fuel do not include any government subsidies, rebates or energy incentives. To compare the cost of fuel do not include any government subsidies, rebates or energy incentives.

To see how this home can achieve its potential rating please see the recommended measures.

Energy Performance Report

Summary of this home's energy performance related features

The following is an assessment of the key individual elements that have an impact on this home's performance rating. Each element is assessed against the following scale: Very poor/Poor/Average/Good/Very good.

Element	Description	Current performance
Main walls	Conry (as built)	Very poor
Main roof	Pitched, insulation at rafters	Average
Main floor	Uninsulated solid concrete (assumed)	Average
Windows	30% Double glazed or better. During or post 2002	Average
Main heating	Main gas combi boiler	Average
Main heating controls	Programmer and room thermostat	FA
Secondary heating	None	Poor
Hot water	From main	FA
Lighting	75% of lighting provided by low-e bulbs	Good
Current energy efficiency rating		D - 63
Current environmental impact rating		D - 67

Recommended measures to improve this home's performance rating

The measures below are cost effective. The performance ratings after improvement listed below are cumulative, that is they assume the improvements have been installed in the order listed.

Lower cost measures (up to £500)	Typical savings	Performance ratings after improvement
1. Fill in cavity with foam line	See table £50.00 per year	C - 71
Higher cost measures (over £500)		
2. Upgrade to programmer, room stat & TRVs	£21.00 per year	C - 69
3. Upgrade to TRVs	£77.00 per year	C - 72
Potential energy efficiency rating		C - 69
Potential environmental impact rating		C - 72

Further measures to achieve even higher standards

The further measures listed below should be considered in addition to those already specified if aiming for the highest possible standards for this home.

Further measures	Typical savings	Performance ratings after improvement
4. Solar water heating	£50.00 per year	C - 72
5. Solar photovoltaic system	£193.00 per year	C - 73
Potential energy efficiency rating	See table £193.00 per year	C - 73
Potential environmental impact rating		C - 77

Improvements to the energy efficiency and environmental impact ratings will usually be in step with each other. However, they can sometimes diverge because reduced energy costs are not always accompanied by reduced carbon dioxide (CO₂) emissions.

- **ARTICLE 8 – Inspection Of Boilers**
 - **20kW – 100kW** -- Regular inspections
 - **100kW & Over** -- 2 yearly for non gas, 4 yearly for gas
 - **Old Boilers (Over 15 years old)**
 - Advise on replacement, modifications or alternatives

- **ARTICLE 9 – Inspection of Air Conditioning**
 - **For systems over 12kW**
 - Advise on improvements, replacements or alternatives, leaflet available from DCLG

- ARTICLE 10 – Independent Experts
 - **Needed for:**
 - Producing Energy Performance Certificates
 - For new buildings
 - For refurbishments
 - Existing buildings
 - Advising improvement measures
 - Plant Inspections

.....more later

Implementation in UK through SI 991

We must all learn about EPCs, DEC's , Ors and ARs.....

Energy Performance Certificates – new build, sale or lease of all non-domestic buildings

Display Certificates to be displayed in public buildings – Libraries, Schools, Town Hall

The following applies to the implementation of the current directive in England and Wales

Still “work in progress” but everything should be in place by March month end

The following article for example was on line yesterday

Key EPC document released

28 January, 2008

By **Phil Clark**

Government publishes practical guide to the implementation of Energy performance certificates in 2008

The Government today released a key document explaining details of the rollout of the Energy Performance Certificates from April this year.

The document, called *Improving the energy efficiency of our buildings*, was expected to be released at the start of this month but has gone through several draft versions, Building Sustainability understands.

from “Building”

- Article 7- **Mandatory Energy Performance Certificates**

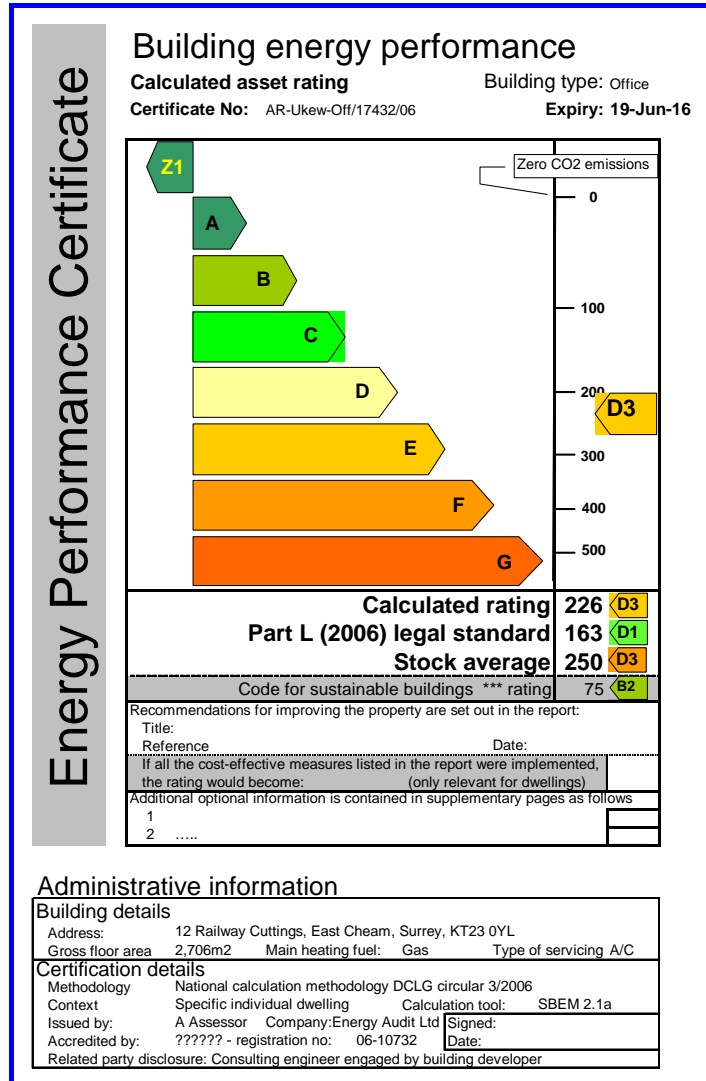
- **EPC**

- To convey Asset Rating (AR) reflecting the building's inherent energy efficiency *capability*
 - AR appropriate for EPCs when buildings are constructed or being sold or rented
 - Require SBEM or other approved calculation tool to estimate energy demand

- **DEC**

- To convey Operational Rating (OR) indicates the *actual* energy
 - DEC will also show the AR (where EPC has been produced previously)
 - DEC will show OR for the past two years
 - To be accompanied by an Advisory Report (valid for 7 years)

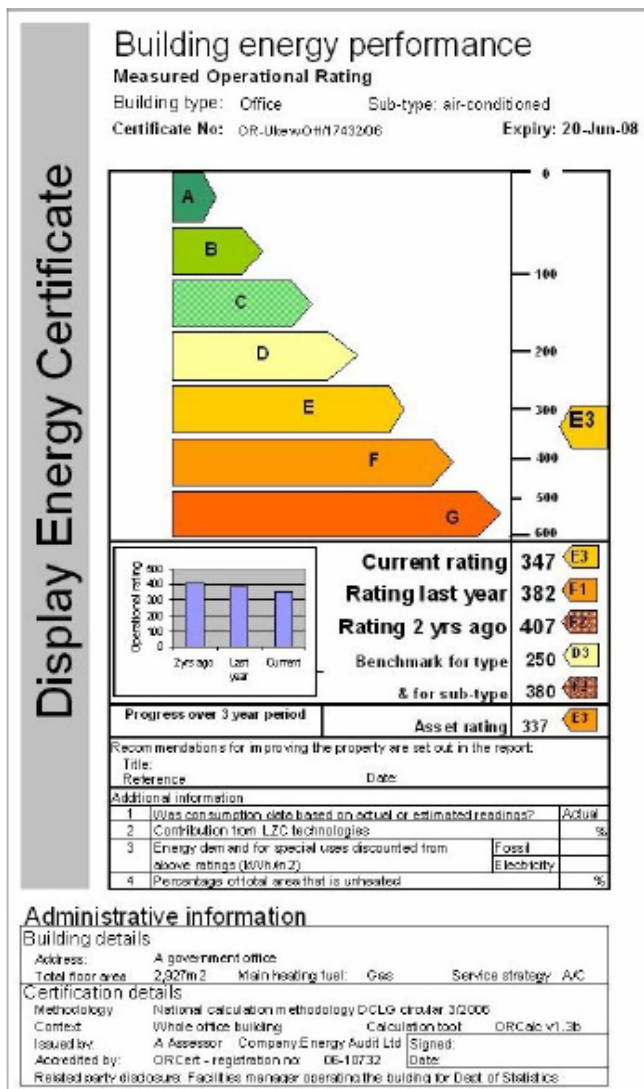
- Article 7.1 - Supply Energy Performance Certificate (EPC)
 - **Who is responsible :**
 - Owner or landlord – Also need to provide free of charge, to any prospective buyer or tenant
 - **When:**
 - Buildings are constructed, sold or rented
 - At the earliest opportunity to inform decision making process
 - Good practice to provide design based energy rating for buildings sold before completion – but not legal EPC
 - Valid for 10 years
 - **How:**
 - Dwellings - SAP for new dwellings,
 - Non Dwellings - SBEM or other approved for non-domestic buildings
 - Accompanied by a Recommendations Report



ASSET RATING (EPC)

- For construction, sale or rent.
- Shows the energy performance of the building and reference values
- Accompanied by recommendations for cost-effective improvement.
- To provide information and incentive to:
 - Enable comparison of building in respect of energy performance to standard template
 - Consider investing in energy saving measures
 - Improve building efficiency

- Article 7.3 - Display Energy Certificate (DEC)
 - **Who is responsible :**
 - Occupier of “public premises” or “frequently visited” premises providing “public services “i.e. the organisation must receive public money)
 - The Owner has a duty to co-operate in the process
 - Buildings over 1000 m² “useful” floor area
 - Voluntary involvement by such as banks and retail to be encouraged
 - **When:**
 - DEC valid for 1 year, Advisory Report valid for 7
 - Includes 3 years energy record histogram to show trends
 - **How:**
 - Non Dwellings – developed from metered records and internal floor area
 - To convey Operational Rating (OR) reflecting the energy performance as metered
 - CIBSE preparing a new Technical Memorandum and updating benchmarks



- Operational Rating
 - Based on actual in-use data
 - Used to incentivise improvement
 - Need to measure and record energy for single buildings or groups of buildings
 - Minimum A3 must be prominently displayed

ARTICLE 10 – Independent Experts

- EPCs, DEC's and plant inspections are carried out by qualified and accredited Independent Experts.
- For approval, schemes must make provision to ensure that members are fit and proper persons who are qualified (by their education, training and experience).
- Schemes must address record keeping, insurance, complaints procedures and ongoing continuous professional development
- Asset Skills appointed to develop National Occupational Standards (NOS) qualifications framework for Energy Assessors and plant inspectors
- DECs and EPCs can be produced by in-house staff if accredited but must disclose relationship on the certificates. and may be subject to random checks
- List of 12 accrediting bodies announced two weeks ago by DCLG

- **Civil rather than criminal law**
 - Penalty charges – procedures for recovery, review and appeal
 - No DEC - £500, no Advisory Report £1,000
- **EPCs on sale or rent of existing buildings**
 - Domestic & commercial
 - (Trading Standards)
- **DECs for public display**
 - (Trading Standards)
- **EPCs on construction of new buildings**
 - Domestic & commercial
 - (Building Control)
- **Air-conditioning Inspections**
 - (Trading Standards)
- **Behaviour and quality of energy inspectors**
 - (Accredited Bodies)

KEY DATES

Duties coming into force.

- **6th Apr 08** EPCs for the sale / rent and construction of non-dwellings over 10,000m²
- **1st July 08** EPCs for the sale / rent and construction of non-dwellings over 2,500m²
- **1 Oct 08** EPCs for the sale / rent and construction of all other non-dwellings
Display certificates for public buildings over 1000m².
- **Jan 09** First inspection of existing air conditioning systems over 250kW must have occurred by this date
- **Jan 11** First inspection of all existing air conditioning systems over 12kW must have occurred by this date

- **Carbon savings**
- **Reduced energy bills**
- **EPCs informing investment / leasing decisions**
- **Impartial information on cost effective energy efficiency improvements**
- **Can be part of a wider estate management strategy – directing future projects**
- **Improvements in asset ratings can demonstrate commitment**
- **Negotiating position (landlords and tenants)**
- **DECs demonstrate public awareness with public sector leading**

- Reducing carbon emissions is key government policy
- Part L drives improvement for new build & refurbishment
- Energy certificates and recommendations incentivise improvements through comparison, sale & rental values and public pressure from display certificates
- Boiler advice campaign rather than mandatory inspection in first instance
- Proliferation of new air-conditioning and age of existing stock creates opportunities for savings through inspection
- New legislation in place for accreditation of energy assessors

Thank you for listening

John Ogle

Faber Maunsell

john.ogle@fabermaunsell.com