



Department of  
**Finance and  
Personnel**

[www.dfpni.gov.uk](http://www.dfpni.gov.uk)

## Approval of the methodology of calculation of the energy performance of buildings in Northern Ireland

The Energy Performance of Buildings (Certificates and Inspections) Regulations (Northern Ireland) 2008  
– SR 2008/170 (as amended)

Department of Finance and Personnel

Properties Division

River House

48 High Street

BT1 2AW

EPC Enquiry Number: 028 9025 7326

Website: [www.epb.dfpni.gov.uk](http://www.epb.dfpni.gov.uk)

© Department of Finance and Personnel Copyright, 2009

Copyright in the typographical arrangement rests with the Department of Finance and Personnel (DFP).

This publication, excluding logos, may be reproduced free of charge in any format or medium for research, private study or for internal circulation within an organisation. This is subject to it being reproduced accurately and not used in a misleading context. The material must be acknowledged as DFP copyright and the title of the publication specified.

May 2009

# Contents

1.	Approval of the methodology	4
2.	Approved methodology	5
3.	Calculating the energy performance of dwellings	6
3.1	For dwellings on sale or rent	6
3.2	For dwellings at construction completion	6
4.	Calculating the energy performance of buildings that are not dwellings	6
5.	Net annual CO <sub>2</sub> emissions for Stamp Duty Land Tax exemptions	6
6.	Approved ways of expressing building energy performance	7
6.1	Dwellings	7
6.2	Buildings that are not dwellings	7
7.	Keeper of the register	8
8.	Data to be lodged on the register	8
9.	Approval of commercial software calculation tools	9
	Figures	10
	Figure 1: Graphical scale on which the asset rating (Energy Efficiency Rating) for a dwelling must be superimposed	11
	Figure 2: Graphical scale on which the asset rating (Environmental Impact CO <sub>2</sub> Rating) for a dwelling must be superimposed.	11
	Figure 3: Graphical scale on which the asset rating for a building that is not a dwelling must be superimposed	13
	Figure 4: Graphical scales on which an operational rating and associated CO <sub>2</sub> emissions must be superimposed	14
	Tables	15
	Table 1: Approved software applications of SAP and rdSAP	16
	Table 2: Approved software interfaces to SBEM and DSM	17
	Table 3: Approved software applications of ORCalc	17

# 1. Approval of the methodology

1.1 Approval of the methodology of calculation of the energy performance of buildings in Northern Ireland took effect from 10<sup>th</sup> April 2008 when the Department of Finance and Personnel (the Department) made the Energy Performance of Buildings (Certificates and Inspections) Regulations (Northern Ireland) 2008 (as amended). Hereafter these regulations are referred to as the “EPB Regulations”.

1.2 This guidance sets out:

- (a) the method of calculation, including methods for calculating the asset rating and operational rating of buildings<sup>1</sup>; and
- (b) the ways of expressing the energy performance of buildings as calculated,

as approved by the Department for the purposes of regulations 5, 6 and 11 of the EPB Regulations and for the purpose of regulation 7 of the Stamp Duty Land Tax (Zero-Carbon Homes Relief) Regulations 2007 (as amended).

The approval also:

- (a) identifies the keeper of the register for the purpose of regulation 24 of the EPB Regulations; and
- (b) describes the data to be lodged in accordance with regulation 25 of the EPB Regulations.

Tables listing the software approved for the methodology of calculation are at the end of this document and should be read in conjunction with the approved methods of calculating the asset and operational ratings as set out in Section 2.

---

<sup>1</sup> The calculation methodologies also calculate the target CO<sub>2</sub> emissions rate (TER), dwelling CO<sub>2</sub> emissions rate (DER) and building CO<sub>2</sub> emissions rate (BER) used by Part F of the building regulations.

## 2. Approved methodology

2.1 The approved **methodology** comprises the following calculation **methods**:

- (a) the Standard Assessment Procedure for the Energy Rating of Dwellings (SAP 2005)<sup>2</sup>;
- (b) approved software applications of SAP 2005 and rdSAP 2005<sup>3</sup> as indicated in Table 1;
- (c) the Government's Simplified Building Energy Model (SBEM)<sup>4</sup>;
- (d) approved software interfaces to SBEM as indicated in Table 2;
- (e) approved Dynamic Simulation Model (DSM) software packages as indicated in Table 2;
- (f) the Government's Method for Calculating Operational Ratings for buildings (MCOR)<sup>5</sup> and its software application; and
- (g) approved software applications of MCOR as indicated in Table 3.

2.2 In this approval:

- (a) a reference to SAP 2005 includes a reference to any approved software application of SAP 2005;
- (b) a reference to rdSAP 2005 includes a reference to any approved software application of rdSAP 2005;
- (c) a reference to SBEM includes a reference to approved software interfaces to SBEM; and
- (d) a reference to MCOR includes a reference to any approved software application of MCOR.

The approved software is listed in Tables 1 to 3.

<sup>2</sup> SAP 2005; The Government's Standard Assessment Procedure for Energy Rating of Dwellings – 2005 Edition

<sup>3</sup> rdSAP 2005; means Reduced Data SAP 2005, an application of SAP 2005 for use in the energy assessment of existing dwellings where, during a site survey of the property, the complete data set required for a SAP calculation is not easily acquired

<sup>4</sup> The Simplified Building Energy Model (SBEM), its user interface iSBEM, User Manual and Modelling Guide can be viewed and downloaded at [www.planningportal.gov.uk/england/professionals/en/1115314255835.html](http://www.planningportal.gov.uk/england/professionals/en/1115314255835.html)

<sup>5</sup> The Government's Methodology for Calculating Operational Rating for Buildings which can be viewed and downloaded at [www.communities.gov.uk/planningandbuilding/theenvironment/energyperformance/energyassessment/methodologysoftware/](http://www.communities.gov.uk/planningandbuilding/theenvironment/energyperformance/energyassessment/methodologysoftware/)

### 3. Calculating the energy performance of dwellings

#### 3.1 For dwellings on sale or rent

For the purposes of regulations 5 and 8 of the EPB Regulations, the asset rating of an existing dwelling shall be calculated using SAP 2005 or rdSAP 2005.

#### 3.2 For dwellings at construction completion

For the purposes of regulations 6 and 8 of the EPB Regulations, the asset rating of a new dwelling shall be calculated using SAP 2005.

### 4. Calculating the energy performance of buildings that are not dwellings

4.1 For the purposes of regulations 5, 6 and 8 of the EPB Regulations, the asset rating of a building (which is not a dwelling) shall be calculated using SBEM or an approved DSM.

4.2 For the purposes of regulations 11 and 12 of the EPB Regulations, the operational rating of a building shall be calculated using MCOR.

### 5. Net annual CO<sub>2</sub> emissions for Stamp Duty Land Tax exemptions

5.1 For the purposes of regulations 5 (Zero-Carbon Home) and 7 (Approval of methodology) of the Stamp Duty Land Tax (Zero-Carbon Homes Relief) Regulations 2007 (as amended) [SDLT] the method of calculation shall be:

- (a) an approved software application of SAP 2005 that incorporates the calculation of a zero-carbon home for SDLT purposes; or
- (b) an approved software application of SAP 2005 that does not incorporate the calculation of a zero-carbon home for SDLT purposes together with the web page calculator at [www.bre.co.uk/sap2005](http://www.bre.co.uk/sap2005)

## 6. Approved ways of expressing building energy performance

### 6.1 Dwellings

The current and potential energy rating and the current and potential environmental impact rating of a dwelling shall be expressed on the Energy Performance Certificate (EPC) and accompanying recommendation report as calculated asset ratings and shown:

- (a) on the EPC as the current and potential energy performance ratings. These ratings are an indicator of the energy costs associated with space heating, water heating, ventilation and lighting less cost savings from energy generating technologies under standardised conditions; and
- (b) on the accompanying recommendation report as the current and potential environmental impact ratings. These ratings are an indicator of the annual carbon dioxide (CO<sub>2</sub>) emissions associated with space heating, water heating, ventilation and lighting, less CO<sub>2</sub> savings from energy generating technologies under standardised conditions.

The ratings shall be displayed on the graphic banding systems as shown in Figures 1 and 2.

### 6.2 Buildings that are not dwellings

- 6.2.1 Where an EPC is required for a building, the asset rating of the building shall be shown on the EPC as the current energy performance asset rating. These ratings are an indicator of the calculated annual CO<sub>2</sub> emissions associated with space heating, water heating, ventilation and lighting less CO<sub>2</sub> savings from energy generating technologies under standardised conditions.

The rating shall be displayed on the graphic banding system as shown in Figure 3.

- 6.2.2 Where a Display Energy Certificate (DEC) is required for a building the actual energy usage of the building shall be displayed on the DEC as:

- (a) an operational rating which is an indicator of the amount of energy consumed during the occupation of the building over a period of 12 months; and
- (b) the operational ratings for the most recent period, and for the two preceding periods (where the information is available) and shall be shown as a horizontal stacked histogram of Previous Operational Ratings; and

- (c) the total CO<sub>2</sub> emissions for the most recent period, and for the two preceding periods (where the information is available) shall be shown as a vertical stacked histogram of Total CO<sub>2</sub> Emissions.

The ratings shall be displayed on the graphic banding systems as shown in Figure 4.

## 7. Keeper of the register

7.1 The Department has approved Landmark Information Group Limited as the “keeper of the register” for the purpose of regulation 24 of the EPB Regulations to maintain the following:

- (a) the domestic register for domestic EPCs, associated recommendation reports and data on dwellings that are for sale or rent and on completion of construction;
- (b) the non-domestic register for non-domestic EPCs, associated recommendation reports and data on dwellings that are for sale or rent and on completion of construction; and
- (c) the non-domestic register for DECAs, associated advisory reports and data.

## 8. Data to be lodged on the register

8.1. The data to be lodged in accordance with regulation 25 of the EPB Regulations is as follows:

- (a) data used to calculate the energy performance, operational ratings where required and the associated certificates and reports; and
- (b) the EPCs, DECAs and accompanying reports.

## 9. Approval of commercial software calculation tools

9.1 Application may be made to the Department of Finance and Personnel for the approval of software packages to form part of the methodology for the calculation of the energy performance of buildings, such as:

- (a) software applications of SAP 2005 and rdSAP 2005;
- (b) software interfaces with SBEM;
- (c) Dynamic Simulation Models (DSMs); and
- (d) software applications of the MCOR.

9.2 The criteria for approval and the procedures for applying for approval may be obtained from:

EPBD Enquiries  
Department of Finance and Personnel  
Properties Division  
48 High Street  
Belfast BT1 2AW  
Tel: 028 9025 7326

Email: [info.epb@dfpni.gov.uk](mailto:info.epb@dfpni.gov.uk)

9.3 Tables 1, 2 and 3 of approved software referred to in Section 1, will be revised from time to time to include new software applications or new versions of existing ones as they are approved by the Department.

Signed by authority of the Department

Philip Irwin  
A senior officer of the Department.

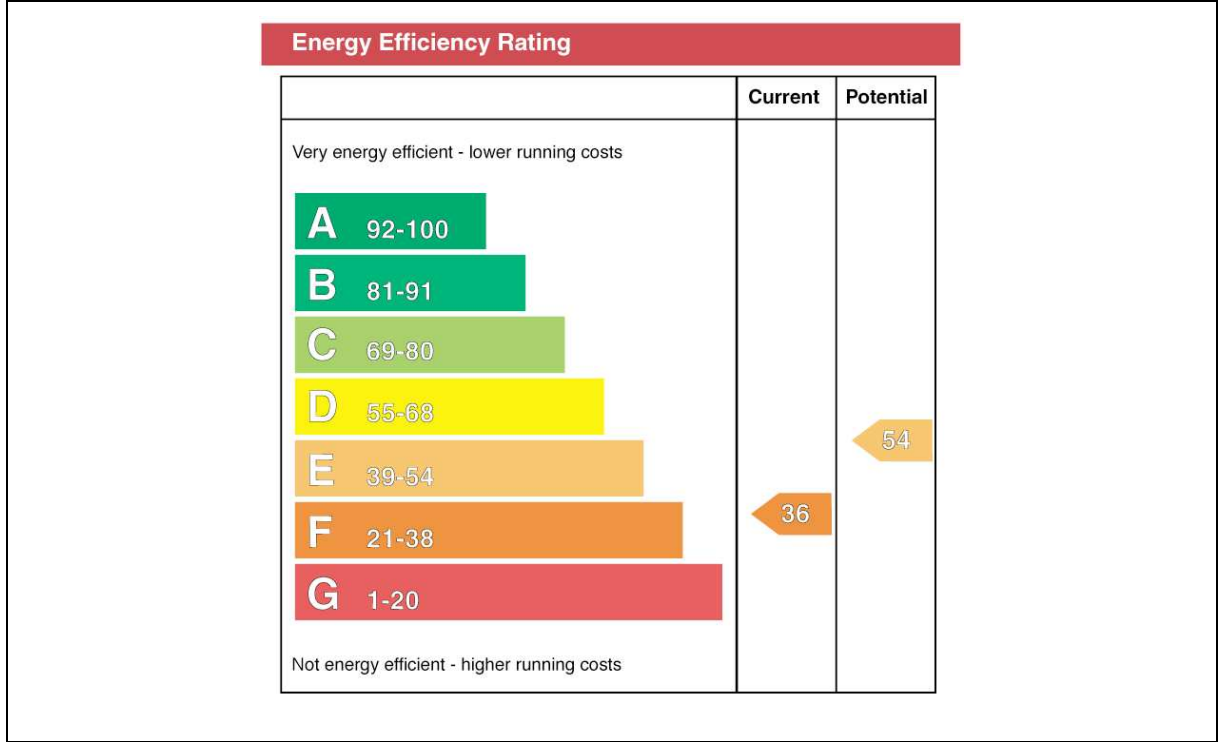
## Figures showing the graphical scales

These figures show the graphical scales on which the calculated asset and operational ratings and CO<sub>2</sub> emissions ratings must be superimposed:

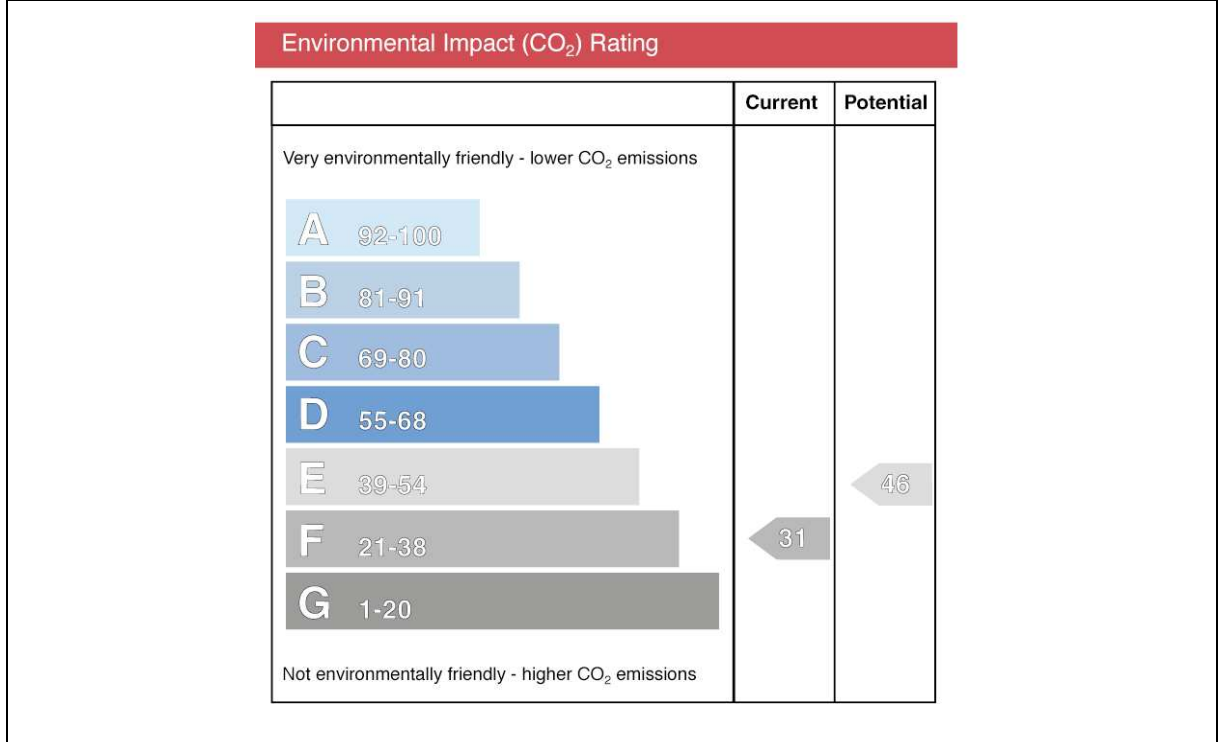
- Figure 1: Graphical scale on which the asset rating (Energy Efficiency Rating) for a dwelling must be superimposed.
- Figure 2: Graphical scale on which the asset rating (Environmental Impact CO<sub>2</sub> Rating) for a dwelling must be superimposed.
- Figure 3: Graphical scale on which the asset rating for a building that is not a dwelling must be superimposed.
- Figure 4: Graphical scales on which an operational rating and associated CO<sub>2</sub> emissions must be superimposed.

# Figures

**Figure 1: Graphical scale on which the asset rating (Energy Efficiency Rating) for a dwelling must be superimposed**



**Figure 2: Graphical scale on which the asset rating (Environmental Impact CO<sub>2</sub> Rating) for a dwelling must be superimposed**



Figures 1 and 2 show how an energy efficiency rating of 36 and an environmental impact CO<sub>2</sub> rating of 31 for a dwelling should be expressed.

The potential rating represents the improved rating that would be achieved if the cost effective recommendations in the recommendation report<sup>6</sup> were to be adopted, and should be displayed in the adjoining column.

The rating should be aligned with the band that includes the rating, and should be in the same colour as the relevant band.

The graph can be produced in any size provided that all information on it is easily legible.

---

<sup>6</sup> Regulation 7 of the Energy Performance of Buildings (Certificates and Inspections) Regulations (Northern Ireland) 2008 (as amended) requires a recommendation report containing recommendations for the improvement of the energy performance of the building to accompany any Energy Performance Certificate produced by an Energy Assessor.

Figure 3: Graphical scale on which the asset rating for a building that is not a dwelling must be superimposed

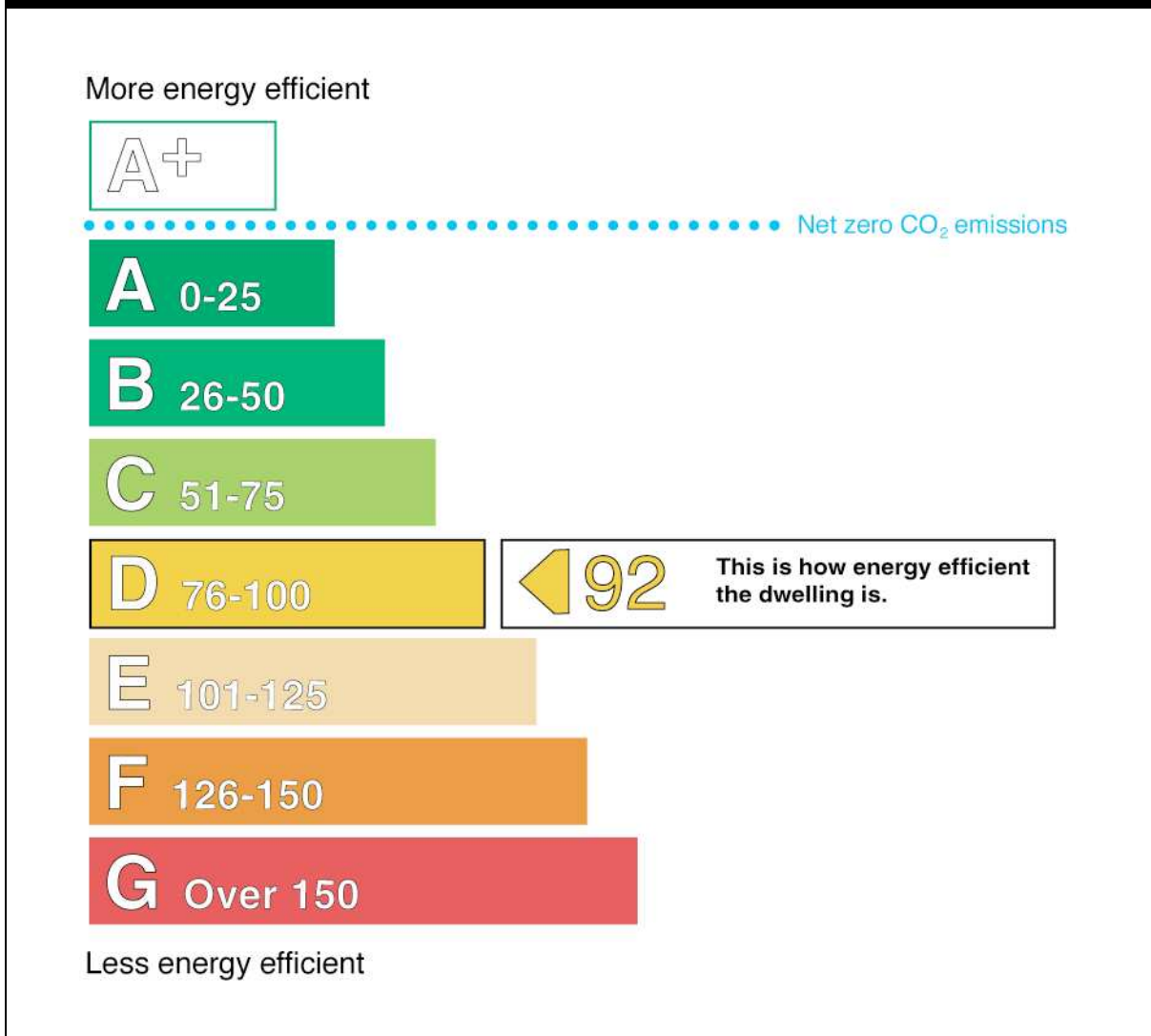


Figure 3 shows how an asset rating of 92 for a building which is not a dwelling should be expressed.

The rating should be aligned with the band that includes the rating, and should be in the same colour as the relevant band.

The graph can be produced in any size provided that all information on it is easily legible.

Figure 4: Graphical scales on which an operational rating and associated CO<sub>2</sub> emissions must be superimposed



Figure 4 shows how an operational rating of 108 and associated CO<sub>2</sub> emissions for a building should be expressed. The most recent period is 2007, the preceding two periods are 2006 and 2005.

The rating should be aligned with the band that includes the rating, and should be in the same colour as the relevant band.

The graph can be produced in any size provided that all information on it is easily legible to the public. The Display Energy Certificate should be at least A3 in size and should be displayed in a prominent place clearly visible to the public.

## Tables listing the approved software

These tables list the approved software and should be read in conjunction with the approved methods of calculating the asset and operational ratings as set out in Section 2:

Table 1: The approved software applications of the Government's Standard Assessment Procedure for the Energy Rating of Dwellings (SAP 2005).

Table 2: The approved software interfaces to the Government's Simplified Building Energy Model (SBEM) and the approved Dynamic Simulation Model (DSM) software packages.

Table 3: The approved software interfaces to the Government's Operational Ratings software package.

These tables will be updated as and when changes to the software and interfaces occur.

Table 1: Approved software applications of SAP and rdSAP							
	Organisation	Address	Program name	Version	Application	Approval date	Approved for EPB regulations
1	Elmhurst Energy Systems Ltd	Unit 16 St Johns Business Park Lutterworth Leics. LE17 4HB Tel: 08700 850490 Fax: 08700 850491 <a href="http://www.elmhurstenergy.co.uk">www.elmhurstenergy.co.uk</a>	EES SAP Calculator	2005.015x	SAP 2005	09/10/08	Yes
			EES WEB rdSAP	1.5x	rdSAP 2005	24/06/08	Yes
2	National Energy Services Ltd (NES)	National Energy Centre Davy Avenue, Knowlhill Milton Keynes, MK5 8NA Tel: 01908 672787 Fax: 01908 662296 <a href="http://www.nher.co.uk">www.nher.co.uk</a>	NHER Plan Assessor	4.1x	SAP 2005	26/09/08	Yes
				4.2x	SAP 2005	28/11/08	Yes
3	Northgate Information Solutions	2 Oakfield Road, Clifton Bristol BS8 2AL Tel: 0117 906 4404 Fax: 0117 970 6897 <a href="mailto:dea@northgate-is.com">dea@northgate-is.com</a> <a href="http://www.northgate-ispublicservices.com">www.northgate-ispublicservices.com</a>	Northgate rdSAP	1.2x	rdSAP 2005	28/05/08	Yes
4	Quest Associates	Quest House 4 Milbanke Court Milbanke Way, Bracknell Berkshire RG12 1RP Tel: 01483 403400 <a href="mailto:support@onlinequest.co.uk">support@onlinequest.co.uk</a> <a href="http://www.quest.com">www.quest.com</a>	QSAP Desktop	6.4x	rdSAP	30/06/08	Yes
5	Property Tectonics	Heywood Hall Bolton Road, Pendlebury Manchester M27 8UX Tel: 0161 794 9977 <a href="mailto:Manchester@propertytectonics.co.uk">Manchester@propertytectonics.co.uk</a>	Lifespan rdSAP	1.4x	rdSAP	28/07/08	Yes
6	Handheld Systems	Charles House Princes Court Beam Heath Way Nantwich CW5 6PQ Tel: 0870 922 0905 <a href="http://www.ps-energy.co.uk">www.ps-energy.co.uk</a>	PS Energy	5.4x	rdSAP	11/08/08	Yes
7	ECMK Group Ltd	Talon House Presley Way, Crownhill Milton Keynes MK8 0ES Tel: 0845 8123 999 <a href="mailto:sales@ecmk.co.uk">sales@ecmk.co.uk</a> <a href="http://www.epc-solutions.co.uk">www.epc-solutions.co.uk</a>	EPC Reporter	1.2x	rdSAP	27/06/08	Yes

<b>Table 2: Approved software interfaces to SBEM and DSM</b>							
	<b>Organisation</b>	<b>Address</b>	<b>Program name</b>	<b>Version</b>	<b>Application</b>	<b>Approval date</b>	<b>Approved for EPB regulations</b>
1	Hevacomp	Smithywood House Smithywood Crescent Sheffield S8 0NU	Part L	24.0	SBEM Interface	25/03/07 25/03/08	Yes
2	IES	Helix Building Kelvin Campus West of Scotland Science Park Glasgow G20 0SP Tel: 0141 945 8500 enquiries@iesve.com	Virtual Environment	5.9.1	SBEM Interface	02/04/09	Yes

<b>Table 3: Approved software applications of ORCalc</b>							
	<b>Organisation</b>	<b>Address</b>	<b>Program name</b>	<b>Version</b>	<b>Application</b>	<b>Approval date</b>	<b>Approved for EPB regulations</b>
1	i-Prophets Energy Services	Daresbury Innovation Centre Keckwick Lane Daresbury WA4 4FS	Digitalenergy	2.0	ORCalc	10/07/08	Yes
2	Systemslink	Property Tectonic 58/62 Holywell Hill St Albans Herts AL1 1BX	ORT	1.0	ORCalc	27/08/08	Yes
3	TEAM (Energy Auditing Agency)	34 The Forum Rockingham Drive Linford Wood Milton Keynes MK14 6LY	TEAMSigma	4.0	ORCalc	29/08/09	Yes