












Building Energy Performance		Scotland
Energy Performance Certificate	Calculated asset rating using iSBEM v3.2.b [SBEM]	Building type Office
	Current rating	
	Excellent	
	 Carbon Neutral	
	 A (0 to 15)	
	 B (16 to 30)	
	 C (31 to 45)	
	 D (46 to 60)	
	 E (61 to 80)	
	 F (81 to 100)	
 G (100+)		
 G Very Poor		
Carbon Dioxide Emissions The number refers to the calculated carbon dioxide emissions in terms of kg per m ² of floor area per year		118
Approximate current energy use per m ² of floor area:		484 kWh/m ²
Main heating fuel: Natural Gas		Building Services: Heating with Nat. Vent.
Renewable energy source:		Electricity: Grid supplied
Carbon Dioxide is a greenhouse gas which contributes to climate change. Less Carbon Dioxide emissions from buildings helps the environment.		
Benchmarks		
A building of this type built to building regulations standards current at the date of issue of this certificate would have a rating:		45  C
Where the accompanying recommendations for the cost effective improvement of energy performance are applied, this building would have a rating:		72  E
Recommendations for the cost-effective improvement (lower cost measures) of the energy performance		
1. Consider replacing TB lamps with T5 lamps 2. Some spaces have a risk of overheating consider solar measures such as reflective coating to windows or as building is listed it may not permit change to windows e.g. Use of internal blinds 3. Consider reviewing the Hot Water System, such as an 'on demand system' or integration with the heating system where not already done.		
4. Replace tungsten GLS lamps with CFLs: Payback period dependent on hours of use. 5. Replace tungsten GLS spotlights with low-voltage tungsten halogen: Payback period dependent on hours of use. 6. Consider replacing T8 lamps with retrofit T5 conversion kit.		

Address: 175 West George Street, (incl 157-165 Hope Street), Glasgow, G2 2LB

Conditioned area (m²): 6587

Name of protocol organisation: <Bre Global>, [BRE-ND-EPC000077]

Date of issue of certificate: 04 Dec 2008 (Valid for a period not exceeding 10 years)

This certificate is a requirement of EU Directive 2002/91/EC on the energy performance of buildings.

NB THIS CERTIFICATE MUST BE AFFIXED TO THE BUILDING AND NOT REMOVED UNLESS REPLACED WITH AN UPDATED VERSION AND FOR PUBLIC BUILDINGS DISPLAYED IN A PROMINENT PLACE

Recommendation Report Scotland

Building Address:

175 West George Street
(incl 157-165 Hope Street)
Glasgow
G2 2LB

Building Type(s): Office

ADMINISTRATIVE INFORMATION

Issue Date:	04 Dec 2008
Valid Until:	03 Dec 2018 (*)
Total Useful Floor Area (m ²):	6587
Calculation Tool Used:	iSBEM v3.2.b using calculation engine SBEM v3.2.b

QUALIFIED/ACCREDITED PERSON DETAILS

Person Name:	Thomas Campbell
Employer/Trading Address:	Baltic Chambers, 50 Wellington Street, Glasgow G2 6HJ
Protocol Organisation:	<Bre Global>
Membership Number:	BRE-ND-EPC000077

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1. Background

Building (Scotland) Act 2003 and Statutory Instrument 2007 No. 534, *The Building (Scotland) Amendment Regulations 2006*, transposes the requirements of Articles 7.2 and 7.3 of the Energy Performance of Buildings Directive 2002/91/EC.

This Recommendation Report is the Additional advice in clause 6.9.3 of the Scottish Building Standards Non-domestic Technical Handbook which may be provided. Cost effective improvements should be inserted into the Recommendations section of the Energy Performance Certificate.

This section provides general information regarding the building:

Total Useful Floor Area (m ²):	6587
Building services:	Heating and Natural Ventilation

2. Introduction

This Recommendation Report was produced in line with the Government's approved methodology and is based on calculation tool iSBEM v3.2.b using calculation engine SBEM v3.2.b .

In accordance with Government's current guidance, the Qualified / Accredited Person did undertake a walk around survey of the building prior to producing this Recommendation Report.

3. Recommendations

The following sections list recommendations selected by the Qualified / Accredited Person for the improvement of the energy performance of the building. The recommendations are listed under four headings: short payback, medium payback, long payback, and other measures.

a) Recommendations with a short payback

This section lists recommendations with a payback of less than 3 years:

Recommendation	Potential impact
Replace tungsten GLS lamps with CFLs: Payback period dependent on hours of use.	LOW
Replace tungsten GLS spotlights with low-voltage tungsten halogen: Payback period dependent on hours of use.	LOW
Consider replacing T8 lamps with retrofit T5 conversion kit.	HIGH
Some spaces have a significant risk of overheating. Consider solar control measures such as the application of reflective coating or shading devices to windows.	MEDIUM
Install more efficient water heater.	MEDIUM
Introduce HF (high frequency) ballasts for fluorescent tubes: Reduced number of fittings required.	LOW
Add time control to heating system.	HIGH
Consider replacing heating boiler plant with high efficiency type.	HIGH
Add optimum start/stop to the heating system.	HIGH
The default heat generator efficiency is chosen. It is recommended that the heat generator system be investigated to gain an understanding of its efficiency and possible improvements.	HIGH

b) Recommendations with a medium payback

This section lists recommendations with a payback of between 3 and 7 years:

Recommendation	Potential impact
Consider replacing HWS with point of use system.	LOW

Some walls have uninsulated cavities - introduce cavity wall insulation.	HIGH
Some windows have high U-values - consider installing secondary glazing.	HIGH
Add local temperature control to the heating system.	HIGH
Add weather compensation controls to heating system.	HIGH
Some loft spaces are poorly insulated - install/improve insulation.	HIGH
Add local time control to heating system.	HIGH
Consider replacing heating boiler plant with a condensing type.	HIGH
Carry out a pressure test, identify and treat identified air leakage. Enter result in EPC calculation.	HIGH

c) Recommendations with a long payback

This section lists recommendations with a payback of more than 7 years:

Recommendation	Potential impact
The default chiller efficiency is chosen. It is recommended that the chiller system be investigated to gain an understanding of its efficiency and possible improvements.	HIGH
Some glazing is poorly insulated. Replace/improve glazing and/or frames.	HIGH
Consider installing building mounted wind turbine(s).	LOW
Consider installing solar water heating.	LOW
Roof is poorly insulated. Install or improve insulation of roof.	HIGH

d) Other recommendations

This section lists other recommendations selected by the Qualified / Accredited Person, based on an understanding of the building, and / or based on a valid existing energy report.

Recommendation	Potential impact
Consider replacing TB lamps with T5 lamps	HIGH
Some spaces have a risk of overheating consider solar measures such as reflective coating to windows or as building is listed it may not permit change to windows e.g. Use of internal blinds	MEDIUM

Consider reviewing the Hot Water System, such as an 'on demand system' or integration with the heating system where not already done.	MEDIUM
Add High Frequency ballasts to existing T8 lamps if not converting to T5 lamps	LOW
Consider targeting and monitoring of Cooling System for efficiency optimisation and reducing waste energy. May be done in conjunction with monitoring Heating	HIGH
Consider looking at building's glazing systems to improve U Values. NB Building is Listed by Historic Scotland who may not permit any changes to external fabric including windows.	HIGH
Consider Air Tightness testing. This test will show any air gaps that may be allowing heat to escape and draughts to enter.	MEDIUM
Consider targeting and monitoring of Heating System for efficiency optimisation and reducing waste energy. May be done in conjunction with monitoring cooling.	HIGH
Replace any tungsten GLS lamps with compact fluorescents lamps	LOW
Insert Recommendation here	LOW

4. Next steps

a)Implementing recommendations

The recommendations are provided as an indication of opportunities that appear to exist to improve the building's energy efficiency.

The calculation tool has automatically produced a set of recommendations, which the Qualified / Accredited Person has reviewed in the light of his / her knowledge of the building and its use. The Qualified / Accredited Person may have comments on the recommendations based on his / her knowledge of the building and its use.

The Qualified / Accredited Person may have inserted additional measures in section 3d (Other Recommendations). He / she may have removed some automatically generated recommendations or added additional recommendations.

These recommendations do not include matters relating to operation and maintenance which cannot be identified from the calculation procedure.

b)Legal disclaimer

The advice provided in this Recommendation Report is intended to be for information only. Recipients of this Recommendation Report are advised to seek further detailed professional advice before reaching any decision on how to improve the energy performance of the building.

c)Complaints

Details of the Qualified / Accredited Person and the relevant protocol organisation are on this report and the energy performance certificate. You can get contact details of the protocol organisation from our website at www.sbsa.gov.uk/european_issues/epcprotocols.

5. Glossary

a) Payback

The payback periods are based on data provided by Good Practice Guides and Carbon Trust energy survey reports and are average figures calculated using a simple payback method. It is assumed that the source data is correct and accurate using up to date information.

The figures have been calculated as an average across a range of buildings and may differ from the actual payback period for the building being assessed. Therefore, it is recommended that each suggested measure be further investigated before reaching any decision on how to improve the energy efficiency of the building.

b) Carbon impact

The High / Medium / Low carbon impact indicators against each recommendation are provided to distinguish, between the suggested recommendations, those that would have most impact on carbon emissions from the building. For automatically generated recommendations, the carbon impact indicators are determined by software, but may have been adjusted by the Qualified / Accredited Person based on his / her knowledge of the building. The impact of other recommendations are determined by the assessor.

c) Valid report

A valid report is a report that has been:

- Produced within the past 10 years
- For an existing building, produced by a Qualified / Accredited Person who is accredited to produce Recommendation Reports through a Government Approved protocol agreement

SBEM Main Calculation Output Document

Thu Dec 04 16:34:53 2008

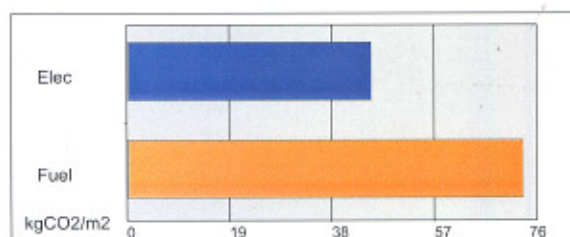
Building name

Turnberry House

Building type: Office

SBEM is an energy calculation tool for the purpose of assessing and demonstrating compliance with Building Regulations (Part L for England and Wales, Section 6 for Scotland, Part F for Northern Ireland and Part L for Republic of Ireland) and to produce Energy Performance Certificates and Building Energy Ratings. Although the data produced by the tool may be of use in the design process, **SBEM is not intended as a building design tool.**

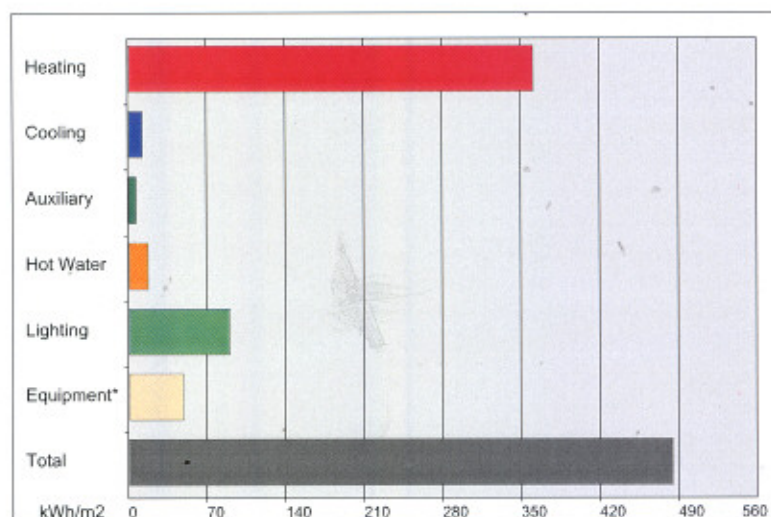
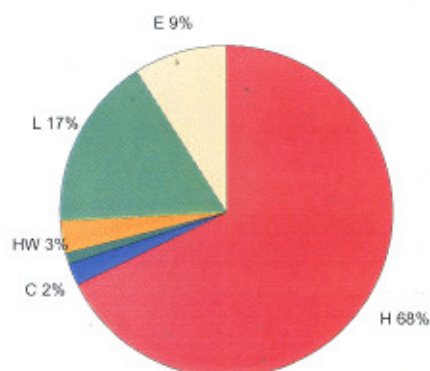
Building Energy Performance and CO2 emissions



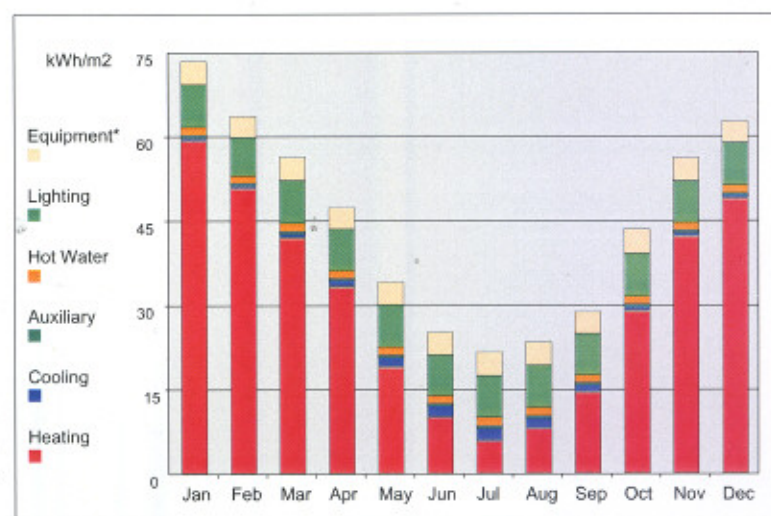
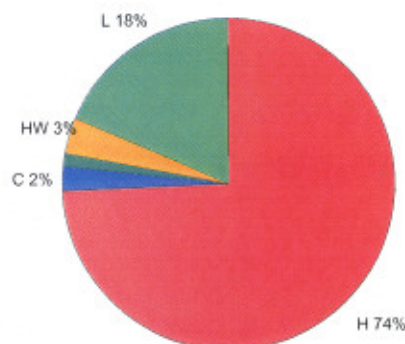
0 kgCO2/m2 displaced by the use of renewable sources.

Building area is 6587.49m2

Annual Energy Consumption



(Pie chart excluding Equipment end-use)



(*) Although energy consumption by equipment is shown in the graphs, the CO2 emissions associated with this end-use have not been taken into account when producing the rating.