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BREEAM update

'Green' is more than a badge it is good business sense!

BREEAM aims to.....

- Improve the environmental performance of buildings
 - By demonstrating improvements over building regulation
 - Recognising and encouraging industry best practice
- Work towards government and global long term targets

BREEAM requirements



- **Scottish Funding Council**
 - New builds to achieve a minimum BREEAM Education Excellent rating at all stages and Post Occupancy Evaluation is now mandatory for all major capital projects
- **SGHD**
 - New builds to achieve a minimum Excellent Healthcare rating and refurbishments to achieve a Very Good
- **Local Authorities**
 - Incorporating Environmental standards as part of supplementary planning guidance
- **Private Developers**
 - Main drivers are planning process, tenants looking to occupy efficient buildings and the social housing sector

Sustainability Drivers - Policy

- Revised tougher Building Regs 2007 – energy and environment sections
 - Ongoing revisions to support policy documents – 30% beyond current standards to be introduced Oct 09
- Climate Change Bill 2007-2008
 - Will result in Scotland having the most ambitious climate change legislation anywhere in the world with a mandatory target of cutting emissions by 80% by 2050

EU Energy Performance of Buildings Directive



- Requires:
 - Minimum energy performance standards for new buildings and large existing buildings subject to major renovation
 - Energy performance certificates
 - *Provided to prospective purchaser/tenant*
 - *Prominent display of the energy certificate in all public buildings and institutions providing public services*

Low Carbon Building Standards Strategy for Scotland - 2007

- New buildings
 - Net zero carbon buildings by 2016 – 2017
 - U-values and airtightness standards to match those of Nordic countries by 2010
 - “Total life” zero carbon buildings by 2030
- Existing buildings
 - Developing practical performance standards for existing buildings (aligned with EPC’s)



Other drivers

- Scottish Sustainable Communities Initiative
- Corporate social responsibility
- Insurance – climate change and risk
- Carbon Reduction Commitment (carbon trading scheme education/NHS buildings to be included)

BREEAM 2008 update

- Change to environmental weightings
- Introduction of mandatory credits
- Innovation and exemplary level credits
- Two stage certification process: Design stage and Post construction
- BREEAM Outstanding
- Benchmarks set for CO₂ emissions to align with the new EPC (Environmental Performance Certificates)
- Green Guide to Specification on line
- New Schemes: BREEAM Education and BREEAM Healthcare

BREEAM Categories



- Management



- Energy



- Water



- Land Use and Ecology

- Health and Wellbeing



- Transport



- Materials



- Waste



- Pollution



Mandatory Credits (*Minimum Standards*)

- Aims:
 - To avoid that a building achieves an Excellent rating, but does not achieve compliance with straightforward BREEAM issues e.g. storage of recyclable waste or installation of a water meter.
 - Comparability across different schemes and BREEAM buildings.
- The higher the BREEAM rating the more mandatory requirements there are and progressively harder they become.



Table 3: Minimum BREEAM standards

BREEAM issue	BREEAM Rating / Minimum number of credits				
	PASS	GOOD	VERY GOOD	EXCELLENT	OUTSTANDING
Man 1 - Commissioning	1	1	1	1	2
Man 2 - Considerate Constructors				1	2
Man 4 - Building user guide				1	1
Man 9 - Publication of building information (BREEAM Education only)					1
Man 10 - Development as a learning resource (BREEAM Education only)					1
Hea 4 - High frequency lighting	1	1	1	1	1
Hea 12 - Microbial contamination	1	1	1	1	1
Ene 1 - Reduction of CO ₂ emissions				6	10
Ene 2 - Sub-metering of substantial energy uses			1	1	1
Ene 5 - Low or zero carbon technologies				1	1
Wat 1 - Water consumption		1	1	1	2
Wat 2 - Water meter		1	1	1	1
Wst 3 - Storage of recyclable waste				1	1
LE 4 - Mitigating ecological impact			1	1	1



Innovation Credits

- Additional recognition for '*innovation in the field of **sustainable performance***', above and beyond what is currently recognised and rewarded in BREEAM
- **Two ways** of obtaining Innovation Credits:
 1. By meeting **exemplary level performance requirements** for an existing BREEAM issue
 2. Where an **application** is made to BRE Global to have a particular building feature or process recognised as '**innovative**'



BREEAM 2008 Update

2008 BREEAM Manuals
available on the BREEAM Website

<http://www.breeam.org>

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BREEAM 2008 Update: In detail New Schemes

BREEAM: Education



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BREEAM Education 2008

BREEAM Education can be used to assess the following types of buildings:

- Schools (primary and secondary)
- Further education colleges
- Sixth form colleges
- Vocational facilities
- This includes new and refurbished education buildings and extensions within or part of a larger education development.



Minster Secondary School and Sixth Form
Southwell, Nottinghamshire

BREEAM Education's scope

- General teaching spaces
- Catering
- Retail
- Sports facilities
- Admin and Support
- Outdoor areas
- Special Educational Needs
- Nurseries
- Specialist areas (drama studios, labs, IT, etc.)

FE colleges:

- Large-scale visual arts and multi-media recording studios, e.g. sculpture/photography
- Trade-based workshops, e.g. salons, bricklaying, carpentry etc.
- '*Independent living*' workshops

N.B. Standalone facilities must be assessed using Bespoke BREEAM

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BREEAM Higher Education - Background

- To date, all HE projects have been assessed using BREEAM Bespoke; implications:
 - Higher criteria development **costs** more than standard schemes
 - Non-standard assessments = less **comparability**
 - Longer **timescales** for delivery of assessments
 - Less opportunity to address **specific** aspects of the HE sustainability agenda



Higher Education – brief history

- Development of HE done in consultation with industry experts
- Process took 18 months and 12 Universities took part in pilot
- The Technical Guide was amended by BRE
 - Input from industry experts to reflect the needs of Higher Education
- Main stakeholders for the development of the Higher Education section are:
 - *The UK Higher Education Funding Councils (England and Wales).*
 - *Scottish Funding Council.*
 - *Northern Ireland, Department of Education.*
 - *Association of University Director of Estates (AUDE).*
 - *Day-to-day project co-ordination by HEEPI (Higher Education Environmental Performance Improvement) project, as part of the broader Green Build project.*

BREEAM Education –incorporating HE

- BREEAM HE will sit within BREEAM Education
- Campus-wide approach
 - Common use facilities such as waste recycling, shared facilities and Cycling Facilities can be accessed and used by ALL buildings and their users within the HE site or campus
- Laboratories and other high energy use facilities
 - Up to 7 credits are now available for laboratories & other containment devices - compensation for poor EPC ratings
 - 5 Energy credits are based on specification of HVAC / fume cupboard air flow reducing strategies; free cooling; heat / cooling recovery; design integration; correct-sizing and modularity measures
 - Health and Wellbeing credit based on BS EN 14175 for Fume cupboards, promoting safety and performance requirements
 - The Management credit is based on the production of a simple Laboratory User Guide



Welcome to The BREEAM Scheme Higher Education E- learning tutorial



E – learning

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Tutorial Aims & Objectives

- To give you an understanding of how Higher Education Buildings fit within BREEAM: Education.
- To enable you to carry out BREEAM assessments of Higher Education buildings under BREEAM: Education
- To provide you with an awareness of some of the issues unique to Higher Education Buildings
- To demonstrate to BREEAM that you understand the issues relating to HE; by completing the 'quiz' at the end of the tutorial

Scope - exceptions

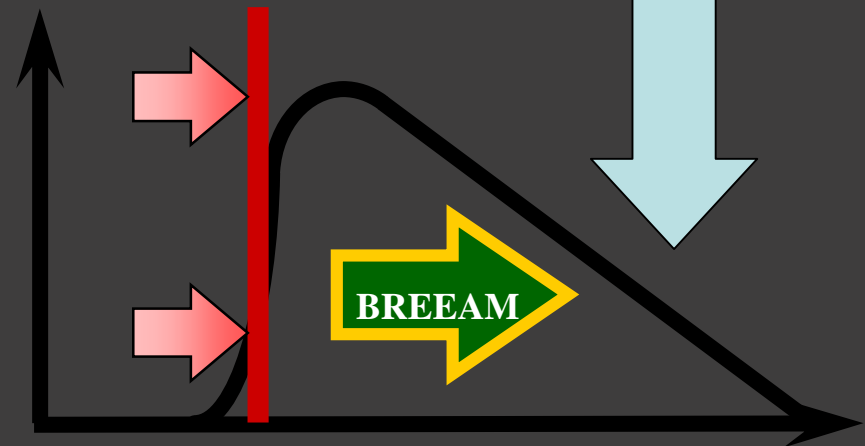
- Standalone associated areas, e.g.
 - Data centres are assessed under BREEAM Data Centres Scheme
 - Staff and student accommodation (halls of residence) are assessed under BREEAM multi-residential scheme
 - Sport facilities are assessed under BREEAM Bespoke Scheme

BREEAM costs and efficiencies



BREEAM ratings can be influenced by:

- Starting early
- Team effort, including client and contractors
- Plan carefully, assign responsibilities
- Know BREEAM (as much as possible)
- Capitalise on project opportunities
 - Mandatory credits
 - Cost effective credits
 - Consider weighting
 - Innovation / exemplary levels
- Takes time



Understanding the importance of getting the design stage right and the relative costs of the procurement process

Design 0.1



Operation 75

Construction 1

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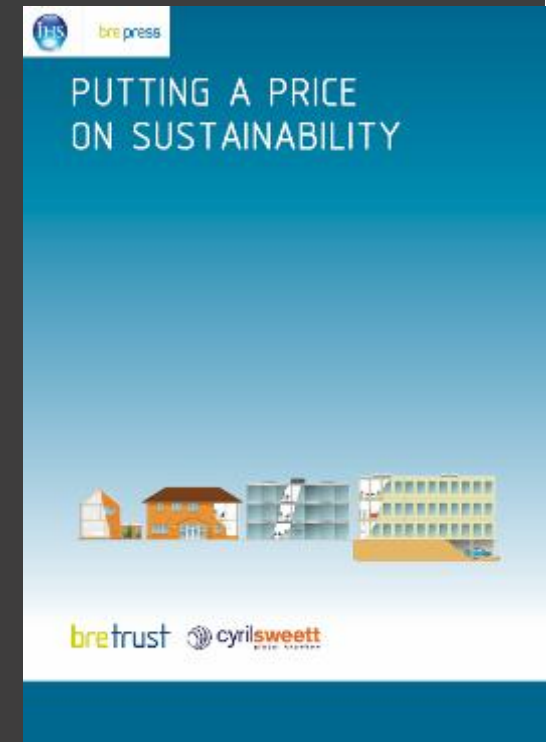
Financial assumptions for achieving higher ratings

- Best value approach from the onset
- Financial modelling includes **best value** not lowest first cost
- Calculate costs for **renewables** not just equipment
- **Safeguard Best Value from Value Engineering**
- Fee and timescales allow for **feasibility studies** and **grant applications**
- Developing site solutions which take full account of its operation, maintenance, and durability

Putting a price on sustainability

‘Putting a price on sustainability’ BRE Trust (BRE & Cyril Sweett), 2005

- Covers :
 - Housing
 - Naturally ventilated office
 - Air conditioned office
 - PFI health centre
- Capital cost implications of achieving the different BREEAM / EcoHomes ratings



Putting a price on sustainability

- Naturally ventilated Office

Table 2b Increases in capital costs to achieve Good, Very Good and Excellent BREEAM ratings in three locations

Location ²	BREEAM score and rating for the base case naturally ventilated office	% increase in capital cost to achieve a Pass/Good/Very Good/Excellent			
		Pass	Good	Very Good	Excellent
Poor	25.4 (Pass)	-0.4	-0.3	2.0	—
Typical	39.7 (Pass)	—	-0.4	-0.3	3.4
Good	42.2 (Good)	—	—	-0.4	2.5

- In use cost savings

- Energy 17%
- Water 71%

BREEAM case studies

- Cardiff Central Library achieves BREEAM 'Excellent' rating with no extra construction cost



- Achieved a post-construction BREEAM Excellent rating
- Re-use of an existing site and enhancements to local ecology
- The provision of a green roof which contains a variety of plant species and helps reduce the risk of local flooding and pollution
- Water saving devices such as dual flush WCs and a leak detection system
- Good public transport links and the use of insulation materials which have zero ozone-depleting potential
- *Laing O'Rourke: "The improvements in the environmental assessment were made without increasing costs in construction. It is very fulfilling as a constructor to contribute to the environmental sustainability of such an important community building."*

BREEAM case studies

- Campus M Business Park, Munich achieves BREEAM Excellent at no extra cost
 - Business park consists of four buildings, together with multi-storey parking making a total rentable area of 18,500 m²
 - Building is entirely naturally ventilated with high frequency lighting and high levels of natural daylight, with workstations at most 7 metres from a window
 - Low energy usage meeting the requirements of the German energy saving regulations EnEV2004
 - Excellent public transport links and extensive cyclist facilities and showers
 - Storage areas for recyclable waste in the basement
 - Highly efficient gas condensing boilers providing the space heating
 - Re-use of an existing site which involved the specialist disposal of contaminated material
 - European Director for Construction and Development: *“Campus M proves that achieving Excellent does not mean additional cost. A high priority was given to bringing all parties involved in the sustainability brief together early – the earlier everyone understands the process, the more cost and time effective green construction is.”*



BREEAM case studies

- G.Park Blue Planet achieves first ever BREEAM Outstanding
 - 35,500m² North Staffordshire distribution centre
 - Energy: biomass plant provides serves the site, electro-kinetic road plates are set within internal roads to generate electricity from vehicles entering or leaving the site
 - Water: rainwater harvesting system is installed, SUDS ponds created on site, which also act as ecological features
 - Materials: Majority of materials are either A or A+ rated. All timber is FSC certified. All internal finishes have very low levels of volatile organics.
 - Waste: The development targeted zero waste sent to landfill. Most major suppliers are committed to retain their own waste for recycling.
 - Ecology: Brownfield site and a significant ecology enhancement plan is in place.
 - **Director of Sustainability and Global Procurement at Gazeley** “we believe we have created an industry blueprint for cutting-edge developments. Not only does it deliver significant environmental savings, it also creates total energy and water cost in use savings of up to £300,000 per annum.”



BREEAM

- www.breeam.org

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BREEAM Workshops

- BREEAM Education
 - Or
- BREEAM In Use

Avoid having to retrofit sustainable features



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