BREEAM (Building Research Establishment Environmental Assessment Method) is the world’s leading environmental assessment method for buildings (with almost 100,000 buildings certified and over half a million registered). It sets the standard for best practice in sustainable design and has become the de facto measure of a building’s environmental performance.

Credits are awarded in each of eight categories according to performance. These credits are then added together to produce a single overall score on a scale of: PASS, GOOD, VERY GOOD, EXCELLENT.

www.breeam.org
ABOUT THE BUILDING
Swindon Central Library is a new four storey building which will be located in the centre of Swindon adjacent to the Town Hall. This building will replace the single storey library which previously existed on this site.

The new library will be semi-circular in shape.

KEY FACTS
- BREEAM Rating: EXCELLENT
- Score: 72.51%
- Net lettable area: 2128m²
- Stage: Design & Procurement
- BREEAM Version: BREEAM Bespoke 2005
- Assessment Completed: April 2007
- Total Costs: £5.7 million

OVERVIEW OF ENVIRONMENTAL FEATURES
This development benefits from:
- Natural ventilation via passive stack ventilation
- Underfloor heating system
- Condensing boilers
- Solar water heating
- Sophisticated lighting control system
- Building Management System
- No refrigerants used in cooling strategy
- Rainwater harvesting and recycling
- Use of A-Rated Green Guide products
- FSC certified timber
- Insulation materials with zero ozone depleting potential and global warming potential of less than 5
- Good public transport links
- No risk of water course pollution
- Recycling storage space
- The site was of low ecological value

THE BREEAM AWARDS
For the second year running BRE will be presenting an award for the most environmentally friendly buildings certified by BREEAM.

The BREEAM Awards recognise and reward those involved in the design and construction of the highest scoring buildings certified under BREEAM that year. A BREEAM “EXCELLENT” rating is a pre-qualification, so the winners truly represent the UK’s top examples of sustainable design.

In order to win an award, each building must have excelled in every environmental category within BREEAM (e.g. from Energy to Ecology) and therefore winners represent a holistic approach to delivering environmental sustainability.

As with all BREEAM rated buildings, the award-winning designs have been independently assessed and certified.

The 2007 awards will be given to buildings in the following categories:
- BREEAM Bespoke
- BREEAM EcoHomes
- BREEAM Offices

For further information regarding BREEAM please visit www.breeam.org.
**THE BREEAM ASSESSMENT**

The development has achieved a BREEAM EXCELLENT rating, scoring 72.51%. Being a library this building fell outside the standard BREEAM versions and a Bespoke BREEAM assessment was necessary – this is where the criteria are specifically tailored to the building type.

Overall the site has performed very well, gaining full credits for the Management section and achieving high scores in the following areas:
- Pollution
- Water
- Health and well being
- Energy
- Transport
- Materials

**BUILDING SERVICES**

The library will be naturally ventilated via passive stack ventilation on the ground, first and second floors and has openable windows to the third floor.

The entire building will be heated via an underfloor heating system powered by two condensing gas boilers.

Twenty-eight zones have been created and are arranged to allow independent adjustment taking into account different temperature and timing requirements for different areas.

Lighting has also been appropriately zoned and is dimmed by daylight sensors when not required. Solar water heating has been incorporated into the design and hot water will be provided both by this means and a top up provided by gas fired condensing boilers.

**GREEN STRATEGY**

The library achieved full credits in the management category of BREEAM by:
- Registering with the Considerate Constructors scheme and scoring well
- Supplying a building user guide
- Carrying out seasonal commissioning
- Carrying out key stakeholder consultation

To save water rainwater recycling will be used to harvest water from the roof to service WCs and water plants within an external courtyard.

The environmental impact of materials has been reduced by the specification of Green Guide A-Rated products, and the use of FSC certified timber.

No refrigerants have been used in this building and insulation materials have an ozone depleting potential and a global warming potential of less than 5.

As Swindon Central Library is located in the city centre and there are good transport links and amenities in close reach no parking provision has been allocated to this site.

**DESIGN TEAM DETAILS**

- Architect – Swindon Borough Council
- Energy Manager – Swindon Borough Council
- Services Engineer – Swindon Borough Council and National Design Consultancy
- Structural Engineer – Halcrow Yolles
- Contractor – Willmott Dixon
- BREEAM Assessor – Halcrow Yolles

"Swindon Borough Council is gaining support for its Borough wide Sustainable Strategy and is aspiring to become an ‘exemplar’ in this field. BREEAM is a step towards this aim. The BREEAM assessment process ensures high standards of environmental performance and challenges the design team to arrive at innovative solutions. The new central library is an exciting new construction in the heart of Swindon that embraces the Council’s desire to provide high quality sustainable developments."

Roderick Bluh
Leader of Swindon Central Library
ABOUT UPTON
Site B, Upton in Northamptonshire, is a development of 204 homes of 42 different types on seven blocks. Jointly sponsored by The Prince’s Foundation, English Partnerships and Northampton Borough Council, Upton’s strict design brief fully embraces the principles of sustainable construction. Upton, as a whole, will comprise of about 2000 homes, a school, shops, offices and the final phase will be complete in 2010.

The overall vision for Upton is that it will become a neighbourhood of mixed housing where a diverse community will evolve. The development aims to become a prime example of national best practice in delivering sustainable neighbourhoods.

KEy FACtS
- BREEAM Rating: EXCELLENT
- Score: 80.25%
- Number of Units: 19
- Stage: Design & Post Construction
- BREEAM Version: EcoHomes 2005

OVERwview OF enVironmenTAL FACtUReS
This development benefits from:
- Rainwater harvesting
- Sedum (green) roofs (flat roofs only)
- Solar water heating
- Photovoltaic slates
- Low NOx A-rated gas condensing boilers
- Full low energy lighting
- Designed for maximum solar gain
- High levels of insulation
- Sustainable materials specification

THe BreeaM asEssMenT
This case study covers 19 houses in Site B all of which score 80% on the EcoHomes scale.

The development achieved full marks in the Pollution and Water categories within EcoHomes and gained nearly all available credits in the Energy and Materials sections.
**BUILDING SERVICES**

Excellent U-Values (i.e. well insulated fabric) have been achieved through construction techniques and materials to improve the energy efficiency of the dwellings.

Energy credits were also gained through an effort to minimise carbon emissions and make the homes more energy efficient.

This was achieved by
- The use of class five energy efficient gas fired condensing boilers with fanned balanced flues, and
- Solar hot water systems providing up to 75% of the hot water from renewable energy (with no associated nitrous oxide (NOx) or carbon dioxide (CO₂) emissions).

Full low energy lighting is supplied throughout, and the external lighting is either low energy, or low wattage and fully controlled. Additionally A-rated fridges and freezers are provided in all units. Some homes have photovoltaic cells to provide pollution-free electricity.

All the insulation used has Zero Ozone depletion potential and a Global Warming Potential of less than 5 thus reducing the amount of ozone depleting substances released into the atmosphere by the insulation materials.

**GREEN STRATEGY**

In addition to the attention paid to reducing the energy consumption and pollution that adds to global warming, this development achieved full credits in the Water category of EcoHomes.

This was achieved via the provision of extensive rainwater harvesting. Rainwater is collected from the whole of the roof area and fed to underground storage tanks with a capacity of 3500 litres. This is then used to supply outside taps to water the garden as well as for flushing toilets and supplying washing machines. Green (sedum) roofs have been planted on areas of flat roofing.

The development also performed well in the Pollution section and the design to maximise solar gain has resulted in excellent daylight levels to the principal living rooms. A high score was also gained in the Materials category by the choice of Green Guide A-rated materials for the majority of this project. In addition, EcoHomes calls for 75% of the timber used to be FSC or PEFC certified. In this development over 95% of timber meets this criterion.

Care has also been taken in the area of waste management as this development has adopted an extensive recycling collection system for all homes.

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**DESIGN TEAM**

Architects: Working Group, Porphyrios Associates, Gale & Snowden
Working Drawings: Wessex Design Partnership
Developers: Cornhill Estates Limited
EcoHomes Assessors: Cornhill Estates Limited
Sustainable Technologies: Ecofirst Limited
Main Contractors: KDJ Slade & Sons Limited
Planning Supervisor: Paul Reading Partnership
Highways: RPS Design

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**The award of an EcoHomes EXCELLENT Certificate for this development allows Cornhill Estates Ltd to demonstrate that we are responsible developers who are doing all that we can to deliver high quality homes that are relevant to the times in which we live**

Kim D Slowe
Managing Director
Cornhill Estates Limited
ABOUT THE BUILDING
Innovate Green Office at Thorpe Park is a commercial development that provides office space for small, medium and large sized businesses.

The site covers approximately one hectare, and the accommodation consists of one three storey and one two storey block with a central unheated “street” atrium.

The University of Leeds has been commissioned to carry out a Post-Occupancy Evaluation study, measuring the building’s performance against its environmental design targets. This crucial part of the Design Process will allow the Developer to ensure that the most successful aspects of the scheme are integrated within future projects.

With a score of 87.55% under the 2005 BREEAM Offices scheme, Innovate Green Office is the highest ever scoring BREEAM development to date (taken across all the BREEAM schemes).

KEY FACTS
- BREEAM Rating: EXCELLENT
- Score: 87.55%
- Size: 4008m²
- Stage: Design
- BREEAM Version: BREEAM Offices 2005
- Assessment Completed: October 2006
- Total Costs: £6M

OVERVIEW OF ENVIRONMENTAL FEATURES
This development benefits from:
- High thermal mass
- Heating and cooling within the building fabric
- SUDS (sustainable drainage) waste water filtration and attenuation system
- Daylight sensors to internal lighting
- Absorption chilling
- Condensing boilers
- Combined heat and power
- Rainwater harvesting for WC flushing
- Waterless urinals
- 100% recycled aggregate and 65-80% recycled cement replacement
- Ecologist’s recommendations implemented
- Permeable roads and paving
THE BREEAM ASSESSMENT
The development has achieved a BREEAM EXCELLENT rating scoring 119 credits out of a possible 139 making a total percentage of 87.55%. The site has performed very well overall and gained full credits for the following BREEAM categories:

- Management
- Health and Wellbeing
- Water
- Ecology

Other categories achieved close to full credits.

BUILDING SERVICES
The development is built of high thermal mass concrete using a Termodeck system. Hollow channels within the fabric allow for heated or cooled air to be passed through for warming or cooling.

The development is naturally ventilated with good daylighting levels throughout. Lighting control has also been zoned using PIR (Passive Infrared) detectors.

A combined heat and power plant backed up by condensing boilers provides the warm air for heating the building and the heat for the ammonia absorption chillers. Ammonia absorption chillers were used for their high cooling efficiency and the environmentally inert behaviour of the gas.

Water consumption has been kept to a minimum by harvesting rainwater for use in WC flushing. The WCs are vacuum flush and have a water consumption of only 1.2 litres. Further water savings are made through specifying waterless urinals.

GREEN STRATEGY
The innovative fabric design is complemented by the use of a high percentage of recycled aggregate, recycled cement replacement, and the specification of certified sustainably sourced timber.

All run-off from the site is dealt with using an extensive sustainable drainage system, comprising a large wetland area/balancing pond fed via a lined pond and a new stream/swale.

All hard landscaping is permeable paving with soakaway drainage while the water run-off from roofs is harvested for toilet flushing. This combination of water handling effectively results in run-off reduction of 100%.

Innovative design, good material and services specifications, good handling and use of rainwater and a sympathetic approach to ecological issues have resulted in the BREEAM EXCELLENT rating.

THE BREEAM ASSESSMENT process has provided a solid framework for the project team to develop the sustainability credentials of the scheme in line with best practice, reviewing where the most cost-effective environmental improvements can be made.

The formal rating system has allowed us to benchmark the scheme against other existing buildings throughout the country and will be used as a tool to inform future projects within the Client’s portfolio. Achieving such a high EXCELLENT rating also gives recognition to the Client and their team, confirming that all their hard work and effort has resulted in a truly sustainable building of which Innovate can be proud.”

Mike Bezzano
Mirus Management Services Ltd

DESIGN TEAM
Project Manager & Cost Consultant – Mirus Management Services Ltd
Architect – Rio Architects
Structural & Civil Engineers – Scott Wilson
Building Services Engineer – Kingshaw
BREEAM Assessors – PDM Consultants
Contractor – GMI Construction Group Ltd
Client – Innovate Property Ltd
NEW CATEGORY FOR THE 2008 BREEAM AWARDS
CODE FOR SUSTAINABLE HOMES

A new category for next year's award ceremony will be recognising the highest scoring housing development under the newly launched Code for Sustainable Homes.

In April 2007 the Code for Sustainable Homes (developed by Communities and Local Government (CLG)), replaced EcoHomes as the assessment method for new housing in England. The Code (which was based on EcoHomes) has a rating scale of one to six stars and contains some mandatory levels in key areas such as energy and water. A home scoring six stars will be carbon neutral.