

Green horizons

The **Environment Agency's** new office in Bristol has achieved the highest BREEAM 2006 rating to date, scoring 85.06% even before the external building was complete. **Ella Taylor** looks at the features which won it such a high score.



The Agency's Horizon House office in Bristol city centre had its topping out ceremony this month, celebrating the completion of the structure. In the coming months it will be fitted out with 'intelligent' lighting, natural ventilation systems and other internal features, but first developers **Westmark** and tenants the Environment Agency took a moment to celebrate its status as the greenest office in the UK at the moment.

The development was commissioned by **Bristol City Council**, which own the site and appointed Westmark to develop it into a building containing a large (70,000sq ft) office over five floors, a smaller (30,000sq ft) office, 78 apartments and a landscaped miniature park area.

Project architect **Mark Osborne** from

Alec French Architects told *SB* that the Agency's interest promoted the integration of sustainable features and design, while the developer's budget meant that this had to be done within the financial constraints of a conventional office development. When the first designs were done in 2005 the building was going to be a typical sealed office, he explained, and this had already received planning permission when the Agency agreed to rent the larger office space.

These original designs had to be adapted to a new brief, with the only significant exterior changes being opening windows to aid natural ventilation through a slightly taller central atrium and a change to the coloured glass entrance pavilion from blue to green. The Agency was also keen to

promote renewable energy, he said, so this led to a number of options being researched. Biomass was considered, but as this would have meant heavy use of transport to the city centre this was ruled out.

Photovoltaic cells over an area of 100m² were chosen instead to produce electricity, along with ground source heat pumps, with 25 boreholes drilled 60m deep, to heat water and provide central heating. These are planned to contribute 17.5% of the building's annual energy requirements. Solar hot water collectors will also be used.

Renewable energy is familiar to the Environment Agency, which says it generates electricity from renewable sources in all its offices. Staff will move into the new office from four others around Bristol

and Bath from the end of 2010, with the office officially scheduled to open in April 2011.

Earth, wind and water

Materials for Horizon House's substructure came from the building that was on the site, a 1959 edifice which was demolished, as it wasn't suitable for use

as an office under **British Council for Offices (BCO)** standards or for residential use, explained Mr Osborne. More than 85% of the former demolished building was recycled on site, while the rest of the materials were taken off site to be used in other developments.

Other materials throughout the development have high recycled content and can be recycled in the future. Where possible they were also sourced from local suppliers and are FSC certified and meet the ISO 14001 British Standard requirements. The thermal performance of the building is 30% higher than *Building Regulations* in both offices and the flats. This is achieved in part through CFC-free mineral wool insulation from **Rockwool** finished in acrylic render.

Features like natural ventilation for the underground car park don't win many percentage points under the BREEAM certification scheme, but Westmark thought this was important to include, explained its press officer **Caroline Harris**.

Although a car park in a city centre development may not seem environmentally friendly, at least it is an improvement on the site's former layout, which featured an outside car park at the back of the old building. Part of this area is now being landscaped to transform it into a miniature park, increasing biodiversity and helping to reduce flood risks.

Some car parking spaces were turned into bicycle parking, while shower facilities will be provided and green transport plans will be developed with staff to help them use public transport for their commutes.

Westmark, Alec French Architects and engineers **Hoare Lea** "got stuck in" with designing the various energy and water saving features in the building like the car park's natural ventilation, whether they won green points with BREEAM or not.

All lighting will be 'intelligent' – controlled automatically by sensors so that movement in the room triggers lights to turn on, and periods without movement turn the lights off. The system will also sense



when there is enough daylight in the room to remove the need for artificial lighting.

Mixed mode ventilation will be used, with natural ventilation coming from high level windows which will be opened at night to cool the building, along with the atrium and a deep under floor ventilation zone to allow cool air to circulate. Mechanical ventilation will kick in only if it gets too hot.

Rainwater will be harvested to flush water efficient toilets in both offices and the flats, reducing the total portable water used in the building by 70% compared to a standard BCO-spec office of the same size.

"We wanted to show with the Environment Agency's new office that high environmental standards and commercial viability are not mutually exclusive. Our team has worked hard to develop a building which has all the facilities which a large occupier would expect from a modern office at a price which is market competitive, but which at the same time has an unprecedentedly low impact on the environment," said Westmark's managing director **Euan Cresswell**.

"We have shown that going green does not have to cost developers or office occupiers the Earth and that it can, in fact, bring strong commercial advantages."

A pre-assessment of the smaller office alongside Horizon House, which hasn't yet been verified, gave it a score of 72%, which is also BREEAM 'Excellent'. It is hoped that the apartments will also achieve Eco Homes 'Excellent' as well, said Mr Osborne, and currently are predicted to achieve 73%.

The flats in the development will be a mixture of studios, one, two or three bedrooms, with 30% of them designated as affordable housing to comply with the Council's requirements for the site. The affordable homes will look the same however, and most will enjoy balconies and terrace areas.

Some green spaces will be reserved only for the Environment Agency's office, through the creation of a wild flower meadow grass roof, which will add

BREEAM Excellent

BREEAM ratings are calculated using eight criteria. The Horizon House large office achieved a 100% BREEAM 2006 score for management, transport and water criteria and 70% (the 'Excellent' minimum mark) or over for all other criteria, including health and wellbeing, energy and pollution.

The Environment Agency says it is aiming for the building to become carbon neutral by 2012, and water and electricity consumption will be monitored, together with CO₂ emissions from deliveries and on-site activities.

Although some other buildings had been awarded higher scores against earlier BREEAM standards, Horizon House's 85.06% is the highest percentage to be given under the tougher BREEAM 2006 criteria. No office buildings have yet been rated under BREEAM 2008, so this is the highest score so far, although how long it will stay at the top remains to be seen.

Some other non-domestic buildings have been getting very high BREEAM scores this year. In April DEFRA's new building in Alnwick, Northumberland, achieved a BREEAM 'Excellent' rating with an as-built score of 80.72%, and also became the first office to get an A+ energy performance certificate.

In March Gazeley's Blue Planet distribution centre in Chatterley Valley, Staffordshire (pictured left) became the first ever building to achieve a design-stage BREEAM 2008 'Outstanding' (SB, April 2009).

insulation and a private green space for Agency staff. Stained glass windows created by artist **Kate Maestri** in shades of green will also form a frameless entrance pavilion, which Mr Osborne pointed out will link the office to the Cathedral nearby.

Carol Atkinson, chief executive of **BRE Global**, said of Horizon House: "BRE welcomes the example that the Environment Agency has set, but more importantly welcomes the challenge it has set down for others to build even better buildings in the UK. BREEAM buildings are not only good for the environment in reducing energy and water use, and good for those that work within them with better day lighting and air quality, but also do not cost as much as many expect. I look forward to many others following the Environment Agency's example."

► <http://www.westmarkdev.co.uk>

► <http://www.environment-agency.gov.uk>

► <http://www.alecfrench.co.uk>