# Green Hill

## Capita Architecture's 'World First' Eco School Ready to Open

A new UK primary school, designed and built to incorporate the latest elements of environmental Sustainability, will open in March.

The school - Hertfordshire's first 'eco-school' - is the first building in the world to feature a revolutionary new heating system that uses the school playground to heat and cool its buildings.

Commissioned by Hertfordshire County Council, designed by a Capita Architecture led consultant team, and project and construction managed by Mace, the new multi-million pound Howe Dell School in Hatfield is a beacon project for Hertfordshire County Council. It will have a major role to play for schools built across the world as a demonstration of how sustainable practice can be integrated into building design.

Falling within the government's 'eco schools' strategy, Howe Dell features low energy use buildings and a host of renewable energy technologies - including a soon-to-be-installed wind turbine capable of exporting surplus electricity production to the National Grid. Over the life of the project, the school has integrated sustainable principles into an 'eco curriculum' which, after just a few weeks, has already been rated as outstanding by Ofsted inspectors.

Building services consultants, Fulcrum Consulting, were pivotal in the development of sustainable features within the building, assisting in the integration of the new heating system - Interseasonal Heat Transfer (IHT) - as part of the innovative environmental design.

The new IHT system has been pioneered by the company ICAX (Interseasonal Collection and Exchange) and works by capturing heat energy from the sun via a collection pipe network just beneath the surface of the school playground.

It then stores the energy in computer-controlled thermal banks in the ground under the school, and releases it to heat the buildings in winter via a series of heat exchangers linked to both the underfloor heating and a TermoDeck system (a specialist heating/cooling and ventilating system that uses the structure of the building to stabilise the environment).

The system - awarded £244,000 of grant funding by the Carbon Trust as part of its mission to develop commercially viable low carbon technologies - is also able to capture the frost of cold winter nights, store it, and use it to keep the building cool in the summer.

Howe Dell has been designed by a team from Capita Architecture's London office, with input from staff, pupils, parents and governors. The school has also been awarded ECO Green Flag accreditation (the highest level of award granted by the UK's eco-schools programme) and will act as a Learning Resource for both its pupils and the wider community. As well as providing education for children up to the age of 11, the project also incorporates nursery provision, a child day care facility for children from the age of six months, and a community centre that can provide a range of after-school learning courses for local adults, among other traditional community uses.

As Debra Massey, Headteacher, explains: "Our curriculum has sustainable education principles at its core and we've already had a lot of positive feedback from Ofsted. Our 'Eco Squad' of pupils helps to promote ideas of sustainability and learning about the environment across the school, enabling us to engage pupils of all ages with the school's ethos."

"This unique project is a resource for the whole community," says Keith Emsall, Executive Member for Education at Hertfordshire County Council. "I strongly believe that if our children can be enthused about the importance of caring for their environment from a very young age, they will carry that message with them

throughout their lives. I'm proud that Hertfordshire is setting the benchmark for other authorities with this exciting new building."

Howe Dell staff have also worked closely with the University of Hertfordshire to devise an assessment and research strategy, so that the changing attitudes and awareness of staff, parents and children to their environment can be tracked throughout the project.

Clare Devine, Director, Capita Architecture, said: "Over the last few years, Capita Architecture has designed a number of award-winning buildings along sustainable principles – from pioneering eco-schools to groundbreaking hospitals. The new technologies and environmental design approaches implemented at Howe Dell are a perfect example of how sustainability in design and construction is continuing to advance rapidly. It really is an excellent example of how sustainable principles can play a vital role in terms of both building design and the children's education."

Robert Trezona, Head of Research and Development at The Carbon Trust, said: "Interseasonal Heat Transfer technology can significantly reduce a building's need for traditional heating systems while providing considerable carbon emissions savings. By awarding Howe Dell School a £244,000 grant as part of our Applied Research scheme to demonstrate the concept, The Carbon Trust is helping to speed widespread commercialisation of this low carbon technology."

**The Building**

The school has already earned plaudits from BREEAM (the world's most widely used environmental assessment method for buildings) and was selected as one of eight projects used during the development of the new BREEAM for Schools initiative. Preliminary appraisal by the pilot assessment panel for the school has showed that its innovative design achieves a level equivalent to the highest BREEAM rating, making it one of the highest achieving pilot schemes.

The design team, led by Capita Architecture, have also included a number of innovative 'sustainable' elements such as recycled and sustainable materials, natural ventilation, energy-saving lighting and water management. Specific features include –

- In addition to the IHT renewable energy system, the school features state of the art solar thermal (to pre-heat water for use in the school kitchens and washing facilities) and electricity producing photovoltaic panels.
- An easily accessible, school-wide software interface that allows pupils to monitor the various environmental systems and help them to understand how energy has been generated by the various systems, how it is being stored, and how much has been exported to the National Grid. Visitors to the school can even see real time energy data displayed on an LCD screen within the main school entrance.
- A TermoDeck fan-assisted heating, cooling and ventilation system, which uses the thermal mass of the structure to stabilize the temperature in the building.
- Strategically placed roof lights allowing natural daylight to flood into the centre of the building, minimizing the need for artificial lighting of deep plan spaces.
- 'Living' sedum green roof areas helping to manage water runoff, insulate the building and promote bio diversity (all aspects of the roofing including the roof lights and green roof were managed by the Hertfordshire based Letchworth Roofing Company).
- High performance windows to reduce heat loss and help control solar gain.
- Light wells that bring natural daylight into the ground floor corridors.
- A sustainably-sourced sprung timber floor in the main hall and a bamboo floor in the dining room.
- Classroom sink tops and splash backs made from recycled yogurt pots.
- Sustainably-sourced timber play equipment.
- A simple rectangular shape that enables all teaching areas – which are all south facing – to have dedicated external classrooms, allowing pupils direct access to the extensive and bio-diverse grounds.
- Rainwater harvested from the main school roof is used primarily for toilet flushing with any surplus being used either by the irrigation system or to top up for the wet-land biodiversity area located within the school grounds.

***For further information contact Clare Devine, Head of Capita Architecture's Education team – clare.devine@capita.co.uk***