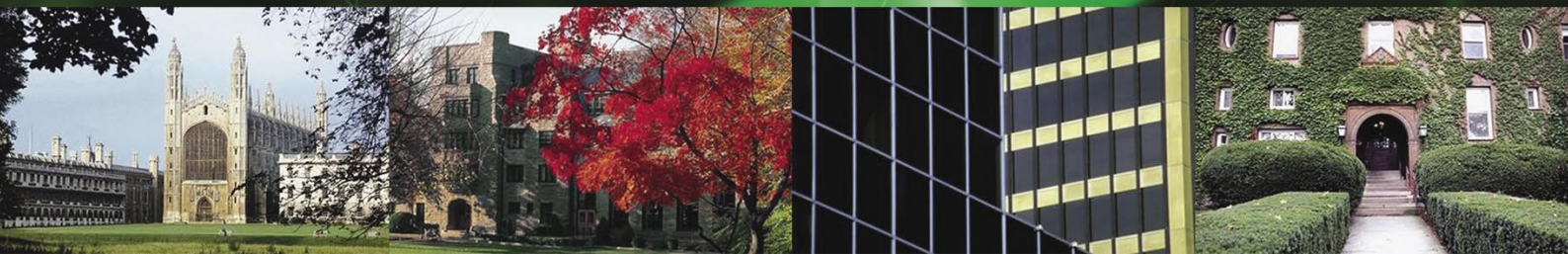


# THE GREEN GOWN *Awards* 2005

transport  
technology  
**sustainable**  
environmental  
energy efficiency  
education



Recognising Progress Towards More Sustainable  
Further and Higher Education in the UK

*In association with:*



The Association of  
University Directors of Estates

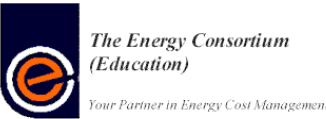








british universities  
finance directors group



The Environmental Association  
for Universities and Colleges



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*Steve Egan*  
 Acting Chief Executive  
 Higher Education Funding  
 Council for England

Our vision is that, within the next 10 years, the higher education sector in England will be recognised as a major contributor to society's efforts to achieve sustainability - through the skills and knowledge that its graduates learn and put into practice, and through its own strategies and operations.

I am delighted to endorse the second year of these awards as they continue to recognise the sector's valuable contribution to a sustainable society. Sustainable development has always made business sense - by improving operational efficiency, enhancing reputations and making connections with the concerns of future markets. Our stakeholders are now demanding that we take more action in this area, and the business case for sustainability is made stronger by increasing pressures such as rising energy prices and additional legislation.

There is already a great deal of activity by universities and colleges relating to sustainable development, but there is potential for us to do more. Sustainable development is about changing the way that we, as individuals and organisations, think and act. However, I recognise that implementing this can be problematic. Integrating sustainable development in decision-making is a challenging process sometimes resulting in hard choices, and requiring stakeholders to engage in constructive discussion about options and outcomes in a positive and entrepreneurial way.

The entries to the Green Gown Awards demonstrate some of the many ways in which institutions can improve their environmental performance, and how the sector can lead the way in embedding sustainable development in the UK. Harper Adams University College has demonstrated how using new technologies can result in significant financial and environmental benefits, as well as what can be achieved by working in partnership with local commercial organisations. The winner of the innovation category, the University of Bradford, shows the potential to adopt an integrated approach to sustainable development - bringing on board academics, students and estates and administration staff for far-reaching environmental, financial and social benefits.

The entries in the 'smaller institutions' category show that effective action can be taken even with limited resources. In addition, the University of Sussex's Environmental Society and activities at York St John University College demonstrate that students are engaged with and increasingly interested in their institution's role in promoting this agenda.

Many institutions will be feeling the pressure from rising energy prices, targets for reducing national and institutional emissions under the Kyoto Protocol and EU Emissions Trading Scheme, and questions over the future security of energy supplies. Improving energy and water efficiency can help alleviate these pressures and result in considerable financial and environmental benefits - as the award entries from Sheffield Hallam University and the University of Plymouth demonstrate. This changing economic climate makes it increasingly viable to design buildings that consider whole life costs and benefits, such as those at the University of York and the University of Southampton.

Universities and colleges in other countries are increasing their commitment to the sustainability agenda and influencing their country's contribution. The UK is no exception, but it is vital that we are not left behind. The HE sector has the opportunity to drive the nation's sustainability agenda. We want to support this work and open the way for more activity, so that UK higher education can play its full part in international initiatives and agreements such as the Kyoto Protocol and UN Decade of Education for Sustainable Development.



# About the Awards

The Green Gown Awards were established to raise awareness of the growing pressures for better environmental performance by UK universities and colleges, and to recognise positive responses to them. They have been sponsored by the Association of University Directors of Estates (AUDE), the British Universities Finance Directors Group (BUFDG), and Environmental Association for Universities and Colleges, and Universities UK (UUK). Individual categories were also sponsored by the Association for Commuter Transport (ACT), the Association of University Purchasing Officers (AUPO), BRE, The Energy Consortium, the Higher Education Academy Geography, Earth and Environmental Sciences (GEES), the Royal Institute of British Architects (RIBA), the Standing Conference of Principals (SCOP), and WARMNET.

## The Judging Panel

This was only finalised after entries were received to avoid conflicts of interest. As applications had been received from the University of Bradford, the HEEPI Directors played no part in the judging. The panel comprised:

Margaret Bates, University of Northampton (representing WARMNET)

Simon Chiva, UK Centre for Economic and Environmental Development

Nicholas Cox, Earthcare

James Fisher, BRE

Mark Gibson, Chartered Institute of Waste Management

Paul Goffin, University of Leicester (representing AUDE)

Andy Johnston, Forum for the Future

Rory McMullan, Association for Commuter Transport

Wendy Miller, GEES

Alayne Moody, Affiliate of Harvard Green Campus Initiative

Dave Morton, NIFES

Nick Rijke, Environment Agency

Joanna Simpson, HEFCE

Rachel Sweetman, DfES

David Thomas, The Energy Consortium (Education)

Andrew Thorne, DfES

Simon Tindall, Sun Microsystems

Allan Waller, SULO

Angus Warren, City University (representing AUPO)

Jim Whelan, GVA Grimley

Alan Yates, BRE

# About HEEPI

The HEFCE-funded Higher Education Environmental Performance Improvement (HEEPI) project is based at the University of Bradford. Its management board includes representatives from the Association of University Directors of Estates (AUDE), BRE, the Environmental Association for Universities and Colleges (EAUC), and the Standing Conference of Principals (SCOP).

HEEPI's aims are to develop better information on the environmental performance of universities and colleges, and to strengthen the capacity of their senior and operational managers to use this information to drive improvement. Since its inception in 2001 HEEPI has:

- Delivered many seminars on issues such as sustainable construction, sustainable procurement, energy and water efficiency, and transport and waste minimisation
- Written case studies and guidance documents, most recently on utilities and waste management and sustainable construction
- Run an accredited training programme in environmental auditing
- Developed an on-line advice centre, the Environmental Virtual Campus
- Developed a database of energy and water consumption in over 300 buildings
- Developed for general use a low-cost on-line survey of university transport impacts.

For more information visit [www.heepi.org.uk](http://www.heepi.org.uk) or contact the HEEPI Co-Directors, Professor Peter James and Dr. Peter Hopkinson via [info@heepi.org.uk](mailto:info@heepi.org.uk) or at:

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# Energy and Water Efficiency

- Electricity and gas prices have doubled in many universities since 2003
- Payback from water efficiency investment is often under a year
- The energy required to supply a megalitre of water creates 404kg of CO2 emissions

## WINNER

**Sheffield Hallam University** - Avoiding higher water costs through low cost efficiency measures

The drought of 1995 led Sheffield Hallam University to introduce a water conservation programme, which reduced consumption by 25% over the following five years. However, consumption started to rise again after 2000 as the programme lost momentum. In 2002 the work was reinvigorated by the health-related redeployment of a plumber, Bryan Kirk, to the post of Energy Conservation Technician. For Charles Morse, the University's Energy Manager, "it was an obvious opportunity to use Bryan's expertise to lead our water efficiency drive."

The new programme began by compiling a 'league table' of consumption in all the university's buildings. This showed that 25% of total consumption was occurring at a 645 bed Student Village. As a result, Bryan Kirk spent 2 days a week for 6 months at the site to understand the reasons, and to identify and implement improvements. These included restricting flows of hot and cold water to showers and washbasins and fitting displacement devices to WC cisterns. After several experiments, the devices were selected - used plastic milk bottles, cut to size. Charles Morse believes that "this not only uses waste as a free resource, it also raised staff awareness because we asked them to save the bottles they used at work. They not only did this very enthusiastically, they also started to report more dripping taps and leaks."

Over the following years, the experience with the Student Village has been transferred to other buildings. The result was a 15% reduction in consumption across 36 sites, and an average reduction of 24% at the targeted 'Top 5' sites, between 2002 and 2005. This has saved £35,000 annually, and greatly reduced the impact of water price rises that are significantly higher than the rate of inflation.



Bryan Kirk installing a plastic bottle

Charles Morse believes that Sheffield Hallam's experience shows that "even limited time and resources can produce significant water savings. We used simple techniques and basic materials, and also had the most important ingredients - the enthusiastic support of a large number of staff, and a 'champion' who could make things happen on the ground. The fact that Bryan came from maintenance also shows how important that function is in day to day energy and water management."

## HIGHLY COMMENDED

**University of Plymouth** - £1.6 million savings from water conservation

Water in the South West has one of the highest unit charges in the country, leading the University of Plymouth to instigate a water conservation programme in 1991. Between then and 2004 this reduced water consumption per student by 45% and created cumulative savings of £1.6 million, for a total expenditure (other than staff time) of £50,000. Without the measures, the University believes that its annual expenditure on water and sewerage would be over £600,000, double the amount that it currently spends. It is also estimated that the initiative has achieved savings in CO2 emissions to the atmosphere of 332 tonnes per annum.

The savings have been achieved by identifying and repairing leaks; reducing water meter sizes to lower standing charges; and installing water conservation equipment such as cistern dams, timed urinal controls, and flow controls for taps and showers. During this period of time, refunds of sewerage charges have also been claimed for water that has not returned to sewer as a result of leaks.

Paul Lumley, the University's Energy and Environmental Manager, highlights the importance of sub-metering to all these actions. "They provide good management information, can identify leaks quickly and facilitate the re-charging of faculties and departments. Users become much more aware of water conservation when they are re-charged from a sub-meter."

He also reveals some of the practical secrets of success. "People can be resistant to reduced water flows, you can minimise opposition by doing the work during vacations. Also keep an eye on maintenance and project teams, and the work they undertake. It's important to ensure that design briefs and specifications include water conserving equipment. However, you must implement such equipment wisely. Cleaners will not thank you for restricting the flows on the taps they fill their buckets from! And remember that water conservation isn't rocket science. A great deal of money can be spent on the new and innovative, but you must not forget the 'bog standard' strategies that cost a fraction to implement, and are equally effective."



Alan Lumley

## Judges' Comments on Energy and Water Efficiency

*"Energy and water costs are rising and seem likely to continue. Universities and colleges are also under pressure to minimize their carbon emissions - which are indirectly generated by water supply, as well as directly by burning fossil fuel. Energy management is well established in larger institutions but, until recently, water efficiency has generally received less attention.*

*One result of this past neglect is that it is often easier to find simple but highly cost-effective measures to reduce water consumption than it is for energy. These opportunities are demonstrated by Sheffield Hallam University. Its intelligent use of limited time and resources to identify priorities, and then achieve considerable savings, provides a model for other institutions which have not yet taken action. Notable features include good use of 'no' cost and 'low' cost measures, the quantification of savings, and collaboration with stakeholders. The programme also shows the difference which individuals can make, and the valuable role of maintenance in achieving energy and water savings.*

## Judges' Comments on Energy and Water Efficiency (continued)

*These points are also demonstrated by the University of Plymouth, whose long-standing programme has generated remarkably cost-effective savings over the last decade. As with Sheffield Hallam, a major factor in its success is considerable sub-metering, which allows easy detection and prevention of leaks. Another factor has been a very practical approach to the topic, which has allowed some of the most common barriers to be overcome."*



# Innovation

- The HE sector owns more than 11,400 hectares of land in England alone

## WINNER

### University of Bradford - Bringing environmental teaching close to home

All second year undergraduates in Bradford's Department of Geography and Environmental Science, and on the land and water management courses of the School of Engineering, Design and Technology, now do a compulsory module on practical environmental management. The students work in self-managed teams on environmental issues relevant to the University which are identified by the course tutor, Dr Liz Sharp, Senior Lecturer in the Department of Geography and Environmental Science, and Jaime Sullivan, the University Environmental Manager.

Jaime Sullivan believes that "some projects are inevitably stronger than others, but the overall gains for environmental management in the University are considerable. In general, the projects give me unique access to students' perspectives and preferences. Their specific findings are also very helpful. For example, one team did an environmental review of grounds maintenance. This not only gathered very useful data on usage of pesticides and other chemicals, it also highlighted the scope to create more biodiversity into our grounds. As a direct result, we're now implementing a biodiversity action plan." Other particularly successful examples include a benchmarking study of car parking at other universities which helped determine decisions about charging, the number of permits and the number of spaces at Bradford. A course-inspired project to improve cycle provision on campus should also be carried out in 2006.



Liz Sharp

Liz Sharp believes that "it's so much more motivating for students if they feel that the work they are carrying out is real, and that it will be used. Students also learn - in a much more effective way than through theory - vital work skills such as operating in teams, project management, report writing and critical reflection on your own practice." The relevance of these skills is enhanced by the involvement of the University's Careers Development Service, who run sessions to help the students understand their importance to employers, and how to reflect this in their CVs.

Liz Sharp notes that "action learning modules of this kind can be challenging for students used to very structured approaches, and we've certainly had to adapt aspects of it in response to their feedback. But as the module progresses, and subsequently, I know that most students realise that they are learning a lot not only about practical environmental management, but also about themselves."

## HIGHLY COMMENDED

### The University of Hertfordshire - Embracing biodiversity

As part of their policy commitments, the past year has seen the University of Hertfordshire embrace biodiversity on its College Lane campus. The aim has been to improve the habitat quality and species richness of the campus, and also to raise awareness of biodiversity and wider environmental and sustainability issues.

Biodiversity and environmental specifications have been integrated into the grounds maintenance contract. There are new specifications to increase biodiversity by using native species, and by providing food and nesting sites for wildlife. There are also requirements to make the overall grounds maintenance practice more sustainable. This includes reducing synthetic chemical use, adopting organic practices, using sustainable sources of peat and mulch, composting green waste, and recycling litter.

An initial biodiversity plan for the College Lane campus has also been prepared. As part of this, the management plan for the 10 acre Hazel Grove Woodland which lies within it has been reviewed and updated. One element was a coppicing (regularly cutting back trees), which was undertaken in 2005. Also, the 76 tonnes of wood produced from the coppicing has been used to produce charcoal - a product which is often sourced from hardwood rainforests in south-east Asia and Brazil.

A traditional mowing regime has also been adopted in an area of existing grassland. In just one year, this has allowed a wide variety of wildflower species to flourish. Smaller areas are also managed for bee orchids, and a lawn area will be converted into wildflower habitat in 2006.



Michelle Dixon

Regular monitoring of trees, plants, birds, bats, butterflies and moths shows that these measures are increasing biodiversity. Environmental interpretation is also well used in wildlife areas. This explains what is happening on the site, and raises awareness about biodiversity and the University's Environment Team.

Michelle Dixon, the University's Environmental Advisor, believes that "biodiversity is often left off the environmental management agenda at universities and colleges. By including it as a key part of our Environmental Policy, the University is demonstrating its commitment to sustainable development, creating a better place to work and study, and playing its part in improving the environment for our neighbours."

## Judges' Comments on Innovation

*As the shortlisted entries show, the Innovation category attracted a wide range of entries. This demonstrates the high degree of creativity within the sector, but also made the category exceptionally difficult to judge.*

*In a very close contest, the University of Bradford's Environmental Management module emerged as the winner. This impressed through its holistic and truly integrated approach to the topic, bringing on board academics, non-academics and students to create both learning benefits for participants, and practical benefits for University environmental management. Whilst group project-focused courses of this kind are not unusual, it has a number of distinctive features such as the fact that it is a compulsory undergraduate module, the use of live University projects, and the involvement of estates and careers staff on a regular basis. The module is challenging for second year students, and has had occasional teething problems, but overall provides an excellent, and very replicable, example of how to integrate sustainability concerns into the curriculum.*

## Judges' Comments on Innovation (continued)

*One of the most successful student projects at Bradford was on the important topic of biodiversity, which is a neglected topic in many institutions. The University of Hertfordshire's initiatives on its College Lane campus provides a vibrant exception, with a sustained and comprehensive commitment to increasing biodiversity through both special areas such as woods and wildflower areas, and mainstream grounds management practices. Their experience also shows that the relatively modest costs can be offset by financial savings, as well as creating great intangible benefit in better relationships with neighbouring communities.*



- As the Sussex calendar is an especially photogenic entry, we are devoting additional space for illustration. The text is taken from the calendar.

## HIGHLY COMMENDED

### University of Sussex Students' Union Environmental Society - Green calendar

The now famous Women's Institute calendar inspired a bevy of Brighton students to bare (almost) all in the name of ecological awareness. The Environmental Society 2006 calendar not only features eye-catching photographs of members for each month, but uses them to highlight a green theme (see next page).

The calendar was photographed over a 12 month period by students, with student models, and student artistic directors who donated their time and resources. It was professionally produced on recycled paper, with print costs of £2,100. By selling 1,000 copies at £5, the Society has raised almost £3,000 for three charities, including a sanctuary for former battery hens. A large proportion of the sales were achieved through a special web site set up as part of the marketing. Sales were helped by the considerable publicity for the calendar in the local media.

Miriam Rose, a student and chair of the Environmental Society, thinks that the calendar has had much more effect in raising environmental awareness than other possible alternatives, such as campaigns and protests. She believes that "it has increased the Society's membership and raised the profile of environmental issues amongst students and staff. It has shown that environmentalists don't have to be serious all the time but can be light hearted. And the web site has also allowed us to reach an audience beyond Brighton."



Miriam Rose

amongst students and staff. It has shown that environmentalists don't have to be serious all the time but can be light hearted. And the web site has also allowed us to reach an audience beyond Brighton."

The calendar has also had unexpected side effects. The University's students have not always been popular with local residents but the calendar, says Miriam, "brought the first positive publicity in a long time, and forged better links between students and the town, as well as between students and the Estates department. Those of us who were involved have also learnt a lot of valuable skills in design, publicity, marketing, fund raising and project marketing, as well as having a lot of fun."

## Judges' Comments on Innovation

*Community relations in Brighton have also been enhanced by the creativity and humour of University of Sussex students in producing their very professional, WI-style, (almost) naked calendar. We feel that most will agree that the content is well attuned to its primary audience of students, that the pictures are striking but tasteful, and the captions witty and informative. In part by demonstrating that environmentalism can be lively and amusing, it has extended the Environmental Society's influence well beyond the relatively few individuals on a single campus that their other actions might have reached.*



## FEBRUARY - Farming (Roger)

Intensive farming methods use large amounts of chemical pesticides and fertilisers which destroy the soil, decrease biodiversity and encourage habitat destruction. Organic food is naturally produced, replaces wildlife habitats and ensures high animal welfare standards. See the Soil Association ([www.soilassociation.co.uk](http://www.soilassociation.co.uk)). Linda at Hen Heaven farm in Sussex rescues battery hens and helps stop animal cruelty. Find out more about their tasty eggs on 07754 550193.

## MAY - Cycling (Miriam)

Fuel powered transport is a major contributor to climate change. 1 long haul return flight can produce more CO2 per person than the average UK motorist uses in one year! See Future Forests ([www.futureforests.com](http://www.futureforests.com)) to help replace your carbon air-miles by planting trees, or use other transport instead! Bikes, buses and trains are many times more energy efficient than cars- use public transport as much as possible! For information on cycling see the National Cycle Network ([www.sustrans.org.uk](http://www.sustrans.org.uk)). Recycle your bike at ReCycle ([www.re-cycle.org](http://www.re-cycle.org)).



## NOVEMBER - Recycling (Dan and Abi)

Each year in the UK we throw away 165 million tonnes of rubbish, 80% of which is recyclable. Reduce, re-use and recycle! Challenge throw-away culture; avoid excess packaging, buy second hand products or get things repaired instead of replacing them. Shabitat, Brighton reclaim wood for furniture ([www.magpie.coop/shabitat.php](http://www.magpie.coop/shabitat.php)), and Magpie provide an excellent recycling service ([www.magpie.coop/](http://www.magpie.coop/)). To find your nearest recycling point see [www.wastepoint.co.uk/wasteconnect](http://www.wastepoint.co.uk/wasteconnect), and for more info on reclaimed materials see Friends of the Earth ([www.foe.co.uk](http://www.foe.co.uk)).



# Smaller Institutions

- Higher education colleges have about 8% of the total 2.2 million higher education students in the UK

## WINNER

### Harper Adams University College - Growing electricity self-sufficiency

The College's campus in Newport, Shropshire, houses Britain's first biomass-fuelled CHP plant. This uses innovative turbine technology to produce higher energy conversion efficiencies - and lower operating costs - than conventional steam biomass units. It produces 100kW of electricity - sufficient to meet the College's baseload electricity demand - and 200kW of heat. CO2 emissions have also been reduced by 648 tonnes a year - the equivalent of 14,727 energy saving lightbulbs. The scheme is already modestly profitable, and should become more so as conventional fuel prices rise, more of the heat output is used, and as a market is created for carbon credits from smaller organisations.

The unit's development began with the College winning support for a Sustainable Technologies Network from the Higher Education Innovation Fund (HEIF). The Network links academic experts (at the College and elsewhere) with manufacturers and others to demonstrate and evaluate equipment and technical processes. Through it, the College formed links with a local supplier of biomass combustion and waste-to-energy systems, Talbott's Heating. Talbott's was looking for the first demonstration site for a recently developed CHP unit, and Harper was able to create a funding package involving HEFCE capital funds, DTI innovation funding, Advantage West Midlands (the regional development agency), and other sources, to build it at Newport.

In summer 2006 the scheme will become self-sufficient, as its biomass will be provided by short rotation crops, tree coppicing, and forestry and agricultural residues, from the College's land. Set-up and research funding for this was gained, respectively, from the DEFRA Energy Crops Scheme and the DTI's Zero Emissions technology programme. The scheme will also become integrated into the curriculum of revised undergraduate courses on Sustainable Resource Management, and into the College's third mission activities on rural innovation. The hope is that sales of the unit will take off both in the UK - including on HE campuses with access to biomass - and internationally.



Professor Wynne Jones, the College's Principal, believes that the scheme is "fulfilling the two key objectives identified by the national Biomass Task Force - creating a robust supply chain, and gaining more accurate data on carbon reduction as a basis for selling carbon credits. As a result, we're expecting to show the system to at least 4,000 visitors during 2006. They'll see an example of higher education putting its expertise into action to create a technology which can save money, help the environment, and provide new opportunities for the rural economy."

Professor Wynne Jones

## Judges' Comments on Smaller Institutions

*Whilst smaller institutions often lack the funding or expertise available in larger ones, it can be easier to create and implement innovative initiatives. This is certainly true of Harper Adams University College, which provides an impressive example of a HE institution combining academic and business expertise to develop new technologies and systems, to support industry, to create impressive regional and national partnerships, to pull in large amounts of external funding, and to respond to - and influence - national agendas. This would be inspirational at a large university, and is even more so for an institution with only 2,200 students. While it is too early to judge the potential market for the specific biomass CHP unit, the College's creation of a locally closed loop for biomass production and consumption is likely to provide a model for other rural campuses, and the rural economy in general.*

## HIGHLY COMMENDED

### York St John University College Students' Union - All quiet for the Pick It Up! Girls

York St John's mission statement commits to education that "embraces difference, challenges prejudice and promotes justice, and is shaped by the College's Church foundation." This has stimulated many actions to achieve the environmental and social objectives of sustainable development, both locally and through the College's international links. Unfortunately, these actions were not sufficient to overcome differences with some local residents, who were very prejudiced about what they perceived to be excessively noisy students.

With encouragement from the College, the Students' Union decided in 2003 to quieten the critics by launching the SSHH! (Silent Students-Happy Homes) campaign. This has 'branded' posters, door hangers, stickers and wall planners featuring 'Zippy', the character whose mouth is a zip in the children's television programme Rainbow. The materials encourage students to "zip it", especially when they leave events at night. Student Union representatives "spot" a sticker each month and award a prize, which encourages many students to display them on their doors or windows.

Jack Woodhams, President of the Students' Union, believes that "the SSHH! campaign has been highly successful, and I've presented to a lot of universities about it. As a result, some other Student Unions have now introduced similar campaigns. We're making something that's very boring for students quite sexy and attractive so that it sticks in their brains."

The success of SSHH! has spawned a follow-up - but much noisier - initiative to tackle campus litter. The Pick It Up! campaign features the Pick It Up! Girls, students (mostly burly men) in pantomime outfits. They appear in humorous posters demanding that students dispose of litter appropriately, with the message reinforced by Pick It Up! logos on bins, and on T-shirts worn by student volunteers. Non-compliance can mean harassment and ridicule as the Girls prowl the campus, armed with megaphones. Jack Woodhams notes that the campaign "is very flexible, as we can change the focus during the year to target particular issues such as chewing gum and cigarette butts. It's such a simple idea, but people really notice it."

Sue Waller, Deputy Director of Facilities and Chair of the University College's Agenda 21 Group, confirms that "the campaigns have created a big drop in the number of complaints we get about noise, and in the amount of litter on campus. This not only creates a nicer environment, it also makes it easier for us to work with local people on our other sustainable development projects."



The Pick It Up! Girls

## Judges' Comments on Smaller Institutions (continued)

York St John University College Students' Union is at the opposite end of the spectrum, demonstrating its social responsibility with two locally focused, 'bottom up' initiatives, to combat noise and litter. With tremendous creativity and humour, they have encouraged many students to change their behaviour. As a result they are seen in a better light by the wider community, with consequent benefits to the 'Gown and Town' relationship. The SSHH! campaign has already been replicated at other universities, and more should follow."

# Sustainable Construction

## WINNER

### University of York - Building tomorrow's science through today's green technology

The new National Science Learning Centre is located at, and was designed and project managed, by the University of York. It offers development courses for school and further education science teachers and technicians, with the ultimate aim of encouraging more post-16 students to choose science options. The Centre has been established by the White Rose University consortium of Leeds, Sheffield and York Universities, together with Sheffield Hallam University, with Government and Wellcome Trust funding.

The building's features include:

- A geothermal cooling/heating system which saves £11,000 annually compared to conventional alternatives
- A multi-species sedum or 'living' roof over much of its area
- Low energy lighting with a state of the art control system
- Variable ventilation which responds to space occupancy levels
- Extensive use of natural lighting and ventilation
- Use of rainwater for WC and urinal flush systems
- Use of Greenpeace-approved "Aquatherm" pipework made of recycled material rather than traditional steel or copper
- A high level of flexibility as a result of partitioning of laboratories and lecture theatres.



Night view of the National Science Learning Centre

Many of these elements can be used to support teaching, supplementing specific curriculum features such as a public display of data from the Building Management System; a weather station on the roof to help study climatic change; and a science trail and webcams highlighting the biodiversity around the building, particularly moths and owls.

The Centre's Director, Professor John Holman, sees the Centre as "being a place of quality and atmosphere to show teachers of science from primary and secondary schools the importance of the job they do, so that they in turn can inspire a future generation of scientists. That's why we have a striking building, full of light, which is a science teaching aid in its own right - especially through its 'green' features. For example, the geothermal heating and cooling not only reduces our CO2 impact, but also gives us a fascinating context for the teaching of energy transfer and earth science."

## Judges' Comments on Sustainable Construction

*Sustainable buildings require the integration of environment and sustainability into the design process from its start, and a commitment to its importance even through difficult stages such as value engineering. This has been achieved with both the National Science Learning Centre (NSLC) at the University of York, and the Administration and Student Services Building (ASSB) at the University of Southampton. The NSLC stands out because of its holistic approach, and its transparency to the user. This should allow it to be used effectively in the curriculum, and could be replicated in many other of the sector's new buildings. The building also has a number of innovative design features such as the sedum roof and the ground source heat pumps which are used for heating and cooling.*

*One feature shared by both buildings is being designed for flexible use to make optimal use of space - a feature which, if more widely applied through the sector, could avoid the need for some new construction, and therefore the environmental impacts it would create.*

- Research shows that green design features which add 0-2% to capital expenditure can save at least 10 times more on lifetime energy and other operating costs
- Tougher Building Regulations and other measures to drastically reduce CO2 emissions are inevitable
- Best practice 'green' buildings proclaim a university's ambition and future orientation

## HIGHLY COMMENDED

### University of Southampton - Optimising use of existing and new built space

A spectacular three-storey glass atrium has proved an inventive way of linking the old and the new at the University of Southampton. Staff working in administration and student services have been scattered across 28 buildings, but have now been brought together in a landmark Administration and Student Services Building on a former brownfield site. This links to the original 40-year-old administration building through the atrium, whose roof glazing gives solar shading to the old structure, while still providing adequate daylight. The glazing, part-funded through the Energy Savings Trust, also contains photovoltaic cells to generate some of the building's electricity needs.

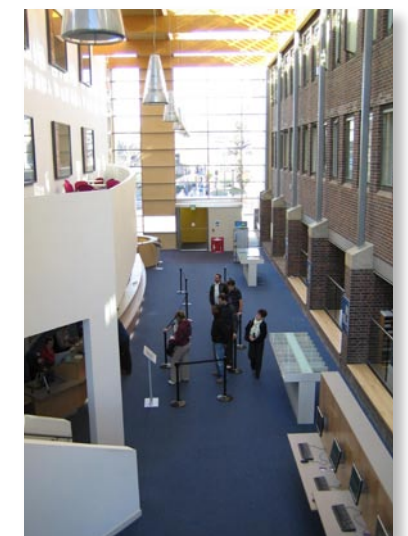
Other features include cooling intake air during warm months by passing it through underground ducts; a rainwater harvesting system to flush WCs; a high level of air tightness, and use of lime mortar. The latter has a number of advantages compared to Portland cement, including being fired at lower temperatures, absorbing high levels of carbon dioxide during curing, being less likely to crack, and in making it easier to recycle bricks after demolition.

The building features open plan offices with breakout areas and small meeting rooms, to achieve greater efficiency in the use of space. The University believes that at around £1,505 per square metre, this is good value for a useful combination of open plan and cellular space.

The building offers a long term monitoring project for the Sustainable Energy Research Group within the School of Civil Engineering, which has a particular interest in its impact on energy and comfort. And as part of the European Union-funded SARA project, the BMS and supplementary data will be available to any authorised researchers through the Internet.

John Brightwell, Project Co-ordinator, Estate and Facilities, at the University believes that "new buildings can be both green, and high performing in terms of cost, appearance and function. We've achieved this by setting a demanding brief, appointing a design team with expertise in, and a commitment to, sustainability, and not losing sight of our goals even when we had to value engineer £107,000 from the tendered price."

The atrium of the Administration and Student Services Building



## Judges' Comments on Sustainable Construction (continued)

*Southampton's ASSB also provides a good example of the intelligent use of low-cost, passive, and highly replicable, features to improve energy and environmental performance. These include its use of lime mortar, ground cooling of incoming air, high air tightness, and graywater recycling. Photovoltaic installations in the UK are admirable but, unfortunately, harder to justify on cost-effectiveness grounds. Southampton's array will nonetheless be valuable if it is fully used for curriculum, research and awareness raising purposes.*

*Of course, superbly designed buildings do not necessarily deliver their claimed energy and environmental benefits in use. A key - and often under-estimated aspect - of sustainable construction is a full post-occupancy evaluation, and regular recommissioning of systems throughout their life. Southampton and York now have an opportunity to continue their innovation in this way, both for their own financial benefit, and to provide evidence about the whole life costs, and other benefits, of sustainable buildings compared to more conventional ones.*



# Sustainable Procurement

## WINNER

### University of Glasgow - Integrating energy efficiency into building procurement

The University has won several awards for its energy conservation activities, and has sought to ensure that the topic is considered seriously at all stages of tendering and design for the £30 million per annum of new buildings it is currently developing. Three processes have been developed to achieve this:

- An Energy Conservation Brief for suppliers
- Use of BREEAM throughout the process
- Post-occupancy evaluation of energy consumption.

Potential suppliers are sent an Energy Conservation Brief, which sets out the University's expectations about, for example, maximum use of natural daylighting and ventilation. The Brief is subsequently discussed in detail with the successful design team, who must provide an Energy Assessment at an early stage of the process.

The design team is then required to use BREEAM (the Building Research Establishment Environmental Assessment Method) to assess the sustainability of the building. In the initial stages BREEAM is used as a design guide and spur to improvement, with formal certification occurring once the design has been finalised. Three buildings have been certified to date - the Beatson CRUK Cancer Research facility (Very Good), the Computing Science building (Very Good) and the Rowardennan Field Station (Excellent). The design team is also required to assess the building one year after handover to demonstrate that projected energy consumption is being achieved.



Glasgow's Energy Conservation Officer, Albert Young, believes that "the process has created many improvements in the energy efficiency of ventilation, heating, lighting and other features of the design." He gives specific examples such as a triple glazed, low emissivity façade in the Beatson facility, and a ground source heat pump at Rowardennan. "This wouldn't have happened without our formal requirements," he continues. "Equally important was the fact that we sent a strong message to suppliers right from the start of the contract that energy and environment are important issues for the University."

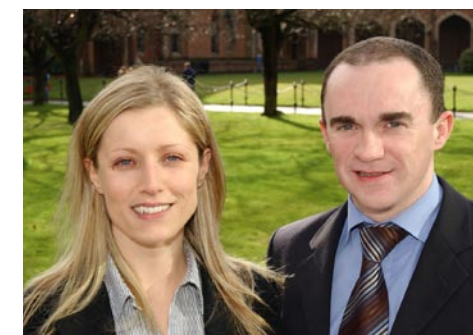
Albert Young

## HIGHLY COMMENDED

### Queen's University of Belfast - Economic and environmental benefit from print management

The University has been spending £700,000 a year on external print and design contracts. It now expects to save 24-46% of this - and reduce the administrative burden of procurement - following the appointment of a single print management supplier, CDS.

Although value for money was the main driver of change, environmental concerns were prominent throughout the process. Respondents to the stage 1 tender were required to fill in a questionnaire on their environmental impacts and management. This gave a better picture of the University's overall impacts, and opportunities for improvement. The stage 2 tender for shortlisted companies then had a detailed annex on the University's environmental requirements, which was an important element in evaluating responses.



Julie-Anne McGregor and Adrian Davis

The final contract with CDS requires the company to support reductions in print impacts. It provides information, and gives advice, on sustainable printing methods and materials, and opportunities to reduce wastage and other impacts through better layout, use of electronic proofing, and other means. CDS is also required to report performance on environmental issues such as levels of wastage in its monthly report to the University. The reporting and management structure has been set up in such a way that it meets the requirements of the environmental management standard, ISO 14001, which the Estates and Purchasing Departments hope to achieve in 2006. As well as these formal environmental components, the contract also creates environmental benefit 'naturally'. For example, the provision of centralised design templates means that less proofing of different versions is required, whilst simpler on-line ordering means that administrative paper trails are reduced.

These benefits convince Adrian Davis, the University's Environmental Manager, that "our move to a single print management contract - which is unusual amongst UK universities - shows that economic and environmental improvement can go hand in hand. However, this will only happen if environment is considered right at the start of any change processes. Fortunately, my colleague Julie-Anne McGregor, a senior buyer in the Purchasing Department, recognised this from the start."

## Judges' Comments on Sustainable Procurement

*The scale of the current development of new and refurbished buildings in higher education means that it is vital to achieve good energy and environmental performance in them. Otherwise, the sector will face a serious cost penalty over the lifetime of the building as prices rise and, conceivably, some retrofitting is required by stricter regulations. The evidence is that the most cost-effective method of achieving this is in the pre-design and design stage, when features such as the location, orientation and internal lay-out of buildings, and the specification of buildings services have some fluidity. The University of Glasgow has made an impressive - and potentially replicable - attempt to highlight the issue to design teams through formal embedding in its capital development processes. The process also means that specific energy efficiency measures are given full consideration at later stages of the design. The benefits are already clear - as with the 2.7 year payback on energy efficiency measures installed into the University's Biomedical and Cardiovascular building.*

## Judges' Comments on Sustainable Procurement (continued)

*Building environment into mainstream procurement processes in a way that be replicated through the sector has also been achieved admirably at Queen's University of Belfast - in this case for print and design. It is a very successful demonstration of how changes in mainstream business activities provide opportunities for environmental benefit, and how these opportunities can be achieved by giving the topic a high profile and having a committed champion. The result is better environmental information and advice to customers and, partly as a result, reduced printing and wastage. It also demonstrates the scope for universities to influence the environmental actions of their suppliers.*

# Transport

## WINNER

### Bournemouth University - Senior managers have no reservations about the travel plan

In 2000 Bournemouth University had a travel headache. Demand for car parking was seriously exceeding supply, permits were uncontrolled, and the bus service between its two campuses, and from them to local areas, was frequent but had a poor image.

A Transport Working Group was established, and conducted a travel audit, got staff and student opinions through a survey and focus groups, and consulted with outside bodies such as major trip generators in the area. The result was the launch of a Travel Plan in 2003, which included the following measures:

The result was the launch of a Travel Plan in 2003, which included car parking charges for staff and students (with all income ring-fenced for transport and environmental improvements) and a re-launch - in partnership with new bus operator, Wilts & Dorset - of the Unilink bus service. This had a newer fleet, enhanced services (subsidised by parking fees), higher frequencies and a revised route structure to also serve Bournemouth Arts Institute and Bournemouth & Poole College of FE. The Plan has also included establishment of a car share scheme through Carsharedorset, and measures to promote walking and cycling to the University.

Stuart Laird, the University's Site Operations Manager and Travel Plan Co-ordinator, observes that "over the next 12 months the improvements at our campuses were extremely positive, with reduced congestion, easier parking and a 20% rise in bus passengers - one of the fastest increases for any UK bus operator." The success has stimulated additional measures such as provision of 'real-time' information at reception areas and main bus stops; introduction of a new bus route; and a major push on cycling promotion. This included the introduction of a business mileage rate for cycle use, as well as provision of more showers and sheds. Negotiations have also begun with Bournemouth Council to develop a cycle path between the two campuses. Amanda Williams, the University's Environmental Officer (a position funded by the parking fees) notes that "the implementation of the Travel Plan was not without its hurdles as there was some



Stuart Laird and Amanda Williams

resistance to parking charges. So it was important to ring-fence the income and continuously communicate our objectives."

Stuart Laird also notes "the importance of a partnership approach. We worked with unions, for example, to overcome their members concerns - as with the introduction of reserved spaces for late starters and shift workers.

Another crucial factor in our success was securing senior management buy-in from an early stage - demonstrated by the fact that the scheme has involved them giving up their reserved parking places!"

#### Judges' Comments on Transport

*All three shortlisted entries for this year's transport category demonstrate that there is a 'win-win' solution to seemingly intractable solutions of too many cars in and around campuses. The solution involves rationalising (and sometimes reducing) the issue of permits, charging for car parking, and recycling the fees into improved bus services (working in partnership with bus operators and local authorities) and facilities to encourage cycling and walking. This can overcome the inevitable resistance to parking charges, providing that there is senior management support, and lots of consultation.*

*The winner, Bournemouth University, has done all these things very effectively. It has also worked with a wide range of internal and external partners and stakeholders. The result is an impressive rise in bus usage, cycling and walking, and a reduction in car parking and usage. The scheme also demonstrates how important it is for senior management in higher education to lead by example - and there is surely no more convincing signal of support from the top than giving up a reserved parking space!*

## HIGHLY COMMENDED

### Edge Hill College of Higher Education - Travel planning at a rural campus

Edge Hill's campus is on the edge of Ormskirk, in semi-rural West Lancashire. It has only a few residences, so most students commute in daily from Lancashire and Merseyside. Public transport links have been poor, with students and staff having first to get to Ormskirk, and then from there to the campus by irregular connections. The result has been high levels of congestion, both on campus and in the town itself.

This situation has been changed by the College's Green Travel Plan, and £500,000 of investment and subsidy that has accompanied it. The Plan itself was based on thorough research, involving a staff and student survey and predictive modelling of travel patterns over the next 5 years - which showed that the problems would get worse without action. The main elements of the plan have been improving pedestrian safety around the campus entrance, and a new "edgelink" bus service. This circulates between the campus, town centre and bus stations at frequent intervals - every 15 minutes on weekdays - and also extends to nearby Southport at the start and finish of the working days. The service is free to staff and students who do not have a parking permit. The bus has also been wrapped in vinyl posters so that it can act as a marketing tool to local people. Other features of the Plan include a stricter parking permit system; provision of secure cycle storage and showers; discounts on cross Lancashire/Merseyside bus tickets for students; and a car sharing scheme.

The Travel Plan's co-ordinator, Dr. John Hindley, identifies three key factors in making the Plan successful - "senior management support, a strong partnership with Lancashire County Council, and a substantial spend on marketing. This hasn't just been to current staff and students - we've tried to get the message over to prospective students too, so that they use non-car based transport right from the start."



Dr. John Hindley with edgelink's 100,000th passenger

#### Judges' Comments on Transport (continued)

*Edge Hill College of Higher Education shows that car travel can be reduced even on semi-rural campuses. This is the result of their considerable investment in, and effective marketing of, car alternatives such as the new edgelink bus service. The Plan has also been based on an impressive degree of research, and is notable for targeting future as well as current students.*



## HIGHLY COMMENDED

### University of Gloucestershire - Unimotion more than doubles bus usage

When the University opened its new Oxstalls campus in Gloucester in 2002 it had to deal with the problem of limited parking space. At the same time, the ageing buses which served its three existing campuses were increasingly unreliable and polluting, with adverse effects on the numbers of passengers, and the University's image. The University therefore worked with a new bus operator, Stagecoach, to set up Unimotion, a relaunched service with newer buses linking the four campuses, via Cheltenham centre and its bus and rail stations. The service was free to many staff and students, who were also allowed free travel on some local Stagecoach routes. The service has been very successful with numbers more than doubling, and average fares per journey halving, between 2002 and 2005.

Unimotion was financed by a tripling in the price of parking permits - to £30 in 2005, which caused a 20% fall in the number issued - and a slight reduction in frequency, from every 20 to every 30 minutes during the day. Payment of travel expenses for inter-campus travel was also ended during term-time. Some of the scheme's costs were offset by using the buses for the town's Park and Ride scheme at weekends. Cheltenham Council also backed the scheme by investing in lay-bys to allow buses to stop without blocking traffic, high kerbs to help disabled access, and bus shelters.

The University's Operations Manager, Andrew Simpson, believes that two important factors in the scheme's success have been "flexibility and partnership. We have monthly meetings between the University, the Students' Union and Stagecoach to review bus use, and look at additional service requirements for events such as open days and student balls." Two recent innovations arising from this have been an extension of free travel to reach as far afield as Hereford, Oxford or Swindon, and a late night bus on Wednesday evenings - initially underwritten by one of the nightclubs - to safely get the students home following socialising in town. "It's another example", says Andrew Simpson, "of an initiative which has changed a service which was embarrassing to the University to one which is making a real contribution to the town, and one which the University is very proud of."



Andrew Simpson

### Judges' Comments on Transport

*The University of Gloucestershire has also seen a great rise in the use of public transport as a result of its partnership with bus operator, Stagecoach, and the local authority, and strong involvement by students. The 'carrot' for the changes have been an improved and low cost service between the campuses, and cheap fares on other Stagecoach routes. The very effective 'sticks' have been restricting and raising the cost of parking, and stopping travelling expenses between sites for staff.*

Environmental concern remains high in many American states, communities and individuals – and is stimulating very proactive responses by universities, including Harvard. The University (whose schools have responsibility for Estates) established a central Harvard Green Campus initiative in 2000, supported by a \$3 million interest free loan facility to finance environmental improvement, and a commitment of \$150,000 a year for five years to fund core staff. This has resulted in:

- Loans to over 40 energy and water efficiency projects which, on average, have generated enough financial savings to repay the principal in just three years
- Conversion of Harvard's entire fleet of diesel vehicles, including student shuttle buses, to bio-diesel, a cleaner-burning fuel made from soybean oil
- Achieved or pending Leadership in Energy and Environmental Design (LEED – the US equivalent of the UK's BREEAM scheme) certification of eight new buildings and building renovations
- Reduced energy consumption of 10-12%, and increases of over 50% in recycling rates, in undergraduate student residences.

Two new dedicated funds have also been established - one to provide loans to finance any additional capital expenditure to achieve high environmental performance in new construction and renovations, the other to support research into medium-long term renewable energy options for the University.

The Initiative has also worked with students, faculty, and administrators to define the following Sustainability Principles:

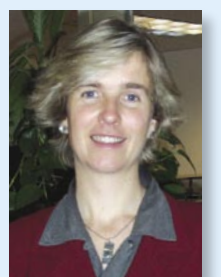
- Demonstrating institutional practices that promote sustainability, including measures to increase efficiency and use of renewable resources and to decrease production of waste and hazardous materials, both in Harvard's own operations and those of its suppliers
- Promoting the health, productivity, and safety of the University community through design and maintenance of the built environment
- Enhancing the health of campus ecosystems and increasing the diversity of native species
- Developing planning tools to enable comparative analysis of sustainability implications and to support long-term economic, environmental, and socially responsible decision-making
- Encouraging environmental inquiry and institutional learning throughout the University community
- Establishing indicators for sustainability that will enable monitoring, reporting, and continuous improvement.

The Principles were adopted by Harvard in October 2004, when University President Larry Summers observed that "operating our campus in an environmentally sustainable way is not only the right thing to do as a citizen and neighbor, it is also an economically sound way to conduct our business. As we plan for the future, these principles will set a strong course that will benefit Harvard and promote responsible growth and environmental quality in our community."

See [www.greencampus.harvard.edu](http://www.greencampus.harvard.edu) for more information.

### Sustainability Influences A University's Reputation

Leith Sharp, the Director of Harvard's Green Campus Initiative, believes that "multinational companies have learnt the hard way that their environmental and social performance - and the way in which this is embodied in activities and buildings - have a big influence on corporate and brand reputations. Universities - especially those who want to be global players - must learn the same lesson, for tomorrow's students, faculty and opinion-formers will pay great attention to this criteria when judging the institutions they will respect and support."



# Waste

## WINNER

### University of Leeds - Recycling saves money

Replacing 5,000 office waste bins with 2000 recycling bins for paper, plastic, cans and glass is just one reason why the University increased its overall recycling rate from 16% in 2003 to over 26% in 2005, with the next target of achieving 30% by 2010. Other aspects of the initiative include specific recycling schemes for batteries, cardboard, cartridges and toners, chemical bottles, computers, fluorescent tubes, furniture, green waste, mobile phones and wood, and a greater emphasis on purchasing recycled paper and stationery. 32 Environmental Co-ordinators have also been appointed in the main schools and departments to help promote and publicise the waste and other environmental initiatives, and provide advice and assistance. They work with the Environmental Officer to identify and develop programmes to meet the university's environmental targets.

The main focus to date has been on academic and administrative buildings, where recycling rates have risen to 55-70%, compared to around 24% before the initiative. Attention is now shifting to student accommodation, building on a partnership with Leeds City Council to provide more recycling facilities. Recycling rates rose from almost zero to 20% during 2005, and should rise further as the policy of removing waste bins is implemented.

The scheme has had senior management support, with Vice Chancellor Professor Michael Arthur telling staff: "The office waste recycling scheme has already been a great success, but we need everyone to take part if we are going to make a real and permanent difference." Dr. Keith Pitcher, the University's Environmental Officer, also emphasises the importance of communication and feedback. "We always accompany the launch of the scheme in a building with a briefing meeting, which allows us to deal with concerns, and also pick up on really good ideas from staff. Student projects have been very useful in auditing outcomes, and providing information that helps us to improve further."

Getting approval for the scheme required a convincing business case. This was based on calculating the costs of doing nothing - which would result in a 30% increase in waste management costs between 2004 and 2010. The costs of

the recycling initiative were estimated at £92,000, with annual cost savings of £47,000 a year when fully operational. Keith Pitcher observes that "this gives a payback of three years. And that's without including the additional benefit of cleaners now spending more of their time on actual cleaning, rather than emptying individual office waste bins."



Recycling in the Vice Chancellor's office, with (left to right) Dr Keith Pitcher, Environmental Officer; Professor Michael Arthur, Vice Chancellor; Professor John Fisher, Pro-Vice-Chancellor for Research, and Chair of Environmental Steering Group; Janet Willis, Cleaning Services Manager.

#### Judges' Comments on Waste

*The Universities of Derby and Leeds show that good waste management, and increased recycling, can both save money, and create environmental benefits.*

*The University of Leeds has achieved this through a sustained and holistic initiative, combining top level support, based on long term targets, investment in facilities, measurement and auditing to provide good data, and high levels of staff and student involvement. The intelligent implementation of the scheme through communication of stakeholders, provision of information, and the establishing of a support network is especially impressive. So too is the variety of waste streams which have been targeted, and the effective use of partnerships.*

## HIGHLY COMMENDED

### University of Derby - Revised waste contract pays off for the environment

In 1999, Derby was the first higher education institution to introduce a pay-by-weight contract with its waste management provider - an innovation which has since been widely replicated. Such schemes save money by using information to optimise the placement of bins, and to ensure that those which are collected are full. This results in fewer movements of collection vehicles, as well as other environmental benefits.

The University continues to benefit from the scheme. Environmental and Energy Manager, Jo Hasbury, believes that it's both "the most cost-effective, and the most environmentally beneficial, way to manage waste. Since 1999 we've reduced the number of bins emptied each week by 35%, and the number of bins on site by 22%."

She calculates that the resulting annual savings to the waste budget rose to an estimated 19% in 2004-5.

More recently, the University has concentrated on recycling. In partnership with the local council, it provides recycling schemes for glass, paper, cans, and plastic in residences, and on its initiative facilities for these materials plus mobile phones and toner cartridges at tutorial sites. In 2004-5 this amounted to 127 tonnes, which is about 17% of its waste.

10 tonnes of this recycled material has been shipped to rural Ghana, through a partnership with the charity, Datalink. The shipments include over 300 PCs (part of the 800+ PCs which the University has donated), as well as other IT equipment, books and sports equipment. To date, Datalink has used these and other donated PCs to train over a million Ghanaians in computer skills. Jo Hasbury observes that "re-using waste equipment in these ways is much better for the environment, and sustainable development, than simply recycling materials and components."



Jo Hasbury

#### Judges' Comments on Waste (continued)

*The importance of measurement and partnerships is also demonstrated by the University of Derby. Its pioneering pay-by-weight waste contract has been both very cost-effective, and environmentally beneficial, and influenced other universities to adopt the same approach. The key to this has been a consistent and tenacious use of the data generated to provide opportunities for improvement. The University's partnership with a recycling charity is also benefiting not just the environment, but also the broader objectives of sustainable development, through the re-use of equipment in Africa.*





Energy & Water Efficiency

Innovation

Smaller Institutions

Sustainable Construction

Sustainable Procurement

Transport

Waste