

Sustainability Highlights

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Birmingham has been identified as 'getting really serious' about sustainability: we can all make a difference!

Professor Judith Petts, Chair of the Sustainability Task Group, University of Birmingham



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Introduction

The University makes a significant contribution to sustainable development, not only in its role as an internationally recognised provider of research and teaching, but also in the way it performs as a business and engages positively with the local and wider community.

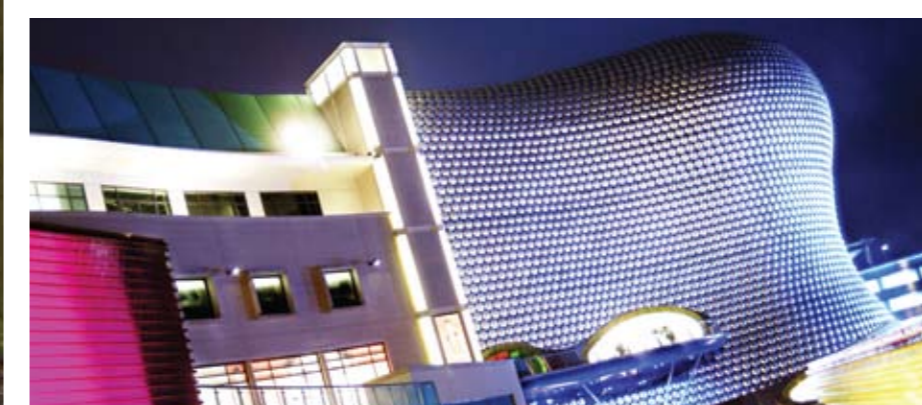
If sustainability is to be achieved, economic, social and environmental goals must be progressed simultaneously.

This report highlights some key areas where the University has made a contribution to sustainability within the institution and the wider region

Sustainability means that we consider others and tomorrow as well as ourselves and today.

The University's full Sustainability Report can be accessed via www.environment.bham.ac.uk

In 2007, a Higher Education Funding Council review identified the University as 'getting really serious' about sustainability.



Sustainability – our contribution to the local and wider community.

Waste reduction and recycling for a more sustainable campus

The numerous initiatives detailed here have resulted in a prestigious 'Green Gown' – an environmental award for higher education institutions – awarded to the University in April 2008. The University was highly commended in the continuous improvement category of the awards.

Major progress has been made over the past few years, particularly by the efforts of the Environmental Services team, in reducing both business waste, and domestic waste from the various student villages.

We were one of the first universities to implement a pay-by-weight contract and

robust data are now available on general business waste – the amount going to landfill has reduced year on year. Extra resource has been made available including the appointment of an 'on the ground' Waste Management Coordinator (Recycling), and purchase of the 'Green Machine' to deliver both the message and the recyclables.



James Strawbridge presents the Green Gown award to Trevor Shields, Sustainability and Environmental Advisor.

You need to have an overall strategy and committed approach.
Peter Larkin, Environmental Services Manager

Based on these solid foundations a new recycling tender was announced in May 2008. This will include more recyclables such as plastics and cans. We are also currently piloting a bin-less office scheme in several locations, whereby staff are responsible for segregating their own waste and removing it to a designated recycling area.

We are also trialling a 'Rocket Composter' in one of our Schools for the conversion of food waste and garden clippings into compost for use on the University's gardens. There are now paper, cardboard and glass recycling facilities in all of the student villages.

At the end of the academic year 2006/2007 one student residence, Jarrett Hall, linked up with the British Heart Foundation charity to reuse and recycle unwanted items discarded by resident students. These practices were extended by taking part in the 'zero waste in halls' project 2007/2008. This project significantly reduces the waste generated when students move out of their residence.

In May 2007, the University entered into an agreement with a local charity – Acorns Childrens' Hospice – which involves the provision of clothes/textile recycling banks in all the student villages, further enabling recycling habits and behaviours.

In 2006/2007, we piloted a 'Fresher's Goodie Bag' scheme. 'Goodies' included Fairtrade chocolate, tea and coffee, a branded (University of Birmingham and Fairtrade) lanyard, an 'A to Z of environmental tips' printed on a tea towel and other general information about the Guild of Students Ethical Society.

We also provided a booklet on energy awareness and carbon emissions as part of the scheme.



The Green Machine on campus



Freshers Goodie Bag



Peter Larkin, Environmental Services Manager

Sustainable transport on campus



Recent visitors to the main campus and nearby canal will have noticed some interesting modes of transport being used.

Green Machine delivers

Following trials of different makes of electric vehicles, Environmental Services, a part of Hospitality and Accommodation Services, purchased the Green Machine at the end of April 2007 and took delivery a month later. Staff in our Design and Publications department came up with attractive and striking graphics for the vehicle, which transports recyclables to the correct area for collection and subsequent recycling. Electric vehicles are a more efficient way of converting fossil fuels into mechanical energy.

The Green Machine is charged overnight by plugging into a standard 13 amp power socket and takes advantage of our combined heat and power station, which produces both electricity and heat from natural gas. The vehicle has a range of over 40 miles, it does not need to be charged every evening and there are no emissions during its use.

The Green Machine has significantly raised awareness around campus of our drive to

reduce waste and increase recycling. The Environmental Services Team is now firmly established, receiving regular calls from staff seeking assistance with various recycling tasks. The Green Machine is not only a practical and environmentally appropriate means of collecting recyclables, it has also helped drive forward what can sometimes be the less glamorous area of waste reduction and recycling.

Hydrogen car fills up on campus

A zero-emission, environmentally friendly car, powered by hydrogen, arrived on campus in November 2007 as part of the Science City Hydrogen Energy Project. The Project looks at how hydrogen-powered cars might replace diesel and petrol vehicles and also create jobs in the region, and has received funding of £6.3 million from Regional Development Agency Advantage West Midlands. The associated filling station was opened in April 2008 to a flurry of media interest as the first in the UK.

The hydrogen car is part of a fleet of five cars that complements some of our own fleet of vehicles, so that engineering researchers can learn more about vehicle efficiency and cost effectiveness.

New technology such as this often faces uncertainties at the commercialisation stage and can also have a higher initial cost. Until they become more competitive on cost, it is

difficult to put these new technologies into production on a larger scale. Professor Kevin Kendall, lead investigator from the School of Chemical Engineering, is hoping to combat this problem:

'By comparing the hydrogen-powered vehicles directly with the University's petrol and diesel fleet, we can find out how vehicles will need to be adapted in order to make hydrogen an attractive and cost effective option as a future fuel.'

'Once we have gathered enough information about the viability of hydrogen-powered cars, we will be working alongside Birmingham City Council to establish whether a hydrogen powered fleet would be practicable for their waste, transport and other vehicles and how this transition could be managed. In terms of the manufacture of these new vehicles we will also be looking at how we can develop a supply chain of companies and create jobs in the region as the hydrogen economy begins to take shape.'

As a direct result of this research, it is hoped that these technologies will attract buy-in from the public sector, providing support to companies moving from the technology demonstration phase into the early stages of commercialisation.



The hydrogen filling station on campus



The Hydrogen hybrid canal boat

Hydrogen hybrid canal boat

September 2007 saw the unveiling of a zero-emission hydrogen hybrid canal boat that uses a combination of magnet and fuel cell technologies. The boat, called the Ross Barlow, is fully operational and demonstrates how 'hydrogen hybrid' propulsion could be used to power other inland waterway craft. Funding of the boat includes contributions from Alumni.

The Ross Barlow was created by converting a standard maintenance canal boat that was donated to the University by British Waterways.

The diesel engine was removed and replaced by the zero emission propulsion system, with the central part of the boat being converted into a covered demonstration area.

The large-scale metal hydride storage system, which stores the hydrogen, was developed by a team at the University along with Swiss collaborators at EMPA Laboratories in Zurich. The system provides an effective means of storing large amounts of hydrogen at room temperature and at a modest pressure. The hydrogen is released from the hydride by

These demonstrators are the start of a journey to a sustainable future.



Professor Rex Harris, Hydrogen canal boat project leader being interviewed

decreasing the pressure, providing the fuel cell with an ultra pure source of hydrogen. The metal hydride powder weighs 130 kilograms and is thought to be the only store of its kind in the UK.

Rare earth magnets are used in the highly efficient motor system and rudder system. There is a synergy between the magnets and hydrogen as they are manufactured by a hydrogen-based process actually invented by University researchers.

Professor Rex Harris, project leader from the School of Metallurgy and Materials Science, summarises the boat's timely development:

'Studies on the performance of the boat will establish the viability of hydrogen for energy storage and as a fuel. We wanted to improve the science and engineering in this field by creating a real working example of this type of transport application and to enhance the public's understanding and acceptance of hydrogen.'

The boat is also being used as an educational tool. It features an LCD screen which displays information about sustainable technologies involving hydrogen and magnets and how these new technologies come together on the boat.

Reducing campus carbon emissions



We recognise our leading role as a University is to set an example in meeting local, national and international carbon reduction targets.

As part of an ongoing initiative, Birmingham, along with 19 other universities, took part in the first phase of the Higher Education Carbon Management Programme in collaboration with the Carbon Trust. This project aims to embed low carbon thinking into the culture of university life and to identify further measures to reduce the environmental impact of universities. We have calculated that University of Birmingham activities in 2005/2006 resulted in annual emissions of around 67,000 tonnes of carbon dioxide, with around 80% due to our use of energy.

The implementation plan, which was approved by the Vice-Chancellor and senior management team in May 2006, has identified various cost-effective projects to reduce these

emissions and produce an absolute saving of 6% of our carbon emissions over a five-year period. This is equivalent to 10% of predicted emissions if no action is taken.

This will enable the University and the community to play our part in meeting the UK's commitment under the Kyoto Protocol. It will also protect our core business, as University energy spend has almost doubled since 2003/04 and the long-term cost trend looks set to continue upwards. Additionally, following our inclusion in the European Union Emissions Trading Scheme, reducing the University's carbon dioxide emissions produces further financial benefit, and priority is being given to identifying energy saving opportunities on campus.

The implementation plan commits the University to an investment of at least £6.4 million over the five year period to 2011. Projects include energy efficiency in both old and new buildings and improvements to systems to aid monitoring of, and subsequent reductions in, energy use. Two new members of Estates staff have been allocated to support the implementation plan and have already started to put ideas into practice.

In 2007/2008 our students along with those at 6 other universities took part in the 'Student Switch Off' campaign, an energy-saving competition between student halls of residence across seven universities. Halls competed against each other to reduce their energy usage from the baseline year. Students were invited to become 'Eco-Power Rangers' and prizes were given out during the year to reward individuals and halls for their hard work. Prizes included solar-powered iPod chargers, wind-up DAB radios and Ben and Jerry's ice cream.

Using the campus as an example in the fight against climate change.

Around 66 tonnes of Carbon Dioxide have been kept out of the atmosphere, particularly as a result of the actions of the 'Eco-Power Rangers', who number over 400 and equate to 12% of the students living in halls of residence at the University. The energy saved is enough to power a 15W energy saving lightbulb for over 1 150 years.

Addressing the challenges of sustainability through environmental and energy research



Providing sustainable energy requires scientific understanding, innovative technology and supportive policy.

An increasing amount of our research and teaching is aimed at addressing the challenges of environmental sustainability, particularly for those studying the impacts of and solutions to climate change.

Institute for Energy Research and Policy
The Institute for Energy Research and Policy was founded in 2005. It is a focal point for the wide range of high quality energy research that has been ongoing at the University for more than fifty years. The Institute recognises the increasing importance of energy research to our current and future environments and lives, it is built on a history of productive research and unites science and technology with the social sciences and public policy.

The aim of the Institute is to be recognised nationally and internationally for the quality of its pure and applied research in both technical and non-technical aspects of energy. Its researchers, from a range of disciplines, also contribute to University and public education and debate on energy matters.

The Institute's vision has been to create a network of researchers engaged on projects of international excellence, with the University of Birmingham being seen as a leading centre for frequent and productive inter-disciplinary collaboration. Researchers' findings are communicated to both specialists and non-specialists, and the Institute promotes education in energy matters – contributing to

the University's degree courses and continuing professional development training. The Institute plays a major part in the formation of the next generation of energy professionals.

At Birmingham we have a proud heritage in science and engineering and our large scale Institute for Energy Research and Policy will make a real contribution to the work of the consortium.'

*Professor Michael Sterling,
Vice-Chancellor and Principal,
University of Birmingham*

The Energy Technologies Institute
In September 2007, following a long and fiercely contested selection process, a consortium of Birmingham, Loughborough and Nottingham Universities was selected

to host the UK's Energy Technologies Institute (ETI). The ETI was founded on the extensive, complementary and world-class energy research activities of its partners. It was established to speed up the deployment of new, low-carbon energy technologies – including the efficient production and use of energy – in support of the UK's energy and climate change goals. It also looks to increase funding, and provide a national strategic focus, for research and development in this area and promotes international technology collaboration.

Jointly funded by government and industry, the Institute has a potential budget of more than £600 million over 10 years.

Professor Michael Sterling, Vice-Chancellor and Principal of the University of Birmingham, said, 'We are delighted that the Midlands Consortium has won the bid to host the Energy Technologies Institute. At Birmingham we have a proud heritage in science and engineering and our large scale Institute for Energy Research and Policy will make a real contribution to the work of the consortium.'

The Eastside development

– creating a sustainable urban environment

Since 2003, researchers and investigators from the University of Birmingham, Birmingham City University, Birmingham Architecture School and the University of Sheffield have conducted a significant research project, funded under the EPSRC Sustainable Urban Environments Programme, that has centred on the Eastside regeneration zone of Birmingham.

The Eastside development is the largest physical regeneration project in Birmingham, comprising 170 hectares (420 acres). The redevelopment of and investment in the areas of Eastside, Digbeth and Deritend are a major part of Birmingham City Council's 'Big City Plan'. The vision is to make the whole Eastside area Birmingham's new learning, technology and heritage quarter. In terms of learning alone, the area is already home to the Custard Factory (Birmingham's arts and media quarter), Aston University, a number of Birmingham City University campuses, Matthew Boulton College and South Birmingham College.

The development of Eastside follows on from the successful redevelopment of Birmingham city centre itself and is viewed as the next stage in the city's 'renaissance'.

Many of the principles of sustainable development, such as city living, reducing travel

to work and pedestrian-friendly environments, were important components of the city centre regeneration. The sustainable development promotion and thinking behind the development also involves the consideration of energy, water and waste reduction, ecology and biodiversity and community and social issues.

With the convening of the Eastside Sustainability Advisory Group in 2002, and with funding from Advantage West Midlands and the East Birmingham and North Solihull Regeneration Zone, Eastside promises to be a benchmark of sustainability thinking and best-practice planning.

The aim of the research programme to-date has been to explore how sustainability is addressed in the regeneration decision-making process, and to assess the sustainability performance of completed development schemes in Birmingham



Aiming to achieve the 'three pillars' of sustainable development; environment, society and economy.

Eastside against stated sustainability credentials and aspirations.

Phase one of the research project involved a feasibility study toward adopting Eastside as a regional demonstrator of sustainable urban development. The primary aim of the first phase of the study was to identify enablers and barriers to sustainability in a 'live' urban regeneration project.

The aim of the second phase focused on identifying the sustainability and innovation choices available to decision-makers during a major redevelopment scheme.

Phase three of the study, which began in January 2007 and has continued throughout 2008, builds directly on the successes of the first two phases to explore how sustainability is addressed in the development of decision-making processes.

The aim of phase three is to develop a suite of analytical tools. These will further assist the study of the sustainability vision for Eastside, and include a development timeline framework, a sustainability checklist, an industrial ecology analysis (to follow particular resources and highlight their interdependence) and a social impact assessment (to enable examination of the social-cultural aspects of sustainability).

The Raymond Priestley Centre

– promoting environmentally-friendly actions and practice



The Raymond Priestley Centre based at Coniston Water

The Raymond Priestley Centre is based on the shores of Coniston Water in the Lake District and has been offering outdoor activities to our students and staff for 60 years.

The Centre offers outdoor courses and adventures year round to a range of students from around the University, who utilise the facilities as part of their degree and postgraduate studies. The Centre also provides outdoor activities to staff and student groups from other universities, as well as Birmingham alumni parties.

The environmental charity Environmental Campaigns (ENCAMs), runs a program that awards green flags to outdoor centres and schools which have shown they are following a 'green path'. The Raymond Priestley Centre has recently been awarded a second green flag. As part of the award, the Centre has developed its own 'eco-code', a statement demonstrating the Centre's commitment to environmentally-friendly actions and practice.

The 'eco-code' states that the Centre will:

- Promote a litter-free environment
- Improve waste management systems on site
- Monitor and reduce energy use where possible
- Work with both clients and suppliers to promote the sustainability of the environment around it
- Make use of the opportunities it has with clients to encourage environmental awareness and understanding
- Have an energy efficient replacement policy as part of the development plan (ie, during maintenance replace fittings with energy efficient equivalents where possible)
- Work with local organisations and the community to actively improve the environment in which its staff work and live

Staff at the Centre educate visiting groups about the damage that is being done to the planet and ways in which we can all prevent it.

This education takes many forms: local primary schools, for instance, regularly visit the Centre and, via games and activities such as 'environmental bingo', learn about the environment in a fun and engaging way.



Forty students can be accommodated in the Centre's newly refurbished accommodation, which was produced using eco-friendly methods. The new bunks were crafted by Out of the Woods, a local bespoke furniture manufacturer, which sources its materials from sustained forests. New mattresses were handcrafted by Blind Craft, an Edinburgh-based company which employs blind or disabled staff, and all rooms at the Centre have low-energy light fittings.

Another sustainability-focused development at the Centre is the John Muir Award, an environmental award scheme focused on wild places. Some of the Centre's groups have already completed John Muir award projects, and have helped with activities such as clearing non-native species and building footpaths in forested and mountainous areas.

These projects have been a great success and have fostered good relations with many organisations local to the Centre. Some students have even gone beyond their first project to find and engage with other similar volunteer opportunities in the local area.

The Raymond Priestley Centre continues to benefit environmental education in Birmingham and the Lake District.

Engaging the local community



A joint project, involving our staff and students and residents of the local community, joined up the theoretical and practical aspects of public policy.

The project took place in the West Midlands area of Castle Vale, where an already-existing community-based regeneration scheme had been expanded to now host Birmingham undergraduate students. The aim was to bring together students and local residents in an active learning environment, to demystify higher education for the local residents and make the learning of regeneration more interesting and relevant for undergraduates.

To this end we developed a course module as part of our Public Policy undergraduate degree called 'Regenerating Urban Communities'. The module explores the experience of communities undertaking urban regeneration through a concentrated study in the field, and is delivered within Castle Vale. The module was attended by Level 2 Joint Honours Planning and Public Policy students, and the residents of Castle Vale, as Level 1 students.

The module covered the theory and policy of regeneration in British urban communities, exploring the impact on those communities and their involvement in the process. The main aim of the module was to provide students with an appreciation of urban regeneration from the



perspective of the resident. It examined the role that residents are being asked to play as important stakeholders in the regeneration process, and the mechanisms through which that involvement takes place.

The programme of study covered theoretical and conceptual ideas, which then went on to inform more practical, case-study work. The course drew on residents' and other practitioners' experiences and explored the regeneration of urban communities from a variety of aspects to reflect its multi-faceted and complex nature. It provided a unique opportunity to build a framework within which people's lives and stories could be heard.

The key partners with the School of Public Policy were Castle Vale Housing Action Trust (CVHAT) and the Castle Vale Tenants and Residents Alliance (TRA). These organisations were supportive throughout the development of the project, not least helping to recruit residents and providing venues and administration.

The project has been updated and reviewed and is now run by the Centre for Urban and Regional Studies within the Business School.

The project continues to successfully bring together Birmingham undergraduates with local residents to provide a unique and real-life perspective on the 'ways of regeneration'.

Regeneration is, primarily, about people's lives.

Workplace Wellbeing



We work to create a positive and healthy experience for all our staff through Workplace Wellbeing.

In 2007, the University incorporated Workplace Wellbeing as a key theme in its new Human Resources (HR) Strategy. Its scope is wide, taking in health and safety, the mental and physical health of staff and the provision of a professional and high quality working environment. Provision of good Workplace Wellbeing aims to help recruit and retain the best people and to ensure that they are able to prosper. It is a natural development from our early involvement in stress management, activity in relation to equality, diversity and other key HR areas, and our Internationalisation Strategy.

A Workplace Wellbeing division has been created in HR, which includes the Occupational Health, Health and Safety and Environment and Sustainability departments, as well as employee support programmes. An expert advisory group has also been established to have oversight of the wellbeing agenda, its membership draws on expertise from within the academic community, from trade union colleagues and from other professional staff within Corporate Services.

Workplace Wellbeing at Birmingham is a multi-faceted provision of support to our employees to enable them to combat issues such as stress, conflict, harassment and bullying, and personal issues. It is also part

of a larger, holistic approach to employee wellbeing as we aim to make it a key element of leadership programmes to ensure that it becomes an inherent part of the leadership culture of the University.

Our Employee Support Programme utilises volunteers, expert consultants, and local organisations. We have an innovative first-port-of-call system, the Confidential Assessment Service, which can, in a partnership unique for universities, refer people on to a variety of co-ordinated services.

The services include mediation, counselling, harassment advisers and the Citizens Advice Bureau. Other options are explored on top of the services that we offer, for example, physical activity, further development and training, healthy diet recommendations and smoking cessation advice.

In 2008, we ran our third Wellbeing Day, which attracted over 1,000 colleagues. The event showcased facilities available to staff and promoted healthy activity, diet and work practices. A number of activities went on in the week building up to the Wellbeing Day, such as the University Farmers' Market and tours of the treasures of the University Collections.

As part of our wellbeing approach we are also improving support for international staff. International staff are closely involved at all stages of overseas recruitment processes, and we have run several events for international academic colleagues and their partners. We aim to continually improve support to our international colleagues and strengthen our international community.

Workplace Wellbeing is fundamental to the future good health of our organisation. It makes our institution more attractive for students and staff and it enhances our sustainability and our standing amongst research-intensive universities.

Volunteering and charity engagement



The University engages with local communities, projects and organisations through a broad range of volunteering, learning and education programmes and initiatives.

Volunteering has become a key part of the student experience at Birmingham, with more than 500 new students registering each year to undertake some form of community or charity work through the Guild of Students during their studies. The Guild offers students a wide range of volunteering opportunities on a regular or one-off basis with student-led projects and with variety of external organisations.

The Guild has around 30 student-led volunteering projects. These are set up, organised and run entirely by students. In addition to being an enriching experience for participants, student volunteers also get to make the decisions about how the projects progress and, ultimately, how they will benefit the local community.

External opportunities exist with over 85 local and national charities and voluntary organisations. These projects offer an excellent route into the local community for students new to Birmingham enabling them to meet and support people from the area.

The Guild also oversees many one-off projects, which enable those who do not have time to commit to something regularly to still volunteer on an ad hoc basis. Previous projects have included marshalling at sports events, stewarding at an arts festival, running a fundraising stall, and being part of a community taskforce team.

The variety of projects on offer gives students the chance to work with a diverse range of people, for example, the homeless, asylum seekers, the elderly, young offenders or people with disabilities. Projects are varied and include teaching or sports coaching, giving counselling and advice, working to conserve the environment, befriending or mentoring and fundraising or marketing.

Volunteering is a great way for students to develop transferable skills and knowledge that can help towards their degree and future career, as many graduate employers look for more than just academic skills. By demonstrating that they have volunteered in their local community, students can show they have the potential to broaden their horizons, and make a commitment above and beyond their studies. Volunteering also gives Birmingham students the opportunity to mix with people from different cultures and backgrounds, and makes a valuable contribution to the local community.

Student volunteers gain accreditation for every single hour that they volunteer, and the Guild operates a timesheet system – when volunteers reach a particular number of milestones, they receive a certificate that they can show to potential employers. The Guild also runs volunteering celebration events, and regularly gives prizes and awards in recognition of students who volunteer.

Embedding service learning into the curriculum

As well as volunteering opportunities for students we are also working towards embedding service learning into the curriculum. The main difference between service learning and volunteering is that the service learning community placement is part of an assessed module.

There are five service learning projects being developed at the University of Birmingham, these are being delivered within modules run by the Business School, the School of Dentistry, the School of Health and Population Sciences-Nursing and Physiotherapy, the Institute of Applied Social Studies, and a joint module with the Centre for Urban and Regional Studies and the Institute of Local Government Studies.

Each module offers students the opportunity to undertake a community based learning placement as part of their studies. By sharing practice through the development of each module it is hoped to formulate a 'Birmingham

Model' template; this will enable us to find the types of community based learning that are best fitted to the University and the local community.

Each student taking part in the service learning initiative will also have the opportunity to attend a conference, introducing them to non-profit businesses that have social objectives (often described as 'social enterprises'). Supported by additional funding that has been secured through the 'Embedding Enterprise Education' (E3) project, these will bring students and social entrepreneurs from across the region together to talk about key issues facing organisations.

The service learning project team has also worked alongside colleagues in the Careers Service and the Guild of Students to run 'Introduction to Volunteering' sessions with the School of Health and Population Sciences, the Institute of Applied Social Studies and the School of Dentistry. These sessions are now run through the Careers service and offer students the opportunity to examine how their

volunteering placements can help them to seek and secure a job, and benefit them in employment through the skills they have gained whilst being a volunteer.

'Service learning community based placements helps students develop independent learning, by applying theory to practice, and also helps to develop a wide range of skills important for graduate 'employability', such as effective communication. We see this as an opportunity to help local communities while enhancing the students experience through their studies'

Cathy Bonner, Service Learning Project Manager, Learning Development Unit

