

SUSTAINABILITY: ENVIRONMENT AND EDUCATION

ANNUAL REPORT 2013-14

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EXECUTIVE SUMMARY

This report provides a summary of activities and initiatives undertaken by the University in relation to environmental sustainability and education for sustainable futures (ESF). All activity falls within the scope of the Environmental Management System and is managed through the Sustainability Governance structure, chaired by Prof Tony Lavender (PVC RKE) and led by Dr Peter Rands (Director of Sustainability Development). It should be acknowledged that this report encompasses the work of many individuals, Departments, Schools, Faculties throughout the University.

Work related to enhancing curriculum with sustainability perspectives, through the *Futures Initiative* is now recognised by the sector as providing a unique approach to transformational learning. After 3 years of seed funding more than 50 curriculum development projects have been funded, involving more than 100 academic and professional services staff. The diversity of projects is exemplified through the 4th version of the FI report and dissemination across the sector continues through several national and international conference presentation and journal articles.

External evaluation of the Green Academy, from which the *Futures Initiative* evolved, continues to highlight “a stark contrast between universities’ strategic ambitions in respect of sustainability and the resources actually devoted to it”. Moving forward, the initiative is being expanded to include a Futures Forum and a senior working group to drive forward organisational alignment with ESF. Helpfully, the QAA has recently published guidance to the sector on Education for Sustainable Development, which will provide a focus for a developmental focus within the context of the University’s new strategic framework.

Enhancement of biodiversity through the Bioversity project continues with a rehabilitation of the Johnson garden and the development of a sound garden during 2014-15. The project has been celebrated as part of a whole day event for the London Universities Environment Group, and the Physic Garden was officially opened as part of the celebrations to mark the 25th anniversary of Allied Health Professions at CCCU.

The University Estates Framework has been agreed for the next 10 years, which signals the potential for estate rationalisation following acquisition of the former HM Prisons Canterbury site. A Low Carbon vision for 2050 has been developed as a supporting document, setting out the key requirements for ensuring that any new buildings have zero or low carbon outputs. Both documents will inform the work of the estates master planning exercise, to be conducted between September 2014 and June 2015.

Scope 1&2 emissions to air as a consequence of gas, vehicle fuel and electricity use amounted to 7,334 Tonnes CO₂e and represents an 8% reduction of 673 Tonnes compared to 2012-13. Estate rationalisation combined with on-going energy efficiency schemes and spend to save projects continues to support this; however, a significant proportion of this reduction is due to a notably mild winter, which illustrates the exposure of the University estate to the variability of our climate. Funding for carbon reduction projects continues to be solely through Salix Finance and HEFCE’s Revolving Green Fund loan schemes. A bid to RGF4 will be made in the autumn for small scale energy saving projects and an exemplar project.

The scope 3 emissions category covers a wide range of operational activities as well as including personal transport to and from work or study. Whilst there is no mandatory requirement to report on or reduce scope 3 emissions, it is important to recognise that supply chain emissions from purchased products and services, and travel emissions from commuting considerably outweigh the rest of the University's scope 1, 2 & 3 emissions.

An improvement in water usage through the installation and monitoring of automated meter readers continues to be a priority. CCCU continues to use a zero waste to landfill contractor, and recycling rates are improving year on year. University fleet vehicles are due for replacement and over the coming year the most efficient options will be chosen, which includes the lease of a pool car through Enterprise rent-a-car. All other vehicles will be replaced with the cleanest and most economical option.

Sustainable procurement remains an essential element of all major procurement activities and in the last year has been incorporated in the retender for student healthcare uniforms; desktop, laptop and Tablet PCs; and the storage area network for IT. At a local level achievement of level 4 on the Flexible Framework is being driven through high impact departmental activities, beginning with Facilities Estates and Operations; to be followed by IT in 2015-16.

During the latter half of the year two students from the 2nd year PR, Media and Sustainability module, along with a 2nd year history student, were employed to set up a Student Green Office (SGO) in order to significantly enhance student engagement with sustainability. Based on a model developed at Maastricht University, but with limited funding, the SGO has been integrated in to the sustainability governance structure and is supported by the sustainability team. Their primary objective for 2014-15 is to recruit a small number of committed project leads (paid) and volunteers to build a sustainable office and provide opportunities for action and debate.

After 3 very successful years in the Green League, achieving consecutively high first class awards, People & Planet undertook a major review of the questionnaire during the year and issued a significantly enhanced survey in July 2014. There has been widespread concern over the changes in content, scale and timescales such that a majority of Universities and Colleges, including CCCU will not be submitting this year. Further developments are now being taken forward collaboratively with the EAUC and AUDE to ensure a more streamlined, stable and pragmatic survey is created for the future.

In February 2014 the University successfully retained ISO14001 accreditation for its Environmental Management System (EMS). Work towards the widening of the scope of sustainability governance to cover the full-services social and environment responsibility, is progressing in line with the development of a set of strategic objectives for sustainability to support the cross cutting theme identified as part of the new strategic framework.

1. INTRODUCTION

This report provides a summary of activities and initiatives undertaken in relation to environmental sustainability and education for sustainable futures (ESF) through the *Futures Initiative*. All activity falls within the scope of the EMS and is managed through the Sustainability Governance structure, chaired by Prof Tony Lavender (PVC RKE). It should be acknowledged that this report encompasses the work of many individuals, Departments, Schools, Faculties throughout the University.

2. EDUCATION FOR SUSTAINABLE FUTURES

2.1. THE FUTURES INITIATIVE

The work of the *Futures Initiative* is now recognised by the sector as providing a unique approach to transformational learning for enriching the curriculum with a sustainability perspective. In the last year a further 14 curriculum development projects have been funded, which continue to demonstrate considerable creativity and inventiveness, and brings the total number of projects funded to 49. The Futures Initiative report, outlining the approach and providing brief case studies has been updated and continues to provide inspiration to academic and professional services staff.

Some highlights include:

- Exploring Sustainability Website

Sustainability is a notoriously complicated concept and is open to a large number of, often contradictory, interpretations. The website takes an open-ended approach and introduces staff and students to different aspects of the sustainability through seven key themes. Each theme is explored using texts, videos and related resources while discussion questions provide a structure for further investigation. The overall aim is to help users uncover some of the deeper thinking and philosophical issues that permeate sustainability thinking. For further information go to www.canterbury.ac.uk/exploring-sustainability

- Developing Overseas Links

As well as working with local community groups, the Futures Initiative has been developing environmental perspectives with partners overseas. In one project, for example, University staff contributed to the Teach for Malaysia programme for 'high flying' postgraduates. This has resulted in a number of outstanding initiatives including a study of the effects of palm oil and other effluents on rivers in Tanjung Sepat. In the past the University has developed a new Teacher Education programme for the Malaysian Ministry of Education which has attracted significant funding. It is now hoped that further business opportunities will arise.

- The Mongolian Yurt

Raising the profile of sustainability and environmental thinking on the University campus is an important part of engaging staff and students. The purpose-built Mongolian yurt which

was set up in the summer on the North Holmes site now provides a unique meeting space and a stimulating teaching environment. It is envisaged that the yurt will be used by a wide variety of groups and that it will be moved to different locations according to need. The yurt has the potential to be a powerful catalyst for student engagement, enjoyment and empowerment and it embodies the inclusive approach which permeates Futures Initiative projects.

- Biochar

Charcoal is produced when wood and other biomass waste is burnt with a restricted supply of oxygen. Biochar is a distinct form which is used for other purposes; notably for carbon sequestration and soil improvement rather than for burning as fuel. Although the biochar industry is still in its infancy it has commercial potential, particularly in Kent where woodland has been traditionally coppiced. The *Futures Initiative* funded a special project to raise awareness and discuss the opportunities with local businesses and stakeholders. This event, which involved a practical demonstration, was filmed by BBC South East as a lunchtime and evening news item. The role of biochar is now being included in the University's soil science module and the interest generated by the project is leading to a follow-up conference.

- New pathways

In the Education Faculty, colleagues from Childhood Studies and other departments have collaborated to create a new three year programme on sustainability and environment. The programme builds on an existing module and promises to offer an exciting and intellectually stimulating syllabus which will broaden the University's portfolio. The programme will be presented for validation in the autumn term and will be ready to be launched in September 2016. The Futures Initiative has supported the programme team during the development process and will be monitoring the success and impact of the programme once it is implemented.

A review of the *Futures Initiative* has been undertaken by the team, which has resulted in proposals to enhance activity in support of the new Strategic Framework and the development and implementation of a Sustainability Strategy. The proposals have been considered and agreed by the Education for Sustainable Futures Group and the Sustainability Strategic Management Group (SSMG).

For the period 2014-17 *Futures* work will comprise three strands:

- The *Futures Working Group* will be a structurally enhanced ESF Group, with formal membership and Terms of Reference, and will continue to be chaired by the Dean of Social and Applied Sciences. Through a top-down approach it will influence the University's academic infrastructure to support organisational alignment with the principles of ESF.
- A *Futures Forum* will be launched on 10th October. It will support the sharing and dissemination of development activities, will be informed by organisational alignment undertaken by the *Futures Working Group* and will provide a variety of engagement

activities to support an accelerated enhancement of formal, informal and campus or subliminal curriculum

- The *Futures Initiative* will continue to facilitate a bottom-up approach to increasing engagement, building capacity and developing ownership and empowerment, albeit with reduced funding for discrete curriculum development projects led by academic teams.

Support work will be focused at a Faculty or School level and a key principle has been established such that Ownership and vision for ESF should be developed and held within the relevant academic areas.

2.2. EXTERNAL EVALUATION AND STUDENT ATTITUDES

A second external evaluation of the impact of the Green Academy was undertaken by the HEA during summer 2013 and reported during early 2014. This involved a full day of evaluation visits and discussions but did not result in an update of the institutional evaluation reports resulting from the first evaluation. A single report was provided, which took a thematic view of the impact across all 8 participating Universities. A key finding that is reflected across the sector relates to resources, indicating “a stark contrast between universities’ strategic ambitions in respect of sustainability and the resources actually devoted to it”.

Since 2011 the HEA¹ and NUS² have carried out an extensive survey of Student attitudes towards and skills for sustainable development. In all three years the research has consistently found that:

- over eight in every ten students consistently believe that Sustainable Development (SD) should be actively incorporated and promoted by universities, and this increases as respondents progress through their studies;
- over two thirds consistently believe that SD should be covered by their university courses;
- over 60% of students want to learn more about SD;
- 80% of third-year students see universities as key players in the delivery of skills for SD;
- a desire to learn more about SD increases as respondents progress through their studies;
- there is a continued preference among students for a reframing of curriculum content rather than additional content or courses;
- the majority of students continue to interpret SD as predominantly being about the environment, with less recognition of the social and economic aspects.

How students value SD in comparison to other aspects of their course and university experience is not yet known, but these attitude surveys provide an unequivocal steer on their own. Further work being undertaken by a lecturer in Economics, in collaboration with the Student Survey Unit and the Dean of Social and Applied Sciences, on understanding the scale and priority of this demand within the student community at Christ Church, is the focus of some more rigorous “stated preference” research currently being undertaken.

¹ Higher Education Academy

² National Union of Students

2.3. SECTOR CONSULTATION AND GUIDANCE

During 2013/14 the HEA and QAA³ jointly organised the development of guidance for HE providers on Education for Sustainable Development (ESD), which was published in June 2014. The University provided a formal response after an internal consultation process. Widespread consultation involving the ESD leaders from across the sector was also undertaken and has resulted in the publication of a very useful document, which will be used to guide the development of ESF⁴ within Christ Church.

2.4. EXTERNAL PROFILE

The *Futures Initiative* team continue to network externally and build university profile in ESD through presentations and case studies of their work at a variety of national conferences and workshops during the last academic year. These are all listed in appendix 1, but it is important to note that Dr Stephen Scoffham was invited to take part in a workshop event at the University of Gloucestershire, Dr Nicola Kemp received the prize for the best paper at the London UNRCE⁵ for ESD conference and the FI team ran an HEA sponsored one-day workshop at College in London on the *Futures Initiative*. In September 2014, Stephen and Nicola will be presenting at the World Symposium on Sustainable Development in Universities, in Manchester, and in October 2014 Stephen will be presenting at the European COPERNICUS Alliance⁶ conference in Prague.

3. BIODIVERSITY AND CHRIST CHURCH BIOVERSITY

The Bioversity initiative has continued to develop with some developments taking place in 2013-14 and others now in the planning stage. A Joint Nature Conservation Committee (JNCC)-based Phase 1 Habitat Survey was completed in summer of 2013, and this now forms the baseline for the development of a more coherent approach to biodiversity action planning for the Canterbury Campus. The survey included the whole World Heritage Site (WHS) (except private accommodation in the Cathedral Precinct) and buffer zone. The survey provides the potential for links to a city-wide green infrastructure project in the long term. A visit by key stakeholders in the WHS on 13 May 2014 (as part of a LUEG⁷ meeting hosted by CCCU) has provided a positive step forward in developing an integrated approach to biodiversity of the whole WHS.

Work has started on rehabilitating the pond area next to Johnson Building. The clearance phase included a staff-development day for senior members of the Estates Department. Large areas have been cleared of ivy ground cover and trees have been thinned to allow more light into the area. The pond has yet to be made sound.

Plans are currently being developed for a 'sound garden' to be developed close to the Maxwell Davis Building. The initiative is being developed by staff in the Education Faculty and will be used to create links with local schools.

³ Quality Assurance Agency

⁴ Education for Sustainable Futures

⁵ United Nations Regional Centre of Excellence

⁶ European Network on Higher Education for Sustainable Development

⁷ London Universities Environment Group

Other sites continued to be managed and to 'mature'. The Jubilee Orchard is in healthy condition, although the wildflower areas continue to grow 'robustly' as the process of de-nitrification takes place over several years.

A survey of wall vegetation by an undergraduate, David Pawley (BSc Geography) was undertaken during 2013-4. The resulting project was of a high quality (first class mark) and will form part of a paper, jointly authored by David and Prof Peter Vujakovic (Ecology Research Group, CCCU), was given at the international 'Green Walls' conference in Sept. 2014.

The formal opening of the Physic Garden took place in July 2014. A recent Bioversity initiative, its opening was a key aspect of the celebration of the 25th anniversary of Allied Health Professions at CCCU. Tom Hart Dyke, well known plant hunter and Broadcaster cut the ribbon for the formal opening of the garden. The initiative was part-funded by the Futures Initiative (FI) and was a joint project between the Department of Geographical and Life Sciences (Joanna Fell) and Allied Health (Gill Gower). It is innovative in providing key information on medicinal plants by using QR codes to link to personal mobile devices. The project has been supported by the Estates Team, and by a very able student volunteer, Nick Haines (BSc Plant Science), a mature student with a background in horticulture.

The Grounds and Gardens team continue to compost garden waste, which includes chipping and composting all woody material for use as mulch. A coffee grounds bin has also been introduced to collect waste grounds that are produced by the various catering outlets, which are added to the compost heap to provide increased nitrogen content.

4. ESTATES FRAMEWORK, LOW CARBON VISION AND MASTER PLANNING

The May 2014 the University published an Estates Framework, a high level review document covering the likely direction for the University Estate over the period 2015-2025. Following the acquisition of the former HM Prisons Canterbury site and the potential for new development in conjunction with the North Holmes campus, this document signals the potential for further rationalisation of the University estate and targets an overall 40% space utilisation by 2025. A Low Carbon vision for 2050 has been developed as a supporting document, setting out the key requirements for ensuring that any new buildings have zero or low carbon outputs. This sets a high level of environmental performance for refurbished buildings, proposing the way that the University can protect against future fuel security and take significant steps to meet 2050 UK and sector carbon emissions targets. Both documents will inform the work of the estates Master Planning exercise, to be conducted between September 2014 and June 2015 which will review the educational needs and estates requirements at each campus and look at the development potential from the enlarged North Holmes campus.

5. SCOPE 1&2 CARBON EMISSIONS, TARGET PERFORMANCE AND CARBON MANAGEMENT

The University during 2013-14 continued to work to reduce its impact from a wide variety of environmental aspects. The following section summarises the actions taken during 2013-14 and planned for 2014-15, relating the equivalent carbon dioxide emissions to each physical impact.

In 2013-14 Scope 1&2 emissions to air as a consequence of gas, vehicle fuel and electricity use amounted to 7,334 Tonnes CO₂e and represents a cost to the University through the Government's Carbon Reduction Commitment Energy Efficiency Scheme (CRCEES) of £98,952. This represents an 8% reduction of 673 Tonnes compared to 2012-13. This can be explained by estate rationalisation through the release of Salomons Mansion House and University Centre Folkestone, energy efficiency schemes and also by the notably milder winter weather experienced this year.

This is reflected on the graph below.

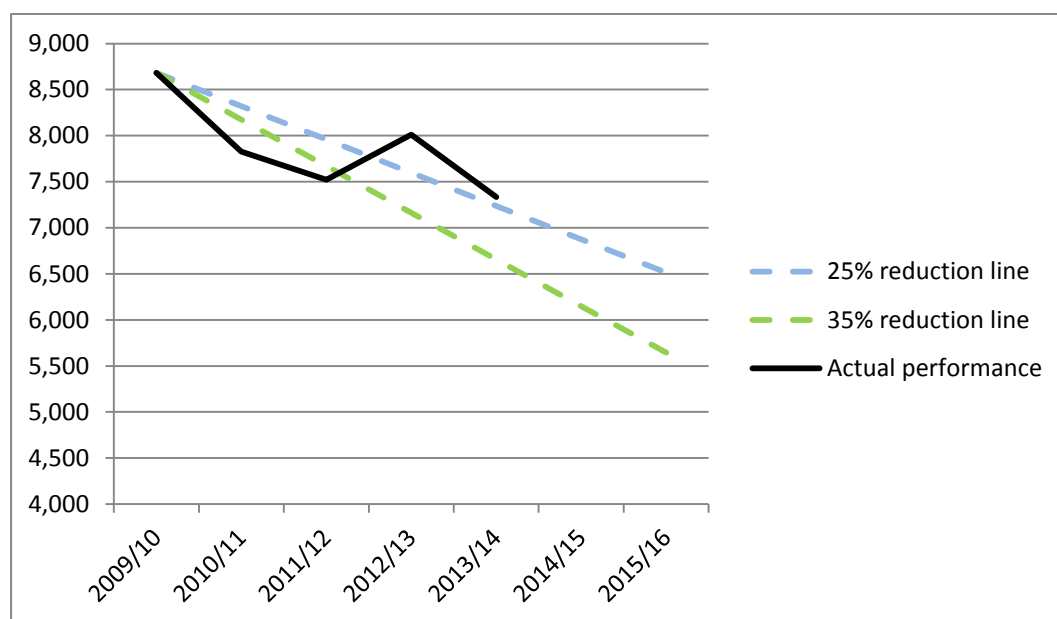


Fig 1. Gas and Electricity - Scope 1 & 2 emissions in tCO₂e

The 2009 to 2013 emissions have been recalculated using DEFRA's new conversion figures.

The weather has demonstrated its considerable effect on gas and electricity consumption in 2013-14, as a consequence of 670 less heating degree days⁸.

There has been no internal investment for carbon reduction projects during 2013-14 and this may impact on the reduction targets set by the university as part of the Carbon Management Plan. There are numerous existing opportunities for external and internal lighting projects with longer payback periods, which the University needs to consider as part of its forward investment strategy in order to meet current targets.

At present, there are still limited opportunities to obtain external funding for energy efficiency and carbon reduction projects through the Governments Salix Scheme and HEFCE's Revolving Green Fund 4 during 2014-15. However, the University continues to be successful in acquiring interest free loans for sub-5 year payback period projects.

⁸ A degree day is a measurement designed to reflect the demand for the energy needed to heat or cool a building, and is derived from measurements of outside air temperature in the specific location

5.1. ENERGY USE FROM NATURAL GAS

In 2012-13 gas consumption significantly increased compared to the baseline year of 2009-10, due in part to extended periods of unseasonal severe weather especially during February and March. This led to significant gas consumption of 14,149,898kW, resulting in an increase of 19%. However, during 2013-14 gas consumption reduced to 10,506,355 kW as a result of 671 fewer heating degree days together with the disposal of the Mansion House (MH) at Salomons and the UCF. Thus a reduction of 25% was achieved, with a saving of 3 Million kW; of this MH contributed 1M kW, UCF 400,000 kW with St Georges continuing to contribute an additional 478,000kW annually.

Optimisation of the new main boilers at the North Holmes Road campus is continuing during 2014-15 and a BMS upgrade at the Broadstairs campus will provide continued savings in gas.

2013-14 Residential gas consumption shows a 10% reduction in Canterbury and a 28% reduction at Broadstairs compared with 2012-13. These reductions can be linked to milder weather and to the use of Thermostatic Radiator Valves (TRV) through the residential properties regulating the heating regime.

Appendix 3 shows the breakdown of gas consumption and emissions.

5.2. ENERGY USE FROM VEHICLE FUEL

The University has a small fleet of vehicles which include vans, minibuses and grounds maintenance equipment which is currently under review. These use a variety of fuels but the overall impact from carbon emissions is small compared to electricity and gas.

In comparison to the previous year there has been a reduction in Diesel of 33% and 70% in unleaded fuels, due in part to the disposal of the Salomons estate and UCF along with rationalisation of vehicle use.

In 2014-15 funding has been allocated for the phased introduction of more energy/fuel efficient vehicles.

5.3. ENERGY USE FROM GRID ELECTRICITY

In 2013-14 electricity usage was 10,905,786 kW which is a decrease of 10% on the previous year. In 2012-13 electricity usage was 12,140,875 kWh which was an increase of 4% from 2011-12. The reduction from the previous year reflects the University's on-going process of estate rationalisation, increasing control of building electricity use, coupled with lighting control and upgrades. Residential consumption in Canterbury shows a 11.6% reduction and at Broadstairs an <1% decrease.

This year, 2013-14 the reporting of emissions from electricity (Appendix 2) has changed to reflect recent guidance from DEFRA. The emissions associated with electricity from its Transport and Distribution (Scope 3) has been separated from electricity generation (Scope 2).

Appendix 4 shows the breakdown of electricity consumption and emissions.

In May 2014 the University entered into a two year fixed rate contact with EDF using a 'Green Tariff' on our Half Hourly (HH) metered sites. The electricity consumed on a Green Tariff is generated from renewable sources and includes a mix of solar, wind and hydro-power generation. The Green Tariff also negates our regulatory payment to the Government of the Climate Change Levy which is imposed on buildings which have high electrical consumption. The HH consumption is approximately 85% of the total consumption with the remaining 15% uses non-half hourly meters, currently with Scottish and Southern. SSE will provide a quote for Green Tariff electricity when the contract is renegotiated in April 2015.

The acquisition of the unoccupied Canterbury Prison site and its associated utility consumption will be reported in the 2014-15 report but will be included in the CRCEES and the Estate Management Return due to regulatory requirements.

5.4. CARBON REDUCTION PROJECTS AND CAPITAL INVESTMENT PROGRAMME

During 2013-14 a bid to the Salix SEELS⁹ program of £266K was successful, which was split between the Canterbury and the Broadstairs campuses. This provided LED lighting upgrades in Newton, Erasmus, Johnson and the main Food Court on North Holmes Road, along with a trial of external LED lamps.

Broadstairs benefited from the extensive installation of LED lighting upgrades throughout the Carey and Allen buildings. The Building Management System (BMS) was also upgraded to provide greater control through optimisation and zoning efficiencies.

HEFCE continue to release funds for energy efficiency schemes as part of the Revolving Green Fund 4. The University will bid for £75K before 31/10/14 for LED lighting projects and heating controls. If the application is successful this will be used to continue to upgrade lighting throughout the NHR campus during the summer of 2015. This will include classrooms, offices and common areas in Laud, Anselm, Newton, TOSH and Ramsey.

Photovoltaic solar panels were installed during August 2012 on Erasmus, Rochester House and Old Sessions House and continue to generate renewable electricity to these buildings. The University has also benefited from the Government's Feed in Tariff scheme and have received funds from EON and Scottish and Southern totalling over £7,000 from the production of 51,721 kW. This is an annual payment guaranteed for 25 years.

6. SCOPE 3 CARBON EMISSIONS

6.1. WATER CONSUMPTION AND TREATMENT

During 2012-13 a water audit was undertaken by M&C Energy Group, involving an investigation of historical invoices and site visits to the main campuses. The report showed no major leaks or invoice error and minor remedial work was undertaken by the Estates department on site.

In comparing 2013-14 with the previous year for Residential properties there was slightly higher consumption of Water (1%) and Sewage (10%). For the non-residential properties there are

⁹ Salix Energy Efficiency Loans Scheme 6

inconsistencies possibly due to the six monthly billing cycles and the consequential apportioning of consumption. Discussions continue with South East Water in 2014-15 to provide a dedicated account manager to ensure greater accounting and accuracy.

The trial of urinal Enzyme Bio Blocks at Rochester House has continued to be successful with 80% water reduction, saving 60,000 Litres per year due to less frequent urinal flushing. This may lead to the Bio Block being used more widely throughout the estate. Flushless urinals, using a positive venting system, have been installed in the Anselm sports changing rooms, with estimated savings in the region of 100,000 litres of water per year.

Automated Meter Readers (AMRs) for water have been fitted to several sites including Canterbury (21 NDR), Medway (RWC) and Broadstairs (Allen & Carey) during 2013-14, which give better insight into water consumption and the potential for reduction at each location. A program of AMR installation at other sites has unfortunately been delayed during 2013-14 due to incompatibility issues related to the historical lack of infrastructure investment in the water and sewage system, and the new technology associated with the AMRs. These water meters are being upgraded by South East Water and Southern Water throughout 2014-15.

During early 2014 there was a substantial water leak at Augustine House and this was only highlighted in the six-monthly invoice generated by South East Water. However, if the water AMR had been fitted this would have been quickly identified. The Estates department located the fault area and repairs were carried out in-house in early May.

6.2. GENERAL WASTE DISPOSAL

Waste is defined as “any substance or object the holder discards intends to discard or is required to discard”

That we produce waste is inevitable but how we dispose of it is increasingly important in these days of dwindling resources. At the beginning of 2013 the University entered into a new waste contract with SITA UK where waste streams are identified and the best way to dispose of them considered. After some 18 months of the contract having now run CCCU is now in a position to chart progress

It remains the responsibility of the Housekeeping team to collect the university waste and place into euro bins located in our waste compounds. These compounds contain euro bins for Dry Mixed Recycling (DMR), General Waste (GTW) and a number also having provision for food waste and glass. None of the University's waste is sent to landfill but is shipped to mainland Europe for incineration and energy generation (Energy from Waste - EfW).

For the 12 months ending July 2014 the overall university waste contract recycling rate stood at 48.54% with a total 1021.9 tonnes being collected. This shows a 6.7% decrease in the weight of waste produced and collected over the previous 12 months.

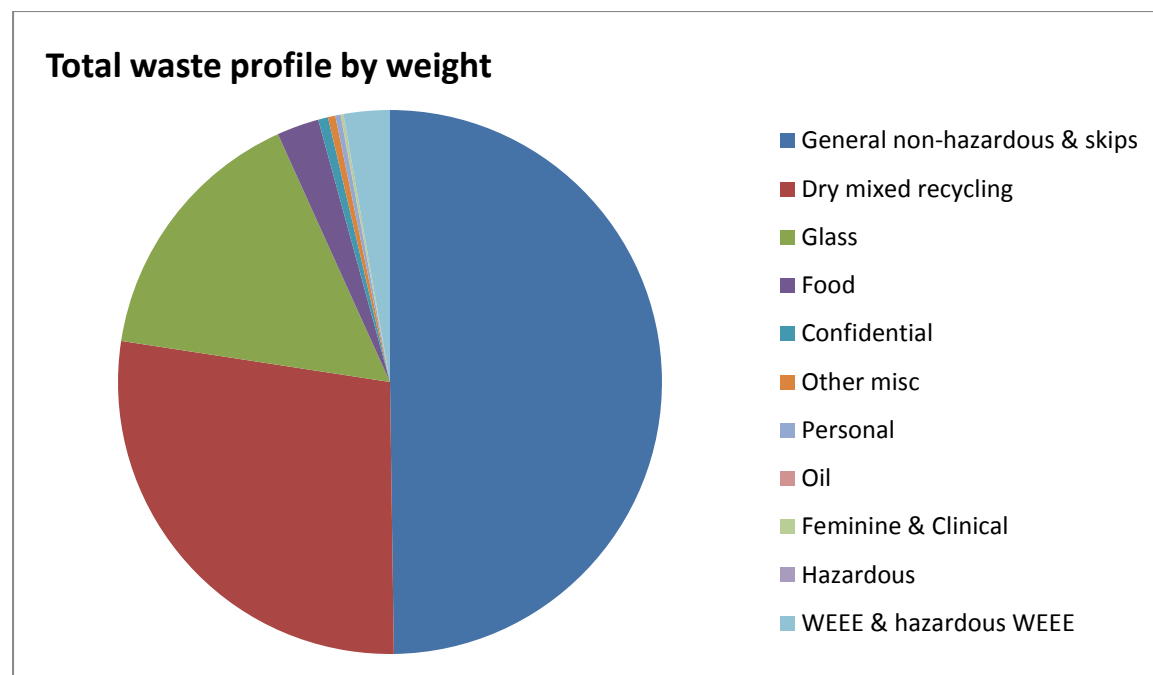
Waste stream	Weight in Tonnes
General non-hazardous waste & skips	525.6
Dry Mixed Recycling	291.9
Glass	167.1
Food waste	26.5
Confidential waste paper	6.2
Other misc items	4.6
Total	1021.9

6.3. OTHER WASTE AND REUSE SCHEMES

There are other waste stream generated which are collected outside of the SITA contract schedule by various third parties:-

- **Personal effects:** The University has a number of British Heart Foundation (BHF) collection bins located across the campus network where students and staff are able to dispose of unwanted items. It is calculated that a total of 3.296 tonnes of unwanted items has been collected over the past year which equates to a net benefit of 33,543 kg CO₂ compared with sending to landfill. This could provide a donation of up to £2.50/kg to the BHF.
- **Waste cooking oil:** 2180 litres of used oil was collected from the North Holmes Road campus and a further 510 litres collected from the Broadstairs campus for processing into Biofuels.
- **Feminine hygiene and Clinical waste:** As with the previous year an estimated 1.6 tonnes was collected and sent for incineration. The energy retrieval is calculated at 0.60MWh per tonne therefore producing 0.96MWh.
- **Hazardous waste:** Only minimal quantities generated and collected. Collections are dealt with as required.
- **WEEE¹⁰ including Hazardous WEEE:** Reported figures show that 28.91 tonnes of waste electrical goods were collected across the university.

¹⁰ Waste Electrical and Electronic Equipment



6.4. WASTE INITIATIVES

Following a very successful engagement with a third year student who undertook a waste review within classrooms and open areas as part of his 3rd year individual study, two key issues were investigated further. Firstly, clarity over the recyclability of the many disposable cups use was sought from our waste contractor, who confirmed that cups used in all university outlets are 100% recyclable. Additionally, the report also highlighted that there were discrepancies in the use of bins and the colours that identified what the bins were used for; this led to a review and audit of the bins across the organisation with a resulting action plan to standardise provision.

Other initiatives have included discussions throughout the University about communicating when there is furniture or equipment that can be reused or recycled. A good example of this relates to the use of stored furniture from a previous centre, which needed to be removed from storage. It was established that another department was looking for similar desks and chairs and proved ideal for this purpose. Previously there would not have been any way of this type of joined up planning and implementation for disparate areas of the University. As an organisation we are now looking at warp-it¹¹, a resource redistribution network, used by universities and public sector organisations in the UK. This will enable the University to dispose of any equipment no longer required for use to other organisations and also to look for equipment for small projects where suitable, for limited cost.

6.5. BUSINESS TRAVEL

The University travel plan is currently under review and responses to tender are being sought from three shortlisted companies to undertake this process. A capital bid has been agreed for the University to reduce and replace the current fleet of university vehicles with environmentally efficient leased vehicles. This will result in fewer vehicles and tighter controls on usage with

¹¹ Waste Action Reuse Portal

ownership from the various departments that use the vehicles. Additionally, it is proposed that the University pool car will be replaced with a vehicle from Enterprise rent-a-car, wherein the vehicle is on a permanent base at the university but is only charged as needed and used. All the new vehicles will be the cleanest and most economical variances of the vehicles possible.

Subsidised bus travel at our Canterbury and Medway sites remains in place for two different bus companies operating in Kent. Additionally, engagement with Kent County Council has enabled us to offer the new under 18 bus card, which will apply to a small number of our students.

6.6. SUSTAINABLE PROCUREMENT

During the year the University took part in a Procurement Maturity Assessment (PMA) conducted by Southern Universities Purchasing Consortium (SUPC). As a consequence of the PMA, work commenced on developing a Procurement Strategy for the University and agreeing an implementation plan for the arising actions. This work also linked the PMA with the Flexible Framework. The University has reviewed its overall target for achieving level 3 for all procurement activities and is now focusing on high spend and high impact areas with a target to achieve Level 4 during 2014-15 in the Facilities (Estates) cost centres. A workshop was developed to assist with the implementation of the Flexible Framework; the process will be reviewed during the year. This will then be rolled out to Facilities (Operational Services) and IT thereafter.

A Value for Money (VfM) Strategy was developed and agreed during the year in order to establish a VfM culture across the University by embedding VfM principles within existing management planning, review and decision-making processes. A VfM Steering group was established to oversee VfM activities across the University. In addition it has been agreed to change the format of reporting to the Audit Committee in order to give a broader appreciation of institutional effectiveness.

During 2013-14 a number of tenders took specific account of sustainability as outlined below:

Student Healthcare Uniforms

The Faculty of Health & Social Care provides uniforms to students on its courses. Ethical procurement considerations have a very high profile within the garment industry, especially given the issues with safety standards in clothing factories in the Far East over the past two years. The project team undertook a number of detailed checks on each company bidding for the contract to ensure the supply chain took into account issues such as labour rights, freedom of association, living wage and equal opportunities. The specification also required all garments to be manufactured from Fairtrade cotton.

Desktop, Laptop & Tablet PC Tender

The specification for the provision of various types of personal computer included several sustainability requirements. Bidders were asked how they would support the University's waste strategy by minimising the volume of computers which were sent to landfill. Potential suppliers were also asked to confirm whether they measured the amount of carbon embedded in their products and were also asked to provide details of supply chain management that minimised

ethical procurement issues such as child labour or the use of conflict minerals. Finally, all bids were evaluated on a whole life cost basis which incorporated not just the initial purchase price of each device, but the cost of energy consumption and disposal.

Storage Area Network (SAN) Tender

The University spent over £900,000 replacing this significant piece of IT infrastructure. As part of the tender all potential suppliers were required to complete several environmental questionnaires which required information on minimising energy consumption and packaging, the recyclability of the SAN components and hazardous substances contained within those components.

6.7. SUPPLY CHAIN EMISSIONS

A considerable amount of work was carried out during 2012/13, using guidance from the HEFCE and the supply chain emissions tool, in order to establish a carbon emissions baseline position for Scope 3 supply chain emissions. However, since the approach could only monitor carbon reductions through either spend reduction in specific commodity areas, or through on-going reduction in published supply chain emissions factors, concern was raised over the validity and usefulness of the approach. In addition to this DEFRA¹² discontinued publication of supply chain emissions factors in 2013, thus reinforcing the University's view.

In order to provide a high level monitor of the University's supply chain emissions, the tool has been used to compare 5 years (2009-14) of spend and to provide an average gross emission figure to compare with the other scope 1, 2 & 3 emissions. It should be noted that this is a very imprecise science but, given that the University has spent £45-50m (excluding capital) on goods and services in each of the last 5 years, this inevitably will equate to significant carbon emissions.

On average using the HEFCE supply chain emissions tool, the University's supply chain emissions are calculated to be 27,938 tonnes CO₂e per year, which equates to 0.58kg CO₂e per year for every pound that the University spends.

6.8. STAFF AND STUDENT COMMUTING

The University does not yet measure staff and student commuting in a way which allows emissions figures to be quoted publically. The sector recommendation from the HEFCE study on reporting emissions is to conduct regular surveys to establish travel modes and then apportion this to the total staff and student population. However, the dangers of survey fatigue, combined with notoriously low response rates would not provide emissions figures with any degree of confidence.

A proposal for automating the collection of basic commuting information (mode and frequency) from staff and students was developed in 2012/13 in line with the University's Business Planning process, and resubmitted in 2013/14. Unfortunately, this development has not yet been prioritised and further consideration will need to be given to the running of a staff and student

¹² Department for Environment, Food & Rural Affairs

travel survey in 2014-15 combined with existing postcode information, staff contracts and student individual timetables.

The University travel plan was agreed by SMT in 2009 and the resulting action plan has been reviewed annually. In order to bring the plan up to date and within the context of the University master planning process, external consultants are being sought to:

- review and rewrite the existing Travel Plan
- survey the staff and students
- support the development of a modes of transport analysis
- align with the new Canterbury City Council travel strategy
- align with the campus network and relevant local authorities
- provide a travel plan action plan for five years

7. SUSTAINABLE FOOD

The catering department continue to promote and offer sustainable food to our customers. All the fish items for sale on the menu are 100% MSC¹³ approved and we continue to ensure that all the meat purchased for sale from the catering department is 100% Red Tractor¹⁴ assured. Our eggs are purchased locally and are 100% free range.

One of our successes this year has been the promotion of the WOK bar which gives the customer much more variety and the opportunity to create their own dish, for which all of the ingredients are fresh. The Wok bar has also been used to promote our theme days focusing on healthy eating.

Unfortunately, organic milk remains cost prohibitive and the department is unable to implement this across our campus network. This is a common issue across the sector but cost monitoring will remain in place to ensure that when the opportunity arises, it can be offered.

China mugs have been provided at many outlets as an option for 'drink-in' customers where possible in order to reduce the impact and cost of disposables. Unfortunately, it is not possible to implement in all outlets due to the type and volume of business.

All food waste is now separated on site and is then collected by our waste contractor (SITA) to be composted in an anaerobic digester. Waste cooking oil continues to be collected for private biodiesel production.

8. STUDENT ENGAGEMENT

8.1. THE STUDENT GREEN OFFICE (SGO)

During the last year the Maastricht University Green Office model has been adopted by two UK universities as part of their successful NUS Student Green Fund (SGF) applications. The University of Greenwich received £171K and Exeter University £300K for the two years of the

¹³ Marine Stewardship Council

¹⁴ Red Tractor is the UK's largest food assurance scheme. Its respected food standards are used across the food supply chain to provide clear food labelling about the quality and sourcing of food.

SGF projects. A further two Green Offices in the Netherlands have been inspired by the Maastricht model.

As a response to very limited student activity for sustainability within CCCU and the Students' Union, *Futures Initiative* funding was used to employ three existing 2nd year students as interns for 8 hours per week to set up a Student Green Office (SGO). Two students from the PR, Media and Sustainability module were tasked to create an SGO identity and virtual presence, whilst an enthusiastic History student provides coordination of the development process and specific activities. The SGO was piloted in two locations during the June Open Day in Canterbury and received a good deal of positive feedback from prospective students and their parents.

The key focus for this embryonic unit, through September, is to recruit a small number of enthusiastic volunteers to run the SGO and develop a set of regular events and activities. A physical space has been provided with the Sustainability office, which is shared with the *Futures Initiative* team and a meeting space. Administrative and mentoring support is provided by members of the Sustainability office, and the SGO will become part of the Sustainability Governance structure that reports to the Sustainability Strategic Management Group (SSMG) in September 2014.

Our Student Green Office interns have been invited to attend the first European Green Office Summit to be held in Berlin in October 2014, with funding provided for all transport related costs.

8.2. STUDENT RESIDENCES

Energy and water conservation along with the effective management of waste and recycling in student accommodation remains a priority. However, student engagement with the conservation of utilities they have already paid for remains problematic. At the end of year review for 2012/13, recognition that the Student Switch Off¹⁵ project was becoming less effective resulted in the decision to discontinue participation.

To address the gap, the former Student Accommodation Environmental Champion role was re-imagined, stepping away from the warden role and delivering Christ Church specific campaigns. Campaign Leaders were recruited from the new intake of students, and supplemented with some of the previous year's employees who already had experience in the former roles. To promote and support the Accommodation Department's new student portal, monthly campaigns were designed and run through Browser with prizes of £50 to be won each month in poster competitions on different broad areas regarding sustainable community living, including budgeting, recycling, travel and so forth, and these were promoted with paper publications and in person each month by the Campaign Leaders.

Unfortunately, the take up from students was very poor; losing the warden aspect of their role meant students had less need to communicate with Campaign Leaders, resulting in the loss of much of the two-way communication established in previous years. A summer review of 2013/14 concluded that simpler, more accessible campaigns for raising awareness were needed

¹⁵ Student Switch Off is a not-for-profit campaign encouraging student action of climate change.

using social media as a platform, and that the warden aspect of the role be re-introduced to encourage more active engagement with Campaign Leaders/Accommodation Champions and more practical applications for the roles.

For 2014/15 Student Accommodation Wardens will be recruited by, and integrated within the Student Green Office. This will provide a more unified and student driven approach, which is embedded in a sustainability ethos and supported by an established infrastructure.

9. AWARDS AND RECOGNITION

9.1. GREEN LEAGUE

After seven consecutive years of the Green League, which changed significantly from year to year, People & Planet decided that a major review should be undertaken during 2013/14. The review consulted widely across the sector using the Green League Oversight Group (GLOG), which included CCCU, during the period November 2013 to April 2014. The Green League 2014 Guide was revealed and the survey launched during late July 2014. However, there was significant unrest across the sector, both through the EAUC¹⁶ and AUDE¹⁷ networks, at the scale of the survey, the changes and additions, and the timeframe, which moved into the busy summer period.

A joint statement was submitted to People & Planet asking them to defer the Green League survey 2014 in order for a more collaborative approach to be adopted in the development of a more holistic but lighter touch survey that recognised the diversity of the sector. People & Planet declined and chose to proceed with the survey. EAUC and AUDE have surveyed the sector independently to provide a litmus test of opinion about whether institutions would be submitting a response to the Green League survey or not. The most recent survey results (AUDE 08/09/14) concluded that of the 92 responding institutions, 27% will submit, 58% will not submit and 15% are undecided. SMT agreed that CCCU should take a principled decision and not submit for one year, in support of the original request by EAUC and AUDE. However, it should be noted that People & Planet will still report a CCCU position in the Green League based on performance data submitted to the HESA EMR¹⁸ and responses submitted in 2013. The University will issue a 'Refusal notice' to the FOI request on the basis that the scale of the request is 'manifestly unreasonable' in line with section 12(4)(b) of the Environmental Information Regulations 2004.

10. SUSTAINABILITY GOVERNANCE

10.1. MEASURING AND BENCHMARKING PERFORMANCE

In February 2014 the University successfully retained ISO14001 accreditation for its Environmental Management System (EMS). 2015 will see the second health check audit of the 3 year cycle before a complete reassessment is due in 2016.

¹⁶ Environmental Association for Universities and Colleges

¹⁷ Association of University Directors of Estates

¹⁸ Higher Education Statistics Agency Estates Management Record

In parallel with the EMS, the LiFE¹⁹ Index performance improvement matrices are being used to assess current performance and set key targets for improvement. LiFE, which is a 'for sector' 'by sector' development of a CSR index, is being re-launched by the EAUC and will be free to members, with a chargeable external accreditation process available as required. The LiFE Index performance assessment has been built in to all SSMG working group terms of reference and is specifically referenced within the EMS as the mechanism for performance assessment and target setting. Based on 4 priority areas LiFE covers the breadth of sustainability and SER within an HEI, with frameworks as follows:

Leadership and Governance	Partnership and Engagement
Leadership Staff Engagement and Human Resources	Community and Public Engagement Business and Industry Interface Procurement and Supplier Engagement
Estates and Operations	Learning, Teaching and Research
Biodiversity Sustainable ICT Utilities Travel and Transport Sustainable Construction and Renovation Resource Efficiency and Waste	Learning and Teaching Research Student Engagement

A major system review of the EMS has reduced the scope to include only the management of significant negative environmental impacts, as the standard was originally designed to address, with the exception of Education for Sustainable Futures, which remains due to the significance of its positive impact. As the implementation of the LiFE Index broadens in to Leadership, HR, student and staff engagement and the wide ranging partnership activities, consideration will need to be given to the governance and reporting structures. These will be addressed as an integral part of the development of a university Sustainability and SER strategy.

10.2. DEVELOPING STRATEGY

The new university strategic framework has taken a fresh look at the University's mission and values, as well as providing a clear set of strategic aims and objectives. Unlike the previous strategic plan, Sustainability, and Social and Environmental Responsibility (SER) are core to the framework; providing both implicit and explicit statements of intent. A series of cross cutting themes and underpinning strategies are also identified, which not only require the development of an overarching Sustainability and SER strategy but also that associated objectives are integrated throughout the organisation.

A framework for the development of an integrated strategy will be taken forward by the SSMG in 2014-15. It is proposed that a high level policy and set of strategic aims and objectives are

¹⁹ Learning in Future Environments is a HEFCE funded EAUC managed development of a CSR assessment and performance improvement methodology for the HE sector

developed, based on the principles of ISO26000²⁰, as manifested through appropriate performance assessment, improvement and reporting frameworks and tools, such as LiFE. These will need to be grounded in the general HE landscape as well as our specific contexts of location, stakeholder groups and markets, such that it supports the development of a distinctive organisation.

The strategy will need to be owned at an appropriate local level such that Departmental, School or Faculty strategies respond to higher level objectives. For example:

- Utilities management is a core university service with holistic responsibility resting with the Facilities department. The Utilities Framework would be used by that team to drive performance improvement.
- Learning, Teaching and RKE has central policies, strategy and processes; however, Faculties develop their own strategies within the context of high level university objectives. Therefore, LiFE could be implemented and a Faculty level.
- Sustainable procurement is driven by central policy but enacted through delegated powers. Using LiFE in the most efficient and effective manner, by focusing on high risk high spend areas, such as Estates, Facilities and IT will drive performance improvement more effectively in the short to medium term, whilst covering a high proportion of university spend.

10.3. REPORTING PROCESSES

This report is published annually and quantitative information is presented in a way that is comparable from year to year. The measurement data originate from the University's own statistics, and from suppliers and contractors used by the University. The last report was published in October 2013. No essential changes have been made in the report in relation to definitions of scope or measuring methods since the last reporting period.

²⁰ International guidance standard for Social Responsibility

11. APPENDICIES

Appendix 1: Summary of publications, papers & presentations supported by the *Futures Initiative*

INTERNATIONAL REFERENCED JOURNAL ARTICLES

Gower, G. (2013) *Sustainable development and allied health professionals*, International Journal of Therapy and Rehabilitation, 20(8), pp 403 - 409, 6th Aug

Scoffham, S. (2013) *'Do We Really Need to Know This? The challenge of developing a global learning module for trainee teachers'* International Journal of Development Education and Global Learning 5(3) 28-45

Kemp, S. with Scoffham, S., Rands, P. et al, (2012) *A National Programme to Support Education for Sustainable Development: University experiences of the HEA Green Academy programme, Rio+20 conference on 'Sustainability in Universities'*. Published in Vol. 34 of Environmental Education, Communication and Sustainability, entitled - Sustainable Development at Universities: New Horizons, October

Vujakovic, P. (2013) *Phytobiography: an approach to 'tree-time' & 'long-life learning'*, Arboricultural Journal, 35(2), 134-146

Vujakovic, P. (2011) *'Down but not out!' – Windthrow Trees as Competitive Organisms within Storm Generated 'Gaps' in East Kent, UK*. Arboricultural Journal, 33(4) pp. 213-227

Vujakovic, P. (2011) *Animal? Vegetable? Mineral?* In: Möller, V. (2011) *Fictional Hybrids*, Stour Valley Arts: Challock, Kent, pp.33-37

IUCN/SSC, (2013) *Guidelines for Reintroductions and Other Conservation Translocations*, IUCN Species Survival Commission, viiii + 57 pp. Translation to Portuguese by Adriana Consorte-McCrea, Christine Steiner S. Bernardo and Carlos Ruiz-Miranda, June 2014

BOOKS

Consorte-McCrea, A.G. & Ferraz Santos, E. (Eds) (2013) *Ecology and Conservation of the Maned Wolf: Multidisciplinary Perspectives*, CRC Press, Taylor Francis Group, Boca Raton, London & New York.

Scoffham, S. and Bridge, C. (2014) *Collins Primary Geography Books 1-6*, Glasgow: HarperCollins.

Barnes, J. & Scoffham, S. (2013) *'Geography, Creativity and the Future'* in Teaching Geography Creatively, Scoffham, S. (Ed), London: Routledge

BOOK CHAPTERS, REPORTS AND NEWSPAPER ARTICLES

Scoffham, S (2014) *'Should Children be Learning about Climate Change?'* In Sangster, M. (Ed) *Challenging Perceptions*, London: Bloomsbury

Scoffham S., Bracewell, J. & Buckley, J. (2013) *Building Sustainability Awareness: A collaborative approach to staff*. In Best Practice Guide, Teacher Education for Equity and Sustainability Network (TEESNet)

Scoffham, S., Whyte, T. & Owens, P. (2012) *Problems with 'Real World' Problems? Barriers to Sustainability Education*. In: ITEF in Inman, S and Roger M (Eds) Teacher Education for Equity and Sustainability Network (TEESNet) 2013 Conference Proceedings, London: South Bank University pp99-106

Scoffham, S., Rands, P. *et al.* (2011) 'A 'Wicked' Approach to a 'Wicked Problem': Developing ESD in the curriculum at Canterbury Christ Church University', In Global Vision, Local Action: Education for Sustainable Development and Global Citizenship, Proceedings of Fourth International Conference, Bournemouth University, September

CONFERENCE PAPERS AND PRESENTATIONS

Adesina O. O. and Shevchenko, K. (2013) 'UK university sustainability agenda: underlying motivations'. Centre for Social and Environmental Accounting (CSEAR) Conference, University of St Andrews, St Andrews, UK, 3rd - 6th September

Brown, L. (2013) 'Realising sustainability commitments: A UK University case study from a ground level perspective', 16th ERSCP-EMSU Conference: Bridges for a More Sustainable Future – Uniting Continents and Societies, Istanbul, Turkey, 4-9th June

Brown, L. & Kemp, N. (2013) 'What is Sustainability?' Presentation to Canterbury Christ Church University BSc (Hons) Events Management students, CCCU Spring Fair, 2nd May

Consorte-McCrea, A.G., Thompson, T. and McDonnell, S. (2014) 'Attitudes towards native wild carnivores and biodiversity conservation in the UK', BES and DICE Joint Symposium, Considering the Future of Conservation, University of Kent, UK, 25 – 27th June

Consorte-McCrea, A.G. (& Newing, H., University of Kent) (2014) 'Creating spaces for interdisciplinary exchange in higher education: a case study', Education for Sustainable Development London annual conference, London South Bank University, 10th June

Consorte-McCrea, A., Thompson, T. and McDonnell, S. (2014) 'Attitudes towards native wild carnivores and biodiversity conservation in the UK', BIAZA (British and Irish Association of Zoos and Aquariums) Annual Conference, Yorkshire Wildlife Park, UK, 09-11th June

Consorte-McCrea, A.G. (& Newing, H., University of Kent) (2013) 'Wildlife and Society: Challenges for a Shared Future', Teacher Education for Equity and Sustainability Network (TEESNet) 2013 Conference Proceedings, London South Bank University, 11th July

Consorte-McCrea, A. G. (2013) 'Wildlife and Society: Challenges for a Shared Future', Wildlife and Society conference, Canterbury Christ Church University, 21st March

Fox, K. (& Moore, P. of Jumping Astronaut Ltd.) (2013) 'Storytelling through free social media with www.mermology.com', 'Storyville: Exploring narratives of learning and teaching', 2nd Annual Higher Education Academy Arts & Humanities Conference, Brighton, 29 -30th May

Futures Initiative team (Consorte-McCrea, A. G., Kemp, N., Rands, P & Scoffham, S.), Canterbury Christ Church University (2014) 'Grass root and Green Shoots' Higher Education Academy (HEA) 'Green Academy' workshop, Blake Hall College, London, 16th May

Kemp, N. (2014) 'Building a Partnership for Change: The Connecting Children and Nature Network', Education for Sustainable Development London Annual Conference, London South Bank University, 10th June

Kemp, N. (2014) 'Building a Partnership for Change: The Connecting Children and Nature Network', Copernicus Alliance (European Network on Higher Education for Sustainable Development) Conference, University of Gloucestershire, 9-10th January

- Rands, P. & Haddock-Fraser, J. (2013) *'From start to beginning: A Journey from the sustainability wilderness'*, EAUC (Environmental Assoc. of Universities and Colleges) Annual Conference, Nottingham Trent University, England, 17-19th April
- Rands, P., Luna, H., Kemp, S., Robertson, A. & Robinson, Z. (2011) *'Green Academy: Curricula for tomorrow'*. In Global Vision, Local Action: Education for Sustainable Development and Global Citizenship, Proceedings of Fourth International Conference, Bournemouth University, September
- Scoffham, S. (2014) accepted, *'Broadening Perspectives: Challenging Practice' Building Capacity in Higher Education*, Copernicus Alliance Conference, Charles University, Prague, Czech Republic, 3rd October
- Scoffham, S. (2014) (with Kemp, N.) accepted, *'It's Contagious: Developing sustainability perspectives in academic life at a UK university'*, Second World Symposium on Sustainable Development, Manchester Metropolitan University, UK. 4th September
- Scoffham, S. (2014) *'The Futures Initiative', Turning Tides in EFS Across Higher Education*, University of Gloucestershire, 2nd July
- Scoffham, S. (2014) *'Difficult Geographies'*, Charney Manor Primary Geography Research Conference, Charney Bassett, 28th February
- Scoffham, S. (& Martin, F., University of Exeter), (2013) *'Frameworks for Intercultural Learning'* in: Inman, S and Roger M (Eds) Teacher Education for Equity and Sustainability Network (TEESNet) Conference Proceedings, London: South Bank University, 11th July
- Scoffham, S. (with Kemp, S. et al) (2012) *Institutionalising sustainability in the curriculum and the student experience: lessons from the Green Academy*, University of York, 26th March
- Vujakovic, P. & Powley, D. (2014) *'Walking the walls: the importance of wall plants as part of a developing 'sense of place' narrative for the Canterbury UNESCO World Heritage Site' 'Meeting the Challenge of a Sustainable Urban Future: the contribution of green walls'*, International Green Wall Conference, Staffordshire University, 4th-5th September
- Vujakovic, P. & Kemp, N., (2014) *'Inside out and upside down'* (Learning, Teaching and Research strand), 18th EAUC (Environmental Assoc. of Universities and Colleges) Annual Conference, Nottingham Trent University, 7-9th May
- Vujakovic, P., (2013) *'Kent's Phoenix Trees: Survivors of the Great Storm'*, Kent Wildlife Trust, Blean Woodland Festival, Canterbury Academy, 2nd June
- Vujakovic, P. (2013) *'Touching the Phoenix trees: life-long learning, long-life learning and phytobiography. 'Researching Learning Lives: on discipline, inter-disciplinary and imaginative imperatives in auto/biographical and narrative research'*, ESREA – European Society for Research on the Education of Adults, Life History and Biographic Research Network, Canterbury Christ Church University, England, 28th February – 3rd March
- Vujakovic, P. (2012) *Canterbury Christ Church University Bioversity - The Canterbury UNESCO World Heritage Site as a living learning resource for all*, 'Sustainability in Practice', University of Nottingham and the Higher Education Academy, 24th May
- Vujakovic, P. (2012) *Nature, Culture and 'Sense of Place': Environmental stewardship of a UNESCO World Heritage Site and the total curriculum* 'Nature and the natural in the humanities: Teaching for environmental sustainability', Centre for Language, Linguistics and Area Studies (LLAS), University of Birmingham, 27th April

Vujakovic, P. (2012) *Shared Stewardship of Nature: past, present and future* 'Many Species, One Planet for Posterity': An International conference on Science, Society and Sustainability Lady Doak College, Tamil Nadu, India, 11-13th January

Vujakovic, P. (2012) *'Windthrow trees, Nature's survivors: East Kent case studies'*, Healing Landscapes: trees and society, twenty-five years on from the Great Storm anniversary conference, Canterbury Christ Church University in association with the NHS Forest/Centre for Sustainable Healthcare, 20th October

ELECTRONIC PUBLICATIONS

Howells, K. (2013) *'Beyond the Fridge Freezer'*, submitted to the European Society for Research on the Education of Adults (ESREA) website and a presentation featured on the [Prezi website](#).

Scoffham, S. (2014) *HEA Education for Sustainable Development and Global Citizenship: Good practice case studies for teacher education, Case Study 14 Developing a Sustainability Mindset: A Collaborative approach to staff development* available at

http://www.heacademy.ac.uk/resources/detail/disciplines/education/TEESNet_ESDGC

Scoffham, S. (2014) *HEA Education for Sustainable Development and Global Citizenship: Good practice case studies for teacher education, Case Study 11 Study visits to the global south* available at

http://www.heacademy.ac.uk/resources/detail/disciplines/education/TEESNet_ESDGC

WEBSITES

Consorte-McCrea, A. (2013)

Wildlife and Society

<http://www.canterbury.ac.uk/social-applied-sciences/geographical-and-life-sciences/Ecology-Research-Group/Wildlife-and-People-Initiative/Home.aspx>

Fox, K. (& Moore, P. of Jumping Astronaut Ltd.) (2013)

Mermology - <http://www.mermology.com>

Scoffham, S. (2014)

Exploring Sustainability - <http://www.canterbury.ac.uk/exploring-sustainability/>

Appendix 2a: Breakdown of Carbon Emissions for 2013-14

Scope	Emission Source	Data type	2013/14 usage	Units	Cost 2013/14	tCO2e/unit	Tonnes CO2e	Factor Source
1	Gas	Meter readings	10,506,355	kWh	£462,569	0.18497	1943	DEFRA 2014 gaseous fuels
1	CCCU Vehicles	Invoice data	8,631 (D) & 441.22(P)	litres	£12701.1	2.6705 (D) & 2.3104 (P)	24	DEFRA 2014 liquid fuels (Assumed 100% Mineral)
2	Electricity (Generated)	Meter readings	10,905,786	kWh	£1,291,503	0.49426	5390	DEFRA 2014 UK Electricity Generated
3	Electricity (Transmission & Distribution)	Meter Readings	As above	kWh	NA	0.04322	454	DEFRA 2014 UK Electricity Transmission and Distribution
3a	Water Consumption	Water Bills	105617.2	m3	£188,673	0.3441	36	DEFRA 2014 water supply
3a	Waste Water Treatment	Water Bills	81547.75	m3	£237,314	0.7085	58	DEFRA 2014 water treatment
3a	Waste to landfill	SITA	0	tonnes			0	DEFRA 2013 municipal waste to landfill
3a	RDF, Skips, Mixed Recycling & WEEE	SITA	1021	tonnes	£TBD	21	21.44	DEFRA 2014 municipal waste to combustion
3a	Business Travel - Car	Expenses	1,161,973	miles	£498,886.87	0.306146	355.73	DEFRA 2014 average car fuel unknown
3a	Business Travel - Motorcycle	Expenses	278 (Claims)	miles	£66.77	0.191367	0.1	DEFRA 2014 average petrol
3a	Business Travel - Bus/Coach	Expenses	593 (Claims)	£	£398,663.3	0.9500	374	DEFRA 2012 Table 13 60.2 (2009)
3a	Business Travel - Taxi	Expenses	1160 (Claims)	£	£100,299.02	0.9500	95	DEFRA 2012 Table 13 60.2 (2009)
3a	Business Travel - Train	Expenses	4306 (Claims)	£	£201,627.6	0.9300	188	DEFRA 2012 Table 13 60.1 (2009)
3a	Business Travel - Train	Key Travel	65543 (Claims)	Kms	£220,138	Variable depending on distance	6.284	Key Travel
3a	Business Travel - Ferry	Expenses	7 (Claims)	£	£344.34	1.9600	0.6	DEFRA 2012 Table 13 61 (2009)
3a	Business Travel - Air	Ledger	243 (Claims)	£	£63,928.04	2.8600	183	DEFRA 2012 Table 13 61 (2009)
3a	Business Travel - Air	Key Travel	1,975644.85	Kms	£118,815	Variable depending on distance	187	Key Travel (DEFRA 2013 without Radiative forcing)
3a	Student - placement travel	Expenses	676 (Claims)	£	£317,965	0.9500	302.0	DEFRA 2012 Table 13 60.2 (2009)
3a	Supply chain (procurement)	Spend	Not applicable	£	£48m	0.00058	28,000	HEFCE Supply chain emissions tool
3b	Staff commuting	Not yet measured						
3b	Student commuting	Not yet measured						

Appendix 2b: Associated bar chart for emissions categories 2013-14

