



**Universities & Colleges
Climate Commitment for Scotland**

**Climate Change Action Plan
*2010 to 2014***

Introduction / Background	7
Context and drivers for Carbon Management.....	7
Vision and Strategic Themes.....	10
Baseline Carbon Footprint.....	10
Scope	10
Carbon Baseline	11
Business as Usual Emissions	13
Value at Stake.....	13
Categories for Action.....	15
Methodology	19
Project Management / Governance	19
Communications Strategy	21
Climate Change Action Plan	22
Appendix B: Definition of Carbon Saving Projects	29

Foreword from UWS

As the largest modern University in Scotland we recognise the impact that our activities have upon the environment and realise we have a significant role to play in supporting national Climate Change Programmes, working towards the Scottish Government objective of reducing emissions by 42% by 2020.

We have signed up to the Universities & Colleges Climate Commitment for Scotland and commit to publishing and implementing this five year Climate Action Plan, aimed at embedding sustainability into day to day activity, providing a positive role model for students, colleagues and the wider community. We see sustainability as an integral part of good institutional practice, producing resource and costs efficiencies which will help us to build an economically, as well as environmentally sustainable institution.

A handwritten signature in black ink that reads "Seamus McDaid". The signature is written in a cursive style with a period at the end.

Seamus McDaid

Principal & Vice-Chancellor

University of the West of Scotland

Executive Summary

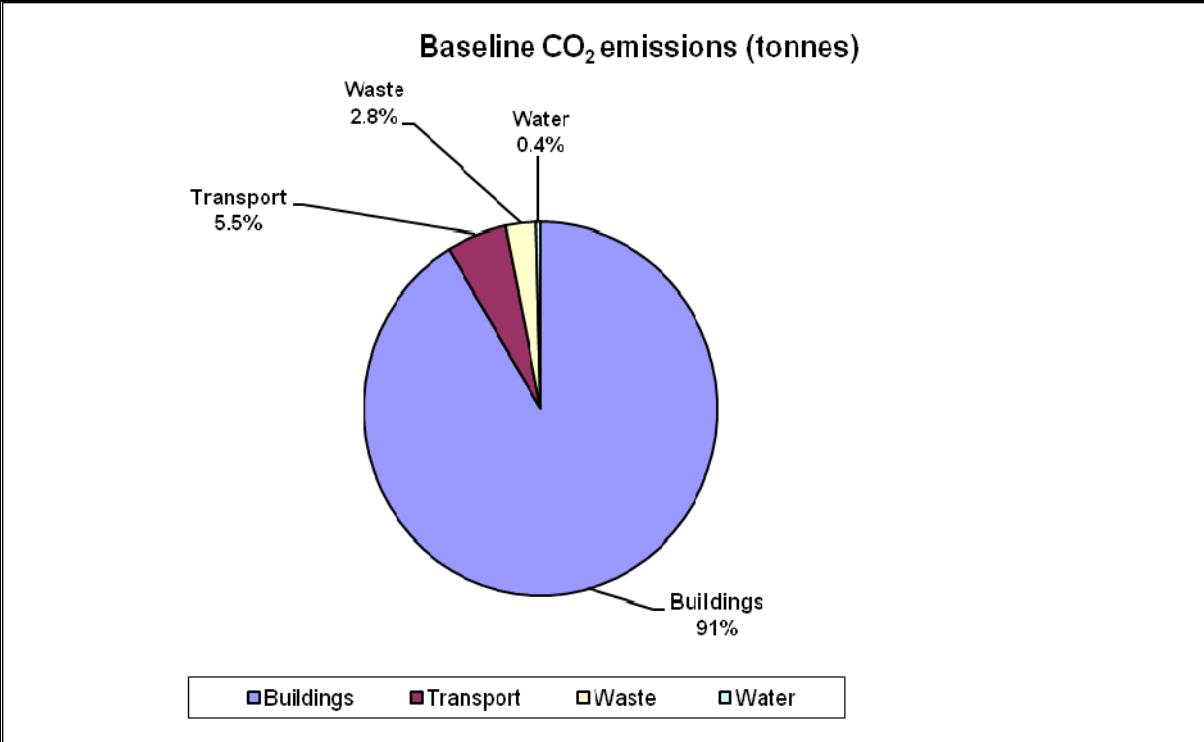
This Climate Action Plan illustrates the University's commitment to reducing the UWS carbon footprint through the proactive development of a sustainable carbon culture. This plan provides the strategic context and resource requirements necessary to drive forward sustainable carbon management at the University of the West of Scotland.

The Scottish Government target to reduce carbon emissions by 42% by 2020 is driving public sector organisations to take action; this aligned with volatile energy costs and the introduction of the Carbon Reduction Commitment Energy Efficiency Scheme increases the financial burden of energy consumption leaving little alternative but to implement ambitious mitigation plans.

UWS has set an interim target of 20% reduction in carbon emissions by 2014 based on a 2008 baseline. Included within the scope of this ambitious target are the following areas where significant carbon savings can be achieved:

- Building energy use
- Staff business travel
- Waste disposal
- Water

The University's baseline emissions for calendar year 2008 was 11,499 tonnes of CO₂. The chart below illustrates that the most significant contribution was from energy use in buildings, therefore this will be the main focus of activity also requiring the most significant resources.



The following four key strategic themes have been identified as priority areas of action in achieving cost effective carbon saving opportunities:

- Estates Strategy
- Green ICT
- Awareness raising and embedding
- Securing internal and external finance

If UWS does not take action to reduce consumption there will be significant financial as well as environmental impacts. Projections show that in 2014 energy, water, business travel and waste costs could rise to nearly £4 million. In 2014 alone financial savings from a 20% reduction in carbon could be over £700,000 when compared with business as usual scenarios. This is a significant figure particularly in light of funding cuts and the efficiency savings required by the University which will amount to at least 10% over the next three years. The potential savings from reducing carbon emissions equates to between 15 to 20 members of staff.

From the corporate social responsibility perspective the University has an obligation to its staff, students, stakeholders and the wider community it serves, to lead by example and minimise its impact on climate change but also to properly equip its students to face the challenges they will meet by providing them with the knowledge and awareness of sustainable actions, behaviours and attitudes which can give them a competitive advantage in the graduate marketplace. This will be achieved through embedding sustainability into the educational experience, through integration into course work, research opportunities and informal awareness raising activity.

This plan identifies a range of low cost “quick win” opportunities which will be prioritised to achieve initial savings, however to achieve the 20% carbon reduction target and an estimated cumulative financial saving of nearly £2.3 million by 2014, more significant financial resources will be required. In order to implement the measures identified in this plan an investment of £1.7m* is needed, this will form the greatest challenge for the implementation of this plan in a time of public sector funding cuts. Availability of funding and ensuring best value through approved business cases will be factors in the progress towards the desired 20% target. UWS will require to reallocate existing resources to facilitate the implementation of projects capable of securing longer term financial and environmental sustainability.

The majority of projects identified have payback periods of less than three years and therefore there is a strong economic case for implementation. If external funding were made available through schemes, such as the Salix ring fenced loan fund, it would ensure that the 20% target is achieved and a more ambitious 25% target could be set.

**It should be noted that over £1m of this funding is for replacement heating at Paisley Campus which will require to be carried out due to the current system nearing the end of life.*

Introduction / Background

This Climate Change Action Plan has been produced to support the delivery of the UWS Climate Commitment, signed by the Principal in March 2009. The main drivers in making this commitment are detailed below.

Context and drivers for Carbon Management

Political Drivers

STERN REVIEW: The Economics of Climate Change (2006) was commissioned by the UK Government to look at the impacts of climate change:

“The scientific evidence points to increasing risks of serious, irreversible impacts from climate change associated with business-as-usual paths for emissions.

The evidence shows that ignoring climate change will eventually damage economic growth. Our actions over the coming few decades could create risks of major disruption to economic and social activity, later in this century and in the next, on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century. The earlier effective action is taken, the less costly it will be.”

The Scottish Government passed the Climate Change Scotland Act (2009) and has set one of the world's most ambitious interim climate change targets, cutting carbon emissions by 42% (compared with their 1990 levels) by 2020, on route to the longer term UK target of 80% by 2050.

The higher education sector has an important role to play in embedding sustainability into the everyday experience of colleagues and students, through the implementation of targeted sustainability policy and action. As well as reducing Universities' direct emissions the sector has the ability, through education and research, to impact significantly on the wider local and global community.

Financial drivers

Carbon Trust figures predict an average annual increase of 8.4% in utility costs. Due to the volatility of energy markets this can only be an estimated figure. Prices may decrease for short periods of time but the long term impact on fuel prices is likely to be a substantial increase.

Further carbon costs will be incurred by the University with the introduction of the CRC Energy Efficiency Scheme (formerly known as the Carbon Reduction Commitment). This is the UK's mandatory climate change and energy saving scheme, due to start in April 2010. It is central to the UK's strategy for improving energy efficiency and reducing carbon dioxide (CO₂) emissions, as set out in the Climate Change Act 2008.

CRC is designed to improve energy efficiency in large organisations. It will operate as a 'cap and trade' mechanism, providing a financial incentive to reduce energy use in buildings by putting a price on carbon emissions, initially £12 a tonne. In CRC, organisations buy allowances annually, from 2011 onwards, equal to their yearly emissions (UWS baseline estimate £125,976).

All the money raised through the allowances will be recycled back to participants according to how well they perform. The scheme features a published annual performance league table that ranks participants on energy efficiency performance. Organisations at the top of the table will have the potential to receive greater returns; those performing less well will only receive a percentage of their initial investment. The financial and reputational considerations encourage organisations to develop and implement effective carbon management strategies.

The cost implications of CRC have not been incorporated into the financial scenarios in this plan and provide an additional driver for reducing carbon. It is anticipated that if the 20% carbon reduction target is achieved that this should be cost neutral after the initial 2011 payment. If carbon is not reduced additional annual CRC costs can be expected.

UWS Strategic Drivers

Strategic Plan

The University of the West of Scotland Strategic Plan (2008 to 2015) committed to an environmental policy and action plan being developed in 2009.

“Will put in place an environmental strategy and develop a plan to ensure that our four campuses are green, and all new buildings meet excellence in environmental standards.”

The draft Sustainability Strategy targets Carbon Management through the following commitments:

- Promote greater awareness of environmental issues and responsibilities to staff, students, and the wider community.
- Ensure that we fully satisfy, and where possible exceed, our obligations to meet legislative requirements and good practice in relation to all environmental standards and issues.
- Promote environmentally and socially responsible procurement of the acquisition of goods and services.

- Manage and maintain our estate in a way that will protect and enhance the environment for the benefit of students, staff and wider community now and in the future.
- Improve the efficiency of buildings through environmentally sustainable design within new and refurbishment projects.
- Reduce the University's carbon footprint through the development, implementation and review of an ambitious UWS Climate Action Plan, embedding sustainable carbon management into day to day activity.
- Reduce the impact of transport on the environment through the adoption of Sustainable Travel Plans for each campus
- Develop effective waste and water management, minimisation and recycling procedures

Carbon Management is also a key theme in the 2010 review of Estates, ICT and Procurement Strategies and will help to facilitate future activity.

Corporate Social Responsibility Drivers

Effective carbon management also impacts on University image and student and staff recruitment. As general sustainability awareness is growing, people are demanding better environmental performance from organisations and want to be affiliated with those that are 'doing their part' for the planet. Achieving a 20% reduction in carbon will be an effective marketing tool for potential customers.

Aligned with reducing carbon emissions many of the measures outlined in this plan will improve facilities and therefore enhance the student and staff experience, for example double glazing and heating upgrades will increase comfort levels in classrooms and offices.

Vision and Strategic Themes

UWS low carbon vision

Our vision is for UWS to play a significant role in combating climate change by empowering the University Community to make positive behavioural changes, embedding sustainable carbon management practices across all University activities.

Carbon Reduction Target

The University of the West of Scotland will reduce carbon emissions by 20% of the 2008 baseline by 2014.

Baseline Carbon Footprint

Scope

The following areas will be included within the scope of the UWS Carbon Management Plan:

- Staff and student awareness
- All UWS Academic Buildings and residencies energy use
- Sports facilities
- Fleet Vehicles
- Staff business travel
- Waste disposal

- Water
- Policy and legislation

Carbon Baseline

The following table summarises the 2008 University of the West of Scotland carbon baseline and provides an estimate of associated costs. The information clearly illustrates that the majority of UWS carbon emissions are produced by buildings.

Summary table of emissions for baseline year 2008

	Total CO ₂ Emission (tonnes)	Buildings	Transport	Waste	Water
Baseline CO ₂ emissions (tonnes)	11,499	10,498	635	319	46
Baseline Cost (£)	£ 2,491,719	£ 2,094,018	£ 253,763	£ 60,023	£ 83,915

The following table provides a summary of how data was sourced and this methodology will be used in future years to ensure a like for like comparison can be made.

Data source summary

Data	Data Source	Notes
Buildings	<p>Invoice data is recorded on spreadsheets, stored in the shared Estates folder.</p> <p>Utilities were contacted directly for Hamilton data.</p> <p>Housing data was included in Stationary sources</p>	<p>Cost of utilities was taken as an average of the different contracts, this was further complicated by substantial increase in gas and electricity costs throughout this period</p>
Changing Estate	Ayr new build consultants provided forecast figures for the	

	new building	
Transport	<p>Mileage data for pool cars was provided by Estates.</p> <p>Some flight data was provided from procurement cards</p> <p>Travel expenses data for April 2008 was recorded and extrapolated to provide an annual estimate.</p>	<p>This was time consuming and should be aided by an electronic expenses system from 2010.</p> <p>Commuter travel will be added to the baseline at a later date once travel surveys have been carried out.</p>
Waste	<p>Tonnage data was supplied by contractors where available.</p> <p>Where 1100L bins are used an indicative figure of 110kg per bin was used to calculate approximate tonnage.</p>	
Water	<p>Invoice data was used for metered water which forms the majority of supply.</p>	

Emission factors used to calculate Carbon Emissions

Energy type	Factor (kg CO ₂ /kWh gross)
Electricity (grid)	0.537
Natural gas	0.185

Fuel or vehicle type	Units	CO ₂ factor (kg/unit specified)
Diesel	litres	2.63
Average petrol car	km	0.21
Air - long haul international	Passenger km	0.12
Air - short haul international	Passenger km	0.11
Air - domestic	Passenger km	0.19

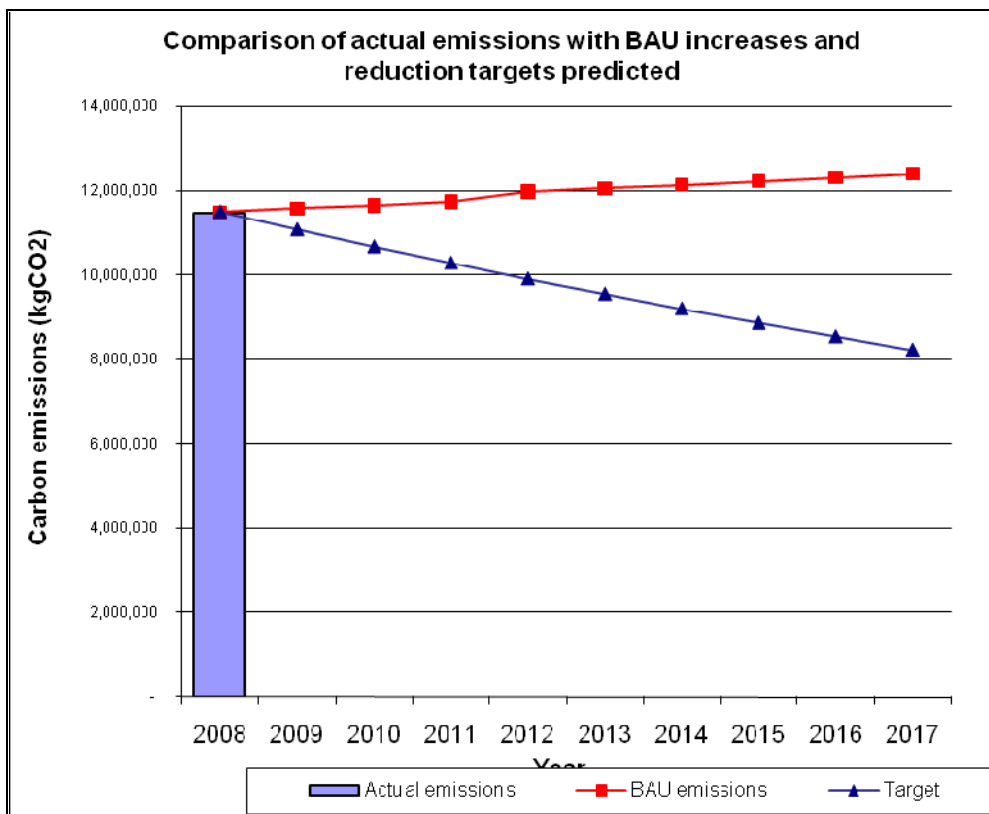
Business as Usual Emissions

Value at Stake

Carbon Value at Stake

Business as usual carbon emission are illustrated below, projections have been calculated using recognised DTI figures predicting an annual 0.7% rise in consumption figures under normal growth conditions. This assumes that student and staff numbers will remain fairly constant. The known changes to the UWS Estate such as the Ayr new build have been factored into this projection. However until the Estates Strategy is finalised there may be other elements that impact on this scenario within the 5 year period.

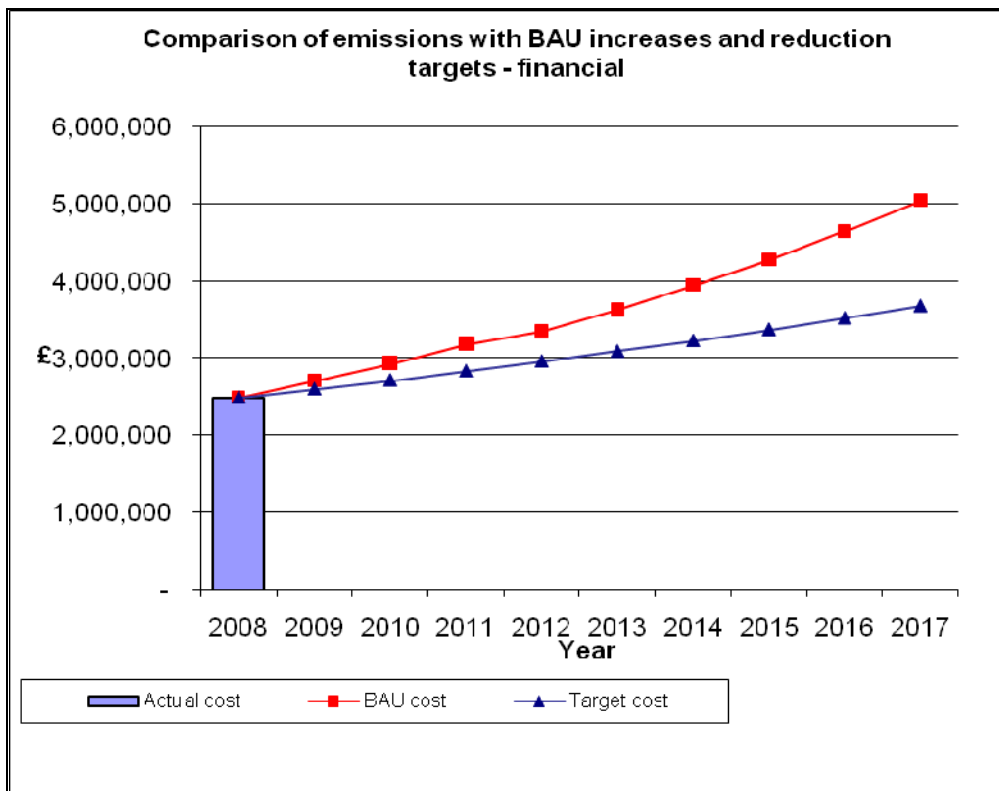
The target carbon reduction line assumes a 20% decrease by 2014 with a continued year on year reduction thereafter working towards the Scottish Government target of 42% by 2020.



Financial Value at Stake

The cost implications of non implementation are clearly illustrated below. A growth increase in consumption as detailed above and the volatility of utility costs will create a substantial financial burden on the University. Projections use recognised Carbon Trust data indicating a potential 8.4% annual increase in costs. The graph demonstrates that estimated costs could rise to as much as £4 million by 2014. Costs do not take into account the additional financial implications of the CRC Energy Efficiency Scheme, estimated at current emissions levels to cost approx £125,976 in the first year.

It should be noted that the 20% reduction in carbon emissions will substantially reduce costs in comparison to business as usual scenarios with the potential to save over £700,000 pounds in 2014 alone and an estimated cumulative saving of nearly £2.3 million pounds during the implementation period of this Carbon Management Plan.



Categories for Action

The following categories of action are outlined in the Universities and Colleges Climate Commitment for Scotland (UCCCfS). UWS commits to all aspects of the UCCCfS, however resource restrictions require categories to be prioritised to those that will most effectively achieve reductions in carbon emissions and help to embed sustainability across the University community. This section will outline UWS priorities for action, providing a summary under each heading as to how these will be addressed.

- A. Energy consumption and Source**
- B. Waste reduction, recycling and responsible disposal**
- C. Sustainable estate development**
- D. Sustainable travel planning**
- E. Responsible procurement of goods and services**
- F. Provision of skills training, modules and courses**
- G. Research capacity and knowledge exchange activity**

Energy Consumption and Source

The carbon baseline shows that the majority of UWS carbon emissions stem from energy use in buildings, therefore this will be the priority target area. The projects outlined in this document focus on more efficient use of energy through awareness raising and cost effective carbon saving measures.

UWS does not, as yet, have any on site renewables. The new build campus at Ayr (2011) will be partly heated by biofuel but it is unlikely that other renewable developments will be prioritised under the scope of this plan as the initial focus will be on efficiency and cost saving. An options appraisal for the Paisley heating strategy included investigation into the use of biomass fuel but this was discounted due to practicalities of implementation on an urban site with space restrictions.

The latest fuel mix information from the University's electricity supply company states that 7.6% of generation is from renewable sources. The Scottish Government has ambitious targets of producing 50% of electricity from renewables by 2020, this should assist in the reduction of UWS carbon emissions from source. With this in mind grid electricity is being considered for projects such as residential heating systems.

Waste reduction, recycling and responsible disposal

UWS recognises its duty of care to dispose of waste in a responsible manner. UWS has a waste policy, which will be reviewed in 2010, and currently recycles a range of materials including electrical equipment, paper, cardboard, cans, plastic bottles and fluorescent tubes. Systems will be put in place to recycle other materials within the timescale of this plan, the first of which in 2010 will be batteries as required by new legislation.

Waste minimisation programmes will also be targeted as part of this plan. As paper and cardboard form a large proportion of UWS waste, approximately 25%, procedures and awareness raising programmes will be implemented aiming to reduce this waste by 10%.

Sustainable estate development

The UWS Estates Strategy is currently under review in 2010. Carbon Management is a key theme of this review ensuring that sustainability is embedded in all activity including:

- general maintenance
- refurbishment
- new build projects

Incorporating carbon reduction into ongoing Estates activity not only provides a cost effective method of implementation but also ensures carbon management is fully embedded in to how properties are built and refurbished. The new build campus at Ayr and the new build residencies at Paisley and Ayr will be carried out within the timeframe of this plan. It is therefore vital that effective carbon management is viewed as a priority in the design and build of these large scale projects to ensure that in use emissions are substantially reduced when compared with business as usual scenarios.

The following policies and proecdures are targeted to be in place by 2014.

- BREEAM Excellent or a minimum Energy Performace Certificate B rating for all new builds
- Sustainability integrated into the business case for all Estates Projects
- Improve space utilisation to reduce m2 across all campuses
- Sustainability embedded into tender and contract documentation

Sustainable travel planning

Individual campus travel plans have been developed and a range of measures identified for each site. Planning restrictions brought about by the development of the new build campus at Ayr require action to be taken to reduce the number of single passenger car journeys. If the Ayr travel plan is not effectively implemented and there is net detriment to the local road network financial penalties of between £20,000 and £350,000 may be incurred depending on the number of car journeys. This aligned with a UWS target of reducing carbon emissions from business travel by 5% by 2014 necessitate the development of a University wide travel plan by the end of 2011. This will look at current modes of transport and the potential for modal shift to sustainable transport options through the implementation of a range of measures.

Responsible procurement of goods and services

The procurement department personnel have all attended level 3 Flexible framework sustainability training. UWS Procurement Policy and Strategy have been reviewed to include Sustainability factors. The 2009 Sustainability Policy states the following:

University staff must take account of the following when engaging with suppliers:

- Ensure where appropriate suppliers understand the key sustainable issues so that they can tailor their products accordingly
- Ensure that local and regional businesses, small and medium sized enterprises and ethnic minority businesses can bid for the business
- Help in the development of sustainable products
- Monitor and review the response to sustainable issues within tender documents
- Carry out a sustainable risk/impact analysis of the products/ services procured
- Goods that can be used and disposed of in an environmentally responsible way are considered
- Items with a high recycled content are used where there is little difference in cost
- Whole-life cost and energy usage and cost is considered prior to purchase

It will take time for the above requirements to be embedded into procurement procedures across the University. Standard templates will be produced by the end of 2011 to be included in tender and contract documentation. Guidelines will also be created within the same timescale to assist purchasers in assessing basic whole life costing scenarios.

Provision of skills training, modules and courses

As well as reducing the University's own carbon footprint UWS will play a wider role in addressing climate change through equipping students with sustainability skills and knowledge that can then be effectively utilised in their future employment and homelife. Sustainability skills will also give students a competitive edge when applying for graduate employment with the resource efficiencies they can bring to the employer.

UWS Centre of Environmental and Waste Management runs postgraduate and IOSH certificated Environmental Courses. Other courses in the Faculty of Science and Technology provide environmental modules. There are also modules run in the Business School, media and computing that use Sustainability as a focus for projects. A scoping study will be carried out in 2012 to identify all current provision.

The three UWS Faculties have Academic Management Groups (FAMG) in place to drive forward academic strategy. Sustainability is now on the agenda of the Business and Creative Industries FAMG and a request will be made to include it on the agenda of the other two groups by the end of 2010. These groups will identify opportunities for embedding sustainability into future education provision.

Research capacity and knowledge exchange activity

Environmental Initiatives Research Group (EIRG)

EIRG is an inter-disciplinary group with members from the Schools of Science and Engineering. It assesses the environmental, social, and human health impacts of climate change with particular reference to developing community-level adaptation strategies and applies seasonal climate forecasts to public health assessments. Specific research is also undertaken on climate change, flooding and the urban water environment. One PhD student for example is investigating the effect of climate change on the variability of rainfall patterns and the vulnerability of water supplies. The research from the group feeds into undergraduate teaching by members of the group on specific modules such as Renewable Energy and Pollution which is a final year Engineering module.

The ambitions of the group are to increase its activity with climate change (especially looking at mitigation and adaptation measures) and building it into other work on waste, environment and human health widening participation to the other University faculties.

Methodology

Project Management / Governance

The Programme Board – strategic ownership and oversight

This Climate Action Plan will be managed by the Carbon Management Board, a sub group of the University Environmental Management Committee which reports through Health and Safety to University Court. Locating the Board within this structure ensures that carbon management has a recognised reporting line and assists in embedding the programme throughout the University. Climate Action Plan reports will be produced each trimester for the Environmental Management Committee detailing progress against targets.

The Board consists of the Energy and Environmental Manager, Depute Director of Estates and Buildings, Director of ICT Services, Assistant Director of Finance and an Academic Champion. The Board have the following remit:

- Facilitate information provision for carbon footprinting.
- Influencing role; embedding carbon management across the University, securing Senior Management support
- Strategic decision making regarding finalising of targets and agreeing cost effective carbon saving initiatives.

The Environmental Management Committee (EMC) will also drive forward sustainability research and education developments. The University Secretary attends the committee, ensuring Senior Management buy in. The EMC also has representation from each Faculty and from the UWS Environmental Initiatives Research Group.

The Carbon Management Team – delivering the projects

The Carbon Management Team will focus on the operational aspects of delivery, identifying, quantifying and delivering cost effective carbon saving opportunities and monitoring their impact.

The team consists of the following key personnel:

- Project Leader (Energy and Environmental Manager)
- Project Sponsor (Depute Director of Estates and Buildings)
- Buildings Officers from each campus
- Engineering Services Manager
- Assistant Director of ICT Operations
- Marketing Co-ordinator to assist with internal communications

Progress Review

Climate Action Plan progress will be reviewed once a trimester prior to Environmental Management Committee meetings. As previously stated this reporting structure allows information to be provided through the Health and Safety Committee to University Court.

Reports will include the following information:

- Measures implemented
- Finance secured
- Resource requirements
- Progress against projects implemented, financial and carbon targets

A more detailed annual report will be produced in March each year, which as well as reviewing progress will look at more detailed short term planning for the year ahead. The annual Climate Action Plan report will be publicly available on the University web site.

Implementation

A programme of cost effective carbon saving measures has been developed to 2014, as summarised later in this document, aiming to achieve a 20% carbon reduction. Although a timetable of measures has been programmed their delivery timescale will be dependent on securing funding, therefore although progress towards this target will be monitored on an annual basis, annual targets will not be set.

The 2010 project costs are confirmed and projects that have less than 12 month paybacks are likely to be funded out of the corresponding utility budget.

The totality of schemes will be presented to the University Financial Monitoring Committee (FMC) and Capital Investment Group to raise initial awareness of resource requirements in order that the budget setting process can make allowance for the programme. Detailed business cases will be developed for

projects and presented to the Financial Monitoring Committee for approval. The FMC will monitor savings and review reports on progress.

Financial Resources Summary

	2009	2010	2011	2012	2013	Total
Total annual project cost	£64,378	£120,500	£246,848	£1,129,993	£177,505	£1,739,224

Additional resources

The greatest resource requirement to successfully undertake this programme will be capital finance. There will also be staffing resource required to implement the above projects, this will be achieved, where possible, through existing staffing. Further investigation and options appraisal will be carried out to identify cost effective methods of ensuring sufficient staffing resource is available to deliver the proposed projects and meet the 20% target.

Communications Strategy

UWS Awareness Strategy

In 2010, the University of the West of Scotland will publish and implement an Environmental Awareness Strategy to raise the profile of sustainability on campus and to develop more sustainable practices and behaviours among staff and students. The strategy will be implemented on a rolling basis and will comprise a number of different activities, materials and events targeted towards students and staff. Campaigns such as “Switch if Off”, car share and a UWS Environment Day will be promoted through stickers, posters, DVDs, website, social media, awareness raising sessions, e-mails etc. The awareness strategy will be aimed at achieving the following goals:

- Increase general sustainability knowledge among staff and students.
- Establish a low carbon culture among staff and students.
- Reduce waste generation and establish strong reuse and recycling behaviours by staff and students.

- Develop responsible and sustainable building management and maintenance behaviours.

Low Carbon Culture

In order to reduce UWS carbon footprint, it is imperative that a low carbon culture is established among staff and students. Work in this respect has commenced with the establishment of campus based sustainability working groups tasked with driving forward activity at a local level at each campus. The groups are led by the Campus Director and members include existing and additional eco champions from both the staff and student body. The Campus Working Groups meet formally once a trimester and report into the Environmental Management Committee, regular e-mail discussions also take place.

Links have been forged with other groups e.g. the Energy and Environmental Manager is a member of the Healthy Working Lives and Refectory and Accommodation committees collaborating on “win win” activity such as “cycle to work” or “take the stairs not the lift” initiatives. This will continue to be developed to deliver maximum exposure.

A number of Job descriptions have already been reviewed and environmental responsibility has been included within these, this process will continue and all relevant job descriptions will be updated to include responsibility for sustainability and carbon management. Discussions have commenced with Human Resources to try and drive this initiative forward to include Sustainability in a wider range of job descriptions.

Climate Change Action Plan

The following tables provide a summary of Climate Action Plan activity from 2010 to 2014. Appendix A provides a more detailed breakdown of quantified carbon saving projects.

A. Energy Consumption and Source

- *Goal Statement:* To deliver a programme of costs effective carbon saving measures to achieve a significant reduction in carbon emissions by 2014
- *Challenges/Barriers:* the main barrier to the delivery of these projects is securing funding

Near term projects

Project	Lead	Project cost	Annual Saving		Pay back	% of Target	Year
			Financial	CO ₂			
Monitoring, Metering and targeting paisley	Sustainability Officer	£25,821	£29,065	214. tCO ₂	0.9	9.3%	2010
Can and Plastic bottle recycling	Energy and Environmental Manager	£3,557	£1,145	6.7 tCO ₂	3.1	0.29%	2010
LCD flat Screens	Assistant Director ICT Customer Services	in ICT budget	£3,310	17.7 tCO ₂	n/a	0.77%	2010
Outsourcing IT Server	Assistant Director ICT Operations	In ICT budget	£5,722	30.6. tCO ₂	n/a	1.33%	2010
Beckford demolition	Depute Director of Estates	£35,000	£25,418	135.8 tCO ₂	1.4	5.9%	2010
Wellmeadow Disposal	Depute Director of Estates	n/a	£3,257	15.3 tCO ₂	n/a	0.67%	2010
Watt Building Disposal	Depute Director of Estates	n/a	£28,922	137.3 tCO ₂	n/a	6%	2010
Residencies summer heating policy	Engineering Services Manager	n/a	£6,028	27.9 tCO ₂	n/a	1.21%	2009

Projects - funding unconfirmed

Project	Lead	Project cost	Annual Saving		Pay back	% of Target	Year
			Financial	CO ₂			
IT Power Management Software	Assistant Director ICT Operations	£20,000	£64,487	344.6 tCO ₂	0.3	14.98%	2011
Awareness raising Campaigns	Sustainability Officer	£10,000	£49,511	328.7 tCO ₂	0.2	14.29%	2011

PIRs fitted in toilets	Project Manager	£10,500	£4,052	21.7 tCO2	2.6	0.94%	2011
Paisley Roof insulation	Building Services Officer	£68,000	£11,156	51.6 tCO2	6.1	2.24%	2011
M,M& T Hamilton	Sustainability Officer	£2,000	£16,825	83.4 tCO2	0.12	3.62%	2011
Retrofit T5 energy efficient lighting	Engineering Services Manager	£240,000	£44,916	240. tCO2	5.3	10.43%	2012
BMS fine tuning	Engineering Services Manager	no cost	£2,477	12.1 tCO2	0.0	0.52%	2012
Ayr Scottish Agricultural College space	Project Manager	no cost	£27,192	142.1 tCO2	0.0	6.17%	2012
Paisley heating Strategy	Engineering Services Manager/ Energy and Environmental Manager	£1,005,760	£83,492	386.1 tCO2	12	16.78%	2013
BMS upgrade Paisley	Engineering Services Manager/ Energy and Environmental Manager	£100,000	£22,375	103.5 tCO2	4.5	4.5%	2013
TRVs	Engineering Services Manager	£20,000	£6,507	30.1 tCO2	3.1	1.31%	2013
Pipework insulation	Engineering Services Manager	£4,233	£2,612	12.1 tCO2	1.6	0.52%	2013
Residential loft insulation top up	Building Services Officer	£2,305	£881	4.1 tCO2	2.6	0.18%	2014
Paisley Double Glazing – phase 2	Building Services Officer	£175,200	£9,081	42. tCO2	19.3	1.82%	2014
Printer rationalisation	Printing Services Manager/ Director of ICT Services	tbc	tbc				

Refurbishment of tenemental residencies to include double glazing	Project Manager	tbc	2012				
---	-----------------	-----	------	--	--	--	--

B. Waste Reduction, Recycling and Responsible Disposal

- *Goal Statement:* To establish policies, procedures and projects to ensure the efficient use of resources and the responsible disposal of waste in line with the waste hierarchy.
- *Challenges/Barriers:* the main barrier to the success of these projects will be staff and student buy in. In order to overcome this promotional programmes will be delivered alongside procedures and infrastructure.

Near term projects

Project	Lead	Project cost	Annual Saving		Pay back	% of Target	Year
			Financial	CO ₂			
Can and Plastic bottle recycling	Energy and Environmental Manager	£3,557	£1,145	6.7 tCO ₂	3.1	0.29%	2010
Battery recycling	Hazardous Waste officer	tbc					

Quantified projects - funding unconfirmed

Project	Lead	Project cost	Annual Saving		Pay back	% of Target	Year
			Financial	CO ₂			
Waste minimisation	Energy and Environmental Manager	£1,000	£1,500	8.8 tCO ₂	0.7	0.38%	2012
Install water saving devices to cisterns	Building Services Officer	£800	£2,920	1.6 tCO ₂	0.3	0.06%	2012
Urinal controls	Building Services Officer	£5,040	£3,734	2.1 tCO ₂	1.3	0.09%	2012

C. Sustainable Estate Development

- *Goal Statement:* To embed carbon management into all estates activities from every day maintenance to new build projects
- *Challenges/Barriers:* It will take time to develop and implement new procedures. Financial constraints and value engineering often make sustainability inclusions difficult to deliver. It will be important to establish a whole life costing approach to funding decisions.

Many of the projects listed in categories A and B will come under Estates Development. The following strategic projects will form the basis of future activity.

Project	Lead	Cost	Annual Saving		Pay back	% of Target	Year
			£	CO ₂			
BREEAM Excellent or minimum Energy Performance Certificate B rating for all new builds	Project Manager	Will be quantified for each individual project					2010
Sustainability integrated into the business case for all Estates Projects	Project Manager	Will be quantified for each individual project					2011
Improve space utilisation to reduce m2, where practicable, across all campuses	Director of Estates and Buildings/ Campus Directors/ Director of ICT Services	To be quantified as part of the 2010 Estates and ICT Strategy documents					2010
Sustainability embedded into tender and contract documentation	Depute Director of Estates and Buildings/ Energy and Environmental Manager						2011

D. Sustainable Travel Planning

- *Goal Statement:* carbon emissions from business travel will be reduced by 5% by 2014 through reduction in travel and facilitating a modal shift from single passenger car journeys.
- *Challenges/Barriers:* The main challenges will be securing funding for the implementation of sustainable travel infrastructure and persuading people to use alternative modes of travel to single passenger car journeys.

Quantified projects - funding unconfirmed

Project	Lead	Project cost	Annual Saving		Pay back	% of Target	Year
			Financial	CO ₂			
Development of Travel Plan and measures	Energy and Environmental Manager	£10,000	£12,300	31. tCO ₂	0.8	1.35%	2011

E. Responsible Procurement of Good and Services

- *Goal Statement:* To integrate sustainability into all procurement decisions
- *Challenges/Barriers:* Although processes are controlled by a central procurement department the majority of procurement is devolved and it is therefore challenging to ensure sustainability factors are included in purchasing decisions and to monitor activity.

UWS procurement strategy has been reviewed to include sustainability as previously detailed in this plan. Many of the projects outlined in section C deal with Estates Procurement. The following projects are wider University initiatives.

Project	Lead	Cost	Annual Saving		Pay back	% of Target	Year
			£	CO ₂			
Embedding Sustainability into UWS Policy	Director level lead dependant on						ongoing

including Procurement/ ICT and Finance	strategy		
Develop procedures to ensure sustainability is incorporated into procurement decisions	Head of Procurement/ Energy and Environmental Manager		2011

F. Provision of skills training, modules and courses

- *Goal Statement:* To investigate opportunities to embed sustainability into the educational experience of UWS students
- *Challenges/Barriers:* Integrating sustainability meaningfully into all courses will be challenging. Support from senior faculty management will be essential to drive this forward.

Project	Lead	Cost	Annual Saving		Pay back	% of Target	Year
			£	CO ₂			
Scoping study of current sustainability education	Energy and Environmental Manager	n/a					2012
Sustainability to be included on the agenda of the FAMGs.	Energy and Environmental Manager	n/a					2010

G. Research capacity and knowledge exchange activity

- *Goal Statement:* To build on the activity of the Environmental Initiatives Research Group to increase climate change and wider sustainability research activity.
- *Challenges/Barriers:* To widen research activity to other Faculties beyond Science and Technology will be challenging

Project	Lead	Cost	Annual Saving		Pay back	% of Target	Year
			£	CO ₂			
To widen the Environmental Initiatives Research Group activity to include all faculties.	EIRG group	n/a					2011

Appendix B: Definition of Carbon Saving Projects

Project:	Monitoring, Metering and Targeting – Paisley Campus
Reference:	
Owner (person)	<i>Claire Purvis – Sustainability Officer</i>
Department	<i>Estates and Buildings</i>
Description	<i>Existing electricity and gas meters will be upgraded in order that they can be read remotely. A software package will also be purchased to enable more accurate monitoring and targeting. If financial resources allow, further automatic sub metering will also be installed.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £29,065</i> • <i>Payback period: 0.9 years</i> • <i>CO₂ Emissions reduction: 214 tonnes of CO₂</i> • <i>9.3% of target</i>
Funding	<ul style="list-style-type: none"> • <i>£25,821 capital cost in 2009/10 budget</i>
Resources	<i>A separate paper will be produced to investigate staffing resource requirements</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Meters need to be in place and staff resource allocated to implement effective M,M&T</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Systems are in place to timeline</i> • <i>Reduced inaccuracies with metering and billing</i> • <i>Reduced carbon emissions</i>
Timing	<ul style="list-style-type: none"> • <i>Quotes for capital equipment by April 2010</i> • <i>Installation by August 2010</i> • <i>Data monitoring system in place by September 2010</i>
Notes	<i>Based on 4% reduction in consumption for gas and electricity</i>

Project:	Can and Plastic Bottle Recycling
Reference:	
Owner (person)	<i>Claire Roxburgh/ Claire Purvis</i>
Department	<i>Estates and Buildings</i>
Description	<i>The implementation of can and plastic bottle recycling at Paisley, Hamilton and Ayr campuses. Bins located in catering and unions as well as main thoroughfares.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 1145</i> • <i>Payback period: 3.1 years</i> • <i>CO₂ Emissions reduction: 6.7 tonnes of CO₂</i> • <i>0.29% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost – £3,557</i> • <i>Project is already underway with the majority of bins in place, 50% of funding for the bins was from coca-cola, 50% UWS Projects budget.</i>
Resources	<ul style="list-style-type: none"> • <i>Project will be delivered with current resources</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Monitoring systems need to be put in place to identify effectiveness of bin locations. These will be in place by the end of 2010.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Bins are in place and used and emptied effectively.</i> • <i>An annual report will be produced providing information on tonnage</i>
Timing	<ul style="list-style-type: none"> ○ <i>Bins were in place October 09</i> ○ <i>Audit carried out February 2010</i> ○ <i>Any additional bins be in place June 2010</i> ○ <i>Annual tonnage report December 2010</i>
Notes	

Project:	IT Power Management Software
Reference:	
Owner (person)	<i>David Johnston</i>
Department	<i>ICT</i>
Description	<i>UWS has approximately 4000 computers, over half of which are for student access and are left on 24 hours a day 365 days a year. Fairly significant savings can therefore be made by introducing Power Management Software</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 64,487</i> • <i>Payback period: 0.3 years</i> • <i>CO₂ Emissions reduction: 344.6 tonnes of CO₂</i> • <i>14.98 % of target</i>
Funding	<ul style="list-style-type: none"> • <i>£20,000</i> • <i>Since payback period is under 12 months this could be financed out of the utilities budget. It will be confirmed by the Carbon Management Board by the end of March if ICT or Utilities budgets will fund this.</i>
Resources	<ul style="list-style-type: none"> • <i>Existing ICT staffing resource will implement this</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors: Trial and rollout of software is implemented in 2010.</i> • <i>All student PCs are powered off out of hours</i> • <i>Principal risks: the biggest risks are associated with turning off staff computers and therefore outlined savings have only attributed a small amount of 10% saving to staff with the majority of savings from student labs.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Dependant on chosen software there may be capability of producing more detailed accurate savings. Energy consumption will also be monitored after software is installed and compared to previous data.</i>
Timing	<i>Trial to start by the end of May 2010.</i>
Notes	

Project: Reference:	Awareness Raising Campaigns
Owner (person)	<i>Claire Purvis/ Claire Roxburgh</i>
Department	<i>Estates and Buildings</i>
Description	<i>An awareness raising strategy is in development aimed at bringing about positive sustainability behaviour in the areas covered by the scope of this plan.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £49,511</i> • <i>Payback period: 0.2 years</i> • <i>CO₂ Emissions reduction: 328.7 tonnes of CO₂</i> • <i>14.29% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost – £10,000</i> • <i>Source of funding: a business case will need to be made for project costs. This will be made in Spring 2010.</i>
Resources	<ul style="list-style-type: none"> • <i>A separate paper will be produced to investigate staffing resource requirements</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors: A fully costed and resourced awareness raising strategy is developed and implemented.</i> • <i>Principal risks: Sufficient staff resource will require to be allocated to implement effectively and realise savings</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Behavioural surveys will be carried out before the commencement of the campaign and at regular intervals to gauge impact.</i> • <i>Energy data will also be monitored during key campaigns such as “switch it off” to gauge impact on consumption.</i> • <i>Annual report will be produced</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones</i> <ul style="list-style-type: none"> ○ <i>Awareness Raising Strategy developed by April 2010</i>
Notes	<i>Based on 4% electricity, 1% gas saving</i>

Project:	<i>Paisley Heating Strategy</i>
Reference:	
Owner (person)	<i>Jim Hillhouse/ Claire Roxburgh</i>
Department	<i>Estates and Buildings</i>
Description	<i>The boilers and distribution pipework that serve the majority of the Paisley campus are nearing the end of life. The age of the boilers means that they are inefficient and require frequent maintenance. Carbon Trust consultants have prepared an options appraisal with indicative costs and carbon savings. The most cost effective options are: replacing the existing system with a new centralised system or a decentralised system with smaller boiler houses located throughout the campus. A decision will be made by the end of 2010 as to which system will be implemented. In order to provide indicative figures for this plan the data for a centralised system has been used.</i>
Benefits	<ul style="list-style-type: none"> • <i>Financial savings: £ 70,759</i> • <i>Payback period: 12 years</i> • <i>CO₂ Emissions reduction: 384.1tonnes of CO₂</i> • <i>16.78% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost: £1,005,760</i> • <i>Source of funding: A business case will be made to the Capital Investment Group and Financial Monitoring Committee in 2012.</i>
Resources	<ul style="list-style-type: none"> • <i>Additional resource: consultants will be required to design and project manage the installation of the new system.</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors: Funding will need to be approved. A more detailed second stage consultancy report will be required to confirm exact figures once a system has been chosen.</i> • <i>Principal risks: Ensuring that heating and hot water can be provided when required. The system should be implemented if possible throughout the summer months.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>The M, M & T system will highlight consumption levels.</i> • <i>Reduction in consumption will be measured as part of the annual carbon saving review.</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates:</i> <ul style="list-style-type: none"> ○ <i>Installation start date: June 2013</i> ○ <i>Installation completion date: September 2013</i>
Notes	<i>12% was added to the estimated costs to take into account consultants design and project management fees.</i>

Project:	<i>BMS upgrade Paisley</i>
Reference:	
Owner (person)	<i>Claire Roxburgh and Jim Hillhouse</i>
Department	<i>Estates and Buildings</i>
Description	<i>The current BMS system is dated and limited in its control over the heating system. An up to date system that is reviewed on a regular basis would provide greater control and also highlight any anomalies that require attention. An upgraded BMS is also required to facilitate savings in other areas e.g. double glazing and insulation. This will be implemented as part of the Paisley heating strategy</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £22,375</i> • <i>Payback period: 4.5 years</i> • <i>CO₂ Emissions reduction: 103.5 tonnes of CO₂</i> • <i>4.5% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost: £100,000. A business case will be made at the same time as the heating strategy in Spring 2012.</i>
Resources	<ul style="list-style-type: none"> • <i>Additional resource ; This will form part of the Paisley heating strategy project</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors: Funding will require to be approved.</i> • <i>Principal risks: Regular BMS review will be required in order to achieve the projected savings.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>The M, M & T system will highlight consumption levels.</i> • <i>Reduction in consumption will be measured as part of the annual carbon saving review.</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones: system to be installed in summer 2013</i>
Notes	<i>Approximate costs only from Carbon Trust consultants</i>

Project:	<i>Paisley Double Glazing – Denholm building</i>
Reference:	
Owner (person)	<i>Dan Maxwell</i>
Department	<i>Estates and Buildings</i>
Description	<i>Upgrading single to double glazing in the Denholm building. Current single glazing has poor thermal efficiencies and little or ineffective draught proofing. As well as reducing heat loss and therefore reducing carbon emissions new double glazing will improve comfort levels enhancing the staff and student experience.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 9,081</i> • <i>Payback period: 19.3 years</i> • <i>CO₂ Emissions reduction: 42 tonnes of CO₂</i> • <i>1.82% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost: £175,200</i> • <i>A business case will be made to the Capital Investment Group and Financial Monitoring Committee in Spring 2013.</i>
Resources	<ul style="list-style-type: none"> • <i>This will be carried out by an external contractor</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors: Budget will need to be secured.</i> • <i>Savings are more likely to be realised in line with upgraded BMS and local heating controls.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Double glazed units are in place</i> • <i>Reduction in consumption will be measured as part of the annual carbon saving review.</i>
Timing	<ul style="list-style-type: none"> • <i>Business case submitted 2013</i> • <i>Contract to be undertaken 2013/2014</i>
Notes	<i>Based on quote of £600 per m²</i>

Project:	<i>Travel Plan measures</i>
Reference:	
Owner (person)	<i>Claire Roxburgh/ Claire Purvis</i>
Department	<i>Estates and Buildings</i>
Description	<i>A university wide Travel Plan will be developed by the Summer of 2011, this will provide an action plan to reduce carbon emissions from business travel by 5% through encouraging the use of public transport, active travel and video and phone conferencing.</i>
Benefits	<ul style="list-style-type: none"> • <i>Financial savings: £12,300</i> • <i>Payback period: 0.8 years</i> • <i>CO₂ Emissions reduction: 31 tonnes of CO₂</i> • <i>1.35% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost - £10,000</i> • <i>Operational costs - There will be additional operational costs each year in the implementation of travel plan measures which will also include commuter travel. It is envisaged that these costs may be covered through the introduction of car parking charges.</i> • <i>Source of funding: A business case will be made in Spring 2010 for project costs.</i>
Resources	<ul style="list-style-type: none"> • <i>A separate paper will be produced to investigate staffing resource requirements</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors: Travel plan developed and adopted by the University Court.</i> • <i>Principal risks: The Ayr new build campus will require new travel planning policies to be adopted by the summer of 2011. It is therefore critical that staffing resource is allocated to meet this deadline.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Travel plan complete and approved by Summer 2011.</i> • <i>Travel Plan measures, modal shift and % carbon savings will be reviewed annually.</i>

Project:	<i>PIRs fitted in toilets</i>
Reference:	
Owner (person)	<i>John Stewart/ Jim Hillhouse/ John Cotton</i>
Department	<i>Estates and Buildings</i>
Description	<i>Presence detection sensors will be fitted to lights in toilets. Toilet lights are often left on more frequently when not in use than lights in other areas. Where possible PIRs will be incorporated into toilet refurbishment programmes and costs will be incorporated into the total project budget.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 4,052</i> • <i>Payback period: 2.6 years</i> • <i>CO₂ Emissions reduction: 21.7 tonnes of CO₂</i> • <i>0.94% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost: £10,500</i> • <i>Source of funding: some of this funding is already approved through a toilet refurbishment programme. A business case will be made in Spring 2011 for funding a rolling programme.</i>
Resources	<ul style="list-style-type: none"> • <i>This programme will be delivered with existing staffing resources.</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors: Toilet refurbishment programme at Paisley is carried out, funding is secured for roll out to other toilets.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>PIRs are fitted and operational</i> • <i>Reduction in consumption will be measured as part of the annual carbon saving review.</i>
Timing	<p><i>Milestones / key dates e.g.</i></p> <ul style="list-style-type: none"> • <i>Toilet refurbishment in Paisley carried out in 2010.</i> • <i>Installation programme rolled out and funded in 2011.</i>
Notes	

Project:	Metering, Monitoring and Targeting - Hamilton
Reference:	
Owner (person)	<i>Claire Purvis/ Donnie Morrison</i>
Department	<i>Estates and Buildings</i>
Description	<i>Older meters at Hamilton will be upgraded to automatic meters, they will then be incorporated in to the software system developed for Paisley to provide more accurate data monitoring and targeting of carbon savings.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 16,825</i> • <i>Payback period: 0.12 years</i> • <i>CO₂ Emissions reduction: 83.4 tonnes of CO₂</i> • <i>3.62 % of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost:£2,000</i> • <i>A business case for funding will be developed for Capital Investment Group and Financial Monitoring Committee for Spring 2011.</i>
Resources	<ul style="list-style-type: none"> • <i>A separate paper will be produced to investigate staffing resource requirements</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Funding requires approval</i> • <i>Principal risks: insufficiently resourced, and meters cannot be incorporated into Paisley M, M & T software. In order to reduce the latter risk checks will be made to ensure the software has this functionality when purchased.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Automatic meters are in place and data monitoring and management system implemented.</i> • <i>Reduction in consumption will be measured as part of the annual carbon saving review.</i>
Timing	<ul style="list-style-type: none"> • <i>Automatic meters and monitoring systems in place for end of 2011</i>
Notes	<i>Based on 5% reduction in electricity and gas consumption</i>

Project:	Retrofit T5s
Reference:	
Owner (person)	<i>Jim Hillhouse</i>
Department	<i>Estates and Buildings</i>
Description	<i>A programme of replacing fluorescent light fittings with energy efficient T5 fittings.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 44,916</i> • <i>Payback period: 5.3 years</i> • <i>CO₂ Emissions reduction: 240 tonnes of CO₂</i> • <i>10.43% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost: £240,000</i> • <i>A business case will be made to Capital Investment Group and Financial Monitoring Committee in 2011</i>
Resources	<ul style="list-style-type: none"> • <i>Supply and fit would be external contractor</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Funding will need to be approved before this can go ahead</i>
Measuring Success	<ul style="list-style-type: none"> • <i>T5 light fittings are in place</i> • <i>Carbon is reduced in line with expectations</i> • <i>Reduction in consumption will be measured as part of the annual carbon saving review.</i>
Timing	<ul style="list-style-type: none"> • <i>Roll out will commence late 2011</i>
Notes	<i>3000 fittings @£80 per fitting</i>

Project:	<i>Paisley Roof insulation</i>
Reference:	
Owner (person)	<i>Dan Maxwell</i>
Department	<i>Estates and Buildings</i>
Description	<i>Elles East, Henry East and West and Maclean roof upgrades to include insulation</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 11,156</i> • <i>Payback period: 6.1years</i> • <i>CO₂ Emissions reduction: 51.6 tonnes of CO₂</i> • <i>2.24% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost – £68,000 This will be the additional cost of insulation rather than the cost of the roof upgrades which require to be carried out under maintenance budget</i> • <i>Business case will be produced to incorporate into the cost of roofing projects</i>
Resources	<ul style="list-style-type: none"> • <i>No additional internal resource required.</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Maintenance budget will require to be secured to undertake roof upgrades and incorporate additional cost of insulation</i>
Measuring Success	<ul style="list-style-type: none"> • <i>All roof upgrades will have effective levels of insulation</i> • <i>Reduction in consumption will be measured as part of the annual carbon saving review.</i>
Timing	<i>As roofs detailed are upgraded by the end of 2012.</i>
Notes	<i>Carbon savings provided by the Carbon Trust based on 1700m² of roof. Cost given by contractor estimated as £40m²</i>

Project:	<i>Install water saving devices to cisterns</i>
Reference:	
Owner (person)	<i>Dan Maxwell/ Donnie Morrison/ Gillian Watters</i>
Department	<i>Estates and Buildings</i>
Description	<i>Installation of water displacement devices – toilet hippos or similar – into 6litre + flush toilet.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 2,920</i> • <i>Payback period: 0.3 years</i> • <i>CO₂ Emissions reduction: 1.6 tonnes of CO₂</i> • <i>0.06 % of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost £800 – as this has a very short payback a business case will be made to fund this out of the water utility budget.</i>
Resources	<ul style="list-style-type: none"> • <i>This project will be carried out over a period of time using existing staff resource</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors – devices are in place and water consumption and therefore waste is reduced.</i> • <i>Principal risks: flush is reduced too much and becomes ineffective – this will be monitored and amount of water displaced altered.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Water consumption will be monitored after the installation of devices and compared with historical data.</i>
Timing	<i>This will be implemented in 2011.</i>
Notes	

Project:	Urinal Controls
Reference:	
Owner (person)	<i>Dan Maxwell/ Donnie Morrison/ Gillian Watters/ John Stewart</i>
Department	<i>Estates and Buildings</i>
Description	<i>Urinal controls will be installed to reduce water consumption from urinals which currently consume water constantly. Waterless urinals will also be incorporated into toilet refurbishment projects on the Paisley Campus.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 3,734</i> • <i>Payback period: 1.3 years</i> • <i>CO₂ Emissions reduction: 2.1 tonnes of CO₂</i> • <i>0.09% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost: £5,040</i> • <i>A business case will be made to Capital Investment Group and Financial Monitoring Committee in Spring 2011.</i>
Resources	<ul style="list-style-type: none"> • <i>This would be rolled out over time and therefore would be delivered with existing staff resources.</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Funding is secured</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Water consumption data would be monitored before and after installation as well as forming part of annual carbon reporting.</i>
Timing	<ul style="list-style-type: none"> • <i>Devices are fitted by the end of 2012.</i>
Notes	<i>Figures calculated from an Envirowise consultancy report</i>

Project:	<i>BMS fine tuning - Hamilton</i>
Reference:	
Owner (person)	<i>Claire Purvis/ Donnie Morrison</i>
Department	<i>Estates and Buildings</i>
Description	<i>BMS training provided free of charge from the Carbon Trust. BMS settings reviewed on a regular basis.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 2,447</i> • <i>Payback period: n/a</i> • <i>CO₂ Emissions reduction: 12.1 tonnes of CO₂</i> • <i>0.52% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost training should be provided free of charge and existing staffing resources will cover the regular BMS review.</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors: Carbon Trust training is provided free of charge.</i> • <i>Regular BMS reviews are carried out</i> • <i>Principal risks: regular reviews are short lived and therefore benefits not realised therefore needs to be programmed into work plans at regular intervals.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Training is carried out</i> • <i>BMS reviews are recorded</i> • <i>Reduction in consumption will be measured as part of the annual carbon saving review.</i>
Timing	<i>Training carried out in 2011</i> <i>Regular BMS reviews implemented from 2011 onwards.</i>
Notes	

Project:	Waste Minimisation
Reference:	
Owner (person)	<i>Claire Roxburgh/ Claire Purvis/ Margaret Leggat</i>
Department	<i>Estates and Buildings and Printing Services</i>
Description	<i>Reduction of paper and cardboard waste by 10% through awareness raising and the implementation of best practice waste minimisation policy and measures</i>
Benefits	<ul style="list-style-type: none"> • <i>Financial savings: £1,500 saving in waste disposal though these will be substantially greater in savings on purchasing paper.</i> • <i>Payback period: 0.7 years</i> • <i>CO₂ Emissions reduction: 8.8 tonnes of CO₂</i> • <i>0.38% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost: £1,000 for marketing material and incentives.</i> • <i>As the payback period is less than 12 months this will be carried out using existing waste budgets</i>
Resources	<ul style="list-style-type: none"> • <i>This would be carried out with existing resources</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors: a waste minimisation action plan is produced and measures implemented</i> • <i>Principal risks: changes to policy or procedures are not adopted and paper systems continue to be used.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Individual measures will be quantified and monitored to ensure actual reductions are taking place.</i> • <i>Reduction in waste will be measured as part of the annual carbon saving review.</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>Waste minimisation action plan produced by end of 2011.</i> ○ <i>Policies and procedures are in place by the end of 2012.</i>
Notes	<i>Assumes 25% of UWS waste is paper and cardboard – findings from student waste survey analysis.</i>

Project:	<i>Ayr Campus - Scottish Agricultural College Space utilisation</i>
Reference:	
Owner (person)	<i>Alasdair Tweedie</i>
Department	<i>Estates and Buildings</i>
Description	<i>13.55% of the new build Ayr campus will be leased to SAC therefore providing more efficient use of shared resources.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ £27,192</i> • <i>Payback period: n/a</i> • <i>CO₂ Emissions reduction: 142.1 tonnes of CO₂</i> • <i>6.17% of target</i>
Funding	<ul style="list-style-type: none"> • <i>n/a</i>
Resources	<ul style="list-style-type: none"> • <i>n/a</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors – SAC utilisation of space as detailed</i>

Project:	<i>Installation of TRVs</i>
Reference:	
Owner (person)	<i>Jim Hillhouse/ Donnie Morrison</i>
Department	<i>Estates and Buildings</i>
Description	<i>A rolling programme of fitting thermostatic radiator valves to radiators to improve local control – this aligned with awareness campaigns will ensure more efficient use of heating.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 6,507</i> • <i>Payback period: 3.1 years</i> • <i>CO₂ Emissions reduction: 30.1 tonnes of CO₂</i> • <i>1.31% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost: £20,000</i> • <i>Source of funding: a business case will be made in Spring 2012 for a rolling programme to be included in maintenance budget.</i>
Resources	<ul style="list-style-type: none"> • <i>This project would be carried out with existing resources</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors: funding secured</i>
Measuring Success	<ul style="list-style-type: none"> • <i>TRVs are in place by the end of 2013</i> • <i>Reduction in consumption will be measured as part of the annual carbon saving review.</i>
Notes	<i>Costs calculated at approx £10.50 per TRV.</i>

Project:	<i>Pipework Insulation</i>
Reference:	
Owner (person)	<i>Jim Hillhouse/ Donnie Morrison</i>
Department	<i>Estates and Buildings</i>
Description	<i>A survey will be required to identify areas of pipework that are not insulated or areas where gaps exist.</i>
Benefits	<ul style="list-style-type: none"> • <i>Annual financial savings: £ 2,612</i> • <i>Payback period: 1.6 years</i> • <i>CO₂ Emissions reduction: 12.1 tonnes of CO₂</i> • <i>0.52% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost:£4,233. A business case will be made as part of the 2012 Estates maintenance budget.</i>
Resources	<ul style="list-style-type: none"> • <i>This project will be delivered with existing staff resources</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>A survey to be carried out to identify areas of pipework that require insulation. This can be done over time using existing staff were pipework is accessible.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Additional pipework is insulated were required.</i> • <i>Reduction in consumption will be measured as part of the annual carbon saving review.</i>
Timing	<p><i>Milestones –</i></p> <ul style="list-style-type: none"> • <i>Pipework insulation surveys carried out in 2012</i> • <i>Insulation in place 2012/2013</i>
Notes	<i>Approximate figures from carbon trust rapid assessment tool</i>

Project:	Residential loft Insulation top up
Reference:	
Owner (person)	<i>Dan Maxwell/ Donnie Morrison</i>
Department	<i>Estates and Buildings</i>
Description	<i>Top up loft insulation at Hamilton residencies and at Paisley residences which are being retained</i>
Benefits	<ul style="list-style-type: none"> • <i>Financial savings: £ 881</i> • <i>Payback period: 2.6 years</i> • <i>CO₂ Emissions reduction: 4.1 tonnes of CO₂</i> • <i>0.18% of target</i>
Funding	<ul style="list-style-type: none"> • <i>Project cost: £2,305</i> • <i>Source of funding: A business case would be made to fund this out of the estates maintenance budget in 2013</i>
Resources	<ul style="list-style-type: none"> • <i>Additional resource: a contractor would be brought in to undertake this work.</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Key success factors: Will be necessary to seek quotes to confirm exact costs for work. Funding will require to be approved.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Insulation is installed to levels in line with current building regulations.</i> • <i>Reduction in consumption will be measured as part of the annual carbon saving review.</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones: Work is carried out in 2013/2014</i>
Notes	<i>Approximate figures from Carbon Trust rapid assessment tool</i>