working with CARBON TRUST

University of Glasgow

Carbon Management Programme

Carbon Management Plan (CMP)

Albert Young, 3 November 2009

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Foreword from Principal, Professor Anton Muscatelli

The University of Glasgow excels in teaching, learning and research, and is one of the world's top 100 universities. As a world-leading institution, we are committed to leading by example in the area of climate change; through our ground-breaking research into new technology, our pursuit of fresh knowledge in the field, and our teaching of new sustainable methods to our students. It is also imperative that we do all that we can to manage the running of the University and its estate so as to safeguard the environment and in so doing we will set an example to both the University and wider communities. This example to our community, and the spreading of knowledge through the expertise of our staff and students, will contribute to a change in culture that must come if our planet is to thrive in the longer term.

Glasgow has recently signed up - as one of 40 signatories - to the Universities and Colleges Climate Commitment for Scotland (UCCCfs) framework committing each institution to a five year climate change action plan.

This carbon management plan, along with other existing sustainability initiatives, will underpin our commitment to ensure that our campus activities are managed in an environmentally responsible way. Building on our existing track record, it sets out the University of Glasgow's ambitious vision and targets for carbon management over the next five years.

The University Court has approved this plan, and it is now the duty of all of us to ensure success. I urge all of you to participate fully in the initiatives which will help us reduce our carbon footprint and combat climate change.

Professor Anton Muscatelli, Principal

Foreword from the Carbon Trust

Cutting carbon emissions as part of the fight against climate change should be a key priority for Higher Education Institutions - it's all about getting your own house in order and leading by example. The UK government has identified the public sector as key to delivering carbon reduction across the UK inline with its Kyoto commitments and the Public Sector Carbon Management programme is designed in response to this. It assists organisations in saving money on energy and putting it to good use in other areas, whilst making a positive contribution to the environment by lowering their carbon emissions.

The University of Glasgow was selected in 2008, amidst strong competition, to take part in this ambitious programme. The University of Glasgow partnered with the Carbon trust on this programme in order to realise vast carbon and cost savings. This Carbon Management Plan commits the organisation to a target of reducing CO2 by 20% by 2014 and underpins potential financial savings to the organisation of around £11 million.

There are those that can and those that do. Public sector organisations can contribute significantly to reducing CO_2 emissions. The Carbon Trust is very proud to support the University of Glasgow in their ongoing implementation of carbon management.

Richard Rugg Head of Public Sector, Carbon Trust

Management Summary

The University of Glasgow is committed to sustainable development and seeks to continuously minimise its environmental impact whilst maximising its contribution to society and the economy. Climate change is having a major impact on our planet and is now firmly established on every business agenda. The measures set out in the University's Carbon Management Plan (CMP) sets out the strategy for the University of Glasgow's carbon reduction programme.

Main Objectives

The plan details the University's strategy for reducing carbon emissions over the next five years and sets out a clear timetable as well as identifying the responsibilities and internal resources required to deliver the programme. The main objectives of the plan are:

- To take a whole business approach so that carbon management is adopted as a key objective. Key stakeholders will be appointed to ensure that carbon reduction is fully integrated into the campus environment.
- To adopt targets for the measurable reduction of carbon emissions and to deliver these reductions. The key target is for a 20% reduction in CO_2 emissions by 2014. This carbon reduction benefit will generate a significant cost benefit over the five-year period.

The CMP will underpin our commitment to the Universities and Colleges Climate Commitment for Scotland (UCCCfs) framework which commits each institution to a five-year climate change action plan. In order to ensure that there is effective and ongoing ownership of the programme, it is important to define a governance structure. A new governance structure has been proposed. The Secretary of Court, as Project Sponsor, will be responsible for implementation of the plan and reporting to the University Court. The CMP will be regularly reviewed and updated and Information on our environmental performance published on an annual basis.

Climate Change Challenge - UK context and Legislation

Carbon reduction is one of the key issues facing Higher Education Institutions today. Challenging carbon reduction targets set by government are causing us to re-assess our environmental impact and how we can seriously reduce this impact. We are currently preparing for the Carbon Reduction Commitment (CRC), the UK's first mandatory carbon trading scheme which starts in April 2010. This participation has a budgetary impact of approximately £400K in 2010/11 for the purchase of annual carbon allowances. We will have our carbon purchase fees reimbursed by 100% +/-10% at the end of the first year depending on our carbon reduction performance. Thereafter there is a sliding scale of reimbursement which changes to 100% reimbursement +/- 20% at the end of the second year and so on. Carbon allowance purchase prices are fixed at £12 per tonne for the first phase of the scheme. Thereafter allowances will be purchased by auction in the second phase of the scheme in 2013, with Government controlling and gradually reducing the number of allowance available in subsequent years forcing up the cost of carbon thereby creating a greater incentive for reducing carbon output. A CRC league table will rank all participants in the scheme on the basis of carbon reduction performance. The scheme will work in tandem with the existing European Union Emissions Trading Scheme in which the University participates.

Climate Change Challenge - Scottish context and Legislation

The Scottish Climate Change Scotland Bill has been granted Royal Assent and will now become an Act of Parliament. The legislation creates a long-term framework that:

- Introduces a statutory target to reduce Scotland's greenhouse gas emissions by ≥ 80% by 2050.
- Establishes an interim target of at least 42% emissions reductions by 2020.
- Establishes a framework of annual targets.
- Includes emissions from international aviation and international shipping.

Against this world leading legislative background, it might be anticipated that SFC may follow future HEFCE sustainability commitments such as linking capital and other funding to carbon performance to combat climate change.

Future Vision

The University began its commitment to sustainability in the mid 1990's when the Energy Office was set up. This early investment allowed GU to become the first Scottish University to become energy efficiency accredited in 1998 and our status has been renewed in 2001, 2004 & 2007. During this time

over £2m cost savings were generated through prudent energy management and design. Fifty percent of our power is drawn from renewable sources and we have received several prestigious awards for our energy systems and new buildings designs including a Carbon Trust Award and two Green Gowns sustainability awards from HEEPI.

The University has developed a comprehensive Carbon Management Plan with targets and timetables for substantially reducing greenhouse gas emissions and improving its impact on the environment. The core themes within the plan include:

- Upgrade to Efficiency – continue to upgrade inefficient buildings and replace inefficient appliances.
- Build Better – all new buildings should be high performance and energy efficient.
- Move to clean power – buy or generate electricity from renewable sources.
- Expand Transportation Alternatives – make it easy to get around with less fuel.
- Implement Green Purchasing – buy products that use less energy, last longer and are good for the environment.
- Reinforce sustainability in the curriculum.
- Institutional Conservation – create a culture of conservation awareness on campus.

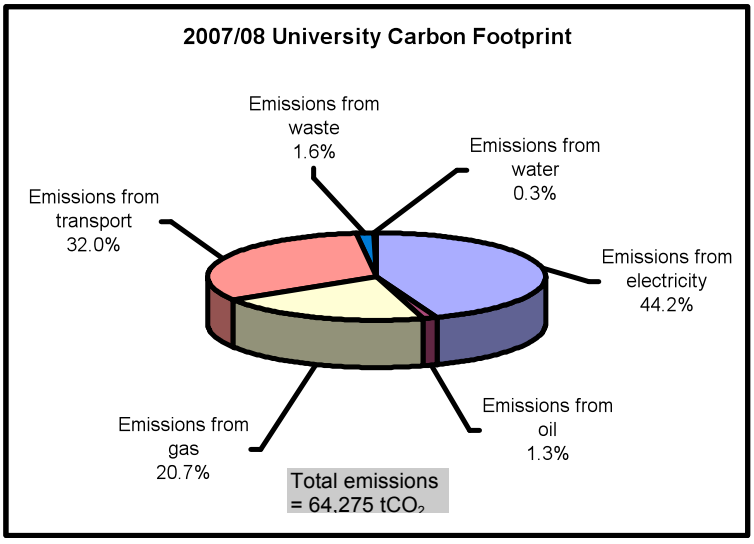
These objectives create a number of opportunities and challenges. Critical to the success of the Carbon Management Plan is achieving the understanding and buy-in of staff and students across the University. An effective communication plan will facilitate this, and it is important to maintaining the profile of the CMP throughout the five year lifecycle. The following objectives have been set for this strategy:

- To raise awareness of the CMP.
- To obtain buy-in to the plan from stakeholders.
- To inform staff and students of progress and key milestones.
- To ensure there is an opportunity to contribute to the project through consultation and feedback.
- To champion a low-carbon approach to the wider community by publicising our successes.

It will be necessary to win the hearts and minds of all staff and students throughout the University so all are regarded as the audience for the CMP-related communications. A range of communication channels have been defined and will be used as appropriate for the audience/message. The channels used and overall effectiveness of the communications strategy will be reviewed regularly during the project to determine whether the objectives are being attained.

Carbon Footprint

An emissions baseline exercise has been carried out to determine the University's carbon footprint against which the benefit of future emission reductions can be measured. The total amount of CO_2 generated in baseline year 2007/08 was 64,275t. This is equivalent to about 2.5 tonnes per annum for each student and member of staff. The figure provides a breakdown of carbon emissions which predominately come from electricity (44%), gas (21%) and travel (32%). These are the principal areas on which carbon management will focus.



A summary of the emissions for baseline year 2007/08 is given in the following table.

Summary Table of Emissions for Baseline Year 2007/08

	Total	Buildings	Transport	Waste & Water
Baseline CO_2 emissions (tonnes)	64,275	42,532	20,540	1,204

Most of the University's carbon dioxide emissions emanate from the energy consumed in buildings. A breakdown of the estimated emissions production arising from the gas, oil and electricity consumed in running our administration, teaching and research activities is given in the following table.

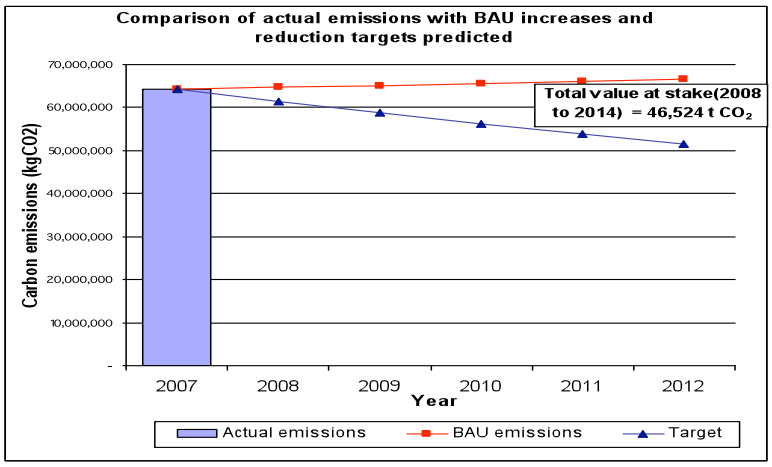
Emissions Arising from Administration, Teaching and Research Activities

	t CO2 per year	% of total emissions
Administration space (Academic & US)	10778	16.8
Teaching space	11308	17.6
Research space	18738	29.1
Residential space	1708	2.7

Research activity is responsible for generating most of the emissions from building activities.

Carbon Reduction Benefits of the Programme – Carbon Value at Stake

A Value at Stake calculation has been carried out to demonstrate the benefits of carrying out a rigorous carbon management programme. The Value at Stake is the difference between the Business as Usual scenario and the reduced emissions scenario - 20% over the five-year programme. This calculation is based on Business-as-Usual (BaU) projections of emissions from the baseline year 2007/08. The BaU scenario has been generated based an annual 0.7% growth demand (1) over the five-years allowing for an increase in research activity, computing and new buildings etc.



The graph above displays an assessment of the likely prediction of carbon reduction over the five years. The BAU and reduced emissions scenario tCO_2 output shows a reduction of **46,524 tCO2** over the five year programme. The estimated carbon value at stake relating to energy water and waste consumption is 31,657 tonnes CO_2.

Carbon Reduction Measures

The following table provides is a summary of the main initiatives which will deliver a substantial part of the five-year carbon reduction target. The recommendations are split into technical, enabling and feasibility projects. The specific individual projects are detailed in Section 5 and in Appendix B.

Category	Action	Technical Measures	Source of Project Cost and Benefit Information
Building Energy Management	1	Better energy management by smart metering	Carbon Trust feasibility report/Best Practice guidance
	2	Fine tuning of BEMS building services controls	University Services
	3	Salix energy conservation fund investment	Carbon Trust reports/consultants design
	4	Salix energy conservation fund (reinvestments from 3)	Carbon Trust reports/consultants design
	5	Campus lighting efficiency	Carbon Trust Feasibility report
	6	Boyd Orr/Joseph Black lighting efficiency	Carbon Trust Feasibility report
	7	GUU boiler replacement	WSP Trust Feasibility report
	8	John McIntyre boiler replacement	University Services
	9	50kW wind turbine Cochno Farm	Carbon Trust Feasibility report
Sustainable Travel	10	Reduce CO2 emissions from business and commuter travel	University Services
Waste Management	11	Waste minimisation & recycling, 80% paper recycling, construction waste management	University Services
Water and Waste Water	12	Water conservation and maintenance programme	University Services
Category	**Action**	**Enabling Measures**	
Enabling Actions	13	Appointment of Carbon Reduction Officer	
	14	Energy awareness campaign	Consultants report/Best Practice guidance
	15	BREEAM excellent standard for new build	
Category	**Action**	**Unfunded projects**	
Unfunded Projects	16	Redevelopment of Modern Languages building	
	17	SCENE 2 new building	
Category	**Action**	**Feasibility Studies**	
Feasibility Studies	18	Energy assessment of buildings (EPCs)	
	19	IT strategy	
	20	Asset maintenance	
	21	Library cladding/Photovoltaics	
	22	Library CHP	
	23	Sustainable development of Western site	
	24	New Law building	
	25	Sustainable redevelopment of Main Boiler House	

Financial Analyses

The Carbon Management Programme is being launched against an underlying growth in energy demand as our institution develops and expands. Nonetheless GU energy consumption per student FTE at 6768 kWh compares very favourably against the Russell Group median of 8137 kWh. The main focus of the Carbon Management Programme is to meet our legislative commitments as well as underpin our commitment to the Universities and Colleges Climate Commitment for Scotland (UCCCfs) framework. The investment in carbon reduction measures as well as significantly reducing our carbon footprint will have the added benefit of bringing about significant cost savings over the five-year programme.

The key figures for the investment required for the planned energy project initiatives 1-9, 12 &14 listed in the table above together with the predicted cost and carbon dioxide savings are shown in the following two tables. The total cost of financing these projects over the 5- year programme is estimated to be £1.5m. The capital cost requirements together with the predicted financial and environmental benefits are based on Carbon Trust energy audit reports, consultant's designs and E&B standard plant costs. The new post of Carbon reduction Officer has been created to help deliver the programme. The cost of this post is included in the annual revenue costs.

Financial Costs – Planned Energy projects 1-9, 12 &14

Figures are in £1000's	2009/10	2010/11	2011/12	2012/13	2013/14
Total estimated annual capital cost	**301**	**193**	**321**	**189**	**189**
Total estimated annual revenue cost	**64**	**65**	**66**	**66**	**67**
Total estimated annual cost	**365**	**258**	**387**	**255**	**256**

We have a considerable number of pipeline projects which have the potential to significantly contribute towards the 20% carbon reduction target. The costs and benefits of the pipeline projects will be determined from feasibility studies and other work. The investment costs together with the financial and environmental benefits will therefore increase as the feasibility of the pipeline projects is established.

An important part of the investment programme is being provided by Salix Finance which is providing £520k, matched by £130k from the University creating an investment fund of £650k. This fund is ring fenced to be spent on energy saving projects. The energy savings made by the investment are returned to the fund until the original project investment is repaid. After that, the utilities budget will benefit from the savings. Salix projects are currently providing a payback of 3.7 years. Other funding sources include Estates and Buildings staff, maintenance, utilities and capital project budgets together with renewable energy funding sources such as the Scottish Government's Community and Renewable Energy Scheme which can provide grants up to £150k.

A key assumption made in determining the financial savings is in the unit price of gas and electricity over the next five years. The unit price of gas and electricity has been assumed to remain at current levels over the five years. The risk to utility prices is on the upside and therefore there is potential for the financial savings to be enhanced.

Annual Benefits – Planned Energy Projects 1-9, 12 & 14

The estimated financial and carbon dioxide savings made from the planned energy projects 1-9, 12&14 is shown in the following table. The predicted financial saving for these projects over the 5-year programme is estimated to be circa £3m providing an excellent rate of return.

	2009/10	2010/11	2011/12	2012/13	2013/14
Annual cost saving - £	**154,000**	**423,000**	**677,000**	**794,000**	**899,000**
Annual CO_2 saving - Tonnes	**1110**	**2837**	**4297**	**4783**	**5302**

The predicted quantity of carbon dioxide saved between 2011/12 – 2013/14 by these projects alone is 14,382 tonnes which would reduce carbon allowance purchase cash flow by £172,584 over the three years based on a purchase price of £12 per tonne CO_2.

(1) http://bis.ecgroup.net/Publications/EnergyClimateChangeDECC/EnergyStatistics.aspx

1 Introduction

The Carbon Management Plan (CMP) is the key output from the University's participation in the Carbon Trust's Higher Education Carbon Management Programme. The CMP details the University's strategy for reducing carbon emissions over the next five years and sets out a clear timetable, as well as identifying the responsibilities and internal resources required to deliver the programme. The principal aim of the plan is to deliver carbon and cost savings across the University operations including:

- Buildings and infrastructure
- Energy (generation, electricity, oil and gas)
- Waste management
- Transport
- Procurement

In developing the CMP, the University followed five key steps laid down by the scheme to build its strategy for reducing CO_2 emissions from sources under its control:

- A systematic analysis of the University's carbon footprint against which future emission reduction activities can be measured
- A calculation of the Value at Stake demonstrating the carbon reduction and financial benefits of delivering the reduced emissions scenario making the case for action
- The identification and quantification of carbon reduction opportunities
- The development of structured action plans for realising carbon savings and embedding carbon management throughout campus activities
- The definition of the governance structure for delivering the programme.

1.1 The University of Glasgow - Past Achievements

A number of key policy initiatives form the strategy for promoting our Corporate Social Responsibility (CSR) agenda in teaching and research, and in the management of the Estate. Energy and waste management, together with sustainable travel and procurement, form the core of the sustainability strategy for our business management and these policies have been in place for a number of years. Whilst considerable progress has been made over the past decade through the implementation of these policies, the University recognised the benefit of joining the Carbon Management Programme which will act as a focus for bringing all of the carbon reduction initiatives together.

The University has been in a partnership with the Carbon Trust since 2003 and has benefited significantly from this collaboration in identifying and implementing carbon reduction opportunities.

Glasgow was the first Scottish University to gain energy efficiency accreditation in 1998 with re-accreditation following in 2001, 2004, and 2007. We propose to take up the new Carbon Standard when our accreditation is due for renewal. The University has a good track record of investment in carbon reduction measures which was initially funded from savings made by capitalising on the deregulation of the utility supply market in the 1990's. £2.75m invested in energy and water conservation over the past ten years was funded mostly by utility cost savings. This investment commitment, together with a range of policy initiatives across the institution, has been responsible for significantly reducing our carbon footprint and promoting sustainability on the University's campuses. Nearly 50% of the University's electricity supply is drawn from renewable sources and the University is constantly exploring new ways to reduce energy use and reduce environmental impact. Salix funding of £650K was secured for ongoing energy efficiency projects in 2007. £300K of this funding has been invested to date. The University features in two case studies.

Envirowise Water Conservation Case Study - CS571, 2006

Carbon Trust Case Study CS030306 "Achievements in energy efficiency - University of Glasgow" 2006

The University received Fair Trade Accreditation in 2005, and Court approval was given for our Sustainable Travel Plan in 2005.

1.2 Initiatives and Awards for New Developments

Recognised by the Green Gown Awards www.heepi.org.uk for our sustainable procurement practices (capital developments), the Estates and Buildings department has ensured the construction of new buildings involves energy assessments and energy saving designs. Investment in sustainability measures has had, and continues to have, a direct financial payback to the University. The following awards for new developments have been achieved:

- BREEAM 'Excellent' rating for the construction design of SCENE Phase 1, 2005
- BREEAM 'Very Good' ratings for the construction design of Royal Beatson Cancer Research and Computing Science buildings, 2005
- Scottish Power Award for the design of the Biomedical and Cardiovascular Research buildings, 2006.
- British Institute of Facilities Management Best New Build Award for SCENE Phase 1, 2007
- The Carbon Trust Low Carbon buildings Award for SCENE Phase 1, 2007.

The University has already demonstrated that construction best practice can be applied to a wide range of teaching and research buildings and that, in addition to carbon and cost savings this brings acclaim in the form of awards and international recognition for its developments.

1.3 Procurement

On the wider procurement front, the University is a member of APUC (Advanced Procurement for Universities and Colleges) and accesses contracts negotiated by Procurement Scotland and other external bodies for a wide range of goods and services procured on a collaborative basis. All of these bodies have sustainability as a central focus of their procurement and increasingly environmental factors are becoming part of the evaluation criteria applied in awarding contracts. The policies of the two bodies mentioned can be found at:

http://www.apuc-scot.ac.uk/Sustainability.htm and
http://www.scotland.gov.uk/Resource/Doc/256155/0076031.pdf

Within the University, "one off" purchases for equipment and tangible goods always takes account of the whole life cost of the goods which ensure a healthy evaluation weighting is given to long warranty and maintenance contracts, ongoing running costs and the use of consumables.

The University is constantly seeking ways to cut down on deliveries and a current example is the intention to migrate to piped filtered drinking water as opposed to chillers and bottled water.

Sustainability in procurement is an ongoing process. It would be wrong to suggest that buyers on stretched budgets are not focused primarily on value for money but by putting sustainability on the strategic procurement agenda – ie by making it a central part of the choice criteria – and combining that with high visibility of green products and education, there is little doubt that the sustainability agenda is gaining in influence in the procurement of goods and services.

Additionally, the University has been granted Fair Trade status, and is accredited by the Vegan Society of Great Britain with a Sunflower Award.

2 Carbon Management Strategy

This section sets out the context in which the University's Carbon Management Strategy will be implemented and the benefits it will bring to both the University and its key stakeholders. The strategic influences and drivers impacting on our institution are mapped out and we list the key themes of activity through which we aim to meet our carbon reduction targets.

2.1 Context and Drivers for Carbon Management

Climate change is widely seen a major threat to our planet and cutting carbon emissions associated with the combustion of fossil fuels is key priority for the University in improving its carbon footprint. The Kyoto Protocol has galvanised the EU and UK government into taking legislative action whilst the Scottish Government has proposed a mandatory long-term target to reduce Scotland's greenhouse gas emissions by 80% by 2050. As a carbon trader, the University is a participant in the EU Emissions Trading Scheme and is about to be affected by other incoming national drivers responsible for enhancing environmental standards. The Energy Performance of Buildings Directive (EPBD) and proposed Carbon Reduction Commitment (CRC) emanating from the Climate Change Bill will have a significant impact on the University creating a greater pressure to improve energy performance and reduce operational costs.

The Scottish further and higher education sectors have already made significant progress in terms of addressing carbon reduction and sustainable development. The Scottish Funding Council (SFC) has taken a sector leadership role in promoting sustainable development and Glasgow as one of 40 signatories has signed up to the Universities and Colleges Climate Commitment for Scotland (UCCCfs) framework committing each institution to a 5-year climate change action plan. Carbon reduction and sustainability are rapidly moving up the University's agenda just as in the government's agenda. The key elements going forward will be the:

- Universities and Colleges Climate Commitment for Scotland, underpinned by the University's Carbon Management Plan
- Carbon Trust
- Salix energy conservation funding
- EPBD and CRC legislation
- EAUC and CaSPr further and higher education sector carbon reduction and sustainability support networks.

Waste minimisation and maximising diversion of waste from landfill will also play an important part in reducing our carbon footprint, and University running costs. Success in implementing good practice - and publicising this - will contribute to awareness of the issues amongst the University and wider communities.

2.2 Our Low Carbon Vision

As one of the world's top 100 universities the University excels in teaching, learning and research. It is our aim to strengthen this position and to lead by example in reducing carbon emissions and promoting sustainable development in all that we do by:

- Taking a whole business approach to embedding carbon management in all of our activities
- Reducing our current carbon footprint by 20% over the next 5 years
- Delivering teaching to students and engaging in research that will be of worldwide benefit for the future, in reducing global carbon emissions.

2.3 Strategic Themes

In developing its low carbon vision the University has identified several key strategic areas where attention will be focussed to achieve the objectives. These are:

- Management process: We will integrate carbon management into the management processes of the University thereby ensuring effective carbon management and engagement with staff and students. It is our intention to ensure that carbon management has the same commitment and status as, for example, finance, health and safety, and equal opportunities in the decision-making processes of the University. A new governance structure for delivering the programme is proposed in Section 7.
- Cultural awareness: The aim is to engage all staff and students, engendering a culture change which will see good carbon reduction practices become routine. The corporate communication team will develop a planned approach to raising awareness of carbon reduction, through the development of a robust communications and awareness strategy.
- Energy conservation investment: This will be managed by the Campus Sustainability Officer in conjunction with Estates and Buildings Office professional staff in an endeavour to maximise carbon reduction opportunities. Full use will be made of the services supplied by the Carbon Trust in developing carbon reduction opportunities through our energy partnership.
- Capital Development programme: The University has a recurrent annual estate capital development expenditure of circa £45million per annum. The University will continue to incorporate environmentally sensitive designs into both new and refurbished buildings and follow a long-term sustainable campus development vision including the possible development of the Western Infirmary site.
- New functions: It is our intention to make the case for the new post of Carbon Reduction Officer to help deliver the Carbon Management Programme. The new officer's task will be to provide more in depth support towards identifying and delivering carbon reduction opportunities as well as providing assistance to the Corporate Communications Team in raising awareness and embedding carbon management. It is also proposed to appoint voluntary green envoys on a faculty basis to provide support in delivering the low carbon message.
- Policy alignment: It is our intention to review existing policies and ensure that they are aligned with the University's Strategic Plan. It is proposed to include Carbon Management in the forthcoming revision of the University's Strategic Plan to be undertaken later this year after the appointment of the new Principal who takes office on 1 October 2009.
- External partnerships: The University has a number of external partners within and outwith the tertiary education sector. It is our intention to strengthen these partnerships focusing on the broader carbon management and sustainability agendas.

2.4 Targets and Objectives

Specific carbon management targets and objectives are detailed below. These will be integrated into existing policies when they are reviewed, and form the main aims and deliverables of the programme.

Overall Target

The University of Glasgow will reduce **CO_2** emissions from its activities by 20% from 2007/08 baseline, by July 2014. This will result in potential financial savings of £11million and reduce CO_2 emissions by 46,524 tonnes per annum by July 2014.

Energy

Objective	To continue to focus on increasing the energy efficiency of the estate by installing up-to-date technologies, engaging with staff and students and encompassing renewables where practicable.
Target 1	To reduce Energy consumption by 20% by 2014.

Construction and Refurbishment

Objective	To ensure that all new build and refurbishment projects achieve a high level of sustainability performance.
Target 1	All new build to aim for a BREEAM Excellent standard.
Target 2	To aim to bring all buildings up to Energy Performance Certificate 'C' standard with 'B^+' the target for all new builds

Procurement of Goods and Services

Objective	To ensure the prudent use of natural resources.
Target 1	To procure as a minimum 10% of electricity supplies from green sources (current uptake is 50%).
Target 2	To move from bottled drinking water to plumbed in dispensing systems by 2011.

Water and Waste Water

Objective	To continue to invest in water conservation measures thereby reducing consumption and wastewater production.
Target 1	To reduce water use by 10% by 2014.

Waste

Objective	To minimise waste to land fill.
Target 1	To comply with the Scottish Government's targets for recycling and waste reduction strategies.
Target 2	To increase our overall figure for waste diverted from landfill to 30% by 2014.
Target 3	To achieve 80% paper recycling by 2014.
Target 4	To comply with Wrap recycled contents and waste minimisation targets in construction projects.

Travel

Objective	To substantially reduce CO_2 emissions arising from University transport and travel activities.
Target 1	Reduce the % of business miles by 10% by 2014.
Target 2	Increase the use of video conferencing by 10% by 2014.
Target 3	Reduce the CO_2 associated with Fleet vehicles by 10% by 2014.
Target 4	Reduce the % staff travelling alone by car by 5% by 2014 as their main mode of travel.

Emissions Baseline and Projections

3.1 Scope

The scope of emissions sources considered in measuring the University's baseline in shown Table 3.1 & Figure 3.1. The data shown is for financial year 2007/08 and is based on Estates Management Statistics published by the Association of Universities Directors of Estates (AUDE).

3.2 Baseline

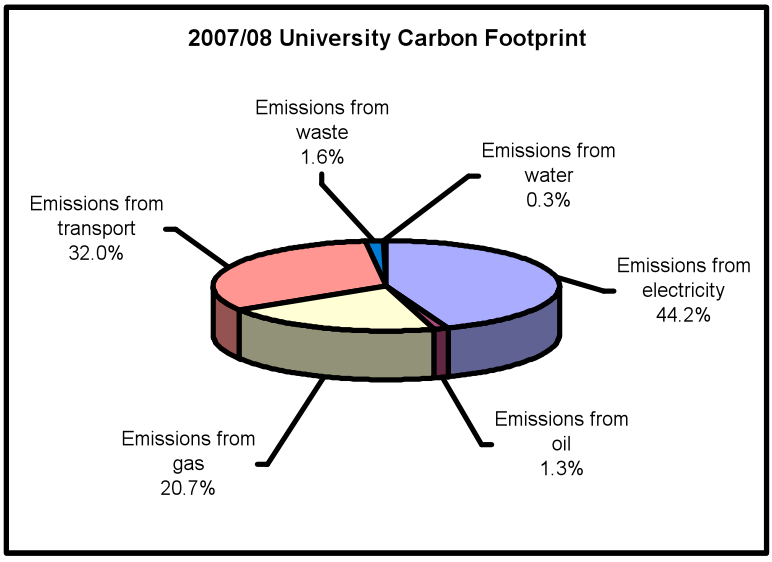
The emissions data has been used to determine a baseline carbon footprint against which the benefit of future emission reductions can be measured. The total amount of CO_2 generated in baseline year 2007/08 was 64,275t. This is equivalent to about 2.5 tonnes per annum for each student and member of staff.

Table 3.1 – Summary table of emissions for baseline year 2007/08

	Total	Buildings	Transport	Waste and Water
Baseline CO_2 emissions (tonnes)	64,275	42,532	20,540	1,204
Baseline Cost (£)	12,601,899	9,748,788	1,874,056	979,055

Figure 3.1 provides a more in-depth break down of our carbon emissions which predominately come from electricity (44%), gas (21%) and travel (32%). These are the principal areas on which carbon management will focus. We intend to review the scope in later years to bring in other areas - such as procurement- as data becomes available.

Figure 3.1



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Residential space	1708	2.7

Research activity is responsible for generating most of the emissions from building activities.

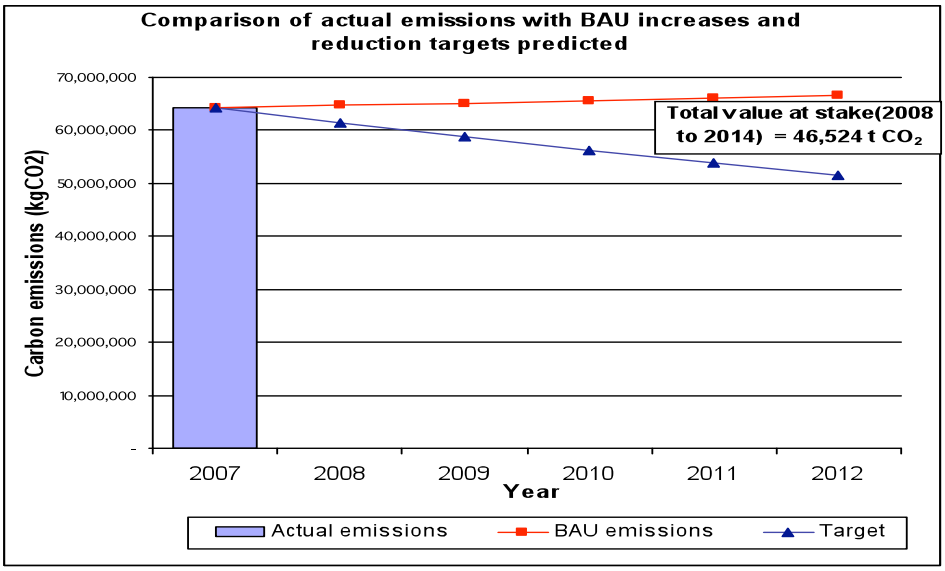
3.3 Projections and Value at Stake

A Value at Stake calculation has been carried out to demonstrate the benefits of carrying out a rigorous carbon management programme. This calculation is based on Business-as-Usual (BaU) projections of emissions from the baseline year. The BaU scenario has been generated based on an annual 0.7% growth demand (1) allowing for an increase in research activity, computing and new buildings etc. Value at Stake is the difference between the Business as Usual scenario and the reduced emissions scenario - 20% over the five-year programme. The graphs below display an assessment of likely predictions over the five -year programme.

(1) http://bis.ecgroup.net/Publications/EnergyClimateChangeDECC/EnergyStatistics.aspx

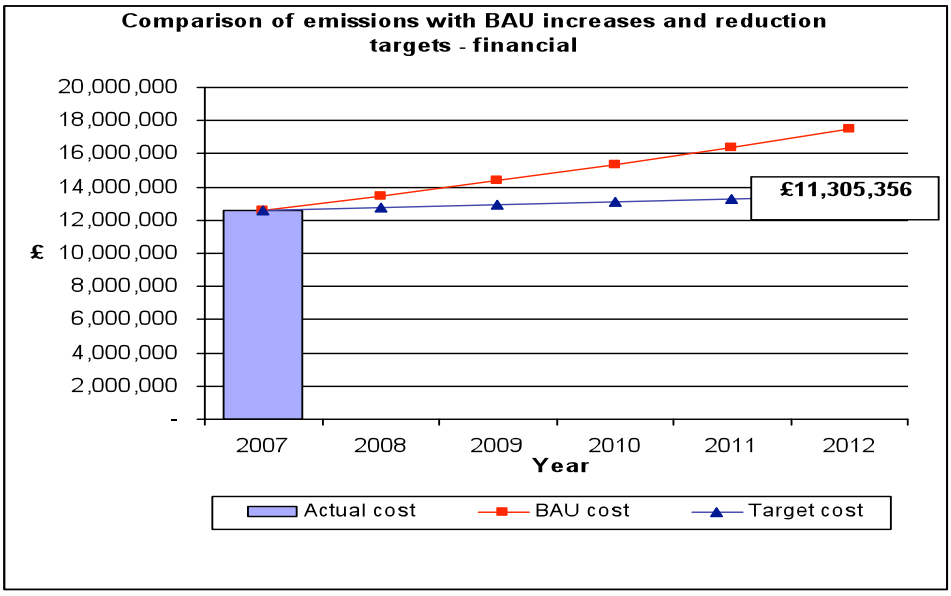
Carbon Value at Stake

The BaU and reduced emissions scenario tCO_2 output shows a reduction of 46,524 tCO_2 over the five-year programme.



Financial Value at Stake

The BAU and reduced emissions scenario expenditure has been calculated using forecasts of energy consumption and an annual 4% energy price rise increase over the duration of the programme. ***The BaU and reduced emissions scenario shows a financial saving of £11,305,306 over the five-year programme.***



4 Carbon Management Projects

In this section we list the individual actions and projects that will be undertaken setting out the key information for each project in terms of capital costs, financial savings and carbon savings. The main criteria for selecting a carbon reduction project are the strength of the business case and the availability of appropriate funds. Projects are assessed on the greatest carbon saving, greatest cost saving, lowest life cycle cost, best demonstration of technology etc. Generally a project qualifies for investment if the simple payback is less than 5 years with an appropriate NPV. With regard to capital projects, design consultants have to comply with the University's Energy and Sustainability Brief which sets out the expected standards of design service. The University's policy is to aim for a BREEAM standard of 'excellent' for new buildings and a 'very good' rating for refurbishments. Consultants would normally produce an energy technology assessment report and technologies with appropriate £/tonne CO_2 would be incorporated into the design.

Existing Projects

Projects completed during the baseline year 2007/08 are listed in the table below. Essentially all of these projects were financed by the Salix energy conservation fund except for the final project, which required business case authorisation. Salix financed projects are assessed on the value of £/tonne CO_2 saved, taking into consideration the persistence factor of the technology.

	Lead	Cost			Annual Saving		Pay back	% of Target	Year
		Cap'l	Rev'ue	Res'ce	£	CO_2			
Davidson Building Refrigerator controls	AY	12,796			5,935	29.67	2.2		2007
Gilmorehill Halls Boiler replacement	HA	22,219			5,212	34.03	4.0		2007
1 – 4 Professors Square Draft proofing	AY	7,827			2,539	16.58	2.9		2007
Stevenson Building DHW Heaters	HA	31,710			6,288	41.10	4.8		2007
Joseph Black Refrigeration Motor Controls	AY	10,905			5,880	27.50	1.6		2008
Main Boiler house Digital Burner	HA	50,512			16,000	74.00	2.7		2008
Campus Steam Main Insulation jackets	HA	13,750			3,600	16.60	3.3		2008
Library L4 Annexe Energy efficient lamps	RK	1,777			1,831	8.60	0.8		2008
Library L4 N Annexe (PIR)	RK	2,902			732	3.40	3.4		2008
Kelvin Building – Heating Upgrade	RK	30,407			5,990	35.80	4.8		2008
Kelvin Building - Heating	RK	7,940			1,500	13.70	5.0		2008
Kelvin Building - Insulation	RK	4,198			800	7.30	5.0		2008
Library Thermocondenser	RK	25,057			5,720	52.37	4.1		2008
Library – Burner Upgrades	RK	30,677			5,940	54.38	4.9		2008
Jarrett Lecture Theatre (Insulation)	AM	4,195			1,130	5.20	3.2		2008
Jarrett Lecture Theatre (AHU Heat)	AM	7,432			1,787	8.30	3.6		2008
Remote management of lecture theatre data-video projectors inc webcams	BH	105255			28914	116.7	3.6		2008
Totals		369559			99798	545.23	3.7	0.85	

The £370K investment will deliver financial savings of £99.8K per year giving a payback of 3.7 years and reduction in CO_2 of 545 tonnes per year.

Planned / Funded Projects

The following table lists the projects already planned, with funding in place. Some of the projects have started on site and are nearing completion. The capital expenditure in a number of projects is not necessarily planned to be made in one financial year and will be phased over a number of years. A table showing the total financial savings and carbon savings over the duration of the University's strategy is shown in Section 5.

			Cost			Annual Saving		Pay	% of	
Ref	Project	Lead	Cap'l	Rev'ue	Res'ce	Fin	CO_2	back	Target	Year
001	Better energy management by smart metering	AY	200,000			141,000	1345	1.4	2.0	2009
002	BEMS fine tuning	IS	178,000			135,000	1000	1.3	1.6	2009
003	Salix energy conservation	AY	350,000			95,400	566	3.7	0.9	2009
004	Salix energy conservation from reinvestments	AY	650,000			175,630	1056	3.7	1.6	2009
005	Campus Lighting efficiency	JL	552,000			152,000	436	3.6	0.68	2009
006	Lighting upgrades J Black Library & corridors, Boyd Orr emergency staircases	JL	25,000			6,800	33.4	3.7	0.05	2009
010	Sustainable Transport initiatives	VR		50,000			2054	<1 Yr	3.2	2009
011	Waste recycling	J McI					25.5		0.04	2009
012	Water & wastewater	AY	125,000			94,600	17.3	1.3	0.03	2009
013	Appointment of Carbon reduction Officer	AY		203000						2009
014	Campus awareness programme	AV		97000		300,000	1402	<1 Yr	2.2	2009
	TOTALS		2,080,000	350,000		1,100,430	7935.2	1.9	12.3	

Near Term Projects

The following table lists all of the projects which are planned to take place but are not yet funded.

			Cost			Annual Saving		Pay	% of	
Ref	Project	Lead	Cap'l	Rev'ue	Res'ce	Fin	CO_2	back	Target	Year
007	GUU boiler replacement	IS	80,000			26145	144	3.0	0.22	2009
008	Redevelopment of J McIntyre Building Boilers oil to gas firing	HH	30,000			5772	32.85	5.2	0.05	2010
009	Cochno Farm wind turbine	AY	133000			21800	66	6.1	0.1	2011
	TOTALS		243,000			53717	242.9	4.5	0.38	

Medium to Long Term Projects

This section lists the projects which may take place but are not yet planned in detail. The detail on these projects is subject to further work to establish quantification of costs and savings.

Ref	Project	Lead	Year
017	SCENE 2 Building	PH	2010
018	Building Energy Performance Certificates	AY	2010
019	IT strategy	RG	2010
020	Asset maintenance	RK	2010
021	Library re-cladding/photovoltaics	RK	2010
022	Library CHP feasibility	AY	2010
016	Redevelopment of Modern languages building	HH	2014
023	Western site development	SS	2014
024	New Law building	HH	2014
025	Sustainable redevelopment of Main Boiler House	RK	2014

Energy performance assessments complying with the Energy Performance of Buildings Directive are currently underway. Extended assessments have been specified which will provide recommendations with quantified carbon savings and capital costs. These recommendations will be assessed applying the criteria stated in introduction of this section. All complying projects will be added to the Carbon Management Plan.

We plan to realise IT-related energy savings by

(i) devising a shut down control regime for 600 drop-in clusters in Library and Round Reading Room when PCs are idling;

(ii) applying this to 3000 PCs in faculty clusters – more of a management issue than a technical one and

(iii) consolidation of server rooms, channelling waste heat for useful purposes.

The University may have the opportunity of purchasing and developing the adjacent Western General Hospital site in the near future. The site will be developed in a highly energy efficient and sustainable manner if purchase is made.

5 Carbon Management Plan Financing

The capital cost of financing the planned Carbon Management Plan over the next 5 years is £2.32 million. The measures set out in section 4 have identified potential savings of £1.15 million per annum and a potential reduction of 8,178 tonnes CO_2 per annum. We have a considerable number of pipeline projects which have the potential to significantly contribute towards the 20% carbon reduction target. The costs and benefits of the pipeline projects will be determined from feasibility studies and other work. The investment costs together with the financial and environmental benefits will therefore increase as the feasibility of the pipeline projects is established.

Project funding sources include a Salix ring-fenced fund of £650K split £520K Salix input: £130K Glasgow input. This is a self-supporting fund where the savings from projects are reinvested, thereby preserving the fund into the future. The Carbon Trust supports Salix Finance, an independent publicly-owned company set up to accelerate public sector investment in energy efficiency technologies through investment to save schemes. The current average payback for Salix funded projects is 3.7 years. The other project funding sources emanate from ongoing University funding allocated to Estates and Buildings for managing utilities, maintenance and capital development projects.

5.1 Assumptions

The key assumptions made in calculating the benefits and savings are:

- The unit price of gas and electricity over the next 5 years.
- Project capital requirements and financial and CO_2 savings are been based on Carbon Trust feasibility reports and on consultant design teams employed by the University.
- Default carbon factors in the Programme Assessment tool were used in converting energy kWh to tonnes CO_2 emissions.

Utility unit price assumptions are the most critical in determining the project financial savings. Utility supply markets are very volatile which makes prediction of future prices very difficult.

5.2 Benefits / Savings – Planned Energy projects

	2009/10	2010/11	2011/12	2012/13	2013/14
Annual cost saving	**154,000**	**423,000**	**677,000**	**794,000**	**899,000**
Annual CO_2 saving	**1,110**	**2,837**	**4,297**	**4,783**	**5,302**

The table shows the estimated financial and carbon savings from the planned energy projects listed in the Section 4. The predicted financial saving for these projects over the 5-year programme is estimated to be circa £3 million providing an excellent rate of return. The predicted quantity of carbon dioxide saved over the five years is 18,329 tonnes.

Unquantified Benefits:

The unquantified benefits which emanate from the Programme are:

- Improved working environment for staff and students
- A better student experience and attractiveness for students to come to Glasgow to study
- Meeting regulatory compliance.
- Improved performance against HEI sector standards
- An improved reputation with staff, stakeholders and the public.

5.3 Additional Resources

Dept/Faculty	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Estates and Buildings	**New appointment of Carbon Reduction Officer**	**38.9**	**39.7**	**40.5**	**41.3**	**42.1**
Corporate Communications	**Existing resources prioritised to provide at least 1 day a week support**					
Faculties	**Existing resources prioritised - appointment of voluntary Green envoys**					
SEPS	**Existing resources prioritised to provide support to the programme**					

Additional resource support for delivering the programme is shown in the table above. It is proposed to justify a new post of Carbon Reduction Officer to assist in the delivery of the CMP. Justification for this post is shown in Project Reference 13. It is also proposed to utilise existing staff resources in providing support to the programme as shown in the table. No budget allocation has been made for this extra support at present. It may be necessary to do so in the light of experience of running and managing the programme.

5.4 Financial Costs and Sources of Funding – Planned Energy projects

figures in £ 1000's	2009/10	2010/11	2011/12	2012/13	2013/14
Annual costs:					
Total annual capital cost	**301**	**193**	**321**	**189**	**189**
Total annual revenue cost	**64**	**65**	**66**	**66**	**67**
Total costs	**365**	**258**	**387**	**255**	**256**
Committed funding:					
Committed annual capital	**301**	**0**	**0**	**0**	**0**
Committed annual revenue	**64**	**0**	**0**	**0**	**0**
Total funded	**365**	**0**	**0**	**0**	**0**
Unallocated funding					
Unallocated annual capital	**0**	**193**	**321**	**189**	**189**
Unallocated annual revenue	**0**	**65**	**66**	**66**	**67**
Total unfunded	**0**	**258**	**387**	**255**	**256**

The planned energy projects capital and revenue costs are shown in the table above. The Salix funding contribution is not included therefore the figures represent the predicted costs to the University in funding the planned energy projects. The split between committed and unallocated funding is also shown. The main internal sources of funding are Estates and Buildings staff, maintenance, utilities and capital project budgets. Estates budgets are about to be confirmed for 2009/2010. The main external funding source is Salix with the potential to draw from the Scottish Government's Renewable Energy Scheme for any renewable energy project.

6 Actions to Embed Carbon Management

Introduction

In this section we set out our plans for embedding the carbon reduction philosophy across the organisational structure of the University. We have made use of the Carbon Management Embedding Matrix for the purpose of benchmarking where our institution is now. The scoring indicated on the Matrix reflects the view of members of the Carbon Management Team detailed in Section 7.

University of Glasgow Carbon Management Embedding Matrix

	CORPORATE STRATEGY	PROGRAMME MANAGEMENT	RESPONSIBILITY	DATA MANAGEMENT	COMMUNICATION & TRAINING	FINANCE & INVESTMENT	POLICY ALIGNMENT
5							
4						*	
3		*		*			
2	*		*		*		*
1							

With a very good record of investment in energy conservation, it was to be expected that the University's best score would be achieved in the finance and investment section, closely followed by the programme management and data management sections. Our present data collection system affords a reasonable amount of analyses; however there is scope for improving data collection by concentrating on a more detailed measurement of buildings' energy usage data, waste statistics and travel data. A significant investment in smart metering technology is planned as detailed in Project 001 in Appendix B.

There are already a number of policies, plans and initiatives in place across campus to cut the level of carbon emissions. Although many of these initiatives have been successful, there is scope to ensure that existing policies and strategies are aligned more comprehensively, reaching and enabling all stakeholders to take control of their activities and reduce impact on the environment.

Experience of running energy awareness campaigns on campus has shown that up to 10% savings can be realised in carbon and cost savings if students and staff follow good housekeeping procedures on a sustained basis. It is proposed to introduce a long-term awareness-raising campaign, and through a planned approach to communication and training, to encourage a culture change throughout the University, embedding good carbon management practices across the institution.

However, our efforts to improve our ratings in the Matrix above will be best supported by attention to the last two areas – that of corporate strategy and policy alignment, where our scores are low at present.

The savings derived for the aforementioned mainstream initiatives are expanded in Appendix B. It would seem reasonable to expect a 5% reduction in energy usage through promoting awareness and ownership of carbon reduction across campus.

6.1 Corporate Strategy – Embedding CO_2 Saving Across the University of Glasgow

The Carbon Management Plan and CO_2 saving target will be approved by the University Court, providing endorsement and a clear commitment at the highest level, reinforcing the need for action across the University. The specific objectives of the plan will be included in the University's strategic plan and other high level plans. Court approval will provide long-term organisational momentum for embedding the CMP and CO_2 saving across the organisation. This will primarily be delivered through the governance structure for carbon management described in Section 7.

Key stakeholders at all levels of management will provide overall support for promoting a culture of carbon reduction throughout faculties and buildings.

The plan will be published online, and in pdf format, with a limited number of printed copies available for key stakeholders, thus leading by example and saving paper and distribution costs.

6.2 Programme Management – Bringing it All Together Effectively

This factor of embedding carbon management is covered in section seven of this Plan.

6.3 Responsibility – Being Clear that Saving CO_2 is Everyone's Job

The key to success of the CMP will be effective engagement with staff and the academic and student communities. Everyone will have a role to play in the carbon reduction campaign, and only working together will we deliver the desired carbon savings.

The key stakeholders in the institution who can shape and change culture and awareness are:

- Principal
- Rector
- Secretary of Court
- Senior management (Vice Principals and Deans)
- Heads of academic departments,
- Heads of services and officers including (Finance, Communications, Estates and Buildings, Procurement, Energy, Waste, Transport, SRC, Residences, Hospitality)
- All students (led by the SRC, the student unions and other student societies)
- All staff (key staff including chief technicians, administrators, grounds staff, janitors, cleaners, and security)

Enthusiastic members of staff will be invited to volunteer as ***Green Envoys*** on a faculty basis. Their task will be to encourage good environmental practices amongst colleagues by setting an example in their own work places. ***Green Envoys*** will receive training so that they can answer basic questions about climate change, energy efficiency and building performance etc. These key staff will be given a printed copy of the Carbon Management Plan, to serve as their roadmap towards achieving tangible carbon savings across the University. The Carbon Management Team will engage with ***Green Envoys*** on awareness-raising initiatives.

It is proposed to include specific carbon-saving responsibilities in the job descriptions of Heads of Services and Heads of Academic departments. Carbon reduction objectives will be issued to appropriate staff as part of their performance management objectives and reviewed during their annual Performance & Development reviews.

Knowledge transfer is a key performance indicator for the University, and the higher education sector has a very important role to play in spreading the sustainability message to the wider community. Through our actions, through the committed students we send out into the world, and through our ground-breaking research into new carbon reduction technologies we will demonstrate that we are committed to tackling climate change. The University of Glasgow will lead by example and make public the high standards we set in sustainability and our achievements in carbon management, influencing our local community, the City of Glasgow and contributing to the Scottish economy. The University's Sustainability Research Network comprises over 100 staff across all our faculties, offering cross-cutting inter-disciplinary research to tackle global challenges. In this international arena, the University of Glasgow aims to be a world leader.

6.4 Data Management – Measuring the Difference, Measuring the Benefit

The University's present data collection system affords a reasonable amount of analyses using TEAM energy accounting software. This is used to monitor all energy costs and consumptions from invoice data and a selected number of building electricity sub-meters. We intend to make a significant investment in smart metering technology over the next 1-3 years, partially encouraged by the Carbon Reduction Commitment which comes into play in April 2010 (see Project 002 in Appendix B for more details). This investment will greatly improve data collection and create the opportunity to carry out a more detailed monitoring of building energy performance and identify carbon saving projects.

Performance data will be communicated to staff to raise their awareness of the implications of their energy use. This will be done regularly on a monthly, a quarterly and a bi-annual basis.

Monthly - the MyGlasgow staff website has a section on Environmental Awareness. This will be developed to showcase progress and encourage everyone to take ownership of our carbon reduction plans. Information from the smart metering system will enable us to publish case studies on a monthly basis, highlighting how staff have saved energy in their building. This will demonstrate what is possible, and may even encourage a healthy rivalry as sections try to outdo one another in savings. Smart metering should also enable us to create graphs of energy usage, which will give additional encouragement to staff to think more carefully about energy-saving practices.

Quarterly - the University's Campus News magazine is produced quarterly and distributed to every member of staff. A new section on sustainability will be added, regularly reporting progress and raising awareness. This will reach staff who do not have access to a computer, but who are important to the success of our plans – grounds, cleaning, catering and janitorial staff.

Bi-annually – the Carbon Trust Management Group will deliver a progress report twice a year. An interim progress report will be delivered to the Estates Committee at the half year point, and a full annual report, including a current assessment by the Carbon Trust, will be submitted to the Estates Committee, the Senior Management Group and the University Court each year.

The Carbon Trust Management Group will meet monthly to review and monitor carbon savings projects. The Group will drive projects, providing encouragement to take ownership of projects as necessary, and fully engaging the network of Green Envoys at assist at the ground level. Awareness campaigns will be augmented by the reporting of progress and success, to encourage interest and healthy competition where possible. The Group will need commitment, persistence and energy, to drive, monitor and refine projects to deliver the desired results.

6.5 Communication and Training – Ensuring Everyone is Aware

The Corporate Communications team will develop a planned approach to raising carbon reduction awareness through the development of a robust communications and awareness strategy. The Campus Sustainability team, based in Estates and Buildings, and the network of ***Green Envoys,*** will provide support in delivering the low carbon message.

There are many avenues of communication available and these will be fully utilised in promoting the carbon reduction message to all staff and students. Effective communication and engagement is the key to success. Substantial cultural change will take time to deliver.

Initiatives for building awareness include:

- Publishing the Carbon Management Plan, and ensuring it is accessible and available to all staff, students and external stakeholders
- High profile energy and carbon awareness campaigns, on a rolling basis
- Regular communication and reporting through the MyGlasgow staff website, Campus News staff magazine, formal bi-annual reviews, the current students website and providing articles to the student newspaper and student union magazines
- Featuring the low carbon culture of the organisation in external news releases wherever possible
- Promoting the low carbon culture of the organisation to new staff during staff induction, providing them with written guidelines
- Publicity during the new student's Fresher's Week
- Training for existing staff – including specific groups such as security staff, cleaners and support staff
- Specific training for ***Green Envoys***
- Engage the support of the Trades Unions

- Incorporate carbon-mitigating targets into staff objectives and discussing progress during annual performance & development reviews
- Consider publishing league tables of departments, or buildings, or specific groups
- Spread news through team briefing and Faculty newsletters
- Introduce suggestion schemes
- Create an opt-in green network of interested staff and students
- Offer interesting lectures and workshops.

Staff attitude to carbon savings will be monitored by online surveys, and regular focus groups. We will use the resources of the Marketing Department of the Business School whenever available. We will also include an appropriate section in the regular HR staff attitude survey. The Carbon Management Team will regularly monitor progress and formally report to the Programme Board as described above (see section 6.5) ensuring that all major stakeholders are kept informed.

6.6 Finance and Investment – The Money to Match the Commitment

This factor is covered in detail section five of this plan.

6.7 Policy Alignment – Saving CO_2 Across our Operations

The CMP will be reviewed on an annual basis and be updated to take into account developments in for example, the campus capital development programme, procurement initiatives, new legislation, energy prices and progress towards target. Sustainable development is central to the University's strategy. The University Court has committed to a sustainable future and has embedded responsibility for sustainable development within the remit of its four main policy-making committees: Finance; Estates; Human Resources; and Health, Safety & Environment. This commitment is reflected in a range of policy initiatives that are promoting sustainability on the University's campuses.

The Carbon Management Team will engage with each of these committees in turn, offering consultation and advice on reviewing and updating their key policies to align with the Carbon Management Plan. It is expected that these mini-reviews will take some time, so they will initially be planned to take place quarterly, on a rolling basis, e.g.:

- January 2010 – Estates
- April 2010 – Human Resources
- July 2010 – Health, Safety & Environment.
- October 2010 – Finance

Policies to be considered will include: procurement – sustainable procurement; capital projects – energy/carbon whole life costing; HR – business travel, cycle to work scheme, and essential car users allowance; HSE – environmental policy, waste minimisation and recycling.

Alignment of these policies through careful review by the Carbon Management Team will promote the embedding of carbon management across the University's policy agenda, providing a strong foundation for the culture change we desire.

7 Programme Management of the CM Programme

7.1 Strategic Governance

In order to ensure that there is effective and ongoing ownership of the Carbon Management Programme, it is important to define a governance structure. The University will adopt the following structure for management accountability.

7.2 The Programme Board – Strategic Ownership and Oversight

The Senior Management Group will act as the Programme Board and have responsibility for the strategic direction and implementation of the CMP. The Senior Management Group advises the Principal, as chief executive officer of the University, on matters of policy. It also advises Court and Senate on matters of strategic policy (academic and resource), and acts on a day-to-day basis to implement the policies of Court and Senate.

The Senior Management Group comprises:

Name	Role in Carbon Management Programme
Principal	
Vice Principals	
Deans of Faculties	
Secretary of Court	Sponsor
Director of Corporate Communications	
Director of Finance	
Attendees	
Jim McConnell Albert Young	Director of Estates Project Leader

The Programme Board will be responsible for monitoring and approving strategic carbon management plans and projects and meets monthly throughout the academic year. Progress reports submitted by the Carbon Management Team will form part of the Board agenda.

7.3 Operational Roles and Responsibilities

The Project Sponsor

The Secretary of Court will champion the project and have ultimate responsibility for strategic direction and for agreeing budgets outside those already available to Estates.

Director of Estates and Buildings

The Director of Estates and Buildings will oversee the strategic implementation plan, have strategic input into its development, and review progress.

Project Leader

The Campus Sustainability Officer will coordinate the implementation of the CMP and report on its progress to the Project Sponsor. Responsibilities of the Project Leader will also include the incorporation of progress into the University's existing sustainable development governance.

Estates Development Managers and Maintenance Services Manager

Estates Development Managers and the Maintenance Services Manager supported by the University's Electrical and Mechanical Engineers will work closely with the project leader and manage the technical aspects of projects. The Campus Sustainability Officer will be responsible for data collection and reporting.

7.4 The Carbon Management Team – Delivering the Projects

The Carbon Management Team, convened by the Project Leader and reporting to the Programme Board, will meet on a monthly basis. Meetings will be tailored to fall in line with Board meeting schedules. Carbon Management Team ad hoc meetings will also be scheduled as the need dictates.

Team remit:

- Review and update the Carbon Management Plan on an annual basis
- Monitor and report progress against the plan
- Monitor and report emissions performance
- Develop internal and external communication plans
- Engage with sustainability/environmental champions on awareness-raising initiatives
- Report to the Programme Board

The composition of the Carbon Management Team is listed in the table below and is made up of a wide range of operational managers and senior technical staff who are committed to driving the carbon reduction agenda forward.

Carbon Management Team		
Albert Young	Campus Sustainability Officer	Project Leader
Ann Galbraith	Environmental Adviser	
Annie Vaz	Corporate Communications Depute Director	
Iain Stoddart	Maintenance Services Manager Estates and Buildings	
Viola Retzlaff	Travel Planning Officer	
Tom McAra	Assistant Director Finance - Procurement	
Management Accountant	Finance Office	
Karen Morton	Residential Services Operations Manager	
John Cooper	Transport Services Manager	
Jim Lappin	University Electrical Engineer	
Hamish Alexander	University Mechanical Engineer	
Prof Archie Knox	Academic Representative	
	SRC Representative	
	External Stakeholder	

The projected time inputs for the project are as follows:

Project Sponsor	1 day per month
Project Leader	8 days per month
Project Team Members	1 day per month

7.5 Succession Planning for Key Roles

The University is committed to delivering the CMP, which is a formal deliverable to the Carbon Trust. In the event of key individuals such as the Project Sponsor or Project Lead leaving post, the University will

ensure that a succession plan is in place by appointing and briefing another manager from within the Senior Management Group, or Estates and Buildings department respectively, to ensure succession and continuity.

7.6 Ongoing Stakeholder Management

The key stakeholders within the University are defined within section 6.3. Prominent groups and committees within the University are Court, the four main policy committees reporting to Court, Senior Management Group, Estates Committee, Estates Management Committee, Faculty Committees and external stakeholders. Key external partners include the EAUC, CasPr and Local Authorities.

7.7 Annual Progress Review

Progress made in measuring the scale of carbon reduction against target will be recorded and reported on at least an annual basis. There will opportunities to monitor the effectivemess of specific initiatives on a more frequent basis.

The review will determine the costs and benefits of the programme and include:

- Financial savings
- CO_2 savings against target
- Less quantifiable benefits, such as enhancing our reputation or influencing the local community.

An annual progress report will be made to the University Court via the Programme Board. The Carbon Trust will help with a follow-up to measure the scale of our carbon reduction at the end of each financial year (31 March).