**Queen's University Belfast
Carbon Management Programme**

Carbon Management Plan (CMP)

2 June 2010

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Foreword from Professor Peter Gregson, President and Vice-Chancellor and Mr James O'Kane, Registrar and Chief Operating Officer

Queen's University Belfast recognises its responsibility to ensure environmental and socially responsible practice in all our teaching and research activities. We are committed to continually improving this environmental performance and demonstrating our role within the wider community.

The Carbon Management Plan (CMP) is a key component of our strategy to change fundamentally the way the University works so that we become an environmentally sustainable low carbon organisation, where our present needs can be met without compromising the ability of future generations to meet their needs. These concepts will inform learning and teaching, the curriculum and research, helping to prepare students to contribute as working citizens to an environmentally sound and socially just society. The University will become a sustainable community, embodying responsible consumption of resources, treating its diverse members with respect and supporting these values in the community. To achieve this, carbon management must become the responsibility of each and every member of the University community.

To date, the University has introduced a number of successful environmental and energy management initiatives to reduce carbon emissions, including embracing new technologies.

Participation of the University in the Higher Education Carbon Management Programme will act as a catalyst to further highlight these successes and devise coordinated plans for the future. This will include raising awareness of environmental issues among staff, students and stakeholders, and so helping the University to reduce carbon emissions resulting from our operations.

Carbon management will enable the University to make a significant contribution to the government's carbon reduction targets, meet the requirements of funding bodies, and be more effective in its control of major operating costs.

We are pleased to give our backing to this Carbon Management Plan.

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President and Vice Chancellor   Registrar and Chief Operating Officer

Foreword from the Students' Union

The Students' Union recognises that environmental and social protection is fundamental to the future health and wellbeing of those involved in this institution and the wider community. This further recognises the risks associated with climate change and shows an understanding of the impacts that our activities have on the environment at local, regional and global levels. Our Union has and will continue to take action to minimise these impacts and to identify sustainable solutions to the challenges that arise.

The Students' Union has been accredited with a Bronze Award in the Sound Environmental Impact Awards which exists to encourage, nurture, reward and celebrate environmental best-practice in Students' Unions. We intend to improve upon this success in future years and carbon management will be a key component. With an Environmental Committee elected each year as part of the democratic student structure, the Students' Union accepts the responsibility of demonstrating leadership in environmental protection and enhancement, and undertakes to cooperate with the University and local and national environmental agencies, in order to deliver our commitment. The Students' Union seeks to harness and channel the enthusiasm for, and interest in environmental initiatives that is continuously shown by our students and staff, and will provide appropriate information and support in order to ensure that they can fully exercise their environmental responsibility.

The Students' Union fully supports the University's Carbon Management Plan and I look forward to leading the Students' Union in implementing particular aspects of the Carbon Management Plan and promoting a more environmentally sustainable community around campus.

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Queen's Students' Union President

Queen's University
Belfast

C A R B O N
T R U S T

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 university sector as key to delivering carbon reduction across the UK, in line with its Kyoto commitments, and the Higher Education Carbon Management Programme is designed in respond to this. It will assist universities in saving money on energy and putting it to good use in other areas, whilst making a positive contribution to the environment by lowering carbon emissions.

Queen's University Belfast was selected in 2009, amidst strong competition, to take part in this ambitious programme and subsequently partnered with the Carbon Trust to develop a Carbon Management Plan. The Carbon Management Plan commits the University to a target of reducing CO_2 by 21% by 2020 in absolute terms from a baseline year of 2008. This equates to the national target of a 34% reduction against a 1990 baseline.

There are those that can and those that do. Universities can contribute significantly to reducing CO_2 emissions. The Carbon Trust is very proud to support Queen's University in implementation of its Carbon Management Plan.

Richard Rugg
Head of Public Sector, Carbon Trust

Management Summary

Context

The Climate Change Act 2008 makes the UK the first country in the world to have a legally binding long-term framework to cut carbon emissions by 34% by 2020 against 1990 levels. The government is committed to ensuring the public sector is taking action to adapt to climate change.

In Higher Education, the UK Funding Councils are now developing a much stronger policy commitment to environmental sustainability and, most critically, are linking funding for capital development to the achievement of sound environmental ratings. This will affect capital funding allocations post 2010. A recent HEFCE consultation proposed a sector target of a 34% carbon reduction against 1990 levels and an 80% reduction by 2050

Whilst the Northern Ireland universities are not presently required to operate under the Capital Investment Framework, in practical terms, it seems inevitable that DEL will support the HEFCE national strategy in terms of sustainability.

At both national and local level, potential students and business partners are seeking to evaluate (in different ways) the environmental performance of institutions when deciding which institution to use as a place of study or to do business with.

Queen's University, along with many Higher Education institutions (HEIs), acknowledges that climate change is a real and growing threat for countries, economies, and organisations in the public and private sector. We understand the exposure and risks from an increasingly carbon constrained economy.

The Carbon Management Plan

The Carbon Management Plan (CMP) builds on the mobilisation of the whole organisation, rather than focusing on a strictly technical approach to carbon saving. By working with the Carbon Trust and participating in Phase 5 of the Higher Education Carbon Management Programme, we are taking the opportunity to make significant strides towards reducing the impact that that our activities have on the environment, and at the same time contributing to local and national commitments to reduce carbon emissions (CO_2).

A CMP Steering Group chaired by the Registrar and Chief Operating Officer, acting as Project Sponsor, has been established, which draws together representatives from Schools, the Students' Union and Academic Support Directorates. Working Groups have been established to examine both technical and behavioural based (communications) carbon reduction opportunities.

The CMP is based around a proven five-step process leading to carbon emissions reductions that will maximise benefits to the University and its stakeholders and sets out an organisation-wide strategy for managing carbon emissions during the next ten years, including a key carbon reduction target and specific actions through which this target can be met.

The key benefit in developing the CMP is that the University will have a plan, agreed at a senior level, to reduce carbon emissions over the coming years in line with best practice: a cut of 34% in emissions by 2020. This will enable us to better absorb increased energy and carbon prices.

Our Vision

The University will endeavour to be a low carbon organisation, by reducing our carbon emissions and providing a high quality and sustainable working and learning environment for students and staff.

Our Current Emissions

Figure 1 below sets out the breakdown of current carbon emissions across the University by source.
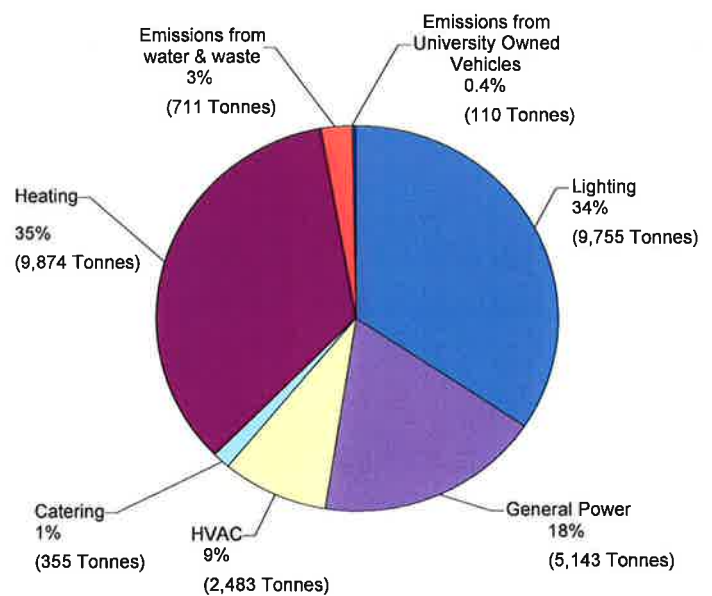
Figure 1: Breakdown of 2008 Scope 1& 2 Emissions by Source (28,430 Tonnes)

Note: Combined HVAC and General Power also includes ICT

Scenarios

Based on actual 2008 carbon emissions, two different consumption scenarios have been projected.

- The **Business As Usual (BAU) scenario** predicts the effect on cost and carbon emissions of taking no action to limit the organisations increasing consumption of energy, whilst

- The **Target CO$_2$ Emissions Scenario (TES)** predicts the effect on cost and carbon emissions as a result of meeting the emissions reduction target over the period of the CMP (21% by 2020 from a 2008 base year)

Figure 4: Comparison of emissions with BAU increases and reduction targets (financial)
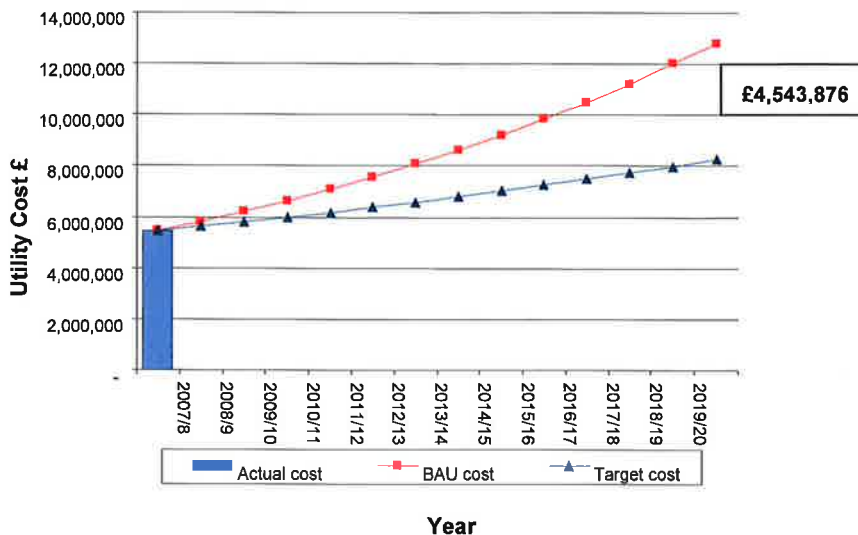
The Value at Stake (VaS) is the difference in emissions or costs between the BAU and the TES; that is, the hypothetical potential value that could be obtained by undertaking a carbon management approach and implementing emissions reductions initiatives in order to reduce baseline emissions by 21% by 2020.

Taking into account the assumptions underpinning the BAU scenario, the VaS by 2020 is some £4.5 million and 12,000 tonnes of carbon emmissions. For management and reporting purposes it is considered more appropriate to benchmark the projected CMP emission reductions to 2020 against the actual emissions in 2008 rather than the BAU scenario.

Our Target

The target for the University will be an ambitious 21% reduction in carbon emissions by 2020 against a 2008 base year. This equates to a 34% reduction against a 1990 base year. The target will be reviewed and adjusted in the light of experience, emerging technology or changes in legislation.

To meet the University's carbon reduction target, a series of specific carbon saving actions have been developed. These include technical initiatives to address energy conservation and efficiency, as well as the use of emerging low carbon technologies. Where possible, these have been developed into fully costed projects by the carbon management Working Groups, including the strategic initiatives set out in Table 3.

Table 3: Breakdown of targeted savings by initiative

Initiatives		Target Savings	
(Technical & Change Management)		%	Tonnes CO_2/yr
(i)	Procurement	Enabling Projects	
(ii)	Green ICT	2.00	569
(iii)	Energy Efficiency and Conservation Measures	12.80	3,639
(iv)	Waste Management	0.16	45
(v)	Fleet	0.04	11
(vi)	Change Management	6.00	1,706
	Total	21.00	5,970

A 21% reduction needs to be achieved by the above initiatives. This will result in a total reduction in carbon emissions of 5,970 tonnes per year by 2020 and assumes that sufficient projects will be identified under each initiative to enable the required savings to be realised.

Allowing for Growth

It is proposed that the additional emissions caused by anticipated University growth over the plan period will be met from a combination of Government decarbonisation of supply grid electricity and pursuing renewable energy sources to offset future emissions.

Current projections indicate that decarbonisation of electricity supplied by the grid will reduce the University's carbon emissions by more than enough to offset the 3,151 tonnes CO_2/year increase from expansion. However, should this estimate prove to be high, the University intends to utilise on site renewable sources of energy to offset the balance as required.

Funding

Table 10 below summarises the estimated costs of carbon management projects over the life of the plan which will contribute to the University achieving its target by 2020.

Table 12: Overall Summary of Costs, Funding and Emissions Savings

Projected Carbon Emission Savings and Estimated Cost	Carbon Emission Savings (Tonnes/Year)	Cost	Funding Source
Technical Initiatives	4,264 tonnes	£5,658,000	£828k GRF, with all savings reinvested
Change Management Initiatives	1,706 tonnes	£755,000	£51k initial outlay, and savings reinvested
Renewable Generation & Decarbonisation	3,151 tonnes	£3,939,000	Excess reinvested savings
Total	9,121 tonnes	£10,352,000	

To achieve the carbon savings set out in table 12 will require an investment in excess of £10m by 2020. It is anticipated that the technical projects will be fully funded from the University's Green Revolving Fund, which has an initial value of £828,000. The Change Management projects will all be funded from the reinvested savings, and have a relatively short payback period.

The savings which accumulate thereafter from these projects should be used to fund the renewable initiatives as they develop in the longer term.

The savings in carbon resulting from the various initiatives will rise progressively over the period of the plan and are estimated to reach approximately £2m per annum by 2020. These savings should all be fully reinvested in carbon saving projects, thereby ensuring that the plan is resource neutral.

Corporate Risks

Corporate Risks which the adoption of the CMP will mitigate fall broadly into a number of key areas:

- Financial
  Increasingly, legislation is now designed to reward those organisations that take the threat of climate change seriously and reduce their carbon emissions; whilst penalising those that do not.

  The passing of the Climate Change Act in November 2008 has given enabling powers for a major new government policy – the Carbon Reduction Commitment ("CRC"). The penalty applicable to the University, if it underperforms, could be as high as £1.27million by 2020.

  Carbon Trust methodology has demonstrated that the Value at Stake (VaS) - the difference between the University doing nothing or effectively implementing a CMP could be as much as £4.5million.

  Funding Councils are stating that future funding of capital projects will be related to effective carbon management.

- Reputational
  Students and potential business partners have begun pressing universities for more disclosure on environmental credentials, including information on carbon emissions.

- Physical
  Carbon emissions will now have to be factored into the operation of the existing and future estate.

Accountability

Key to the success of the CMP will be budget holders across the University being accountable for the achievement of agreed targets. A comprehensive awareness raising and educational programme will address any deficit in understanding of carbon management and its impact on the University.

Budget holders will be supported by a network of "Environmental Champions" who will help promote the low carbon agenda in their area. Environmental Champions will be selected in consultation with Heads of Schools and Directors of Academic Support Units.

Annual Performance Review

Carbon reduction will be incorporated as a KPI at both institutional and School / Directorate level. Progress in meeting targets will be included in all School and Directorate Performance Reviews submitted to the University Operating Board in November each year; and then reported to the University Management Board, the Planning and Finance Committee and, ultimately, to Senate each December.

To help communicate how each area of the University is performing a Carbon Reduction League will be developed. This will be accompanied by a scheme to "reward" success and "punish" non-compliance.

Summary

The successful implementation of the CMP will require the commitment of all staff and students.

The outcome of adopting and implementing the CMP is an increased awareness of the potential impacts of climate change on the University and a greater capacity to identify and deal with these impacts. By establishing carbon management as a core business process, we will become better able to adapt to an increasingly carbon-constrained economy.

Delivery Action Plan

The Deliver Action Plan set out overleaf will, amongst other things, address the limited understanding of carbon management amongst staff.

The plan sets out the key actions required to:

i)   Mobilise the University
ii)   Embed Carbon Management in our operations and management reporting
iii)   Ensure drivers and strategic objectives remain appropriate

Delivery Action Plan

Objectives			Related Tasks	Programme	Owner				Planned Outcome
					CMG	TG	CMPSG	Other	
1	Communicate the CMP to relevant stakeholders	1.1	Launch of CMP	Sep 10					Mobilisation of the University
		1.2	Calendar of awareness raising events for staff and students	Oct 10	✓		✓		
		1.3	Develop a Senior Managers Guide to the CMP (Overview of the CMP, Targets, typical actions, reporting formats, roles & responsibilities	Oct 10	✓				
		1.4	Deliver a briefing session to explain CMP to Heads of Schools and Directorates and define accountability	Oct 10	✓				
		1.5	Prepare and deliver briefing sessions to budget holders	Oct 10	✓				
		1.6	Work with Deans and the Registrar to ensure that carbon reduction is incorporated into appraisals	Sept 10	✓		✓		
		1.7	Appointment of Environmental Champions and launch event	Oct 10					
		1.8	Develop and deliver awareness training for Environmental Champions	Nov 10					
		1.9	Develop and issue a Resource Pack for Environmental Champions	Dec 10	✓				
		1.10	Undertake Environmental Survey amongst students	Nov 10	✓				
		1.11	Establish an Environmental Champions forum	Jan 11	✓				
2	Measure the success of carbon management within Schools and Directorates	2.1	Derive a series of quantitative KPIs to include how Schools and Directorates are performing against carbon target	Oct 10		✓			Embed Carbon Management in the University's Operations and Management
		2.2	Derive a series of qualitative KPIs to indicate how Schools and Directorates are embedding carbon management into everyday practices	Oct 10	✓				
		2.3	Establish a carbon reduction league table that will enable Schools and Directorates to be compared on an even basis	Oct 10		✓			
		2.4	Identify Mechanism to reward over achievers and punish under achievers	Oct 10		✓			
3	Monitor the progress of the implementation of the CMP	3.1	Review and report the progress of technical projects	Aug 10		✓			Ensure drivers and strategic objectives remain appropriate
		3.2	Review and report the progress of change management projects	Aug 10	✓				
		3.3	Update carbon emissions inventory	Dec 10		✓			
		3.4	Review and report the progress towards the CMP target	May 11			✓		
		3.5	Undertake Environmental Survey amongst staff	Mar 11	✓				
		3.6	Review and report the performance of Schools and Directorates	Nov 11				✓	

Key:
CMG	Change Management Group
TG	Technical Group
CMPSG	Carbon Management Plan Steering Group
Other	UOB & Senate as appropriate

1. <u>Introduction</u>

Queen's University Belfast is a broadly-based research-driven university, and a member of the Russell Group, with a dynamic world-class research and education portfolio and strong international connections. The ethos of the University is defined in the words 'Leading, Inspiring and Delivering' and this is at the heart of its Corporate Plan 2006-2011, which is underpinned by a £259m investment in staff, students and the physical estate.

The strategic aims underpinning the University's Corporate Plan 2006-2011 are to develop and further enhance dynamic and world-class research and education portfolios, to provide a world-class experience for students and staff, and to harness global excellence for local purpose and advantage.

Benchmarked against our group peers, the University is one of the more energy efficient users. We have a good record in managing energy, and have implemented a significant number of projects to reduce energy costs. We are also striving to build the most energy efficient buildings possible. Further, recent years have seen a step change in the way that energy and utility data, generally, is managed; we are better placed than ever to assess the effectiveness of the measures we implement.

In addition to this, we have a Travel Plan, which is helping a shift away from single occupancy car use. We also operate an internationally recognised Environmental Management System (EMS) and, though we are a diverse producer of waste, we are dealing with it better than ever, and are diverting large amounts of waste from landfill.

We find ourselves in a situation in which:

- Research has shown that human-induced climate change is more serious than previously thought. There are likely to be ever more stringent restrictions on our carbon emissions and we understand the exposure and risks from an increasingly constrained carbon economy.

- There is evidence that fossil fuel reserves are depleting faster than new reserves are being discovered. Combined with increasing demand and long-term instability in oil-producing regions, prices are likely to continue to rise. Oil was at $20 a barrel in 1998; in June 2008 it reached $147. Electricity prices were at £17/MWh wholesale in 2001and reached £80/MWh in August 2008. Though prices have since fallen, there is obviously potential for a high degree of volatility in the market.

- There are therefore good moral and financial reasons to act on these issues, and being seen to be "ahead of the game" could deliver additional kudos to the University.

Corporate Risks

Corporate risks which the adoption of the CMP will mitigate fall broadly into a number of key areas. These are discussed below and summarised in Appendix 1:

- Financial

  Increasingly, legislation is now designed to reward those organisations that take the threat of climate change seriously and reduce their carbon emissions; whilst penalising those that do not.

  The passing of the Climate Change Act in November 2008 has given enabling powers for a major new government policy – the Carbon Reduction Commitment ("CRC"). The penalty applicable to the University, if it underperforms, could be as high as £1.27m by 2020. Refer to appendix 2 for additional detail.

  Carbon Trust methodology has demonstrated that the Value at Stake (VaS) - the difference between the University doing nothing or effectively implementing a CMP could be as much as £4.5million.

  Funding Councils are stating that future funding of capital projects will be related to effective carbon management.

- Reputational

  Students and potential business partners have begun pressing universities for more disclosure on environmental credentials, including information on carbon emissions.

- Physical

  Carbon emissions will now have to be factored into the operation of the existing and future estate.

Fifty universities have already participated in the Higher Education Carbon Management Programme (HECMP), and we are part of a cohort group of 13 taking part in Phase 5.

At Queen's University Belfast, we have focused on achieving the following goals:

- To audit work currently being undertaken to ensure that we are moving fast enough to a position where we are able to thrive in a future carbon-constrained economy.

- To develop a consensus, amongst a clear majority of staff and students at all levels, for carbon management measures and actions.

- To produce and adopt at a senior level, by June 2009, a Carbon Management Plan (CMP) for reducing carbon emissions over the next five and ten years, consistent with currently identified good practice. This includes the implementation of change management programmes, energy conservation and efficiency measures, and the use of low carbon technologies and, where possible, renewable energy.

With increasing energy prices and the introduction of government carbon reduction schemes and targets, the University recognised the importance of reducing its own carbon emissions and, accordingly, it has initiated a review of the mechanisms that would assist in this process.

Participation in the HECMP and the production of an institutional plan is seen as an ideal way to carry out this review and prepare for the future. The CMP outlines a series of initiatives for carbon reduction to ensure that the University is on-target to progress towards the government target of a 34% reduction in carbon emissions by the year 2020.

The CMP builds on the mobilisation of the whole organisation, rather than focusing on a strictly technical approach to carbon saving. A Carbon Management Plan Steering Group (CMPSG) chaired by the Registrar and Chief Operating Officer, acting as project sponser, has been established, which draws together representatives from Schools, the Students' Union and Academic Support Directorates. Working Groups have been established to examine both technical and behavioural based (communications) carbon reduction opportunities.

The key benefit in developing the CMP is that the University will have a plan, agreed at a senior level, to reduce carbon emissions over the coming years in line with best practice: a cut of 34% in emissions by 2020. This will enable it to better absorb increased energy and carbon prices.

A series of carbon reduction opportunities have been identified in the following areas:

Technical Initiatives

(i)   Procurement
(ii) Green ICT
(iii) Energy Efficiency and Conservation Measures
(iv) Waste Minimisation
(v)   Fleet

Communication Initiatives

(vi) Change Management (Communications)

The CMP will underpin the University's Environmental Management Strategy over the coming years. It is recognised, however, that this will be a dynamic process, requiring regular review in order for it to be both pro-active and reactive to the various social, technical, regulatory and other changes that will undoubtedly occur.

2. Carbon Management Strategy

The strategic aims of the Corporate Plan (2006-2011) are to develop and further enhance dynamic and world-class research and education portfolios, to provide a world-class experience for students and staff, and to harness global excellence for local purpose and advantage.

The Estate Strategy supports the Corporate Plan providing a comprehensive framework for accommodation planning for the period 2007-17. While setting down parameters for the use of the estate, the Strategy is flexible - thus enabling new demands and changes, both internal and external, to be met.

Underpinning the Estate Strategy, and allied to the Corporate Plan priorities, are a series of guiding principles which form the basis for the ongoing development and operation of the estate. Carbon management is seen as being one of these guiding principles.

The objective of carbon management for every organisation is to minimise the risks and maximise the opportunities arising from carbon emissions and climate change against a rapidly evolving regulatory framework, market forces and stakeholder concerns.

We recognise carbon management as a strategic, whole-organisation approach that integrates with our existing strategy and management, enabling the institution to:

- Understand the impact of carbon emissions
- Identify key risks and opportunities
- Formulate a plan to reduce carbon emissions
- Effectively implement, review and update the plan into the future
- Communicate success

The outcome of successfully adopting and implementing carbon management is an increased awareness of the potential impacts of climate change on the University and a greater capacity to identify and deal with these impacts. By establishing carbon management as a core business process, we will become better able to adapt to an increasingly carbon-constrained economy.

2.1 Context and Drivers for Carbon Management

(i) The Climate Change Act 2008 makes the UK the first country in the world to have a legally binding long-term framework to cut carbon emissions by 34% against 1990 levels. It also creates a framework for building the UK's ability to adapt to climate change.

(ii) At both national and local level, potential students and business partners are seeking to evaluate (in different ways) the environmental performance of institutions when deciding which institution to use as a place of study or to do business with.

(iii) The government is committed to ensuring the public sector is taking action to adapt to climate change. The Climate Change Act 2008 introduces a new power for the Secretary of State to direct a "reporting authority" to prepare reports. These reports need to cover how the organisation is

assessing and acting on the risks and opportunities from a changing climate.

(iv)   The government has stated that Higher Education should set the example for private and public sector organisations when it comes to curbing carbon emissions.

(v)   We believe that measures aimed at mitigating the potential for dangerous climate change are desirable in their own right, and Queen's University Belfast can act as a leader for stakeholders, especially students, staff, alumni and colleague institutions, in delivering carbon emission reductions. We also understand that financial benefits will accrue from judicious action and that the organisation will enjoy reputational benefits from being seen to act well and act early. The converse need hardly be stated: late, ineffectual action will be costly for the University and may damage its hard-won reputation of leadership in the sustainability field.

(vi)   Nationally, 91% of our energy comes from the burning of oil, gas and coal fossil fuels, which are in limited supply. While energy use across the world increases, fossil fuels are significantly declining. Some experts estimate that peak oil levels could be reached as early as 2013; that is the point where further expansion of global oil production becomes impossible. Beyond this point, the world will face shrinking supplies of increasingly expensive oil, sourced from politically sensitive countries. More efficient use of our existing supplies and the use of alternative renewable energy sources is required if we are to address this issue. In addition to this, burning to fossil fuels releases carbon dioxide, one of the main greenhouse gases responsible for climate change.

(vii)   In the last twenty years, improved observation and modelling has led to a near unanimous consensus amongst the scientific community that restrictions on carbon emissions are necessary. Globally, failure to arrest carbon emissions could result in increasing numbers of extreme weather events (floods, storms, droughts), threatening life, property and agriculture. Worldwide, shifts in climate are likely to cause large scale shifts in population due to floods and famine, reductions in food production and increasing conflict over resources.

(viii) From a Northern Ireland perspective we have higher energy costs than many other European countries and are 15% higher than Great Britain (GB). As a consequence of our geographical position, at the end of long supply chains; our market size which limits economies of scale; and our lack of indigenous fossil fuel, our energy costs are disproportionally higher.

(ix)   In Higher Education, the UK Funding Councils are now developing a much stronger policy commitment to environmental sustainability and, most critically, are linking funding for capital development to the achievement of sound environmental ratings. A recent HEFCE consultation proposed a sector target of a 34% carbon reduction against 1990 levels and an 80% reduction by 2050. This will affect capital funding allocations post 2010.

(x)   Whilst the Northern Ireland universities are not presently required to operate under the Capital Investment Framework, in practical terms, it

seems inevitable that DEL will support the HEFCE national strategy in terms of sustainability.

(xi)   Thus, reduction in our demand for some oil-fuels, using what we need more efficiently, and increasing our consumption from non-fossil sources are all good ways to insulate ourselves as a university, and as part of the UK, from higher fuel prices.

(xii)   Much of the foregoing is informed by specific legislation pertaining to climate change. The University is currently meeting or working to meet these requirements:

- Provision of Energy Performance Certificates and Display Energy Certificates for our buildings.

- The Carbon Reduction Commitment ("CRC") will impact on up to 5,000 large non-energy intensive business and public sector organisations.

The CRC is mandatory, and qualifying organisations will need to report carbon emissions associated with their use of electricity, gas and other non-transport fuels. From 2011 they will have to buy allowances to cover these emissions with an initially fixed price of £12 per tonne of carbon applying. From 2013, allowance prices are likely to rise as they will be set by the market. Revenues will be recycled to participants, based on how well they perform in the carbon reduction league table – i.e. compared with other organisations.

The penalty applicable to the University, if it underperforms, could be as high as £1.27million by 2020. Appendix 2 provides further details.

2.2   Our Low Carbon Vision

The University will endeavour to be a low carbon organisation, by reducing our carbon emissions and providing a high quality and sustainable working and learning environment for students and staff.

2.3   Strategic Initiatives

To realise the University's low carbon vision will involve a thorough appraisal of the impacts in relation to:

(i)   Procurement

It is recognised that much of our indirect environmental impact lies in our supply base. Through the Environmental Management System (EMS), the Purchasing Office monitors the environmental performance of key suppliers, with particular emphasis on minimising the environmental effect of production processes, packaging and deliveries.

The procurement of certain goods and services will impact directly on the environment, such as the purchase of inefficient equipment. In order to reduce the carbon emissions which result from the use of such equipment,

procedures are being put in place to make energy consumption a key component of procurement decisions.

(ii) Green ICT

The Information Services Directorate will continue to examine opportunities for reducing power consumption and improvements in the ICT process.

(iii) Energy Efficiency and Conservation Measures

The main focus for carbon reduction measures in existing building stock will be to improve energy efficiency and so reduce energy consumption. The Estates Directorate will continue to identify opportunities where energy efficiency technology and conservation measures can be implemented to achieve a reduction in carbon emissions.

(iv) Waste Minimisation

The University Waste Management Policy outlines our commitment to minimising waste and maximising recycling and is underpinned by EMS ISO14001. This internationally recognised standard for best practice provides the mechanism for improving resource efficiency and supporting a reduction in carbon emissions.

(v) Fleet

Our Fleet Management Policy ensures that University-owned vehicles operate legally, safely and efficiently whilst minimising environmental impact. In addition, the University has a Travel Plan to promote sustainable travel use amongst staff and students.

(vi) Change Management (Communications)

A Communications Strategy is key in achieving behavioural change amongst the University's staff and students. The mission which supports this Strategy is 'Empowering staff and students to achieve a low-carbon lifestyle'.

All of this must be achieved whilst realising the objectives identified in the Corporate Plan.

3. Emissions Baseline and Projections

Calculating a carbon emissions baseline is the first step in enabling the University to quantify its carbon footprint and to gain a better understanding of its overall carbon contribution. This section will detail the sources that have been included and how the carbon emissions baseline has been calculated. The baseline will be used to measure the University's carbon emissions reduction performance as carbon-saving initiatives are implemented during future years.

The following sections describe the scope of carbon emissions, together with possible scenarios and value at stake.

3.1 Scope of Carbon Emissions

The World Resource Institute (WRI) has developed a classification of carbon emission sources around three 'scopes':

- **Scope 1** is direct carbon emissions that occur from sources that are owned or controlled by the organisation, for example, carbon emissions from combustion in owned or controlled boilers, furnaces, vehicles.

- **Scope 2** accounts for carbon emissions from the generation of purchased electricity consumed by the organisation.

- **Scope 3** is all other indirect carbon emissions which are a consequence of the activities of the company, but occur from sources not owned or controlled by the organisation – for example, commuting, procurement and business travel.

The University's primary focus is to make reductions in Scope 1 and 2 carbon emissions as these can be more accurately quantified.

Figure 1 below sets out the breakdown of current carbon emissions across the University by source.

Figure 1 - Breakdown of 2008 Scope 1& 2 Carbon Emissions by Source (28,430 Tonnes)

Emissions from water & waste
3%
(711 Tonnes)

Emissions from University Owned Vehicles
0.4%
(110 Tonnes)

Heating
35%
(9,874 Tonnes)

Lighting
34%
(9,755 Tonnes)

Catering
1%
(355 Tonnes)

HVAC
9%
(2,483 Tonnes)

General Power
18%
(5,143 Tonnes)
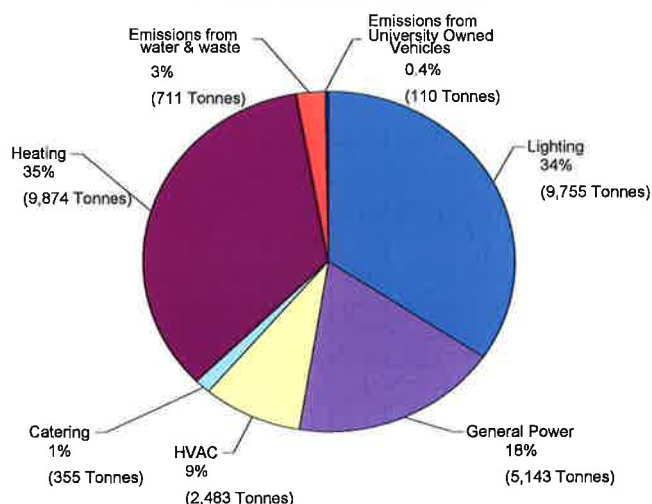
Note: Combined HVAC and General Power also includes ICT

In relation to Scope 3 carbon emissions, the University has committed to improving the measurement of carbon emissions with the intention of setting targets in the future as more reliable data becomes available.

3.2 Business as Usual (BAU)

Achievement of the Corporate Plan will require continued development as set out in the Estate Strategy, together with greater intensification of use. This will clearly increase the University's carbon emissions in the short to medium term.

Figure 2 projects the possible extent of this increase and future forecast based on historical trends. This is a do nothing scenario referred to by the Carbon Trust as BAU and assumes:

- No investment in low carbon projects
- Staff and students are not actively encouraged to participate in carbon management
- Carbon saving measures are disregarded for new builds or major refurbishments
- The University takes no additional measures to reduce carbon emissions
- The government target for decarbonising grid electricity is not achieved
- Continued development of the estate as identified in the Estate Strategy will result in an additional 3,151 tonnes of carbon emissions each year by the end of the plan period (2020)

Figure 2 - Comparison of actual emissions with BAU increases
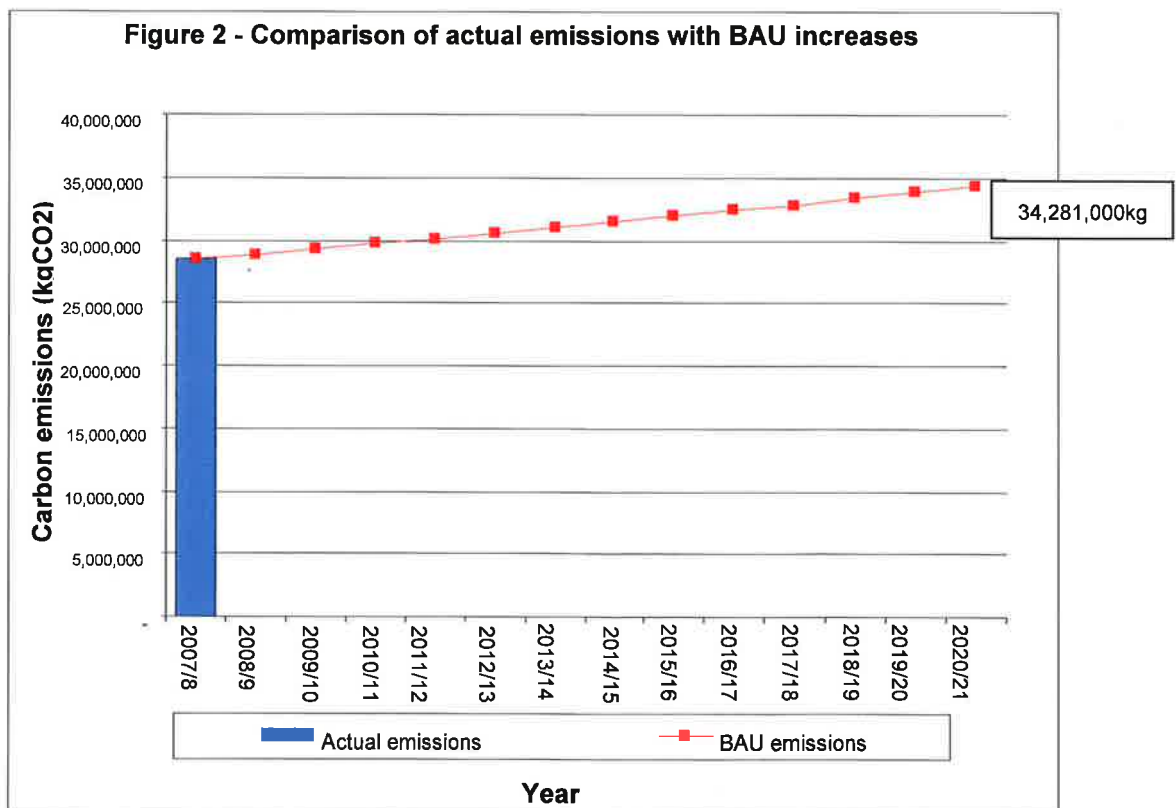
3.2.1 Managing the BAU Scenario

If carbon emissions continue unchecked, by 2020 the University will emit approximately 34,281 tonnes of carbon per year – a 21% increase from a 2008 baseline of 28,430 tonnes.

3.2.2 Existing and Planned Measures to Mitigate Carbon Emissions

To mitigate the increase in carbon emission levels described above, the University is continuing to undertake a number of projects under the following strategic initiatives:

Technical Initiatives

(i) Procurement
(ii) Green ICT
(iii) Energy Efficiency and Conservation Measures
(iv) Waste Minimisation
(v) Fleet

Communication Initiatives

(vi) Change Management

3.3 Setting the University's Target

To enable the University to set a robust and ambitious target, two Working Groups were established:

- Carbon Management Communications Group
- Carbon Management Technical Group

Communications Working Group

Central to the successful implementation of the CMP will be the engagement of the whole University, including staff and students, and an increasing carbon management awareness.

The Group is responsible for developing a Communications Strategy that will:

- Reduce the University's carbon emissions through a targeted and sustained communications plan. This target is based on the fact that over 50% of the University's emissions are under the direct control of the end user.

- Engage with internal stakeholders to bring about behavioural change in relation to carbon management.

- Brand Queen's as a low carbon University.

- Raise the profile of Queen's as an example of best practice in the field of carbon management in the Higher Education sector.

Carbon Management Technical Group

Low carbon technology will play a major part in reducing the University's carbon emissions. Where possible, this technology will be retrospectively fitted to existing buildings and incorporated into the design of new builds and major refurbishment projects. In addition, green ICT offers significant opportunities for reducing electricity consumption and associated carbon emissions.

The Group has identified a number of initiatives which, over the next ten years, could reduce, through targeted investment, the University's carbon emissions.

3.4   The University Target

The target for the University will be an ambitious 21% reduction in carbon emissions by 2020 against a 2008 base year. This equates to a 34% reduction against a 1990 base year. The target will be reviewed and adjusted in the light of experience, emerging technology or changes in legislation.

It should be noted that the base year of 2008 refers to the University's 2007-08 financial year.

Table 1 sets out the sources of carbon emissions together with the percentage saving to be targeted.

Table 1: Breakdown of Savings by Carbon Emission Source

Source of Emissions	% Savings		
	Technical Initiatives	Communication Initiatives	Combined
Lighting	6.5	3.5	10.0
HVAC	1.5	1.0	2.5
General power (Includes ICT)	2.0	1.5	3.5
Heating	4.8	-	4.8
Water & Waste conservation	0.2	-	0.2
Total	15.0	6.0	21.0

Table 2 sets out the targeted savings associated with strategic initiatives identified in section 2.3. The percentage saving is set against the 2008 carbon emissions rate of 28,430 tonnes/year.

Table 2: Breakdown of Targeted Savings by Strategic Initiative

Initiative (Technical & Change Management)		Target Carbon Emission Saving	
		%	Tonnes of CO_2
(i)	Procurement	-	-
(ii)	Green ICT	2.00	569
(iii)	Energy Efficiency & Conservation Measures	12.80	3,639
(iv)	Waste Management	0.16	45
(v)	Fleet	0.04	11
(vi)	Change Management	6.00	1,706
Total		21.00	5,970

3.5   Projections and Value at Stake

The Carbon Trust's methodology measures the Value at Stake (VaS) by assuming that a BAU scenario occurs and seeks to measure the reduction in both carbon emissions and utility costs over the plan period.

The Carbon Trust has determined the Value at Stake (VaS) (2020/21) as follows:

Table 3: VaS Analysis

	Carbon Emissions (Tonnes/year)	Utility Costs (£/year)	Comment
BAU	34,281	12,800,000	Figure 3 & 4
Target	(22,460)	(8,300,000)	Figure 3 & 4 (assuming inflation energy cost at 5.3%)
VaS	11,821	4,500,000	

Figures 3 and 4 set out the VaS in relation to carbon emissions and associated cost.

Figure 3 - Comparison of actual emissions with BAU increases and reduction targets predicted

34,281,000kg

11,821,000 kg

22,460,000kg

Actual emissions   BAU emissions   Target

Figure 4 - Comparison of emissions with BAU increases and reduction targets - financial

£12,800,000

£4,543,876

£8,300,000

Actual cost   BAU cost   Target cost
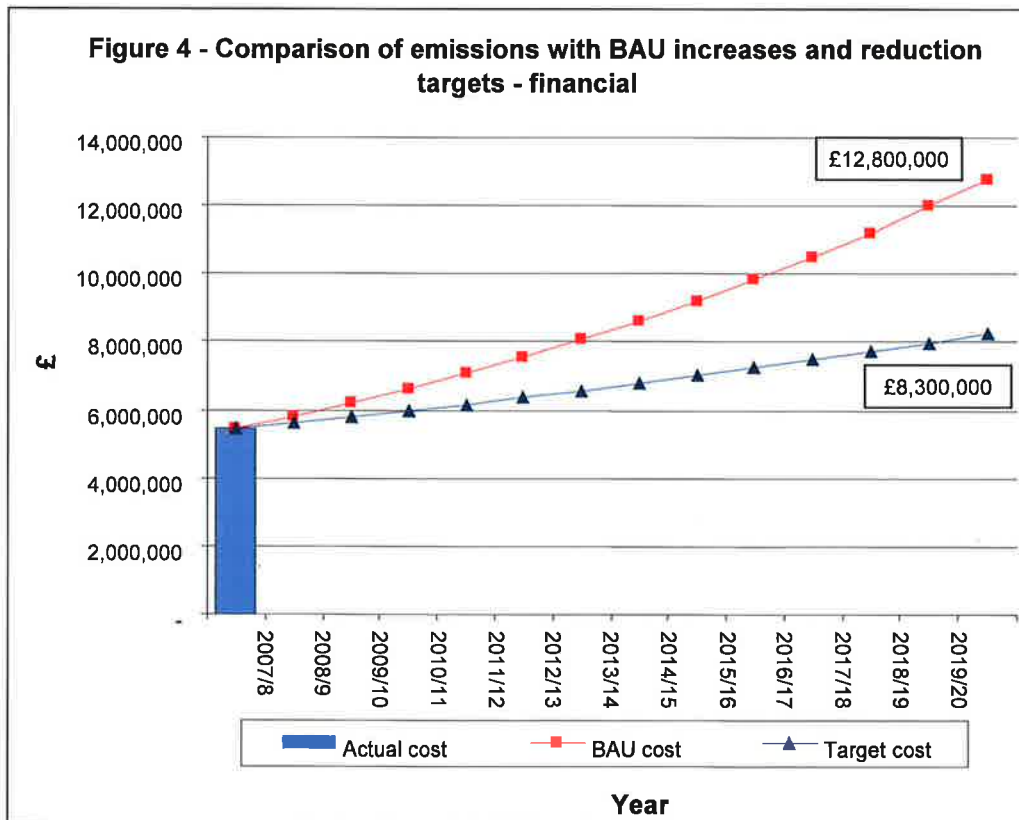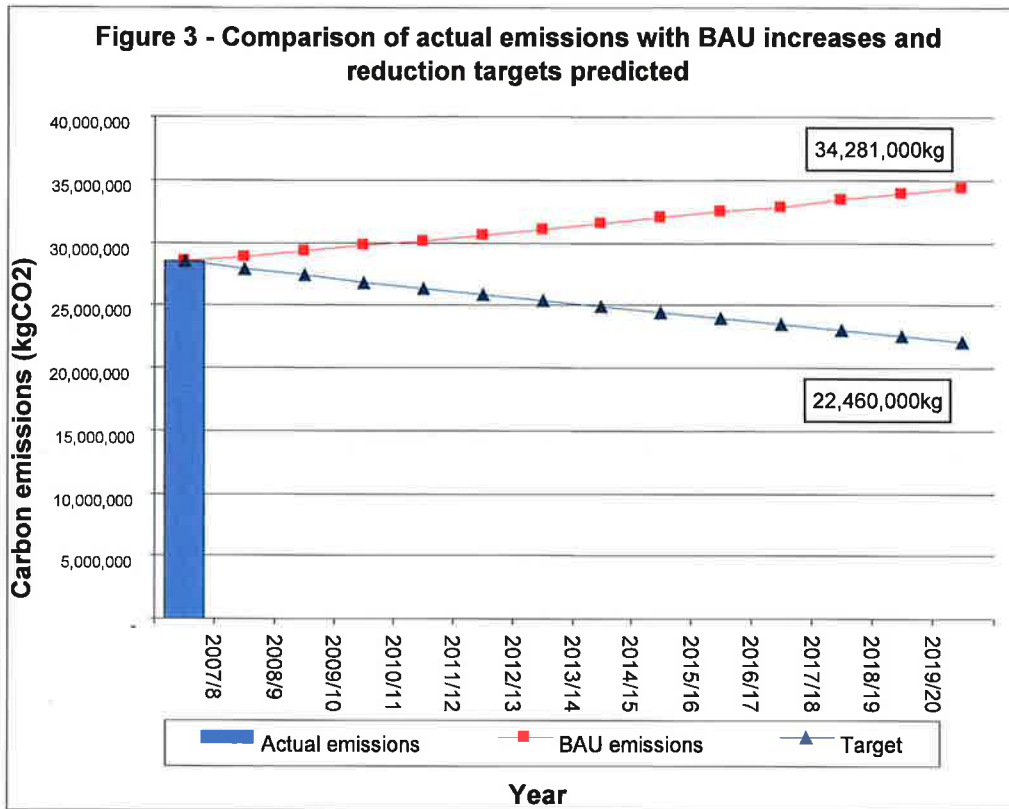
Taking into account all the previous assumptions identified in section 3.2, the VaS in 2020 is some 12,000 tonnes of carbon and £4.5m per annum.

3.6 Overall Summary

Table 4 summarises the overall findings of section 3 and sets out the quantity of carbon at stake together with the financial impact.

Table 4: Overall summary of Carbon Emissions and Costs

Year	Carbon Emission (Tonnes)	Utility Cost (£m)	Comments
2008 Base Year	28,430	5.40	2008 is the most recent year for which information on carbon emissions is available
2020 BAU	34,281	12.80	A do nothing scenario as defined by the Carbon Trust
2020 Target	(22,460)	(8.30)	Year by which the targeted reduction in carbon emissions is to be achieved
VaS	11,821	4.50	The hypothetical potential value that could be obtained by undertaking a carbon management approach and implementing emissions reductions initiatives in order to reduce baseline emissions by 21% by 2020.

4.   Strategic Initiatives and Associated Projects

The CMP is based on the identification of opportunities relating to six strategic initiatives. These are supported by a range of projects over defined timescales. The Procurement initiative is treated as an enabling opportunity which will support many of the remaining initiatives. These will be described in the following sections.

4.1   Procurement
4.2   Green ICT
4.3   Energy Efficiency and Conservation Measures
4.4   Waste Minimisation
4.5   Travel and & Transport
4.6   Change Management (Communications)

For management and reporting purposes, the following project timelines have been adopted:

Table 5: CMP Timelines

Initiative	Timeline	Project Status
Current	To July 2010	Projects already identified and costed
Near Term	August 2010 – July 2015	Projects partially identified and costed
Longer Term	August 2015 – July 2020	Projects still to be identified

Appendices 3, 4 and 5 sets out project information, where indentified, in a framework for improvements up to 2020.

4.1   Procurement

Strategy Statement

The University is committed to improving its environmental performance. It is dedicated to executing its purchasing activities in an environmentally responsible manner and ensuring that ultimately, and where practicable, the University deals only with suppliers who have developed sound environmental credentials.

In the case of procurement, it is recognised that much of the University's indirect environmental impact lies in its supply base and it is, therefore, our responsibility to ensure the appropriate level of environmental performance of suppliers. By incorporating environmental considerations into its processes, the Purchasing Office can pursue its commitment to minimising the environmental and social impacts of purchasing and to ensuring compliance with environmental legislation in the procurement of all goods, services and works.

Key Objectives

(i)   Develop a formal Environmental Purchasing Policy which supports the University's Environmental Policy

(ii) Environmental awareness to be promoted amongst suppliers through the University's Environmental Purchasing Strategy

(iii) Environmental considerations to be included in the assessment of suppliers and their products

(iv) Suppliers to be encouraged to investigate and introduce environmentally friendly policies and processes

(v) The environmental impacts of suppliers and products to be identified

(vi) Environmentally responsible purchasing decisions to be made based on accurate information about environmental performance

(vii) A proactive approach to be taken with key suppliers to progress environmental initiatives, influence environmental policies and exchange best practice

Targets

There is no direct target associated with procurement opportunities. Low carbon procurement techniques will enable the University to achieve an overall 21% reduction in carbon emission levels compared to 2008.

Monitoring, Reporting & Review

(i) Monitoring and reporting undertaken as part of annual Environmental Action Plan (established in conjunction with Environmental Services, Estates).

(ii) Review undertaken as part of annual audit processes for ISO 14001 environmental certification, held jointly by Purchasing Office and Estates.

4.2 Green ICT

Strategy Statement

Information Services is dedicated to environmentally sustainable computing and in improving the energy efficiency of data centres and computing systems throughout the University. This will be achieved through the adoption, and promotion, of processes and technology developed to improve energy performance.

Key Objectives

(i) Implementation of virtualisation technology

(ii) Improvement in design of core systems

(iii) Better overall infrastructure for hosting/managing IT

(iv) Compliance with latest power consumption standards for IT equipment

(v) Close co-operation with the Purchasing Office to drive through standards

Targets

2% or 569 tonnes of carbon by 2020.

Monitoring, Reporting and Review

The energy consumption of data centres and computing installations will be measured and analysed by way of sub-metering and specialist utilities management software.

Information will be collated and reported against set targets to senior management on an annual basis.

4.3   Energy Efficiency and Conservation Measures

Strategy Statement

Energy efficiency in the operation of buildings across the campus is key to reducing carbon emissions.

The Environmental Policy includes a Sustainable Development Design Brief (SDDB) which is applied on all new build and major refurbishment projects implemented under the Estate Strategy.

The SDDB will make a major contribution to the CMP by providing a mechanism for the reduction of environmental impact and costs arising from construction of buildings. This will be done through the better management of resources, and by meeting and exceeding the requirements of legislation. The SDDB will address energy, transport, biodiversity, water and waste strategies and assist in meeting objectives and targets in these areas.

The SDDB sets out a range of sustainable construction criteria, which can be mapped to address the BREEAM assessment criteria for capital projects. Appropriate environmental performance targets will be established at project inception stage to achieve the highest achievable BREEAM rating. In general terms, the target will be to achieve an 'Excellent' rating for new build/extensions and a 'Very Good' rating for major refurbishment projects.

The SDDB suite of documents provides a structured approach to sustainable development, identifying best practice opportunities and targets. Recognition of sustainability principles and issues are now a key criterion in the selection of teams and construction supply chains, with each required to demonstrate that they have the requisite resources and skills to deliver in this critical area. A key consideration includes the briefing and management of design teams to ensure a comprehensive approach is adopted during all phases of the project and that the design solution, as far as possible and subject to time, quality and cost considerations, meets the agreed objectives. This is supported by the early nomination of a senior staff member (Estates Manager) to act as a 'sustainability champion' and ensure that both BREEAM requirements and the University's broader sustainability objectives are embedded into the design, and achieved in practice. This is a key factor in achieving the highest number of points for the BREEAM assessment of capital projects.

Due to the nature of the estate, which includes over 100 buildings of special architectural or historic interest, it may not be economically feasible or practical to achieve formal BREEAM certification on particular projects. With this in mind, the SDDB has been structured to ensure that the same underlying objectives are delivered within a realistic and achievable framework. A flow chart (Appendix 6) sets out a guide for the application of BREEAM and the SDDB.

Key Objectives

(i) Reduce energy consumption in relation to services in existing buildings, through targeted upgrade programmes, which address:

- Implementation and upgrading of BEMS controls
- Thermal upgrade of building fabric
- Fuel conversion from oil to gas / electricity to gas
- Voltage optimisation
- Heat recovery
- Installation of lighting controls
- Lighting upgrades
- Metering
- Water leak management systems

(ii) Achieve BREEAM Excellent rating on all new build projects

(iii) Achieve BREEAM Very Good rating on all major refurbishment projects

Targets

12.8% or 3,639 tonnes of carbon by 2020.

Monitoring, Reporting and Review

Energy is monitored on an ongoing bases by way of the University's Utilities Management System. This is supported by a significant investment in sub-metering across the campus and the recent appointment of a Data Analyst who will oversee monitoring and targeting projects.

4.4 Waste Minimisation

Strategy Statement

The Waste Management Policy confirms the University's commitment to minimising waste and maximising recycling, and is based on the Waste Hierarchy – Reduce, Re-use, Recycle, Disposal.

It is recognised that minimisation of waste and increased recycling will contribute to a reduction in carbon emissions.

Key Objectives

(i) Reduce the quantities of waste generated, and maximise recycling of those materials which enter the waste stream

(ii) Ensure waste is managed with minimal impact on the environment and public health

(iii) Develop a controlled internal process for the collection and preparation of waste, to enhance recycling and reduce costs

(iv) Adopt and promote more sustainable practices of resource consumption and waste management

(v) Provide staff and students with increased opportunity to contribute to environmental protection

Targets

0.16% or 45 tonnes of carbon by 2020.

Monitoring, Reporting and Review

The volume of waste generated by Queen's is monitored through monthly waste data provided by the University's appointed waste contractor. This information is collated and reported against set targets to senior management on an annual basis.

The report includes details of:

- Volume of waste generated, based on monthly provision of waste volumes from the appointed waste contractor
- Breakdown of waste volumes
- Estimated carbon emissions

Waste management objectives will be reviewed on an annual basis as part of the University's ISO 14001:2004 accredited EMS.

4.5 Fleet

Strategy Statement

The Fleet Management Policy provides a mechanism to ensure continual environmental improvement of the fleet. The long term strategy is to further reduce the environmental impact of all transport activities associated with the University, and help maximise the efficiency of the University's transport resources. The Policy includes:

- Vehicle Acquisition Procedure
- Vehicle Management Information Procedure
- Vehicle Disposal Procedure

Key Objectives

(i)   That fleet is operated efficiently, whilst risk is efficiently managed

(ii) All vehicle procurement is directed through the Transport Services Manager and applies with appropriate standards

(iii) The environmental impact of vehicles is considered prior to purchase

(iv) Accurate management information records are maintained

(v)   All vehicle disposal follows the approved procedure

(vi) The introduction of alternative fuel vehicles to the fleet as replacement for conventional fuel vehicles

Targets

0.04% or 11 tonnes of carbon by 2020.

Monitoring, Reporting and Review

Fleet management information is collated by the Transport Services Manager on a monthly basis. This information includes expenditure on fuel, mileage, and servicing costs and is presented to the Estates Management Group and the University Operating Board on an annual basis. The fleet is continually reviewed for efficiency and, where appropriate, improvements are implemented. This is undertaken through continuous communication with Schools and Directorates.

4.6   Change Management (Communications)

Strategy Statement

The mission of this Communications Strategy is to:

'Empower staff and students to achieve a low carbon lifestyle'.

Appendix 8 details the Communications Strategy in full.

Key Objectives

(i)   Reduce the University's Scope 1 and 2 carbon emissions by 6% by 2020 (compared to BAU) through a targeted and sustained communications plan. This will contribute to, and underpin, the University's overall target of a 21% reduction by 2020 (compared to BAU).

(ii) Increase low carbon and energy awareness among internal stakeholders

(iii) Engage with internal stakeholders to bring about behavioural change in relation to carbon management

(iv) Brand Queen's University Belfast as a low carbon university

(v) Raise the profile of Queen's University Belfast as an example of best practice in the field of carbon management in the Higher Education sector and in the local community

Target

6% or 1,706 tonnes of carbon by 2020

Monitoring Reporting and Review

This Communications Strategy is a live document which will continually develop and evolve throughout the life of the CMP.

5. Implementation Plan Financing

5.1 Introduction

As previously outlined in section 3, in order to achieve the target reduction of 21% compared to the 2008 base year, the University is required to make carbon emissions savings of:

(i) 5,970 tonnes relative to the 2008 steady activity level by 2020

(ii) 3,151 tonnes as a result of projected growth in University activity in the period to 2020

5.2 Financial Assumptions

The financing required to achieve the estimated reduction of 5,970 tonnes is very difficult to establish at this stage of development, given the significant range of variables involved; the relative lack of experience in relation to carbon reduction across the sector generally; and the uncertainly regarding technological advancement and aspects of future government policy over the planning period.

The following assumptions have been used, therefore, to arrive at an initial estimate of both the financial benefit and the costs associated with implementing the CMP.

5.2.1 Core Assumptions

- The required reduction of 5,970 tonnes CO_2 on the 2008 steady state level will be saved by technical and change management initiatives as outlined in Table 2 of section 3.

- It is assumed that projected growth in carbon emissions of 3,151 tonnes CO_2 will be offset through the introduction of onsite renewable energy generation, together with the decarbonisation of purchased grid electricity in accordance with government policy.

Table 6: Summary of Carbon Emissions, Savings and Offsets Required

Carbon Emissions, Savings and Offsets Required	Carbon Emission Savings (Tonnes/year)	Total Carbon Emissions (Tonnes/year)
2008 Baseline	-	28,430
Technical Initiatives	4,264	
Change Management Initiatives	1,706	
Sub Total (no further growth)	**(5,970)**	**22,460**
Increase in emissions due to growth	3,151	25,611

over the plan period		
Offset by renewable energy generation and decarbonisation of supply grid electricity	(3,151)	**22,460**
Total Projected Carbon Emissions by 2020		**22,460**

5.2.2   Benefits/Savings Assumptions

- There will be no change in the mix of energy use between gas, electricity and oil over the period of the plan to 2020

- Average ambient temperatures will remain unchanged throughout the period to 2020

- There will be no significant change in the way students learn and are taught, or how research is undertaken throughout the period to 2020

5.2.3   Technical Initiative Assumptions

- Technical projects in the first three years (2009-10 to 2011-12) have an average capital cost per reduced tonne of CO_2 of £838 and an average payback period of 4.04 years. This is based on actual projects already initiated or specifically identified for action.

- Payback periods and capital costs per reduced tonne of CO_2 are then assumed to rise as follows:-

Table 7: Cost per Tonnes of CO_2 Saved

CMP Year	Payback Period (Years)	Capital Cost Per Tonne CO_2 saved (£)
2009-12	4	838
2012-13	5	1,037
2013-14	6	1,244
2014-15 onwards	7	1,451

- There will be sufficient technical projects across the University to facilitate the required savings over the period of the plan

- All energy efficiency savings are fully reinvested in technical initiatives

5.2.4   Change Management Initiative Assumptions

- The set up costs are £31,500 as estimated by the Communications Sub-Group and outlined in Appendix 4

- The initial annual recurrent cost of initiatives is £34,650 as estimated by the Communications Sub-Group and outlined in Appendix 4

- The annual recurrent cost of initiatives over the life of the plan remains at £34,650

- The currently employed Data Analyst (Estates) will be retained at a gross cost of £25,000 per annum to assist with technical and change management initiatives over the life of the plan

5.2.5 Renewable Energy Generation and Decarbonisation Assumptions

- The increased emissions due to growth in the estate will amount to 3,151 tonnes CO_2 /year over the plan period

- Government decarbonisation of electricity through the grid will only partially offset current growth projections, leaving the University to meet the shortfall through use of renewable technology

- Most technical comment indicates that the average cost of renewable energy per tonne of carbon saved is £2,500

5.3 Benefits/Savings

5.3.1 Quantified Benefits and Savings

The following table sets out the projected savings, both carbon emissions and financial, arising from the various initiatives which will be undertaken. The twelve year period from the 2008 base year to the 2020 target has been sub-divided into 3 phases, recognising the increasingly uncertain nature of projects towards the end of the period.

Table 8: Quantified Benefits to 2020

Period	Current and Near Term to 2014 - 15	Long Term 2016 - 20
Annual cost saving by end of period	£1,203,000	£2,086,000
Annual CO_2 saving (tonnes) by end of period	4,528	5,970
% of target achieved by end of period	75%	100%

5.3.2 Unquantified Benefits and Savings

There are a number of unquantified benefits identified against which it is hard to place a monetary value, as follows:

- University reputation
- Staff and student recruitment and retention
- Decreased risk from volatile energy markets

- Effect on climate change of changes in the behaviour of staff, students and the community

5.4 Financial Costs

The table below sets out the costs associated with meeting the targets set out in section 5.2.1.

Table 9: Estimated Cost of Meeting Targets

Projects and associated timelines	Current Up to July 2010	Near term 2010-11 to 2014-15	Long term 2015-16 to 2019-2020	Total
	£	£	£	£
Technical Initiatives	666,914	1,703,000	3,288,000	5,657,914
Change Management Initiatives	51,383	326,191	378,144	755,718
Renewable Energy Generation	-	1,000,000	2,938,750	3,938,750
Total	718,297	3,029,191	6,604,894	10,352,382

5.4.1 Financing of Technical Initiatives (Green Revolving Fund)

The University has recently established a Green Revolving Fund (GRF) partially funded by Salix Finance. Salix is a Carbon Trust funded company set up to accelerate public sector investment in energy efficiency technology projects through 'invest to save' schemes.

Table 10: Composition of GRF funding

Funding Source	£000
Salix	328
Queen's University Belfast	500
Total	828

The underlying principle of the GRF is that the savings generated from capital investment in energy efficiency projects will be fed back and reinvested in other energy efficiency projects.

To date, the University has invested in 15 projects at a total capital cost of £666,000. In total, it is anticipated that these projects will save 810 tonnes of carbon per annum and provide £182,000 per annum for reinvestment.

Based on the various assumptions outlined in 5.2.3, and assuming all savings are reinvested, **the target savings of 4,264 tonnes from**

technical initiatives over the planning period to 2020 will be fully fundable from the Green Revolving Fund (as illustrated at Appendix 7) .

Table 11: Summary of Green Revolving Fund to 2020

Cashflows	£'000
Initial Investment	828
Total expenditure to 2020	(5,646)
Total savings recouped to 2020	4,818
Balance at 2020	**0**

Assuming all savings are reinvested in the fund over the life of the relevant project, from 2020 there will be cumulative savings of £844k p.a. available for reinvestment each year.

5.4.2   Financing of Change Management Initiatives

The proposed investment in change management initiatives is relatively immaterial and can easily be financed by proposed savings resulting from reduced energy consumption. Based on the projected savings over the life of the plan outlined at 5.3, each reduced tonne of CO_2 will generate an average annual cost saving of approximately £349 as a result of a reduction on energy consumption. This compares favourably to an average investment per tonne on change management initiatives over the period of the plan of £443 per tonne saved, and indicates that such projects have a very short payback period of approximately 1.3 years. After this period, future savings will be available to fund other initiatives. Assuming that the target saving of 1,706 tonnes is met by 2020, the estimated saving on utility costs at this point will be £595,000 per annum.

On the basis of this high level analysis, it is clear than the anticipated savings will adequately fund the proposed change management projects.

5.4.3   Financing of Renewable Energy Initiatives

It is proposed that the additional emissions caused by anticipated University growth will be met from a combination of government decarbonisation of supply grid electricity and pursuing renewable energy sources to offset future emissions. It is generally accepted that payback periods for renewable energy, although lengthy, will occur with the life of the project itself and that this may extend beyond 2020.

Current projections indicate that decarbonisation of electricity will reduce the University's carbon emissions by more than enough to offset the 3,151 tonne increase from expansion. However, should this estimate

prove to be high, the University intends to utilise renewable sources of energy to offset the balance as required.

At present, a conservative estimate of the cost to save carbon through renewable initiatives is £2,500 per tonne. Should decarbonisation only enable the University to offset 50% of the required 3,151 tonnes, the balance would amount to 1,576 tonnes and would cost £3.939m to offset. This could be funded by excess savings arising from Change Management Initiatives.

5.5 Summary

It is very difficult at this early stage to determine accurately the costs and financial benefits associated with the CMP. The success of the change management initiatives, in particular, is extremely difficult to estimate with any degree of certainly. However, based on the various assumptions outlined in 5.2, the target reduction in carbon emission and associated costs are summarised below.

Table 12: Overall Summary of Costs, Funding and Emissions Savings

Projected Carbon Emission Savings and Estimated Cost	Carbon Emission Savings (Tonnes/Year)	Cost	Funding Source
Technical Initiatives	4,264 tonnes	£5,658,000	£828k GRF, with all savings reinvested to 2020
Change Management Initiatives	1,706 tonnes	£755,000	£51k initial outlay, and savings reinvested
Renewable Generation & Decarbonisation	3,151 tonnes	£3,939,000	Excess reinvested savings
Total	9,121 tonnes	£10,352,000	

To achieve the carbon savings set out in table 12 will require an investment in excess of £10m by 2020. It is anticipated that the technical projects will be fully funded from the University's GRF. The Change Management projects will all be funded from the reinvested savings, and have a relatively short payback period. The savings which accumulate thereafter from these projects should be used to fund the renewable initiatives as they develop in the longer term.

The savings in carbon resulting from the various initiatives will rise progressively over the period of the plan and are estimated to reach approximately £2m per annum by 2020, as detailed in 5.3. These savings should all be fully reinvested in carbon saving projects, thereby ensuring that the plan is resource neutral.

This financial section of the CMP will be updated annually to reflect lessons learned going forward, technical developments and changing energy costs.

6. Actions to Embed Carbon Management

At the launch of the CMP, a Carbon Management Embedding Matrix (Appendix 9) demonstrated that carbon management was not yet fully embedded in the University's operations and management. This will be addressed by the implementation of the CMP.

The following sections describe how this will be achieved within the organisation in terms of:

(i)   Corporate Strategy
(ii) Curriculum, Learning and Research
(iii) Students' Union

6.1   Corporate Strategy

The CMP is endorsed at the most senior level through approval by Senate. It also has very strong support from the Registrar and Chief Operating Officer who chairs the CMPSG. Carbon management and carbon reduction targets will be included in all future corporate strategic plans and all Schools and Directorates will be required to report progress on an annual basis.

6.2   Curriculum, Learning and Research

The Institute for a Sustainable World's (ISW) vision is to be a Centre of Excellence for research and decisive support for sustainable development research and teaching throughout Ireland and Internationally.   The Institute will pursue this vision by carrying out interdisciplinary research to provide a robust and transparent evidence base for sustainable development decision making, and for synthesising knowledge, tools and techniques from across the University and the wider community. In terms of teaching, ISW has a remit in relation to developing the postgraduate sustainability teaching and learning portfolio and associated student experience.

The ISW has recognised that carbon/climate is fast becoming the 'unifying theme' of sustainability, bringing together researchers, teachers and practitioners from engineering, environmental science, management, social sciences and spatial planning, and has identified Energy, Climate and Carbon Management as one of its five key research themes.

ISW delivered a carbon embedding seminar in January 2010 for staff and postgraduates interested in Carbon Footprinting. The seminar included breakout discussions and report backs on education needs and opportunities and, as a result of this and ongoing discussions and consultations, a number of ongoing actions on Curriculum, Learning and Research have been identified. These include:

- Development of an undergraduate Carbon Management module

- Evaluation of the current post-graduate programmes for sustainability, with the aim of developing a Masters Degree in Carbon Management

- Seeking funding to deliver interdisciplinary research to support the transition to a low carbon economy and society

6.3 Students' Union

The Students' Union recognises the risks associated with climate change and fully supports the University's CMP. Going forward, the President will lead the Students' Union in implementing particular aspects of the CMP and will be assisted in this by an Environmental Committee comprising of four dedicated and elected Students' Union Council members.

To date, the Students' Union has been accredited with a Bronze Award in the Sound Environmental Impact Awards. This scheme seeks to encourage and reward good environmental practice. The Union intends to improve upon this success in future years and carbon management will be a key component.

6.4 Responsibility

The project sponsor, and person responsible at senior management level for the implementation of the CMP, is the Registrar and Chief Operating Officer. The Director of Estates is project manager with operational responsibility for delivering the CO_2 reduction targets. This will be done in conjunction with the relevant Directors, Deans and Heads of School, all of whom have responsibilities for any future projects allocated to them and for achieving the targets which lie within their remit.

Support will be provided by the Carbon Management Working Groups which have been established with responsibility for:

- Identifying historical carbon emission levels associated with the consumption of energy, the production and removal of waste and those generated as a result of the travel commitments of the University

- Identification of projects that will assist the University in reaching its carbon reduction targets, and to include: projects, costing, lifecycle and potential emissions reduction levels

- Obtaining necessary financing, both internal and external, for potential projects and behavioural change procedures

- Implementation of carbon reduction projects

- Communication of the programme to staff and students, including projects and behavioural change procedures and their corresponding effects on the University's long term carbon reduction goals

- Communicating emission reduction successes to senior management, staff and the student population

Key to the success of the CMP will be budget holders across the University being accountable for the achievement of agreed targets. A comprehensive awareness raising / educational programme will address any deficit in understanding of carbon management and its impact on the University.

Budget holders will be supported by a network of "Environmental Champions" who will help promote the low carbon agenda in their area, reporting issues, identifying projects and assisting with the cultural change. The University will provide a programme of training and support for these champions focused on reducing the carbon footprints in their work areas. Approximately 100 champions, at all levels, have already volunteered to reinforce the message that the carbon agenda is of utmost importance, as well as building engagement at all levels of responsibility and decision making. Environmental Champions will be selected in consultation with Heads of Schools and Directors of Academic Support Units.

To help communicate how each area of the University is performing a Carbon Reduction League will be developed. This will be accompanied by a scheme to "reward" success and "punish" non-compliance.

Notwithstanding these specific managerial responsibilities, carbon management within the University is the responsibility of each individual who works and studies at the University. For this reason, it is critical to achieve the successful engagement and education of staff and students in the implementation of the CMP.

6.5 Data Management

The University has significantly increased the number of utility meters throughout the campus and this will allow a better understanding of energy consumption in individual buildings over time. A Data Analyst has also been employed to undertake monitoring and targeting of energy projects.

The University Energy Manager will take responsibility for analysing and interpreting the resulting data in order to:

- Monitor the success or otherwise of carbon saving projects
- Identify new opportunities
- Provide clear feedback on energy performance to the wider University

The data from these monitoring programmes will be disseminated as widely as possible.

6.6 Communication Strategy and Action Plan

Central to the successful implementation of the CMP will be engaging the whole University, including staff and students, and increasing the carbon management awareness of both, internally and externally. Key to this will be the implementation of a Communications Strategy and Action Plan which must deal with issues relating to the transient population within the University.

The Communications Strategy Mission Statement is to 'Empower staff and students to achieve a low-carbon lifestyle'.

The objectives of the Strategy are to:

- Helping to reduce the University's carbon emissions by 21% by 2020 against 2008 through a targeted and sustained communications plan

- Increase low-carbon and energy awareness among internal stakeholders

- Engage with internal stakeholders to bring about behavioural change in relation to carbon management

- Brand Queen's as a low-carbon university

- Raise the profile of Queen's as an example of best practice in the field of carbon management in the Higher Education sector and in the local community

Bringing about behavioural change in staff and students will be crucial if the University is to achieve its carbon emission targets. Awareness/motivational surveys for staff and students have been developed to determine current attitudes and motivation, and what behaviours need changed. The data collected will provide valuable information for devising awareness campaigns.

Other key elements of the Strategy include:

- Recruitment of a team of "Environmental Champions". The champions will receive support and guidance on their roles including a bespoke training course.

- Development of a carbon management website

- Development of an awareness Campaign Strategy based on an analysis of the awareness/motivation surveys. The surveys will identify which behaviours need to be targeted and will inform the key messages and communication tools to be used.

- Student engagement through the Students' Union

- Annual carbon awareness events

- Where appropriate, building carbon management into job descriptions, induction, appraisal and training of staff

7. <u>Programme Management of the CMP</u>

In order for the CMP to succeed, appropriate management structures will be put in place, to clearly reflect ownership and responsibilities.

This will ne ensured by:

- Senior, strategic ownership of the carbon reduction target

- Bringing together, in one place, the diverse set of projects across the University

- Oversight of the CMP to encourage delivery, through the identification and removal of obstacles

- Project owners coming together to ensure coherence and coordination of carbon reduction activity

7.1 Strategic Ownership and Oversight

The CMPSG will take strategic ownership of the CMP and meet twice each year to review progress against targets, and the implementation of projects against defined programmes.

Project Sponsor:	Registrar & Chief Operating Officer
Project Leader:	Director of Estates
Membership:	Head of Cost and Capital Accounting
	Assistant Director of IT Systems & Services
	Head of Estates Services
	Head of Estates Development
	Head of Estates Planning
	Pro Vice Chancellor, Planning & External Relations
	President of the Students' Union
	Director of Accommodation & Hospitality
	Dean of Engineering & Physical Sciences

The Terms of Reference for the CMPSG is given at Appendix 10.

7.2 Delivering the Projects - The CMP Working Groups

The CMP working groups, reporting to the CMPSG, will oversee the implementation of technical and change management projects. Membership includes academic and support staff and meetings will be held on a quarterly basis to review the progress of all projects.

Technical Working Group

Chair	Head of Estates Development
Membership:	Senior Estates Manager
	Energy Manager
	Travel Plan Coordinator
	Environmental Manager
	Head of Estates Services
	Head of Estates Planning
	Information Services
	Head of Purchasing
	Finance
	President of the Students' Union
	Student Plus Maintenance Officer

The Terms of Reference for this Group is included in Appendix 11.

Change Management Working Group

Chair	Dean of Engineering and Physical Sciences
Membership:	Head of Estates Development
	Energy Manager
	Environmental Manager
	President of the Students' Union
	Accommodation & Hospitality, Operations & Compliance Manager
	Communications Officer
	ISW Representative
	School of Psychology (representative)
	Teaching & Learning, Information Services
	Staff Training & Development Manager
	Students' Union Marketing Manager

The Terms of Reference for this Group is included in Appendix 12.

7.3   Succession Planning for Key Roles

The Director of Estates will act as the project leader. This role will be covered by the Deputy Director of Estates (Head of Estates Development).

The Chair of the Technical Working Group will be covered by the Head of Estates Services.

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The Chair of the Change Management Working Group will be covered by a senior academic representative of the ISW.

7.4 Progress Reviews

(i) There will be a biannual review of progress on the implementation of the CMP to cover:

- Progress reports on all identified initiatives and associated projects to include technical and change management projects
- Proposals for new projects
- Electricity consumption data (KWh and tonnes of CO_2)
- Gas consumption data (KWh and tonnes of CO_2)
- Water consumption (m^2 and tonnes of CO_2)
- Waste sent to landfill (tonnes and tonnes of CO_2)
- Recycling rate (tonnes CO_2 avoided)
- Fleet transport
- Total reduction in carbon emissions
- CO^2 savings against target
- Financial commentary and cost savings

The review will be developed by members of the Working Groups before submission to the CMPSG. The carbon management webpage will also be used to disseminate information.

The Working Groups will be responsible for assessing performance against targets and evaluating project outcomes and ensuring that these are included in the biannual reports. Where necessary, they will also recommend any revision to the CMP for approval by the CMPSG.

(ii) Annual Performance Review

Carbon reduction will be incorporated as a KPI at both institutional and School / Directorate level. Progress in meeting targets will be included in all School and Directorate Performance Reviews submitted to the University Operating Board in November each year; and then reported to the University Management Board, the Planning and Finance Committee and, ultimately, to Senate in December.

7.5 Managing Risks that the CMP May Fail to Deliver

7.5.1 Risks that the CMP may fail to deliver fall into 2 categories (summarised in appendix 1):

1. Poor design
2. Lack of support

Poor design would arise largely as a result of CMP measures being less effective than anticipated, leading to a shortfall in the quantity of measures needed or their longevity.

These risks will be managed by:

- Using nationally-agreed Carbon Trust tools for determining the likely effect of measures

- Regular review of the efficacy of installed measures, and expansion of our metering system to accommodate this better

Failure of the CMP due to lack of support may arise if measures are "cherry-picked" to prioritise short payback times, and funding is refused for measures with longer paybacks.

A commitment to maintaining the key posts of Energy Manager and Environmental Manager will also be pivotal to maintaining the momentum of the CMP. It is assumed that this commitment will be implicict in the adoption and approval of the CMP and revised Environmental Policy by senate in June 2010.

Scrutiny of progress against actions under the CMP will ensure that the programme continues on schedule. The CRC will also provide further opportunity for the University to demonstrate its adherence to the CMP.

7.5.2   Ongoing Risk Management

As part of the risk assurance mechanism within the University, every School/Directorate is required to provide a status report, twice yearly, to the Risk Management Committee. Both the Estates and Finance Directorates will identify and manage risks in relation to the implementation of the CMP and the CRC together with other related emerging risks.

Appendices

Appendix 1

Risk Management Table – Corporate Risks

Risk	Mitigation
CRC financial penalty	Targeted reduction in scope 1 & 2 carbon emissions should result in an improved performance in the CRC league table.
Capital funding	A CMP that includes target is required to qualify for HEFCE CIF 2 Funding.
Rising energy costs	Reduced scope 1 & 2 emissions generally will help reduced energy consumption and therefore cost.
Reputation – Operational: Mandatory disclosure of emissions means the University could attract negative publicity	A formal CMP illustrates that the University is taking the threats associated with Climate Change seriously.
Reputation – Teaching & Research:	Embedding carbon management in the teaching curriculum will help in achieving the UK Low Carbon Transition Plan. By continuing to conduct research into alternative energy and fuel efficiency the University will attract attention from funders and the media.
Growth of Estate The economy is becoming "Carbon Constrained" and as such the growth of the estate can no longer lead to a growth in emissions	The University has developed a Sustainable Design Brief that will ensure that carbon emissions are a key consideration during the design of all new buildings and major refurbishment projects

Risk Management Table – Risks That The CMP may Fail to Deliver

Risk	Mitigation
There are insufficient technical projects to allow the University to reduce carbon emissions by the required amount.	The University's Energy Manager in conjunction with the Carbon Management Technical Group will work to identify carbon reduction projects over the life of the Plan.
The projected growth in emissions of 3,151 tonnes against 2008 levels is understated.	The Estates Directorate have conducted detailed analysis to ensure that this figure is accurate at the time of publication of the CMP. It will continue to be reviewed and revised as the Plan is updated over the period.
The University becomes even more research-intensive than expected in the period to 2020, causing emissions to rise more than anticipated.	The CMP will not override the University's core objectives. The projections and targets identified in this document are accurate at the time of publication, but will be revised in the light of key University decisions over the life of the Plan.
The payback period for technical projects rises more than expected, meaning that the annual savings available for reinvestment is lower, and fewer new projects can be commenced.	The payback period used in the projections in this Plan are best estimates based on the most accurate information currently available. The University's Energy Manager will ensure that the latest information is used to update these projections as the Plan moves forward.
Government decarbonisation of electricity does not happen to the extent anticipated, meaning that more renewable energy initiatives will be required to offset growth.	The Plan currently assumes that 50% of the projected growth in emissions will be met from government decarbonisation of the grid. Based on the latest data, it is possible that decarbonisation will generate reductions to cover 100% of the growth, and so this is a very conservative assumption. It will, however, be continually reviewed as the CMP period progresses.
The cost of renewable energy initiatives is understated, meaning that it will cost more to offset the anticipated growth in emissions.	The Energy Manager will continue to monitor the cost of renewable energy initiatives, and the CMP will be updated accordingly.
The communications strategy does not yield the required savings over the course of the Plan.	A dedicated Communications Working Group will oversee the implementation of the communications strategy.

No viable recycling contractor/method available for all recyclable waste streams	Reputable Waste Contractor engaged for current waste services. Service Level Agreement in place and regularly reviewed. Waste contract to detail minimum waste streams to be collected and recycled by the Waste Contractor
Changes/increase in legislation means that the Carbon Management Plan has to deliver greater savings/ reductions.	Routine checks undertaken of environmental/ energy legislation to identify future regulations are identified in advance of being implemented.
Wider student and staff population do not engage with the Carbon Management Plan and as a result Carbon Reduction Savings are not realised.	Targeted Communication Campaign with a clear environmental message. Endorsement of the Communications Campaign by Senior Management. Communications Campaign implemented monitored and reviewed by Change Management group.
Finances available to the Program are insufficient to achieve reductions.	Regular review of programmes and available funds.
Increase in Energy intensive research programmes within the University, which requires significant energy uses, increasing carbon emissions.	The Carbon Management Plan is a 'Live' document' which will be reviewed and updated as the University continues to evolve.
Enthusiasm for the CMP across the University is not maintained amongst Senior Management	Annual report to UOB and Senate on progress of the CMP will include appropriate KPIs
Risk to the reputation of the University (e.g. falling down Green League table, UTC), if focus on the Carbon Management Plan is lost.	Ensure programmes are sufficiently resourced, given Senior Management support and regularly reviewed and reported on.
Extension of the University Estate results in increase in the number of Fleet required for the Operation of the University	Review Fleet requirements annually. Incorporate Carbon performance into Fleet selection criteria.

UK Carbon Reduction Commitment

1. Background

The Carbon Reduction Commitment (CRC) scheme was announced by the Government in an Energy White Paper in 2007. The aim of the scheme is to cut carbon emissions from large commercial and public sector organizations by applying mandatory emissions trading. The University exceeds the minimum energy consumption threshold for the scheme, and will therefore be required to participate.

2. How the CRC will Operate

The following key points should be noted:

- The CRC is intended to be revenue neutral to the Exchequer

- All money generated by the purchase of carbon allowances by participants from the Government will be recycled back to the participants

- A league table shall be used to determine how an individual organisation is performing against other scheme participants

- The amount of money recycled back to a participant will depend on their position within the league table

Each participant's performance will be self certified. However, to ensure standards are maintained, a number of audits will be conducted by local environmental authorities. Therefore an evidence pack will be required to illustrate how an organisation is administering the CRC. The evidence pack must be robust enough to withstand an audit by the Environmental Heritage Service (EHS). It is likely that 20% of participants will be randomly selected for an audit.

3. CRC Implementation Timeline

CRC starts in April 2010. For administrative purposes, the scheme is divided into set time periods known as phases. The first phase is the *introductory phase* and runs for three years. Subsequent phases each last for seven years. The first two years of each phase are preparatory, and overlap with the previous phase. Each phase has:

- A *qualification period*, the period for which organisations must assess whether or not they qualify to make an information disclosure or participate fully in CRC.

- A *registration period*, during which organisations that are required to take action under the scheme must either submit their information disclosure or register as a *participant* with the administrator.

- A series of *compliance years*, which run from April to March like financial years, during which participants must take some action to comply with CRC. There are three compliance years in the introductory phase, and seven compliance years in all subsequent phases.

- A *footprint year*, where participants must monitor their total emissions from energy supplies and determine what emissions must be included in CRC. This is the first compliance year of each phase. This data must be reported to the administrator in a *footprint report*.

- The footprint year is followed by a series of *annual reporting years*, during which a participant calculates the energy supplies it has included in CRC. In the introductory phase the footprint year is also the annual reporting year.

Organisations must report their actual emissions by the end of July after each annual reporting year and surrender allowances to cover to their reported emissions. Then in October, three months later, they will receive a *revenue recycling* payment, based on their performance in the previous year.

For the introductory phase:

- The qualification period is the calendar year 2008
- The registration period is April-September 2010
- The footprint year is April 2010-March 2011
- In the first annual reporting year 2010-2011 there will be no sale or surrender of allowances
- The first sale of allowances takes place in April 2011-March 2012.

The following timeline sets out key dates that the University must comply with:
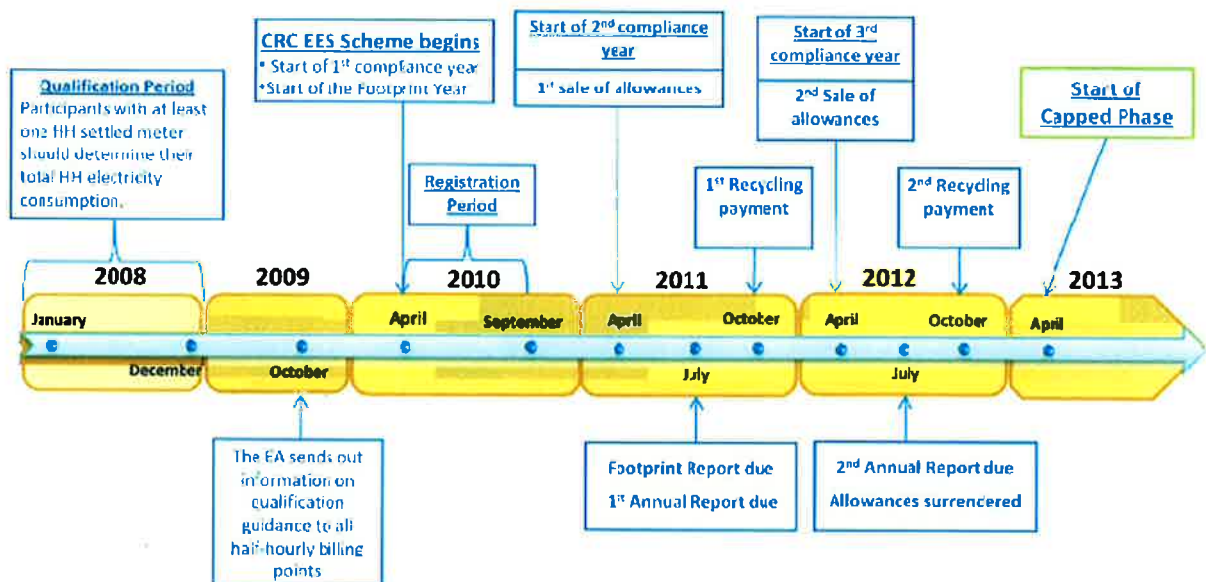
4. Performance and the CRC League Table

The University will be required to assess its performance each year, and submit a report via the CRC Registry which outlines energy use for the sources contributing to carbon emissions. The CRC Registry will then convert this figure into tonnes of CO_2. The performance of each organisation in reducing its CO_2 will be compared, and the results published in the form of a league table.

Performance will be assessed on the basis of the following three metrics, with different weightings applied to each in the initial years of the scheme:

Early Action Metric – This measure gives some recognition for good energy management undertaken prior to the start of the scheme. This metric is based on two factors, equally weighted, which have been chosen as a proxy for good energy management:

(i) The percentage of non-mandatorily HH metered electricity and gas emissions which are covered by voluntarily installed **automatic metering** (AMR) by 31 March 2011.

(ii) The percentage of your organisation's emissions covered by a valid **Carbon Trust Standard** (as well as any recognised equivalents) or an *Energy Efficiency Accreditation Scheme* certificate on 31 March of each compliance year.

Absolute Metric – This measure is your percentage emissions change. Performance is assessed using a five-year rolling average. The metric compares your current annual emissions to your average emissions over the preceding five years. In the first five years of the scheme, current emissions are compared against the average over the years available.

Growth Metric – This gives recognition and provides context for your organisation if you are growing or declining commercially, but your emissions are increasing at a slower rate, or decreasing. This is your percentage change in emissions per unit turnover (or revenue expenditure if you are in the public sector). It compares your current per unit level of emissions relative to your average over the preceding five years.

Table 1 sets out how these metrics will be weighted in the initial years of the scheme:

Table 1

			Year 1 2010-11	Year 2 2011-12	Year 3 2012-13	Future years 2013-14...
Early Action Metric	*(i)*	*Automatic metering*	50%	20%	10%	0%
	(ii)	*Carbon Trust Standard*	50%	20%	10%	0%
Absolute Metric			0%	45%	60%	75%
Growth Metric			0%	15%	20%	25%

■ Absolute reduction   ■ Relative reduction
■ AMR (Smart metering)   ■ Carbon Trust Standard*
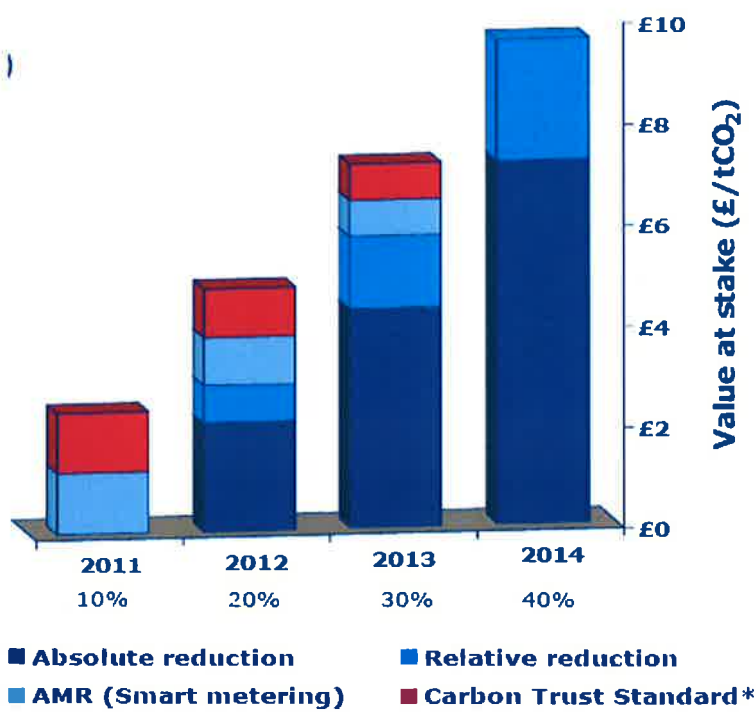
Therefore, as the scheme matures, the league table ranking will be based increasingly on the absolute emissions figure. There is also considerable benefit to installing automatic metering as soon as possible and investing in year one to ensure the Carbon Trust Standard is achieved.

5.   Projected Cost to the University

Participating organisations will be required to purchase carbon allowances from the Government at the start of each fiscal year (i.e. April). The payment made for carbon by a participant will then be returned to the organisation by the Government in October of the same year. However, a penalty, or bonus, will also be applied. The precise level of penalty or bonus will depend on where the organisation is placed within the CRC league table. The penalty or bonus will increase by 10% per year over the first five years of the scheme.

The potential cost to the University of participating in the CRC is set out in Table 2 and assumes no change in the current rate of emissions.

Table 2

Carbon Mgt Plan (CMP) Target

University Financial Year	Quantity of Carbon Allowances (CMP Target Scenario)	Cost of Carbon per tonne*	Total Cost of Carbon Allowances	% Performance Bonus or Penalty	Maximum Performance Bonus or Penalty	
2009 - 2010	28,430	£12	£341,160	0%	-	Base year
2010 - 2011	28,430	£12	£341,160	10%	£34,116	Introductory period
2011 - 2012	28,430	£12	£341,160	20%	£68,232	
2012 - 2013	28,430	£12	£341,160	30%	£102,348	
2013 - 2014	28,430	£45	£1,279,350	40%	£511,740	First capped phase
2014 - 2015	28,430	£45	£1,279,350	50%	£639,675	
2015 - 2016	28,430	£45	£1,279,350	60%	£767,610	Further phases - bonus/penalty could rise to 100%
2016 - 2017	28,430	£45	£1,279,350	70%	£895,545	
2017 - 2018	28,430	£45	£1,279,350	80%	£1,023,480	
2018 - 2019	28,430	£45	£1,279,350	90%	£1,151,415	
2019 - 2020	28,430	£45	£1,279,350	100%	£1,279,350	

*Cost of carbon has been set at £12 per tonne for the first 3 years. After 2013, carbon will be traded on the open market and the price is anticipated to rise to between £40 and £50 per tonne (Building Magazine, January 2010).

During the introductory phase (first three years) the price of carbon allowances will be fixed at £12/tCO$_2$. After this, carbon will be bought and sold by participatory organisations in a secondary market. It is extremely difficult to predict how the price of carbon allowances will move in this period, but *Building Magazine* has estimated a price of £40-£50 per tonne. For this reason, £45 has been used in Table 2.

At this stage, it is unclear what the bonus/penalty percentage will be in year six and beyond. The Government have stated that it will be reviewed after year five, however most commentators believe it most likely that the 10% rise per annum will continue through to year ten. This will mean that the entire carbon payment will be at stake in year ten, with the best performers receiving a recycling payment of 200% and the lowest ranked organisations receiving nothing.

Summary Current Initiatives

Ref	Initiative	Section	Lead	Cost (£)		Annual Saving			Payback (years)	% of CO$_2$ Target	Year(s) Implemented
				Capital	Recurrent	£	Carbon (tonnes)				
PR	Procurement	4.1	Purchasing Office	E	E	E	E		E	E	2010
ICT	Green ICT	4.2	Information Services	-	-	-	-		-	-	-
EB	Energy Efficiency & Conservation Measures	4.3	Estates	554,850	-	122,190	630		4.50	10.53	2010
WM	Waste Minimisation	4.4	Estates	-	-	-	-		-	-	-
FL	Fleet	4.5	Estates	-	-	5,030	11		4.60	0.20	2010
CM	Change Management	4.6	Change Management Working Group	-	-	-	-		-	-	-
	Total			**554,850**		**127,220**	**641**		**4.55**	**10.73**	

E : This is an enabling initiative

Current Projects - Procurement

Ref	Project	Lead	Action	Measuring Success	Cost £		Annual Savings		Pay back (years)	% of CO₂ target	Year Implemented	Status
					Capital	Recurrent	Saving	CO₂ (tonnes)				
PR1	Increasing Energy Efficiency of Small Electrical Equipment	Head of Purchasing	Ensuring that buyers and suppliers are adhering to green guidelines in the purchase and supply of small electrical equipment (eg white and brown goods, IT and small items of laboratory equipment)	Appropriate communication strategy – targeting all relevant purchasers/users No equipment with energy rating of B or lower in any School or Directorate							Annually	■ (green)
PR2	Environmental Purchasing Strategy	Head of Purchasing	Environmental Purchasing Strategy, incorporating Green Procurement Policy and Green Guidelines for Buyers and Suppliers	Regular reviews of targets and enhancements/ new initiatives identified and implemented							Annually	■ (green)

Traffic Light Definitions

Green	Good: this is on track, low risk
Amber-Green	Satisfactory: this is broadly on track with some concerns which need to be addressed
Amber	Mixed: Some significant concerns which could be damaging if not addressed, medium risk
Red	Problematic: serious concerns threaten this area, high risk to the institution's overall performance

Current Projects - Green ICT

Ref	Project	Lead	Action	Measuring Success	Cost £		Annual Savings		Pay back (years)	% of CO₂ target	Year Implemented	Status
					Capital	Recurrent	Saving	CO₂ (tonnes)				
			Total									

NOT APPLICABLE IN CURRENT PHASE

Current Projects – Energy Efficiency and Conservation Measures

Ref	Project	Lead	Action	Measuring Success	Cost £		Annual Savings		Pay back (years)	% of CO_2 target	Year Implemented	Status
					Capital	Recurrent	Saving	CO_2 (tonnes)				
EB01	BEMS Controls	Energy Manager	Install BEMS controls on 6,8 & 14 Malone Rd	Monitoring energy consumption	15,000	N/A	2,960	19	5	0.32	2010	
EB02	Students' Union Lighting Controls	Energy Manager	Install lighting controls in corridors and open spaces	Monitoring energy consumption	3,800	N/A	900	5	4	0.08	2010	
EB03	University Square Draught Proofing	Energy Manager	Install Quatroseal around windows	Monitoring energy consumption	40,000	N/A	8,000	50	5	0.84	2010	
EB04	Main Site Draught Proofing	Energy Manager	Install Quatroseal around windows	Monitoring energy consumption	40,000	N/A	9,000	45	4	0.75	2010	
EB05	Elms Village – Voltage Optimisation	Energy Manager	Optimise incoming supply voltage	Monitoring energy consumption	102,350	N/A	20,000	99	5	1.66	2010	
EB06	Main Site– Voltage Optimisation	Energy Manager	Optimise incoming supply voltage	Monitoring energy consumption	103,000	N/A	26,000	154	4	2.58	2010	
EB07	Elms Village – Lighting Controls	Energy Manager	Install lighting controls in corridors and open spaces	Monitoring energy consumption	22,000	N/A	5,000	28	4	0.47	2010	

Ref	Project	Lead	Action	Measuring Success	Cost £ Capital	Cost £ Recurrent	Annual Savings Saving	Annual Savings CO_2 (tonnes)	Pay back (years)	% of CO_2 target	Year Implemented	Status
EB08	Main Site – Lighting Controls	Energy Manager	Install lighting controls in corridors and open spaces	Monitoring energy consumption	57,500	N/A	17,000	79	3	1.32	2010	🟩
EB09	PEC Lighting Upgrade	Energy Manager	Upgrade existing Lighting	Monitoring energy consumption	34,000	N/A	7,000	30	5	0.50	2010	🟩
EB10	Project Description	Energy Manager	Heating System Controls	Monitoring energy consumption	3,000	N/A	3,000	14	1	0.23	2010	🟩
EB11	PEC Heat Recovery	Energy Manager	Heat Recovery at Pool Hall	Monitoring energy consumption	125,000	N/A	22,000	100	6	1.67	2010	🟩
EB12	PEC Roofspace Insulation	Energy Manager	PEC Roofspace Insulation	Monitoring energy consumption	9,200	N/A	1,330	7	7	0.11	2010	🟩
	Total				554,850	N/A	122,190	630	(Av) 4.5	10.53		

Current Projects - Waste Minimisation

Ref	Project	Lead	Action	Measuring Success	Cost £		Annual Savings		Pay back (years)	% of CO$_2$ target	Year Implemented	Status
					Capital	Recurrent	Saving	CO$_2$ (tonnes)				
			Total									

NOT APPLICABLE IN CURRENT PHASE

Current Projects - Fleet

Ref	Project	Lead	Action	Measuring Success	Cost £		Annual Savings		Pay back (years)	% of CO_2 target	Year Implemented	Status
					Capital	Recurrent	Saving	CO_2 (tonnes)				
FL1	Fleet Acquisition Procedure	Assistant Estates Manager (Transport)	Fleet policy, and associated procedures, disseminated to all Schools/Directorates with vehicles	Reduction in overall fleet CO_2 output	The cost of more fuel efficient vehicles are on average 10% more expensive than regular vehicles	N/A	2,300	5	6	0.10	Reviewed Annually	■
FL2	Fleet Management Information Procedure	Assistant Estates Manager (Transport)	Monthly and ad-hoc meetings/ communication with all vehicle representatives where all fleet issues are discussed	Reduction in overall fleet CO_2 output	Cost neutral	N/A	910	2	3	0.03	Reviewed Annually	■
FL3	Fleet Disposal Procedure	Assistant Estates Manager (Transport)	The Transport Manager consistently reviews the fleet to establish value for money and vehicle effectiveness	Reduction in overall fleet CO_2 output	Cost neutral	N/A	1,820	4	5	0.07	Reviewed Annually	■
	Total				-	-	5,030	11	(Av) 4.6	0.20		

Current Projects - Change Management

Ref	Project	Lead	Action	Measuring Success	Cost £		Annual Savings		Pay back (years)	% of CO₂ target	Year Implemented	Status
					Capital	Recurrent	Saving	CO₂ (tonnes)				
CM01	Increase low-carbon and energy awareness among internal audiences	School of Psychology	Carry out Staff Awareness/ Motivational Surveys	(Market intelligence Number of respondents Annual movement in awareness/ motivation	1,000	600					April 2010 Reviewed annually	
CM02	Increase low-carbon and energy awareness among internal audiences	Communications Office	Develop a sustained staff communication campaign incorporating monthly plan of activity for each academic year. (using Queen's Now, QTV, Round Up, Queen's Online, awareness events)	Monthly plans developed and implemented Reduction in CO₂ in Schools and Directorates Feedback from staff							Annually	
CM03	Increase low-carbon and energy awareness among internal audiences	Communications Office	Develop branding for use on communication campaigns	Branding developed Brand recognition by staff and students							July 2010	
				Total	1,000	600	-	-	-	-	Target	

Summary of Near Term Initiatives

| Ref | Initiatives | Section | Working Group | Cost (£) | | Annual Saving | | Payback (years) | % of CO$_2$ target | Year Implemented |
				Capital	Recurrent	£	Carbon (tonnes)			
PR	Procurement	4.1	Technical	E	E	E	E	E	E	2011-2015
ICT	Green ICT	4.2	Technical	Min 400,000	-	-	-	-	-	2011-2015
EB	Energy Efficiency & Conservation Measures	4.3	Technical	500,000	-	111,833	583	4.1	9.75	2011-2015
WM	Waste Minimisation	4.4	Technical	12,000	-	-	-	-	-	2011-2015
FL	Fleet	4.5	Technical	-	-	-	-	-	-	2011-2015
CM	Change Management	4.6	Change Management	Min 10,633 Set up	Min 17,486	-	-	-	-	2011-2015
	Total			922,633	17,486	111,833	583	4.1	9.75	

Note

E: This is an enabling initiative

Near Term Projects - Procurement

| Ref | Project | Lead | Action | Measuring Success | Cost £ | | Annual Savings | | Pay back (years) | % of CO$_2$ target | Year Implemented | Status |
					Capital	Recurrent	Saving	CO$_2$ (tonnes)				
PR3	Strategy for Purchase of Energy Efficient Capital Equipment	Purchasing Office	Development of a strategy for the purchase of capital equipment to ensure that energy consumption is a key component of the procurement decision.

Project to include a review of all issues affecting the purchase of capital equipment – including adhering to the requirements of funding bodies.

Relevant target dates to be established as part of the strategy. | Buy in from users – consider the needs of users and their customers and take on board their comments and suggestions.

Lower energy consumption | | | | | | | 2011 | |
| | | | | **Total** | | | | | | | | |

Traffic Light Definitions

Green	*Good: this is on track, low risk*
Amber-Green	*Satisfactory: this is broadly on track with some concerns which need to be addressed*
Amber	*Mixed: Some significant concerns which could be damaging if not addressed, medium risk*
Red	*Problematic: serious concerns threaten this area, high risk to the institution's overall performance*

Near Term Projects - Green ICT

Ref	Project	Lead	Action	Measuring Success	Cost £		Annual Savings		Pay back (years)	% of CO$_2$ target	Year Implemented	Status
					Capital	Recurrent	Saving	CO$_2$ (tonnes)				
ICT01	Improve efficiency of Displays & TV screens.	IS	Audit of all CRT systems within QUB. Replacement of CRT Computer / TV Screens with Flat Panels	Calculation based on units replaced	-	-	-	-	-	-	2011	
ICT02	Server Virtualisation	IS	Install architecture to support Virtualisation and reduce number of physical servers.	Measure loading of new infrastructure and existing systems prior to migration.	Phase 1 £200k Phase 2 £200k	-	-	-	-	-	2011	
ICT03	Equipment turned off when not in use	IS	Establish strict processes and polices about turning off unused equipment.		Staff time to establish polices and process as custom and practice.	-	-	-	-	-	2011	
ICT04	Replace Admin Data Centre	IS	Undertake Feasibility Study for site of new modern design data Centre	Reduced power consumption of Data Centre	-	-	-	-	-	-	2011	
	Total				Minimum £400k	-	-	-	-	-		

Near Term Projects- Energy Efficiency and Conservation Measures

Ref	Project	Lead	Action	Measuring Success	Cost (£)		Annual Savings		Pay back (years)	% of CO₂ target	Year Implemented	Status
					Capital	Recurrent	Saving	CO₂ (tonnes)				
EB13	6-8 College Green	Estates	Conversion of electrical heating to boiler and radiator system	Monitoring energy consumption	12,000	N/A	4,000	14	3	0.23	2012	
EB14	Various	Estates	Automated lighting controls for corridors an foyers	Monitoring energy consumption	10,000	N/A	2,500	12	4	0.20	2012	
EB15	Various	Estates	Lighting upgrade	Monitoring energy consumption	15,000	N/A	3,750	17	4	0.28	2012	
EB16	Elmwood Site	Estates	Voltage Optimisation	Monitoring energy consumption	100,000	N/A	20,000	117	5	1.96	2012	
EB17	DKB	Estates	Voltage Optimisation	Monitoring energy consumption	100,000	N/A	20,000	117	5	1.96	2012	
EB18	Ashby	Estates	Voltage Optimisation	Monitoring energy consumption	100,000	N/A	20,000	117	5	1.96	2012	
EB19	14 & 16 Malone Rd	Estates	Insulation	Monitoring energy consumption	2,000	N/A	500	2	4	0.03	2012	

Ref	Project	Lead	Action	Measuring Success	Estimated Cost		Annual Savings		Pay back (years)	% of CO$_2$ target	Year Implemented	Status
					£	Revenue	Saving	CO$_2$ (tonnes)				
EB20	Elms Village	Estates	Insulation	Monitoring energy consumption	125,000	N/A	31,250	147	4	2.46	2012	
EB21	Fitzwilliam Street	Estates	Insulation	Monitoring energy consumption	3,000	N/A	750	3	4	0.05	2012	
EB22	Main Site	Estates	Insulation	Monitoring energy consumption	20,000	N/A	5,000	23	4	0.39	2012	
EB23	University Sq	Estates	Insulation	Monitoring energy consumption	3,000	N/A	750	3	4	0.05	2012	
EB24	Various	Estates	Pipework insulation	Monitoring energy consumption	10,000	N/A	3,333	11	4	0.18	2012	
	Total				500,000		111,833	583	(Av) 4.1	9.75		

Near Term Projects - Waste Minimisation

Ref	Project	Lead	Action	Measuring Success	Cost £ Capital	Cost £ Recurrent	Annual Savings Saving	Annual Savings CO₂ (tonnes)	Pay back (years)	% of CO₂ target	Year Implemented	Status
WM01	Increase recycling rates from 35 % to 50% of all waste generated by 2013/2014 based on a 2008-2009 baseline.	Estates Manager	Establish baseline of waste generated across campus	Monthly recycling and waste management reports	Potential £12,000 (Food Composter) full costs to be investigated				Due to current increases in landfill tax cost benefit is currently zero			
WM02			Review all waste streams generated by the University and identify opportunities for minimising waste and increasing recycling e.g. Feasibility study to compost food waste			-	-	60		1	2011	
WM03			Communicate recycling and waste minimisation initiatives across campus through environmental champions, green week, competitions, posters etc									
Total					12,000	-	-	60	-	1		

Near Term Projects - Fleet

Ref	Project	Lead	Action	Measuring Success	Cost £		Annual Savings		Pay back (years)	% of CO_2 target	Year Implemented	Status
					Capital	Recurrent	Saving	CO_2 (tonnes)				
				Total								

PROJECTS TO BE IDENTIFIED

Near Term Initiative - Change Management

Ref	Project	Lead	Action	Measuring Success	Cost £		Annual Savings		Pay back (years)	% of CO₂ target	Year Implemented	Status
					Capital	Recurrent	Saving	CO₂ (tonnes)				
CM04	Increase low-carbon and energy awareness among internal audiences	School of Psychology	Carry out Staff Awareness/Motivational Surveys	Number of respondents Annual movement in awareness/ motivation	Set up costs - £1,000	2 Repeat surveys - £600	Total below				2011 Reviewed annually	▮
CM05		Communications Office (Information Services/ISW)	Develop and maintain a carbon management website	Web statistics monitored Number of updated pieces of copy Staff and student feedback	Internally designed – capped at £500 max.	Additional resource required for maint-enance of site. (0.1FTE) Grade 5 - £2,950					2011 Reviewed annually	▮
CM06		Communications Office	Develop a sustained staff communication campaign incorporating monthly plan of activity for each academic year. (using Queen's Now, QTV, Round Up, Queen's Online, awareness events)	Reduction in CO₂ in Schools and Directorates Feedback from staff	N/A	£600 per 3mins QTV video					2011 Reviewed annually	▮

Ref	Responsibility	Action	Measures		Cost		Timescale	Status
CM07	Communications Office (Student Plus)	Develop a sustained student communication campaign incorporating monthly plans of activity for each academic year (using SUTV, Students' Union communications, awareness events, lecture presentations, inter-hall competitions, Queen's Online)	Monthly plans developed and implemented Reduction in CO_2 in Schools and Directorates Feedback from students	N/A	£1,500 for prizes for inter-hall competit-ions		2011 Reviewed annually	▉
CM08	Communications Office (Student Plus)	Develop promotional material for use on targeted communication campaigns	Targeted promotional material produced	N/A	£3,000 (targeted distribut-ion only)	Total below	2011 Reviewed annually	▉
CM09	Communications Office	Identify an annual Carbon Awareness Week to raise awareness among staff and students.	Number of staff and students who participate in event Reduction in CO_2 in Schools and Directorates Staff and student feedback	N/A	£2,500		2011 Reviewed annually	▉
CM10	Estates (with support from STDU, ISW and School of Psychology)	Recruit, train and set up a programme of support for Environmental Champions (EC) Target approximately 100	Number of EC recruited. Number attending training course Impact of EC in individual Schools/ Directorates	£30,000	£22,000	Total below	2011 Reviewed annually	▉

Engage with internal audiences to bring about behavioural change

CM11		Estates (Communications Office, Student Plus)	Develop Carbon Champion Award Schemes for staff and students who have made a significant contribution to the reduction of carbon	Reduction Co$_2$ emissions EC Feedback Number of carbon reduction measures suggested by EC and implemented Number of nominations for awards Awards event held Feedback from staff and students	N/A	£1,500 – for awards and event	Total below	2011 Reviewed annually	■
CM12	Brand Queen's as a low-carbon university	Line Managers in Schools and Directorates	Consider building carbon management into the staff appraisal process – staff members to identify carbon reduction opportunities as part of their annual objectives.	Monitored as part of the annual appraisal process Reduction in CO$_2$ in specific Schools and Directorates	N/A	N/A	Total below	2011 Reviewed annually	■
CM14		Human Resources/ Student Plus	Build carbon management into student handbook and staff webpages	Carbon management built into handbooks/ webpages Increased awareness among staff and students	N/A	N/A		2011 Reviewed annually	■

CM15	Raise the profile of Queen's as an example of best practice	Communications Office	Identify opportunities for external publicity based on Queen's carbon credentials, for example when milestones are reached, key dates such as Green Week, student success stories and awards.	Amount of positive press coverage 3 x opportunities identified per year	N/A	N/A	Total below	2011 Reviewed annually
CM16		Estates	Identify accreditation schemes and awards to participate in, for example Green Gown awards.	Awards and accreditation identified Number of awards entered Number of successful entries and accreditation	N/A	Possible entry fees		2011 Reviewed annually
				Total	31,500	34,650	853	14.28

Appendix 5 will be populated as the CMP is developed

Flow Chart for the Application of the HE SD Brief and BREEAM
(All Costs Are Ex Vat)

New Build Over £1m	→ YES →	Apply HE SD Brief and BREEAM Excellent

NO ↓

New Build Under £1m	→ YES →	Apply HE SD Brief only

NO ↓

Non Listed Refurbishment Over £1m	→ YES →	Apply HE SD Brief and BREEAM Very Good

NO ↓

Non Listed Refurbishment Under £1m	→ YES →	Apply HE SD Brief

NO ↓

Extension to Non Listed Buildings Over £1m	→ YES →	Apply HE SD Brief and BREEAM Excellent

NO ↓

Extension to Non Listed Buildings Under £1m	→ YES →	Apply HE SD Brief

NO ↓

Extension to Listed Buildings Any Value	→ YES →	Apply HE SD Brief

NO ↓

Refurbishment of Listed Building Any Value	→ YES →	Apply HE SD Brief

Funding Model

	2008-09 £	2009-10 £	2010-11 £	2011-12 £	2012-13 £	2013-14 £	2014-15 £	2015-16 £	2016-17 £	2017-18 £	2018-19 £	2019-20 £
Opening Balance	828,000	720,000	180,923	125,568	94,462	941	819	530	99	382	379	662
2008-09 projects												
Capital cost	(108,000)											
Repayments		19,837	19,837	19,837	19,837	19,837	19,837	19,837	19,837	19,837	19,837	19,837
2009-10 projects												
Capital cost		(558,914)										
Repayments			161,808	161,808	161,808	161,808	161,808	161,808	161,808	161,808	161,808	161,808
2010-11 projects												
Capital cost			(237,000)									
Repayments				50,250	50,250	50,250	50,250	50,250	50,250	50,250	50,250	50,250
2011-12 projects												
Capital cost				(263,000)								
Repayments					61,583	61,583	61,583	61,583	61,583	61,583	61,583	61,583
2012-13 projects												
Capital cost					(387,000)							
Repayments (assume 5 year payback)						77,400	77,400	77,400	77,400	77,400	77,400	77,400
2013-14 projects												
Capital cost						(371,000)						
Repayments (assume 6 year payback)							61,833	61,833	61,833	61,833	61,833	61,833
2014-15 projects												
Capital cost							(433,000)					
Repayments (assume 7 year payback)								61,857	61,857	61,857	61,857	61,857
2015-16 projects												
Capital cost								(495,000)				
Repayments (assume 7 year payback)									70,714	70,714	70,714	70,714
2016-17 projects												
Capital cost									(565,000)			
Repayments (assume 7 year payback)										80,714	80,714	80,714
2017-18 projects												
Capital cost										(646,000)		
Repayments (assume 7 year payback)											92,286	92,286
2018-19 projects												
Capital cost											(738,000)	
Repayments (assume 7 year payback)												105,429
2019-20 projects												
Capital cost												(844,000)
Repayments (assume 7 year payback)												
Closing Balance	720,000	180,923	125,568	94,462	941	819	530	99	382	379	662	374
Annual Carbon Savings from in year capital investment (tCO₂e)	99.48	710.69	277.00	306.00	373.33	298.24	298.36	341.08	389.31	445.12	508.52	581.56
Annual Carbon Savings - total (tCO₂e)	99.48	810.17	1,087.17	1,393.17	1,766.50	2,064.74	2,363.09	2,704.17	3,093.48	3,538.61	4,047.12	4,628.68

Total Capital Expenditure	(£5,645,914)
Total Savings across period	£4,818,288

(Funding for Technical Initiatives)

Note: It is assumed that all available funding is reinvested each year after 2011-12

QUEEN'S UNIVERSITY BELFAST

Carbon Management Programme Steering Group
28 April 2010

Carbon Management Plan – Communications Strategy

1. <u>Context</u>

   1.1 Carbon Management Programme

   Global carbon dioxide emissions result in climate change and the government is committed to playing its part by striving to become a low carbon economy with legally binding "carbon budgets". As a consequence, the Higher Education sector is under increasing pressure to improve its carbon credentials, and there are increasingly strong indications that future funding will be linked to carbon performance.

   The University is participating in the 2009 phase of the Higher Education Carbon Management Programme. The primary objective of this is to establish the University's carbon footprint and develop a fully costed CMP which supports the case for cutting carbon.

   Central to the successful implementation of the CMP will be the engagement of the whole University, including staff and students, and increasing carbon management awareness both internally and externally. Key to this will be the development of a Communications Strategy and Action Plan which must be sustainable to deal with issues relating to the transient population within the University.

   1.2 Scope of Carbon Emissions

   The World Resource Institute (WRI) has developed a classification of emission sources around three 'Scopes':

   - **Scope 1** is direct emissions that occur from sources that are owned or controlled by the organisation, for example emissions from combustion in owned or controlled boilers, furnaces, vehicles.

   - **Scope 2** accounts for emissions from the generation of purchased electricity consumed by the organisation.

   - **Scope 3** is all other indirect emissions which are a consequence of the activities of the company, but occur from sources not owned or controlled by the organisation – for example, commuting and procurement.

   The University's primary focus is to make reductions in Scope 1 and 2 emissions as these can be more accurately quantified at present.

2.   Mission

The mission of this Communications Strategy is to 'Empower staff and students to achieve a low-carbon lifestyle'.

3.   Goals

The objectives of the Communications Strategy are to:

- Reduce the University's Scope 1 and 2 carbon emissions by 5% by 2020 through a targeted and sustained communications plan. This will contribute to and underpin the University's overall target of a 20% reduction by 2020.

- Increase low-carbon and energy awareness among internal stakeholders.

- Engage with internal stakeholders to bring about behavioural change in relation to carbon management.

- Brand Queen's as a low-carbon university.

- Raise the profile of Queen's as an example of best practice in the field of carbon management in the Higher Education sector and in the local community.

4.   Audiences

The Strategy is targeted at all University stakeholders and key external audiences.

These are defined as:

4.1   Internal Audiences:

- Staff – at all levels
- Students – at all levels
- Visitors (Scope 3 of CMP)
- Suppliers (Scope 3 of CMP)

4.2   External Audiences:

- Higher Education Sector including government departments and agencies
- Local Community

5.   Key Messages

The overarching key messages of the Strategy are:

- The world has finite resources and reducing carbon emissions is everyone's responsibility.

- Reducing carbon emissions as part of the fight against climate change is a key priority for the University.

- Queen's is a low-carbon university.

- Staff and students can make a difference to reduce carbon consumption at home and at work. (The energy saving principles are the same).

Key messages will be communicated as the Strategy and Action Plan evolve.

6. Success Factors for Strategy

In order for the Strategy to succeed the following actions have been identified:

6.1 Awareness/Motivational Survey

To help design the correct Communications Strategy and supporting Action Plan, it is important to determine the attitudes and knowledge of internal stakeholders. It is proposed that a staff and student awareness/motivational survey be carried out to identify a number of factors:

- Barriers and opportunities
- Quick wins
- Awareness and motivation of different categories of staff
- What behaviours need changed

The data collected will provide valuable information for devising awareness campaigns. The survey will also identify staff interested in carbon management who could act as environmental champions.

The survey should be repeated annually to gauge the movement of awareness and motivation.

6.2 Students' Union

Students are key stakeholders of this Strategy and sustained engagement will be critical in reducing the University's carbon emissions. The Students' Union has a crucial role to play in student engagement and will take the lead in delivering carbon messages to the student population and to staff employed within the Students' Union.

To ensure this represents a sustainable approach it is important that the Students' Union takes ownership of the process and that carbon management is a priority within a Student Executive Officer's remit.

6.3 Local Environmental Champions

Enlisting the help of staff to act as environmental Cchampions across the University will be crucial to the success of the Communications Strategy. The champions will be identified as part of the awareness/motivational survey.

The role of the environmental champions is to:

- Provide the day-to-day point of contact and channel of communication on aspects of promoting carbon reduction.

- Take geographical responsibilities in their Schools and Directorates for helping to promote carbon reduction.

- Promote good environmental practice in their area with support from Heads of School and fellow champions.

- Participate in walkabouts with colleagues to identify carbon reduction opportunities.

- Listen to staff and feed back ideas on carbon reduction.

- Raise awareness.

It will be important to give the environmental champions support and guidance in their roles and to make them feel part of a team. This will involve facilitating events to ensure the champions meet regularly to share ideas and best practice from their area.

6.4 Campaign Team and Strategy

An awareness Campaign Strategy will be devised based on an analysis of the results of the awareness/motivation survey. The survey will identify which behaviours need to be targeted and will inform the key messages and communication tools to be used.

Campaign Teams will be set up to run specific communication campaigns to the target audiences. The teams will feed back and report to the Communications Working Group.

6.5 Momentum

In order to maintain momentum, awareness and interest, it is important that the Communications Action Plan is co-ordinated and sustainable. In addition to specific campaigns, it will be crucial to identify ways of integrating energy efficiency and carbon reduction into daily university life. This can be done through building carbon awareness into appraisals, induction and training.

6.6 Senior Level Support

Senior level commitment is essential for the success of the Communications Strategy, in terms of giving support to the environmental champions, ensuring carbon management objectives are included in appraisals and releasing staff for training.

7. Monitoring and Evaluation

This Strategy is a live document which will continually develop and evolve as the CMP progresses. The targets will be reviewed after five years. The Action Plan sets out monitoring and evaluation measures for specific communication activity.

Carbon Management Matrix - Embedding

	POLICY	RESPONSIBILITY	DATA MANAGEMENT	COMMUNICATION & TRAINING	FINANCE & INVESTMENT	PROCUREMENT	MONITORING & EVALUATION

5 BEST	• SMART Targets signed off
	• Action plan contains clear goals & regular progress reviews
	• Strategy launched internally & to community
		• CM is **full-time** responsibility of a **few** people
		• CM integrated in responsibilities of **senior managers**
		• VC support
		• Part of **all** job descriptions
			• **Quarterly** collation of CO_2 emissions for all sources
			• Data **externally** verified
			• M&T in place for:
			  ○ Buildings
			  ○ Waste
				• All staff & students given formalised CM:
				  ○ Induction
				  ○ Training Plan
				  ○ Communications
				• CM matters **regularly** communicated to:
				  ○ External community
				  ○ Key partners
					• **Granular & effective** financing mechanisms for CM projects
					• **Finance representation on CM Team**
					• **Robust** task management mechanism
					• **Ring-fenced fund** for carbon reduction initiatives
						• **Senior** purchasers consult & adhere to ICLEI's **Procura+** manual & principles
						• Sustainability comprehensively integrated in **tendering** criteria
						• Whole life costing
						• Area-wide procurement
							• Senior management review CM process
							• Core team regularly reviews CM progress
							• Published externally on website
							• Visible board level review

4	• SMART Targets **developed but not** implemented	• CM is **full-time** responsibility of an **individual**
		• CM integrated in to responsibilities of department **managers**, not all staff
			• **Annual** collation of CO_2 emissions for:
			  ○ Buildings
			  ○ Transport
			  ○ waste
			• Data **internally** reviewed
				• All staff & students given CM:
				  ○ **Induction**
				  ○ Communications
				• CM communicated to:
				  ○ External community
				  ○ Key partners
					• Regular financing for CM projects
					• **Some** external financing
					• **Sufficient** task management mechanism
						• Environmental demands incorporated in tendering
						• Familiarity with **Procura+**
						• **Joint procuring** between HEIs or with LAs.
							• **Core team regularly** reviews CM progress:
							  ○ Actions
							  ○ Profile & Targets
							  ○ New opportunities quantification

3	• **Draft** policy
	• Climate Change **reference**
		• CM is **part-**time responsibility of a **few** people
		• CM responsibility of department champions
			• Collation of CO_2 emissions for limited scope i.e. buildings only	• **Environmental / energy group(s)** give ad hoc:
				  ○ Training
				  ○ Communications
					• **Ad hoc** financing for CM projects
					• Limited task management
					• No allocated resource
						• **Whole life** costing occasionally employed
						• Some **pooling** of environmental expertise
							• CM team review aspects including:
							  ○ **Policies / Strategies**
							  ○ Targets
							  ○ Action Plans

2	• **No** policy • Climate Change **aspiration**	• CM is **part-**time responsibility of an **individual** • No departmental champions	• **No** CO_2 emissions data compiled • Energy data compiled on a regular basis	• Regular poster/awareness campaigns • **Staff & students** given ad hoc CM: ○ Communications	• Ad hoc financing for CM related projects • Limited task coordination **resources**	• **Green** criteria occasionally considered • Products considered in **isolation**	• Ad hoc reviews of CM actions progress
1 WORST	• No policy • **No Climate Change** reference	• No CM responsibility designation	• Not compiled: ○ CO_2 emissions • **Estimated billing**	• No communication or training	• **No internal financing** or funding for CM related projects	• No Green consideration • No life cycle costing	• No CM monitoring

QUEEN'S UNIVERSITY BELFAST

Carbon Management Plan Steering Group

Terms of Reference:

The Carbon Management Steering Group has strategic ownership and oversight of the University's Carbon Management Plan and is tasked with delivering carbon reductions throughout all aspects of University business through:

    i)   Reviewing and updating the Carbon Management Plan on an annual basis
    ii) Monitoring carbon reduction initiatives and associated projects
    iii) Internal & external communications
    iv) Reporting on emissions performance

Membership:

Composition		
Project Sponsor:	James O'Kane	Registrar & Chief Operating Officer
Project Leader:	Gary Jebb	Director of Estates
Membership:	Brian Gribbin	Head of Cost and Capital Accounting
	Jim Cunningham	Assistant Director of IT Systems and Services
	Peter Erwin	Head of Estates Services
	John Nugent	Head of Estates Development
	Roland Carson	Head of Estates Planning
	Gerry McCormac	Pro-Vice-Chancellor, for Planning and External Relations
	Gareth McGreevy	President of Students' Union
	Caroline Young	Director of Accommodation & Hospitality
	Tom Millar	Dean of Engineering and Physical Sciences
In Attendance:	Claire Patterson	Communications Officer, Marketing & Recruitment
	Anthony Schmidt	Estates Manager (Energy)
	Sara Lynch	Estates Manager (Environmental)
	Tricia Massey	Head of Purchasing
Serviced by:	Pauline Banna, Estates Directorate	
Reports to:	University Operating Board	
Receives reports from:	Technical and Change Management Working Groups	

QUEEN'S UNIVERSITY BELFAST

Carbon Management Plan Technical Working Group

Terms of Reference:		

The Carbon Management Technical Working Group is responsible for determining scientifically based carbon reduction targets that will deliver carbon savings throughout all aspects of University business through:
 	
  i)   Identifying technical projects
  ii) Quantifying carbon savings from potential projects
  iii) Developing a breakdown of the University's carbon emissions		

Membership:		
Composition		
Chair	John Nugent	Head of Estates Development
Membership:	Bill Annesley	Senior Estates Manager
	Anthony Schmidt	Energy Manager
	John McCann	Travel Plan Coordinator
	Sara Lynch	Environmental Manager
	Peter Erwin	Head of Estates Services
	Roland Carson	Head of Estates Planning
	Jim Cunningham	Information Services
	Tricia Massey	Head of Purchasing
	Stephen Bailie	Finance
	David Bready	Student Plus Maintenance Officer
	Gareth McGreevy	President of Students' Union
In Attendance:	Supporting Officers as required	
Serviced by:	Pauline Banna, Estates Directorate	
Reports to:	Carbon Management Plan Steering Group	
Receives reports from:		

QUEEN'S UNIVERSITY BELFAST

Carbon Management Plan Change Management Working Group

Terms of Reference:		
The Carbon Management Plan Change Management Working Group is responsible for devising a strategic communications plan that will deliver carbon reductions throughout all aspects of University business through: i) Identifying stakeholder groups ii) Identifying obstacles and barriers and the means by which these can be overcome iii) Devising and monitoring a sustainable communications action plan iv) Internal and external communications		

Membership:		

Composition		
Chair	Prof Tom Millar	Dean of Engineering and Physical Sciences
Membership:	John Nugent	Head of Estates Development
	Anthony Schmidt	Energy Manager
	Gareth McGreevy	President of Students' Union
	Richard Robinson	Accommodation & Hospitality, Operations & Compliance Manager
	Claire Patterson	Communications Officer
	Prof Evanthia Lyons	School of Psychology
	Dr Robin Curry	Business Development Officer (ISW)
	Paddy Daly	Teaching and Learning, Information Services
	Seana Skeffington	Students' Union Marketing Manager
	Francis Guinane	Staff Training & Development Manager
In Attendance:	Supporting Officers as required	
Serviced by:	Claire Patterson, Communication Office	
Reports to:	Carbon Management Steering Group	
Receives reports from:		