Edinburgh Napier
UNIVERSITY

working with the

CARBON
TRUST

Edinburgh Napier University
Carbon Management Programme

Carbon Management Plan 2008 - 2015

Produced by the Edinburgh Napier University Sustainability Office in association with the Carbon Trust

Contents

Foreword

The 2009 Edinburgh Napier Carbon Management Plan set a target of reducing carbon emissions from the University by 25% by the end of the 2012/13 academic financial year (from a 2006/07 baseline).

Following a rigorous assessment carried out by External Consultants on behalf of the Carbon Trust in Scotland this updated Plan will set projects and initiatives and will further embed carbon reduction activities, progressing towards the **new target of reducing carbon emissions by 35%** by the end of the 2014/15 academic year (again, using the 2006/07 baseline).

The development of the Carbon Management Plan is a key commitment towards reducing the overall environmental impact of the University and the development of an Environmental Management System covering all UK based operations. The University plans to gain Platinum EcoCampus and ISO14001 status by January 2015, working with Scottish and UK further and higher education partners through the Universities and Colleges Climate Commitment for Scotland (UCCCfS).

Encapsulating the work of professional services colleagues to academic, research and knowledge transfer expertise within the University will ensure that Edinburgh Napier succeeds in embedding a strong ethos of responsible resource use, with active participation from all staff, students and visitors to the University.

Professor Joan Stringer CBE

Principal and Vice Chancellor

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. The UK government has identified the public sector as key to delivering carbon reduction across the UK inline with its Kyoto commitments and the Public Sector Carbon Management programme is designed in response to this. It assists organisations in saving money on energy and putting it to good use in other areas, whilst making a positive contribution to the environment by lowering their carbon emissions.

Edinburgh Napier University was selected in 2008, amidst strong competition, to take part in this ambitious programme. Edinburgh Napier University partnered with the Carbon Trust on this programme in order to realise vast carbon and cost savings. This Carbon Management Plan commits the organisation to a target of reducing CO2 by 35% by 2015 and underpins potential financial savings to the organisation of around £3.6million.

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

Richard Rugg
Head of Public Sector, Carbon Trust

Foreword from the Carbon Trust

Cutting carbon emissions as part of the fight against climate change should be a key priority for all public bodies - it's all about getting your own house in order and leading by example. The Scottish and UK Governments have identified the public sector as key to delivering carbon reduction across Scotland and the UK in line with world-leading Scottish and UK Climate Change legislation.

The Carbon Trust's Public Sector Carbon Management programme is designed in response to this. It assists organisations in saving money on energy and putting it to good use in other areas, whilst making a positive contribution to the environment by lowering their carbon emissions.

Edinburgh Napier University was selected to take part in this ambitious programme. The University partnered with the Carbon Trust in order to realise substantial carbon and cost savings. This Carbon Management Plan commits the organisation to a target of reducing CO_2 by 35% by 2015 and underpins potential financial savings to the organisation of around £3.6million.

There are those that can and those that do. Public bodies can contribute significantly to reducing CO_2 emissions. The Carbon Trust is proud to support Edinburgh Napier University in the on-going implementation of its carbon management.

Paul Wedgwood
Manager, Carbon Trust in Scotland

Management Summary

1.1 Overview

Climate Change is a very high profile issue. Following the Kyoto Protocol in 1998, the UK's legally binding target is to cut carbon emissions by 12.5% below 1990 levels by 2008-2012. The UK Energy White Paper (2003) suggested a long-term target of 60% carbon reduction by 2050, with real progress by 2020. The Scottish Climate Change Bill however proposes to set some of the most stringent emissions targets in the world. Within this context the short-term targets set by Edinburgh Napier University are being developed to ensure that Carbon Dioxide emissions from all activities are reduced by 80% by 2050 ensuring that the university plays its part within this important national agenda.

Related to the UK Climate Change Programme, the Carbon Trust has been working with Higher Education Institutions since 2004 to help them address their Carbon emissions through a formal Programme called the 'Higher Education Carbon Management (HECM)'. When joining the HECM in May 2008 the University had already embarked on a range of initiatives related to the environment and sustainability covering procurement, travel, research and estates development so this partnership with the Carbon Trust fitted perfectly within the developing environmental sustainability strategic plan.

This ''Carbon Management Plan'' (CMP) focuses on one action area - mitigation of carbon through the corporate performance of Edinburgh Napier University. It is the culmination of work to scope and reduce the impact of the energy and water usage, transport and waste associated with the delivery of university business over the next 7 years.

Edinburgh Napier University is recognised in independent assessments as Scotland's leading Modern University and with 17,800 students and 1864 staff, the university community is equivalent to that of a small town. 2921 students study at the University from outside the UK representing 98 countries. In addition to the undergraduate and post graduate courses relating to energy and the environment, the University's Research and Knowledge Transfer activities (Appendix B) are particularly relevant to this Carbon Management Plan.

This document explains the financial and environmental benefits of the Carbon Management Programme to Edinburgh Napier University against the consequences of a "business as usual", the scenario that would allow the University emissions of the greenhouse gas carbon dioxide and its energy expenditure to rise unabated. As a result of this programme, the University has identified projects/initiatives that will reduce its carbon footprint by 35% (3908 tonnes) and cumulative energy bill to a value approaching £3.6million by 2014/15

When the CMP was first published in 2008 it was agreed that a midterm review would be necessary to reflect forthcoming changes to the University beyond that quantifiable within the Business as Usual projections.. During 2011/12 the Carbon Trust worked with the University to undertake a comprehensive review of Carbon Management and to benchmark the University against other Scottish Public Sector Bodies, the results of this study formed the basis of this update CMP.

1.2 Carbon emissions baseline

Considering the University's direct activities, including energy and water use, travel and waste, carbon emissions were calculated at approximately 11,166 tonnes of Carbon Dioxide (tCO2) for the baseline year of 2006/07.

Figure 1 - CO$_2$ emissions baseline 2006/07(tonnes pa & percent of total):
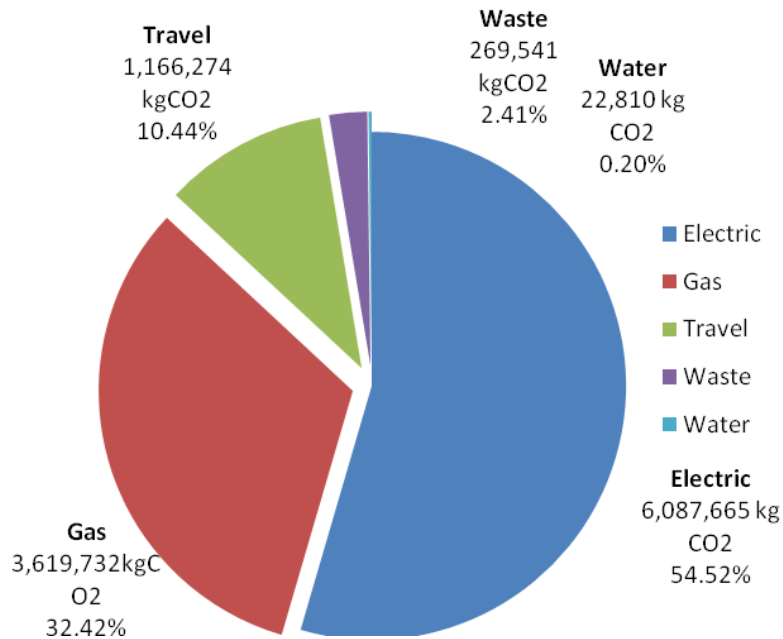
It should also be noted that in addition to the staff and student business travel which is included in the above, that the total estimated emissions for staff daily commute and both student daily commute to campus, and between non-term-time home address and Edinburgh, has been calculated to be **11,691 tonnes of Carbon Dioxide (tCO2),** as detailed in Table 1 Below**.** This is slightly more that the total carbon footprint of university business activities but is consistent with the findings of recent similar research at other universities.

Table 1: - Staff and Student Commuting carbon emissions projections (tCO2)

Journey	Emissions (tCO2)
1. Staff – home to their place of work.	663
2. Students – home, non-term-time, address to Edinburgh (international).	5,694
3. Students – home, non-term-time, address to Edinburgh (UK).	437
4. Students – term-time address in Edinburgh to campus.	4,897

A comprehensive annual staff and student survey together with the information recorded on home and term time addresses will enable this important dimension to the Carbon Management Plan to be monitored. It must be noted that whilst local commuting may be influenced by initiatives such as the subsidised bus routes, bus pass loans, barrier controlled restricted car parking, city car club, lift share and bike to work, international travel, which is significant in terms of Carbon, will be very difficult to influence.

1.3 Emission Forecast

In a business as usual (BAU) scenario the carbon emissions from the University are expected to increase due to increased services and occupancy. The BAU scenario has been calculated and is detailed in table 2 below.

Table 2: - Business as usual carbon emissions projections (kgCO$_2$)

Year in Project	Base Year	-	1	2	3	4	5	6	7
Year	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Buildings	6,087,665	6,130,278	6,173,190	6,216,402	6,259,917	6,303,737	6,347,863	6,392,298	6,437,044
Electricity	3,619,732	3,645,070	3,670,586	3,696,280	3,722,154	3,748,209	3,774,446	3,800,867	3,827,473
Travel	1,166,274	1,174,438	1,182,659	1,190,938	1,199,274	1,207,669	1,216,123	1,224,636	1,233,208
Waste	269,541	271,428	273,328	275,241	277,168	279,108	281,062	283,029	285,011
Water	22,810	22,970	23,131	23,293	23,456	23,620	23,785	23,951	24,119
Total CO^2	11,166,022	11,244,184	11,322,893	11,402,154	11,481,969	11,562,343	11,643,279	11,724,782	11,806,855
% increase from baseline			1.56%	2.09%	2.77%	3.45%	4.13%	5.00%	5.74%

1.4 Targets

This Carbon Management Plan sets a target of a 35% reduction in manageable CO$_2$ emissions against a baseline year of 2006/07 which is equivalent to reducing CO^2 emissions to 7258 tCO^{2}yr per annum by 2014/15 by saving 3908 tCO$_2$ against a business as usual projection, as detailed in table 3.

Table 3: - Carbon Emission Targets

Year in Project	Base Year	-	1	2	3	4	5	6	7
Year	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Target annual % CO$_2$ reduction			5%	10%	15%	20%	25%	30%	35%
Annual CO$_2$ targets	11,166,022	11,166,022	10,607,721	10,049,420	9,491,119	8,932,818	8,374,517	7,816,215	7,257,914
Annual CO$_2$ saving targets			558,301	1,116,602	1,674,903	2,233,204	2,791,506	3,349,807	3,908,108
tCO$_2$			558	1117	1675	2233	2792	3350	3908
Cumulative tCO$_2$			558	1675	3350	5583	8375	11724	15632

The University purchases 100% renewable energy from its suppliers but within the context of this CMP has recognised that the purchase of electricity under a green tariff does not count as being zero carbon.

Table 4 on page 8 is a summary of the carbon reduction measures that have been identified as critical to achieving the five-year ambitious target The projects include a range of organisational, long-term enablement actions, direct emissions projects and no or low cost emission reduction actions. The target takes into account the working nature of this Carbon Management Plan, existing opportunities will need to evolve and new ones will need to be added over the five-year life span of the plan.

Table 4: - Summary of key projects

Embedding Carbon Management	Establishing Environmental Sustainability Office Environmental Sustainability Policy and Action Plan Student and staff engagement Monitoring and Targeting Effective communication strategies BREEAM 'excellent' standard for all new builds Carbon Reduction integral to all projects – integrated design strategy Creating a carbon reduction culture
Reducing Electricity Use	Infrastructure upgrades Time/occupancy/daylight lighting controls Innovative C&IT solutions
Reducing Gas Use	Plant and infrastructure upgrades Building Energy Management Systems – Enhanced controls Thermal Insulation
Changing Travel mode	Internal and external travel management plan Cycle to work initiatives Lift share, car sharing, city car club, green fleet review Public transport initiatives
Reducing Water Use	Smart metering Water saving devices
Reducing Waste going to landfill	Reduce, reuse, recycling of all waste streams Construction waste initiatives
Feasibility Studies	Investigate the use of renewable sources Carbon Modelling of all buildings and activities

The savings made in the final year of the CMP also continue to be made for every year after that according to the life span of the technology or initiative put in place. In order for projects to take place, funding is required. There are numerous funding streams currently being exploited, both internal and external sources, and work will continue to explore other avenues to allow additional investment in further carbon reduction opportunities.

Table 5: Summary of investment and savings

Total Estimated Capital Expenditure £M	2.763	Cumulative Financial Savings £M				1.954	
Total Annual Carbon Savings							
(Accumulated)	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2012/13
Carbon Reduction (tonnes)	558	1117	1675	2233	2792	3350	3908
					Total Carbon Saved (tonnes)		15632

Stakeholder management and communication is key to the success of the Programme. A wide range of internal stakeholders have been engaged and consulted throughout the programme planning process. This will continue throughout the five year implementation process, with the CMP being directed by new project ideas from stakeholder groups.

A communications plan is an important outcome of this Carbon Management Plan and the Sustainability Office works closely with the Marketing and Communications Office to tailor information to promote continued stakeholder engagement and input. This is aimed at promoting behavioural change amongst staff and students to increase energy efficiency, reduce waste and water use and to encourage more sustainable travel options.

The Plan requires strategic governance, ownership and management at the University so this Carbon Management Plan sets out key roles and responsibilities for the programme. Ultimately success is governed by the Principal and the University Court. They are supported by the Sustainability Office and the Environmental Sustainability Advisory Group and Estates Committee. These groups will be responsible for implementing, directing, reviewing and reporting on the programme. The Programme requires that a 'carbon culture' is created at the University for this CMP to achieve its vision:

> *Edinburgh Napier University will work towards embedding Carbon Management within all areas of University activity. Carbon Reduction will be a long-term strategic goal and will be fully integrated within all business processes to achieve a Sustainable Future.*

2. EDINBURGH NAPIER UNIVERSITY

2.1 The University

Edinburgh Napier University is one of the largest higher education institutions in Scotland with over 15,000 students, from over 98 countries, studying professional and relevant courses. The University is a dynamic and modern institution that offers engaging and relevant degree programmes that equips students with the knowledge, skills and confidence for today's workplace and is Scotland's top university for graduate employment.

The University has 3 Faculties:

2.1.1 The Business School

The Business School is located in our world class state-of the art campus at Craiglockhart and is dedicated to working closely with organisations and individuals to develop relevant knowledge, skills and competences to meet their needs in today's rapidly changing and competitive global business environment. A wide range of programmes, research, consultancy and knowledge transfer services are offered by the three schools: Accounting, Economics & Statistics; Management & Law; Marketing, Tourism & Languages.

2.1.2 The Faculty of Health, Life & Social Sciences

The Faculty encompasses three schools: Health & Social Sciences; Life Sciences; and Nursing, Midwifery & Social Care which offer rewarding courses of study, innovative research programmes and far-reaching international activities. Subjects taught include psychology, herbal medicine, sport and exercise science, toxicology, biomedical science, animal biology, and environmental science. The Faculty is the largest provider of nursing and midwifery professionals in Scotland, and also provides a veterinary nursing training facility.

2.1.3 The Faculty of Engineering, Computing and Creative Industries

This is the largest faculty in the University in terms of its teaching, research, and knowledge transfer activity with around 4,000 students, several hundred full-time academic staff and professional support staff. Students come from over 90 countries around the world, and this diversity enhances the learning experience for both students and staff, as well as University life. The Faculty encompasses three schools: Computing; Arts & Creative Industries and Engineering; and the Built Environment.

2.2 The Campuses

Edinburgh Napier University campuses range from the small and intimate to the grand and spectacular. The University estate consists of 10 main sites, 20 non residential buildings and 6 student accommodation blocks[1]. The estate in 2008 covered a Gross Internal Area (GIA) of 103,345 m^2.

The University is situated on 4 main campus throughout Edinburgh, namely Merchiston, Craiglockhart and Craighouse and Sighthill. The University also utilises many other smaller sites across Edinburgh and further a field in Livingston and Melrose. A description of these campuses follows:

Craiglockhart	Home to Edinburgh Napier University Business School, Craiglockhart was extensively refurbishment in 2005 creating a stunning building and state-of-the-art facility. This includes 2 large lecture theatres, cyber café, language labs and computing facilities.	
Merchiston	Located in the lively Bruntsfield area, Merchiston Campus is a unique blend of the past and present. It is home to the award winning 500-seater Jack Kilby Computing Centre, open 24 hours a day - and also to the 13th century Napier Tower where John Napier was born in 1550. The Faculty of Engineering, Computing & Creative Industries, and the School of Life Sciences can be found here.	
Craighouse	A fabulous set of Grade A-listed buildings in the Morningside district. Craighouse Campus currently houses part of the School of Creative Industries with Communication Arts and Music courses based here. The campus is also home to many service departments including the University Principal's Office.	
Sighthill	The campus at Sighthill is currently under major redeveloping and when reopened In 2010 will become home to the Faculty of Health, Life & Social Sciences. More detail is provided in section 2.3.	
Canaan Lane	The Canaan Lane Campus is situated within the grounds of the Astley Ainslie Hospital in Morningside and currently hosts a large part of the Faculty of Health, Life & Social Sciences and is home to the School of Nursing, Midwifery and Social Care. It is a pleasant, modern and well-equipped site and home to the nursing clinical skills labs. This building is leased from the NHS.	

Comely Bank	An additional base for Edinburgh Napier's range of health courses is Comely Bank Campus, next to the Western General Hospital in the north of the city. This campus is home to part of the School of Nursing, Midwifery and Social Care. The building is leased from the NHS.	
Marchmont	Located on Marchmont Road, in a highly popular student area, Marchmont Campus hosts part of the School of Creative Industries and is the base for photography teaching and facilities – including a range of studio set ups and a gallery. The campus is a former school building.	
Morningside	Morningside Campus is located on Morningside Road providing a lecture theatre and tutorial rooms inside an old church.	
Livingston	Specialist teaching unit housed in St Johns hospital in Livingston approximately 20 miles east of Edinburgh.	
Melrose	Specialist teaching unit housed in the Borders General Hospital in Melrose, approximately 40 miles from Edinburgh.	
Residencies	The University offers self catering student accommodation at 5 developments throughout Edinburgh offering 900 Beds.	

2.3 Estates Strategy

Edinburgh Napier University is in the latest phase of its £100m Estate (Strategy 2006-2016) which will help achieve its goal of becoming the best modern university in Scotland and one of the finest in the UK..

2.4 Research & Knowledge Transfer

Research and knowledge transfer, are fundamental activities in every modern university. A leading research-informed teaching-led Higher Education Institution, Edinburgh Napier University has consistently proved itself effective in the transfer of knowledge to industry and society. Edinburgh Napier is widely recognised for the excellence and relevance of research which includes strong links with the Carbon Management, including Biofuels Research, the Scottish Energy Centre and Building Performance Centres as detailed in Appendix B.

Against this background, Edinburgh Napier University is committed to the following objectives:

- Maintaining international recognition in areas of research strength
- Producing graduates informed by world leading research.
- Nurturing high quality near-market research
- Playing a leading role in knowledge transfer to businesses throughout the UK

Edinburgh Napier has an excellent record of migrating research into marketable technologies. Examples of this transfer of knowledge from blue skies research to commercial exploitation is ably demonstrated within Appendix B.

3. INTRODUCTION

The Edinburgh Napier University Carbon Management Plan (CMP) will form the cornerstone of the university's environmental management plan over the coming years. The programme aims to quantify and systematically reduce the University's 'carbon footprint'. This is the amount of carbon dioxide (CO_2) produced from its activities such as energy use in buildings, transport, waste disposal, and water use.

The CMP Programme has been designed and planned in association with the Carbon Trust, as part of its Higher Education Carbon Management (HECM) Programme. The Carbon Trust is an independent company funded by the Government. It helps businesses and the public sector reduce carbon emissions. The HECM Programme is based on extensive experience working with many organisations including universities, manufacturing and service sector companies, property management, the health sector and in local government.

This Carbon Management Plan presents the findings of the CMP planning process. Assisted by the Carbon Trust, this has taken part in a number of stages from mobilising the organisation, gathering data to understand CO_2 emissions and identifying and quantifying project opportunities.

This CMP covers a seven-year period, from the start of the academic year 2008/09 until the end of the academic year 2014/15. It implements the project plan, produced in August 2008 and amended in 2012, and is intended to:

- present the context and business case for carbon management at the University;

- establish the University's baseline CO_2 emissions using a 2006/07 baseline;

- quantify emissions reduction opportunities and projects, in terms of cost, financial benefit, and carbon reduction;

- set targets, prioritise and schedule projects for the measurable reduction of CO_2 emissions; and

- define and communicate the roles and responsibilities of individuals at all levels so that the plan will be delivered and reviewed, and benefits measured.

Project Sponsor – Dr Gerry Webber, University Secretary
Project Leader – Grant Ferguson, Assistant Director Property & Facilities

4 CARBON MANAGEMENT STRATEGY

4.1 Context for Carbon Management

As a University, Edinburgh Napier is absolutely committed to addressing environmental issues and this demonstrated improvement is part of an ambitious agenda being steered by the Environmental Sustainability Advisory Group (ESAG) chaired by the University Secretary, Gerry Webber. Progress on the Environmental agenda is reported to Estates Committee of Court on a quarterly basis.

During 2008 the posts of Energy/Utility Manager and Environmental Sustainability Advisor were established to work as part of the new Sustainability Office within Facilities Services. Some of the areas of focus are to advance projects in energy efficiency, water conservation, green travel, green procurement and waste management. The overarching aim is to minimise the impact of the University's activities on the environment.

Another example of the Edinburgh Napier commitment to the environment is the innovative design of the new Sighthill Campus, opened in 2010. The design includes features such as on site Combined Heat and Power (CHP) and is on track to receive the Building Research Establishment's (BRE) award for sustainable building construction – BREEAM 'Excellent'.

These initiatives will help Edinburgh Napier to reduce its carbon emissions, and engagement across all services will continue to identify and implement ways of doing so. Annually the University, through the Sustainability Office, ask all staff and students to participate in and contribute towards this initiative, as everyone has a role to play, whatever their job, whatever their position to ensure the only impact we make on our environment is to change it for the better.

In addition to the above, the University, through its academic programme, is teaching and embedding sustainability, where appropriate, throughout the curriculum and a number of our research centres, such as our Scottish Energy Centre, are developing new techniques in areas such as Biofuels, Fuel Cells, Micro-renewables and thermal insulation as detailed in Appendix D.

4.2 Drivers

In seeking to achieve sustainability, Edinburgh Napier University will lead by example, operating within a framework that includes economic, environmental, and social factors, mindful of the widest context, recognising impacts of its own activity at local, national and global levels.

 To achieve the above, Edinburgh Napier University will work to:

Promote the Achievement of Sustainability through its educational, research and knowledge transfer activities.

Maintain, develop and operate the University Estate in a sustainable manner.

Build relationships and partnerships both within and out-with the University to encourage the spread of sustainable approaches.

Provide Leadership and visible commitment to achieving sustainability.

Develop specific policy statements and, where appropriate, internal sustainability / best practice targets.

The benefits to the University of participating in the Carbon Management Project include:

i) A clearer understanding of the University's energy and water consumption in terms of carbon emission and through that the ability to identify more effectively potential targets for reductions in energy and water use leading to significant savings on current expenditure.

ii) An understanding of the condition of the University's buildings to help in identifying potential passive measures that will improve insulation in winter and shading/ventilation in summer and reduce the growing demand for localised heating and cooling of workspaces.

iii) Greater understanding and application of integral sustainable design in new buildings, development projects and maintenance from the outset of planning, taking into account whole life costing and carbon reduction.

iv) An improved understanding of the effectiveness of the University's waste management strategy so that the success of the current program can be enhanced and taken to a new level.

v) The development and application of a transport carbon emissions analysis that can be used to measure the impact of the University's travel plan and the impact of any modal switch resulting from changes which may be brought about by the planned update to the transport strategy.

vi) The development of reliable carbon emissions database that can be utilised as a resource for teaching, student projects and communication with stakeholders in the wider community.

vii) The development of a greater awareness of the carbon management agenda across the University community and amongst external stakeholders.

vii) Taken together the knowledge base generated through the project will build the University's capacity not only to attract further resources for activities targeted at better energy, water, waste and transport management and carbon savings but also to interact with and support similar projects in the local business community.

4.3 Objectives

The objectives of this project are:

- To establish a better understanding of the impact that the University has on the environment by identifying its carbon footprint and then to use that baseline to identify the most effective ways of reducing carbon emissions through a systematic programme of activities in the short, medium and long term.

- The project will also aim to identify links with the University's academic programmes so that the work undertaken within the project becomes a resource for teaching and engaging with the academic and student communities.

4.4 Our low carbon vision

Sustainability is integral to the Strategic plans of Edinburgh Napier University. The University is working towards developing campuses that are environmentally excellent – meeting the needs of our students and staff without compromising the quality of life of future generations.

The University is committed to reducing its CO_2 emissions by 35% by 2015 against a 2007 baseline.

4.5 Strategic themes

The primary objective of the CMP Programme is to reduce CO_2 emissions by 35% by 2014/15 against its baseline through a systematic programme of activities in the short, medium and long term. The strategy to achieve this is set out below within table 5 and is based around the areas and levels set out in the carbon management matrix. The matrix indicates the level of achievement at:

a)   the start of the CMP Programme planning process in July 2008

b)   the end of the CMP time period, given the implementation of the proposed strategy and opportunities

Table 6: The Carbon Management Matrix to establish the status of carbon management
Brown – June 2008 (start of programme). Green – 2017(End of Program)

	POLICY	ORGANISATION	INFORMATION AND DATA	COMMUNICATION AND TRAINING	FINANCE	MONITORING & EVALUATION
5	Specific sustainability / climate change policy with targets signed off and implemented. Action plan with clear goals and regular reviews to confirm actions undertaken and targets achieved/being progressed.	Accountabilities for sustainability /climate change defined at senior level, e.g. senior Sustainability / climate change responsibilities integrated into responsibilities of relevant people in different departments, e.g. Teaching, Finance, Estates	CO_2 emissions compiled for all main HEI sources for a baseline year and regular collation of annual emissions data. Data externally verified.	Formalised communication and training plan for all staff on carbon and energy related matters, including integration in induction and other normal training processes. Communication on carbon and energy related matters with the academic and student body and other key business partners	Use of innovative external funding mechanisms for carbon related projects. Development of internal financing mechanisms, e.g. self-sustaining fund, specifically for carbon related projects	Management Review of carbon management process by senior management. Regular reviews by core team on progress with carbon management.
4	Specific sustainability / climate change policy with targets developed and signed off, but not implemented	Sustainability / climate change responsibilities integrated into responsibilities of relevant people in different departments, e.g Teaching, Finance, Estates	CO_2 emissions compiled for all main HEI sources for a baseline year (i.e. buildings, transport and commuting, etc. Data internally reviewed.	Formalised communication and training plan for all staff on carbon and energy related matters, including integration in induction and other training, and awareness raising	Strategic plan for developing internal financing mechanisms and obtaining funds from external sources	Regular reviews on progress with carbon management (e.g. review of actions, check against emissions profile and targets, addition of new opportunities etc.)
3	Sustainability / Climate change included in wider policy documents	Sustainability / climate change/ carbon management is part-time responsibility of moderate ranking personnel, e.g. Energy Manager, Sustainability/Environment Officer1	CO_2 emissions data compiled for some sources for a baseline year (e.g. buildings) and source data available for other sources (e.g. transport)	Ad hoc communication and training delivered to all staff/students on carbon and energy related matters	Some internal financing on an ad hoc basis for carbon and/or energy efficiency related projects Review conducted on applicable external funding sources	Ad hoc assessment of all aspects of carbon/energy policies/strategies, targets and action plans
2	Sustainability / Climate change as an aspiration in non-policy documents	Sustainability / climate change/carbon management is part-time responsibility of low ranking personnel	No CO_2 emissions data compiled for any sources but energy data compiled on a regular basis	Communication and training to specific groups in the HEI (e.g. environment team) on carbon/energy related matters	Some internal financing on an ad hoc basis for carbon and/or energy efficiency related projects	Ad hoc reviews of specific aspects of carbon/energy policies/strategies, targets and action plans
1	No sustainability / climate change policy or strategy and no mention of climate change in policy/strategy documents	No individual with responsibility for sustainability / climate change issues	No CO_2 emissions data compiled for any sources and energy data not compiled on a regular basis	No communication or training to staff/students on carbon or energy related matters	No internal financing or funding for carbon and/or energy efficiency related projects	No monitoring of carbon/energy policies/strategies, targets and action plans

4.6 Targets

> **Edinburgh Napier University will reduce its manageable CO_2 emissions from it's activities by 35% from the 2006/07 baseline, by 2014/15. This is a reduction of 3,269 tonnes of CO_2 against the business as usual projections.**

This Carbon Management Plan sets a target of a 35% reduction in manageable CO_2 emissions against a baseline year of 2006/07 which is equivalent to reducing CO_2 emissions to 7,906 tCO_2yr by 2014/15 by saving 3,269 tCO_2 against a business as usual projection, as detailed in table 7.

The 35% target applies to the University's overall manageable emissions. Reductions will be made in energy use in buildings, business travel, water use and waste sent to landfill.

Table 7: Baseline Emission Targets

Year in Project	Base Year	-	1	2	3	4	5	6	7
Year	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Target annual % CO2 reduction			5%	10%	15%	20%	25%	30%	35%
Annual CO 2 targets			10,607,721	10,049,420	9,491,119	8,932,818	8,374,517	7,816,215	7,257,914
Annual CO2saving targets			558,301	1,116,602	1,674,903	2,233,204	2,791,506	3,349,807	3,908,108
		tCO2	558	1117	1675	2233	2792	3350	3908

5.0 EMISSIONS BASELINE AND PROJECTIONS

5.1 Scope

The scope of the University's baseline emission calculations includes the CO_2 produced from four broad areas.

- Energy use in buildings
- Water consumption
- Waste sent to landfill
- Travel (Students and Staff)

The baseline emissions are split into 2 categories:

a) **Manageable emissions** - This includes energy use in buildings, waste, water and staff and student business travel. The University, through changes to business practice, can directly control these emissions. Carbon emissions are calculated for all University campuses. Changes to the travel forms enable better data capture of business travel.

Also included in the baseline is the assessed carbon emissions associated with the purchase and delivery of office products and services at the University. Other goods and services are not yet directly measurable as it requires the supplier to provide detailed information however the university is actively engaging with companies to advance the quality of data for future use. Generalised carbon emission savings associated with improved purchasing practice are reported through ESAG.

Influence emissions. A Travel Plan exists to influence behavioural change amongst students and staff within the university and significantly as part of this plan a comprehensive commuter travel analysis was undertaken during 2008/09 and again in 2012/13.   A comprehensive annual staff and student survey together with the information recorded on home and term time addresses will enable this important dimension to the Carbon Management Plan to be monitored. It must be noted that whilst local commuting may be influenced by initiatives such as the subsidised bus routes, bus pass loans, barrier controlled restricted car parking, city car club, lift share and bike to work, international travel, which is significant in terms of Carbon, will be very difficult to influence.

It is recognised that the University can influence these emissions but cannot directly manage them. Similarly the University can only influence staff practices at work i.e. using recycling facilities and using less energy by switching things off. Hopefully the awareness gained at work will extend beyond the boundaries of the campuses and back into people's everyday lives.

5.2 CO2 Emissions Factors

Estimating the emissions from each source was carried out by applying the appropriate CO_2 emissions factor to each fuel type. The emissions factors used in the calculations are the standard conversion factors supplied by the Carbon Trust (originally from DEFRA's 'Environmental Reporting Guidelines for Company reporting on Greenhouse Gas Emissions).

Electricity	0.057kg/kwh
Natural Gas	0.185kg/kwh
Car	0.13 – 0.30 kg/km (Dependant on fuel and vehicle type)
Bus	0.0.11 kg/km
Train	0.06 – 0.08 kg/km (Dependant on journey type)
Air	0.11 – 0.19 kg/km (Dependant on journey type)

Methodology and data limitations

Data presented on CO_2 emissions relating to electricity, gas, water and waste was sub divided by campus as sub-metering within each campus is not currently adequate to allow further sub-divisions.

Electricity
Electricity data has been collated primarily using Half Hourly (HH) meter readings. Around 80% of the University's consumption is recorded by HH meter readings. Where the meter is Non-Half Hourly (NHH), estimates and manual readings were used.

Gas
Gas data was taken from invoices. Where there is an estimated reading, manual readings were taken to monitor bill accuracy.

Water
The data for water is taken from monthly meter readings and invoices produced by the University's water supplier.

Waste
Data is presented from pay by weight statistics provided by the University's waste management company. No information is available for the baseline year as to the percentage of waste recycled. So, a 0% baseline was used.

The following items are not included in waste data for the baseline year:
• Waste and redundant electrical equipment
• Fridges and cookers
• Printer and toner cartridges
• Fluorescent light tubes etc

These items are now included within the waste management contract. Pay by weight figures were submitted from the beginning of 2008/09.

Transport
Data on business travel using public transport or personal car use has been estimated using a sample of employee returns which was based on an audit undertaken within the University. Data on employees using hire cars and flights abroad or within the UK has taken from travel claim forms.

Emissions from students and staff commuting to the University have been calculated and included as part of the University's Travel Plan.

The Sustainability Office within Edinburgh Napier University can recommend and advise on the most sustainable methods of transport for staff and students to travel to the University. Ultimately though, the Office can only influence and does not have any direct control. It is for this reason that the Carbon Dioxide emissions created as a result of student and staff commuting have been calculated, but the total Carbon Dioxide amount will not sit within the main calculations of emissions for the University as a whole.

To calculate emissions the Sighthill Travel Plan was used which was created with the help of 601 staff and students that participated in an on-line survey to determine the modes of travel used by staff and students to travel to campus. The information gathered here formed the baseline for calculating proportionate emissions from each mode of travel; car 36%, bus 32%, walk 20%, cycle 6%, train 5% and motorbike 1%. A detailed postcode analysis was used for both staff and students commuting routes.

Emissions from staff and student consider the following journeys, with the following estimated emissions:

Table 1: - Staff and Student Commuting carbon emissions projections (tCO2)

Journey	Emissions (Tonnes CO2)
1. Staff – home to their place of work.	663
2. Students – home, non-term-time, address to Edinburgh (international).	5,694
3. Students – home, non-term-time, address to Edinburgh (UK).	437
4. Students – term-time address in Edinburgh to campus.	4,897

Total estimated emissions for staff and student travel to campus, and between non-term-time home address and Edinburgh is: **11,691 tonnes of Carbon Dioxide**. A target of reducing emissions associated with the day-to-day and term-time commute is set at 2% annually. Although, as per above, the University can only influence the travel choices made by staff, students and visitors.

Figure 2 – C02 Emissions attributed to staff and student daily and term time commuting
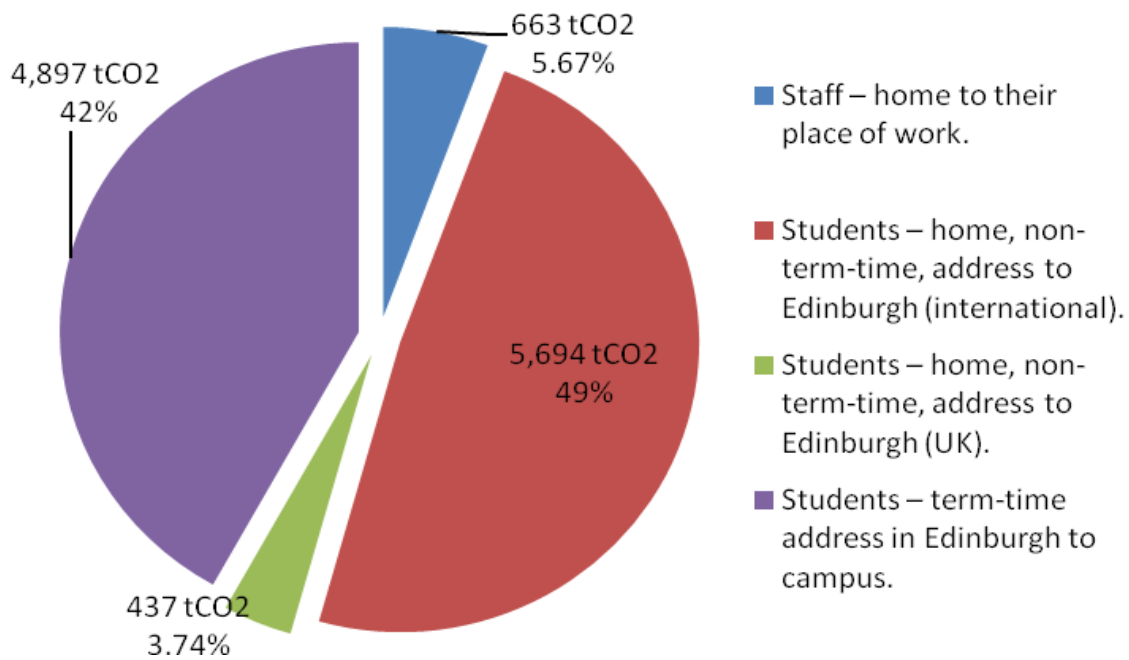
5.3 Emissions baseline

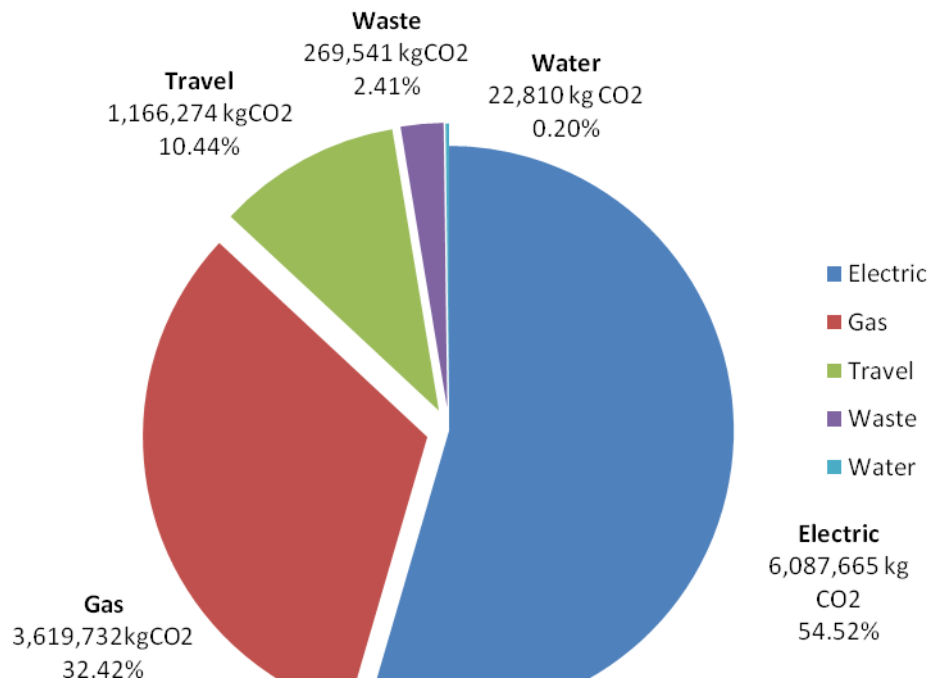| The baseline for the Carbon management Plan is 2006/07. |
|---|

The University's manageable baseline emissions, for energy use, business travel, water use and waste disposal are 11,166 tonnes of CO_2. Figure1 shows that energy use accounted for 87% (9,707 tonnes/ CO_2), business travel 10.44% (1,166 tonnes/ CO_2) and other activities 2.62% (292 tonnes/ CO_2).

Table 8: Baseline Carbon Emissions

Baseline	Buildings	Vehicles	Waste & Water	Total
Emissions (kgCO$_2$)	9,707,397	1,166,274	292,351	11,166,023
% CO$_2$	86.94%	10.44%	2.62%	

Energy Costs	£705,832	£27,685	£399,489	£1,133,007
% of total costs	62.30%	2.44%	35.26%	

Fig 1 : CO$_2$ emissions baseline 2006/07(tonnes pa & percent of total):

5.4 Carbon emissions under a business as usual scenario

A business as usual scenario has been calculated for the University's CO_2 emissions until the end of this Carbon Management Plan in 2014/15, a model provided by the Carbon Trust was used. Many assumptions had to be made under this scenario pending the post Sighthill development information being available as detailed below. The University's overall projected increase in CO_2 emissions are detailed in Table 8 and illustrated by figure 2.

The cost implications of this rise in CO_2 emissions are shown in figure 4. The costs associated with CO_2 emissions are calculated using a range of tariffs provided by the Carbon Trust but again assumptions had to be made due to the volatile energy markets.

Table 9: Business as usual Carbon Emissions Projections

Year in Project	Base Year	-	1	2	3	4	5	6	7
Year	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Buildings	6,087,665	6,130,278	6,173,190	6,216,402	6,259,917	6,303,737	6,347,863	6,392,298	6,437,044
Electricity	3,619,732	3,645,070	3,670,586	3,696,280	3,722,154	3,748,209	3,774,446	3,800,867	3,827,473
Travel	1,166,274	,174,438	1,182,659	1,190,938	1,199,274	1,207,669	1,216,123	1,224,636	1,233,208
Waste	269,541	271,428	273,328	275,241	277,168	279,108	281,062	283,029	285,011
Water	22,810	22,970	23,131	23,293	23,456	23,620	23,785	23,951	24,119
Total CO_2	11,166,022	11,244,184	11,322,893	11,402,154	11,481,969	11,562,343	11,643,279	11,724,782	11,806,855
% increase from baseline			1.56%	2.09%	2.77%	3.45%	4.13%	5.00%	5.74%
Target annual % CO_2 reduction			5%	10%	15%	20%	25%	30%	35%
Annual CO_2 targets			10,607,721	10,049,420	9,491,119	8,932,818	8,374,517	7,816,215	7,257,914
Annual CO_2 saving targets			558,301	1,116,602	1,674,903	2,233,204	2,791,506	3,349,807	3,908,108
		tCO$_2$	558	1117	1675	2233	2792	3350	3908

| Actual emissions	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Reduction Index	100	92.7	80.4	78.7	85.0				
Emissions applied to base year	11166022	10350983	8973099	8787568	9489025				

Assumptions made under the emissions business as usual scenario

The business as usual (BAU) scenario assumes a 1% annual increase in CO_2 emissions. This figure is based on extensive research by the Carbon Trust on public sector buildings, given minimal growth in buildings and building users. Business travel, water use and waste disposal are also projected to increase by 1% per year. Waste disposal and water use during this period are projected to rise by 1.5%. Business travel keeps to a 1% annual increase throughout. An assumption is made that student and staff numbers will remain constant.

When originally published in 2008 the original CMP noted that Edinburgh Napier University was part way through an ambitious Estates Strategy which involves the redevelopment of the Sighthill Campus. The new campus, completed in late 2010, enabled the University to co-locate the Facility of Health and Life Sciences onto one site and will significantly influence the remaining property portfolio with disposal of non essential properties being planned. All emissions will be impacted but significantly energy and inter site travel.

To reflect the changes a comprehensive revision to this Carbon Management Plan was envisaged in 2008 once the phasing of the changes are determined as at the moment, particularly in the uncertain economic climate, property related scenarios are difficult to forecast, this was completed in 2011/12

Figure 3: Comparison of emissions with BAU increases and reduction targets – carbon
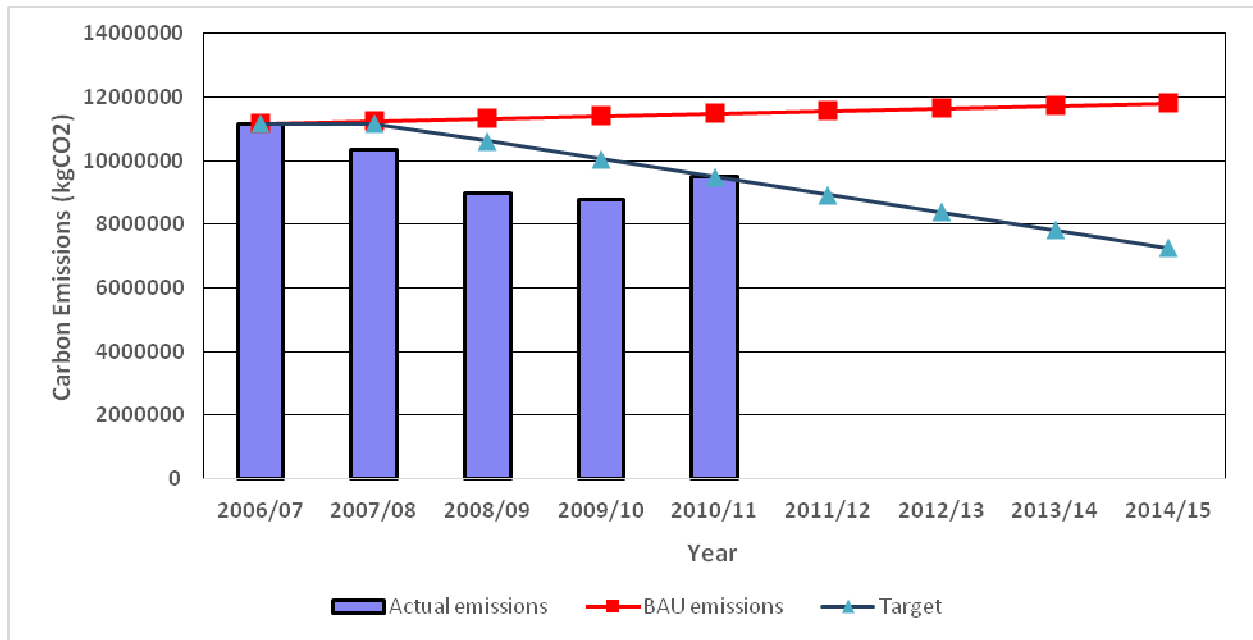
Figure 4: Comparison of emissions with BAU increases and reduction targets – financial
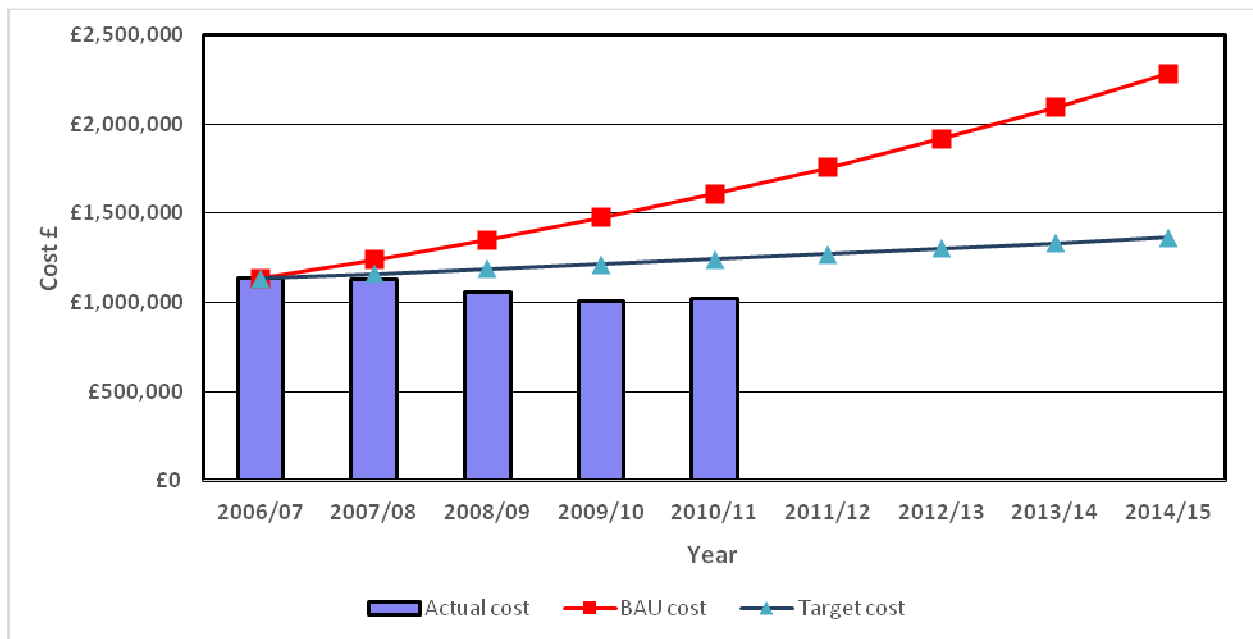
Unless carbon management projects are implemented at the University, its manageable CO_2 emissions are projected to increase by 5.74% by 2014/15 from its baseline. This is projected to cost the University an extra £920,817and cumulatively some £3,646,400 over the 7 year period from the base year.

6.0 CARBON MANAGEMENT PROJECTS

6.1 projects

In order to achieve the 35% reduction target the University must implement a systematic programme of projects and initiatives which are linked to the recently updated Environmental Sustainability Policy and Action Plan. The Sustainability Office, working in close partnership with Facilities Services, will oversee the implementation of these initiatives

The projects outlined in this CMP have been short-listed following a wide range of suggestions from stakeholders and have been split broadly under the headings of Embedding Carbon Management, Reducing Electricity Use, Electricity and Lighting, Reducing Gas Use, Changing Travel Modes, Reducing Water Use and Reducing waste going to landfill.

Individual projects have not been quantified in terms of carbon and financial savings but rather by grouping only as there are diminishing returns for each initiative depending on the phasing of the work. There is a real danger in quantifying individual projects in that the same carbon saving may be accounted for more than once hence the adopted strategy by Edinburgh Napier University. For instance should a replacement boiler be installed with an increased efficiency then a pre quantified heating controls project would no longer realise the original savings since the scope of available reduction potential is reduced. The sum of individual projects will have a greater theoretical saving potential than can practically ever be realised.

It should be noted that whilst carbon and financial savings are important driver's, projects being advanced have a range of tangible benefits to the University, including reduced maintenance costs, improved comfort levels, service resilience and statutory compliance.

The projects planned are detailed in tables 10 – 16 with those already underway being highlighted in green.

Carbon Saving Projects Cost (£) and timing

Table 10 - Embedding Initiatives

Project	Campus	Year 1 (£)	Year 2 (£)	Year 3 (£)	Year 4 (£)	Year 5 (£)	Year 6 (£)	Year 7 (£)	Project cost (£)		Funding Source	Secured	tCO$_2$ Saved
Environmental Sustainability Policy + Action Plan	All	-	-	-	-	-	-	-	-		Staff time only	-	
Environmental Sustainability Advisory Group formed	All	-	-	-	-	-	-	-	-		Staff time only	-	
Environmental Sustainability Advisor post established	All	40	42	44	46	48	50	52	322		ESAG	Yes	
Energy/Utility Manager Post established	All	40	42	44	46	48	50	52	322		ESAG	Yes	
Sustainability Office created	All	20	21	22	23	24	25	26	161		ESAG	Yes	
Environmental Management System implementation	All	-	-	-	42	-	-	-	42		ESAG		
Staff Awareness Campaign	All	-	-	-	-	-	-	-	-		Staff time only	Yes	
Staff energy training	All	-	-	-	-	-	-	-	-		Staff time only	Yes	
Train Eco Champions throughout the uni.	All	-	-	-	-	-	-	-	-		Staff time only	Yes	
Procurement Policy Review	All	-	-	-	-	-	-	-	-		Staff time only	Yes	
Planned maintenance on plant	All		tbc	tbc	tbc	tbc	tbc	tbc	Tbc		Facilities Services	tbc	
Kitchen plant management policy	All	-	-	-	-	-	-	-	-		Staff time only	-	
Energy Efficiency considered for all projects	All	-	-	-	-	-	-	-	-		Part of Projects	-	
Videoconferencing	All		tbc	tbc	tbc	tbc	tbc	tbc	Tbc		tbc	tbc	
Multifunctional devices (MDFs) replacing individual printers	All	-	-	-	-	-	-	-	-		Self financing	Yes	
Monitoring and Targeting of utilities	All	-	-	-	-	-	-	-	-		SALIX	Yes	
Aid the creation of a Lothian wide Carbon Management networking group.	All	-	-	-	-	-	-	-	-		Staff time only	-	
Replace bottled water with drinking water outlets	All	-	-	200	-	-	-	-	200		Priority Works	Yes	
Estates Strategy BREEAM 'Excellent' new builds	New	-	-	-	-	-	-	-	-		Sighthill (2010)	Yes	
Budget		100	105	310	157	120	125	130	1047		**Notional Target**	15%	1675

Table 11 - Lighting Initiatives

Project	Campus	Year 1 (£)	Year 2 (£)	Year 3 (£)	Year 4 (£)	Year 5 (£)	Year 6 (£)	Year 7 (£)	Project cost (£)		Funding Source	Secured	tCO$_2$ Saved
Lighting surveys - lux levels/type/usage/savings potential	All	-	-	-	5	5	5	-	15		Carbon Trust	Yes	
Replace Tungsten lights with compact fluorescents	All	10	20	-	-	-	-	-	30	S	SALIX	Yes	
Installation of high frequency fluorescent ballasts	All	-	20	20	-	-	-	-	40		SALIX	Yes	
Lighting Controls – occupancy/need	All	5	5	5	-	-	-	-	15		SALIX	Yes	
Lighting upgrades – LED etc	All	-	-	-	5	5	-	40	50		SALIX	Yes	
Kilby Centre Lighting Controls	Merchiston	8	-	-	-	-	-	-	8		SALIX	Yes	
LRC lighting system control	All	5	-	-	5	-	-	-	10		SALIX	Yes	
Occupancy light sensors in toilets	All	3	3	-	-	-	-	-	6		Priority Works	Yes	
Budget		31	48	25	15	10	5	40	174		**Notional Target**	10%	362

Table 12 - Electricity Initiatives

Project	Campus	Year 1 (£)	Year 2 (£)	Year 3 (£)	Year 4 (£)	Year 5 (£)	Year 6 (£)	Year 7 (£)	Project cost (£)		Funding Source	Secured	tCO$_2$ Saved
PC shut-down	All	-	-	-	-	-	-	-	-		Staff time only	Yes	
Optimisation of Supply Voltage	All	-	-	-	-	4	-	-	4		SALIX	Yes	
Time switches to vending machines	All	-	-	1	-	-	-	-	1		SALIX	Yes	
Fit Sava controls to freezer room	All	1	-	-	-	-	-	-	1		SALIX	Yes	
IT infrastructure changes	All	-					-	-	-		tbc	tbc	
Combined Heat and Power	All	-	-	-	-	tbc	-	-	Tbc		tbc	tbc	
Wind	All	-	-	-	-	tbc	-	-	Tbc		tbc	tbc	
Sub Metering of buildings	All	-	5	-	5	-	-	-	10		Priority Works	Yes	
Variable speed drives for mechanical ventilation systems and large pumps	All	5	-	10	-	-	10	-	25		SALIX	Yes	
Budget		6	5	11	5	4	10	0	41		**Notional Target**	10%	362

Table 13 - Heating Initiatives

Project	Campus	Year 1 (£)	Year 2 (£)	Year 3 (£)	Year 4 (£)	Year 5 (£)	Year 6 (£)	Year 7 (£)	Project cost (£)		Funding	Secured	tCO_2 Saved
Heating/Temperature Surveys	All	-	-	-	-	-	-	-	-		Staff time only	-	
Building Energy Management Systems	All	150	10	10	10	10	10	10	210		Priority Works	Yes	
Review BMS Time Schedules for academic buildings	All	-	-	-	-	-	-	-	-		Staff time only	-	
Daily scheduling HVAC plant to match occupancy	All	-	-	-	-	-	-	-	-		Staff time only	-	
Heating Policy with maximum temperatures published	All	-	-	-	-	-	-	-	-		Staff time only	-	
Use of tamperproof thermostatic radiator valves	All										SALIX	Yes	
Craighouse Condensing Boilers	Craighouse	120	-	-	-	-	-	-	120		Priority Works	Yes	
Rezoning of heating systems	All	100	100	-	15	-	15		230		Priority Works	Yes	
Pipe work insulation	All	-	15	-	-	-	5		20		SALIX	Yes	
Valve Insulation Jackets	All						5		5		SALIX	Yes	
Further Plate Heat exchangers replacing Calorifiers	Merchiston	-	-	60	-	-	-	40	100		Priority Works	Yes	
Seal and draught-proof windows	All	50	30	-	-	-	-	-	80		SALIX	Yes	
Merchiston Reroofing/Insulation	Merchiston	20	20	20	20	-	-	-	80		Priority Works	Yes	
Thermal imaging surveys	All	5	5	-	-	-	-	-	10		Carbon Trust	Yes	
Building Insulation	All										SALIX	Yes	
Merchiston Entrance Autodoors	Merchiston	10	-	-	-	-	-	-	10		Priority Works	Yes	
Merchiston Double Glazing	Merchiston		-	-	-	-	-	-	-		tbc	tbc	
Merchiston Exterior Cladding	Merchiston	-	-	-	-	-	-	-	-		tbc	tbc	
Solar	All	-	-	-	-	-	-	50	50		Prority works	Yes	
Heat Recovery	All	-	-	-	10	30	20	20	80		Salix	Yes	
Cooling improvements	All	-	-	5	10	30	10	10	65		Salix	Yes	
Budget		**455**	**180**	**95**	**65**	**70**	**65**	**130**	**1060**		**Notional Target**	**25%**	**1522**

Table 14 Travel Initiatives

Project	Campus	Year 1 (£)	Year 2 (£)	Year 3 (£)	Year 4 (£)	Year 5 (£)	Year 6 (£)	Year 7 (£)	Project cost (£)		Funding	Secured	tCO₂ Saved
External and internal travel management plan	All	-	-	-	-	-	-	-	-		Staff time only	-	
Subsidised public bus routes to Campus	Craiglockhart / Craighouse	120	120	120	-	-	-	-	360		Facilities Services	Yes	
Additional Internal bus network feasibility	All	-	-	-	-	-	tbc	-	-		tbc	tbc	
Transport surveys and studies	All	-	-	2	-	2	-	2	6		ESAG	Yes	
Car sharing – promotion	All	-	-	-	-	-	-	-	-		Staff time only	-	
Extending Cycle to Work Scheme	All	-	-	-	-	-	tbc	tbc	-		Salary Sacrifice	Yes	
Cycle Facility improvement	All	3	3	-	-	-	-	tbc	6		Grants	Yes	
Lift share	All	3	-	-	-	-	-	-	3		ESAG	Yes	
City Car Club Vehicles on Campus	Craiglockhart / Craighouse	-	-	-	-	-	-	-	-		Self financing	Yes	
Staff driver training	All	-	-	tbc	-	-	-	-	Tbc		tbc	tbc	
Reduction in flights taken / unnecessary travel	All	-	-	-	-	-	-	-	-		Staff time only	-	
Green fleet review	All	-	-	tbc	tbc	tbc	tbc	tbc	Tbc		tbc	tbc	
Biofuels for fleet	All	-	-	tbc	tbc	tbc	tbc	tbc	Tbc		tbc	tbc	
Hybrid fleet vehicles	All	-	-	tbc	tbc	tbc	tbc	tbc	Tbc		tbc	tbc	
	Budget	126	123	122	0	2	0	2	375		Notional Target	5%	58

Table 15 – Water Initiatives

Project	Campus	Year 1 (£)	Year 2 (£)	Year 3 (£)	Year 4 (£)	Year 5 (£)	Year 6 (£)	Year 7 (£)	Project cost (£)		Funding	Secured	tCO$_2$ Saved
Smart Water Metering	Main sites	-	-	10	-	-	-	-	10		Priority Works	Yes	
Water saving device to urinals and WCs	All	3	3	3	3	3	3	3	21		Priority Works	Yes	
Rainwater Capture	All	-	-	tbc	tbc	tbc	Tbc		Tbc		tbc	tbc	tbc
Budget		**3**	**3**	**13**	**3**	**3**	**3**	**3**	**31**		**Notional Target**	**10%**	**2**

Table 16 – Waste Initiatives

Project	Campus	Year 1 (£)	Year 2 (£)	Year 3 (£)	Year 4 (£)	Year 5 (£)	Year 6 (£)	Year 7 (£)	Project cost (£)		Funding	Secured	tCO$_2$ Saved
Recycling scheme at all main campuses	All	10	3	-	-	-	-	-	13		Facilities Services	Yes	
Create better signage for recycle bins	All	10	4	3	-	-	5	-	22		Facilities Services		
Completion of in-depth waste audit	All	-	-	-	-	-	-	-	-		Staff time only		
Construction waste – WRAP commitment	All	-	-	-	-	-	-	-	-		Part of project costs		
Budget		**20**	**7**	**3**	**0**	**0**	**5**	**0**	**35**		**Notional Target**	**10%**	**27**
Total identified to date		**741**	**471**	**579**	**245**	**209**	**213**	**305**	**2763**		**Notional Target**		**4008**
											Target		**3908**

7 CARBON MANAGEMENT PLAN FINANCING

7.1 Funding Sources

As detailed in section 6 the University has already secured significant funding for advancing all Carbon Management Projects for years 1 and 2. The main funding streams are:

7.1.1 Priority Works Capital Budgets - The University has established a Priority Works budget for major asset/infrastructure upgrades such as the boiler replacements program £120K, The BEMS project £150K and heating system improvements £100K and two specific energy investment allocations totalling £175K. The full list of related projects is detailed in section 6. In addition there is now a policy of incorporating carbon saving technology within all separately funded projects to ensure the both the life cycle costs and carbon impact is kept to an absolute minimum.

7.1.2 SALIX - The University has established a £250K SALIX fund in 2008 to advance projects with a short payback period. SALIX is an independent, not-for-profit company set up by the Carbon Trust using Government funding of £20 million as an integral part of the UK Climate Change Programme. Grants are made available to organisations that can satisfy strict strategic and operational standards, as Edinburgh Napier University have been able to do.

The revenue savings from these projects will be ploughed back into a ring fenced account which will be used solely to fund additional carbon reduction initiatives on a recurring basis.

The ongoing funding criteria require full and independence validation of the carbon savings and financial payback of all projects using the SALIX 'SERS' software. Formal progress reports must be submitted to SALIX on a regular basis to verify the fund is being managed to maximum benefit.

7.1.3 Sustainability Office

In addition to the project investment budgets the University has committed to funding a Sustainability Office with both an Environmental Sustainability Advisor and a Utility /Energy Manager posts, with admin support. The Sustainability Office is staff by 2.0 WTE. It is essential not only to the success of the Carbon Management Plan but also for the long-term sustainability of the University that the newly created Sustainability Office continues to be fully funded.

The Sustainability Office will investigate other sources of funding out-with the university in the form of external grants etc.

7.2 Governance

The ESAG and Facilities Services will secure an internal annual budget and external funds, as available for carbon management.

The projected costs associated with the implementation plan have been estimated on the basis of similar project work where this is possible. Many of the project costs are 'extra over' where the ongoing maintenance and replacement programmes will be used as the base to develop a more energy efficient option than would be achieved through like for like replacement.

Progress against existing budgets and any financial bids will be reported bi monthly to the Environmental Sustainability Advisory Group and quarterly to the Estates Committee of Court.

8 ACTIONS TO EMBED CARBON MANAGEMENT

8.1 Corporate Strategy

The University has made carbon management one of the key performance indicators and has included carbon management as part of the Sustainable Futures project which aims to help Faculties and Service *in identifying and implementing operational and process improvements*. Each Faculty, Directorate, and Service Department in the University will be encouraged to participate as part of the University's enhancement agenda. The overall strategy is:

- Climate change commitments will be integrated into existing policies, strategies and plans at the University, including the Strategic Plan, the Environmental Sustainability Policy, the Sustainable Purchasing Policy and the Travel Plan.

- Objectives, targets and action plans will be set and reviewed part of the University's Environmental Management System.

- The established Achieving Environmental Sustainability Advisory Group (ESAG) will meet bi-monthly to steer activity. The Group is constituted with senior representatives from the Sustainability Office, Facilities Services, University Academics, the Student Association, Purchasing, Health and Safety and external representatives. The Group will focus on improving performance in carbon management relating to energy, waste, water and transport in addition to wider environmental and social corporate responsibility projects.

- The Environmental Working Group, made up of 'Eco Champions' throughout the University, will report on progress in carbon management on a departmental level to the Environmental Sustainability Advisor.

- Action groups will be established or maintained in key carbon management areas.

- The Sustainability Office will implement the Carbon Management Plan and all policies relating to climate change.

- Opportunities workshops will be held as required to collate new opportunities for carbon management.

- The Sustainability Office will prioritise the most effective ways of reducing CO_2 emissions at the University in the short, medium and long term.

- All Committee Chairs will be requested to ensure that issues of sustainability and carbon management are reflected appropriately in the terms of reference of their committee.

- Work will advance to set criteria to ensure all new proposals consider carbon impacts.

- Ultimately it would be nice to have carbon management responsibilities being fully embedded within all job descriptions AS Health and Safety has been but there are many practical issues with this. As an interim staff will be asked to sign up to an Environmental Code of Conduct which recognises their important role in reducing the University's Carbon Footprint.

8.2 Programme Management

The Achieving Environmental Sustainability Advisory Group (ESAG), chaired by Dr Gerry Webber, will review and direct the activities of the Sustainability Office and ultimately coordinate the implementation of the Carbon Management Plan.

The Assistant Director Property & Facilities will coordinate with the Sustainability Office the practical implementation of the Plan.

The University Court will receive an annual report on carbon management from ESAG and this will include details on whether the emissions reductions are on target.

The Carbon Management Plan was comprehensively reviewed during 2011/12 once full details were confirmed on the post Sighthill review and thereafter on an annual basis.

8.3 Responsibility

ESAG is chaired by Dr Gerry Webber, University Secretary who has ultimate responsibility for achieving commitments on carbon management. The Sustainability Office under the guidance of ESAG and the Assistant Director Property & Facilities will engage with stakeholders across the University. Using various media, including the Environmental Working Groups, carbon management will be embedded at local level and robustly established within the remit of all staff and student and not seen as a central function.

8.4 Data Management

There is an explicit requirement for the Sustainability Office to review the Carbon Management Plan on a monthly basis to ensure that the overall programme and its projects are being implemented effectively and provide updates to stakeholders on progress and maintain their support.

The recently installed Monitoring and Targeting Software and Building Energy Management Systems will both be used proactively to monitor and quantify carbon reductions against targeted levels and enable detailed reports to be compiled relating to the baseline.

The Carbon Management Plan and all climate change related policies, objectives, targets and action plans will be reviewed annually by ESAG to:

- Enable the Plan to be improved and optimised.

- Ensure projects are meeting strategic objectives and moving towards the University's carbon management vision.

- Ensure that the benefits of individual projects and the programme as a whole are measured and communicated.

- CO_2 emissions will be collated for all the main sources included in the baseline year at the end of each subsequent academic year.

- Data will be annually verified.

- Data will be made publicly available.

In addition to the internal reports progress will be detailed on dedicated web pages within the Sustainability Website, these pages are available to all both within and out with the University and regular contact will be maintained with the Carbon Trust and progress will be formally reported in line with its carbon accounting period ending March each year.

8.5 Communication and Training

The Sustainability Office, supported by the Environmental Working Group and Eco Champions will:

• Work in partnership with all sectors of the University community to promote ownership and responsibility of carbon management.

• Implement a formalised communication and training plan for all staff and students on carbon management, to be updated annually.

An awareness and communications plan is a key part of the CMP. This will set out a detailed action plan covering the following areas:

• **Support and resources –** Excellent senior management support already exists for the project and there are a wide range of systems and media already in place to disseminate information at the University.

• **Budget planning** - The budget for communication and awareness is estimated to cost £15,000 for the first year and £5,000 every year following this. This covers an awareness campaign to start in March 09.

• **Time allocation -** The Sustainability Office are primarily allocated to implement the communications plan. Eco champions have supporting responsibilities on a voluntary basis.

• **Awareness questionnaire and market research -** A carbon awareness questionnaire will be promoted and available online every year.

• **Campaign audiences -** Alongside the staff and student campaign, key groups will be targeted with different approaches under the main campaign theme.

• **Messages and channels -**Targeted messages will be developed for staff and students using a wide variety of channels. There will be an overarching campaign which will use a series of student designs.

• **Monitoring and reporting -** Key performance indicators will be used to measure the success of the communications plan.

• **Maintaining awareness -** The plan will aim to create a 'carbon culture' through ongoing campaigns and engagement.

8.6 Policy Alignment

One of the key elements of developing an Environmental Management System is the development of an Environmental Plan. The plan sets out a number of key objectives and targets that are intended to:

- Provide leadership and visible commitment to achieving sustainability.
- Develop specific policy statements and, where appropriate, internal sustainability / best practice targets.
- Maintain, develop and operate the University estate in a sustainable manner.
- Build relationships and partnerships both within and out-with the University to encourage the spread of common environmental approaches.
- Promote the achievement of sustainability at the University through education, research, and knowledge transfer achievements relating to sustainability and sustainable development.

The following information provides general guidance on the key environmental projects underway or planned for implementation at Edinburgh Napier University. There are also more in-depth working action plans for each of the main topics noted and important links to enabling and supporting policies such as Procurement, Finance and HR being established. Example being the development of a Green Procurement Guide for staff that directs staff to what they should be buying, rather than just provide information and the Policy to discourage staff from taking flights when rail travel can be a practical alternative.

Progress against the stated objectives and targets outlined in the plan will be monitored and assessed by ESAG on a regular basis in accordance with the management review requirements of the Environmental Management System standard ISO 14001.

8.7 Environmental Sustainability Plan

This Environmental Sustainability Plan expands on the information contained within the 'Environmental Sustainability Policy Statement'. This plan sets out a number of key objectives and targets, for Napier University, that are intended to:

- Provide leadership and visible commitment to achieving sustainability.
- Develop specific policy statements and, where appropriate, internal sustainability / best practice targets.
- Help maintain, develop and operate the University estate in a sustainable manner.
- Build relationships and partnerships both within and out-with the University to encourage the spread of common environmental approaches.
- Promote the achievement of sustainability at the University through education, research, and knowledge transfer achievements relating to sustainability and sustainable development.

The information below provides general guidance on the key environmental projects planned for implementation at Napier University

This Implementation Action Plan will be reviewed annually and subsequent plans will be published on the University Website at http://staff.napier.ac.uk/environment linked through the main page and also stored under the 'Management Programmes' tab.

All reports noted within this document are also publically available at http://staff.napier.ac.uk/environment

Actions

A – General Actions

B – Biodiversity

C – Energy

D – Procurement and Building Maintenance

E – Transport

F – Waste, including Emissions and Discharges

G – Water

A – General Actions

Objective	Target	Timeline / Milestones	Final Outcome
Identify potential areas of environmental non-compliance to minimise the possibility of enforcement by Regulatory Authorities. Meet and exceed all requirements set.	Carry out periodical Environmental Assessment of all University activity. Develop action plans and implement any changes necessary to address any issues of concern identified.	Complete detailed action plan assessment by the end of July 2009 and conduct periodically after that date. Tie into Carbon Management Plan, Universities that Count, ISO14001 work already completed.	The University will comply with all relevant environmental legislation.
Strengthen the management of environmental issues in the University setting demanding, but achievable, performance targets and using externally assessed monitoring frameworks.	Establish an Environmental Sustainability Advisory Group (ESAG), including senior Facilities and Academic management, lecturers, and representatives from the student body. Develop and establish an Environmental Management System based on ISO 14001 Develop proposals for the production of a University Annual Environmental Report and / or Corporate Social Responsibility Report.	This group meet, with representation covering the structural and academic functions of the University, and the Student Union on a bi-monthly basis. Data collection for the completion of the Carbon Management Plan has started this process. It will be completed by 30/04/09. Programmes working towards ISO 14001 started in 2008 with the completion of a plan and assessment study. ISO 14001 will be gained by May 2011. Information will be submitted for the 'Universities that Count' programme during March 2009. The full corporate responsibility index will be completed by March 2010.	The Environmental Sustainability Office will ensure that meetings continue to be taken bi-monthly. Following the completion of the Carbon Management Plan, the University will have ISO14001 accreditation by May 2011. Environment and Corporate Responsibility will be linked where possible. Environmental sustainability will

	Encourage Environmental Sustainability to be included throughout the internal Sustainable Futures Project.	Initial meetings have taken place between Keith Horton and Jamie Pearson. The Sustainable Futures Project will be launched Summer 09.	be fully integrated into the project with each area investigated given an equivalent Carbon Dioxide, as well as financial value / effect.
	Ensure that environmental management is included in all relevant meetings such as the Estates Committee of Court and the Principles Executive Group.	Both groups meet bi-monthly. Reports are sent to all Estates Committee's and to PEG when requested.	Reports are sent to both groups and senior management are aware of all environmental work taking place throughout the University.
Promote the achievement of sustainability through education, Research and Knowledge Transfer activities.	The University, through its Research and Knowledge Transfer activities, will integrate environmental sustainability into all applicable academic areas.	Key linkages between the academic and structural sectors of the university will be made and maintained on a continual basis.	Both academic and structural staff will be aware of opportunities and progress in both sectors to enable a holistic picture of sustainable development to develop.
Reduce emissions of Carbon Dioxide.	Develop a comprehensive Higher Education Carbon Management Plan in partnership with the Carbon Trust.	The first draft of the report was sent to the Carbon Trust in December 2008. The final report will be completed in April 2009.	The University will have a completed Carbon Management Plan. The areas of energy, transport, waste and water will be continually updated so that progression towards emission reduction can be noted.
	Regularly review carbon emission targets for the University and monitor progress against targets currently in effect.	The University will reduce emissions of Carbon Dioxide by 25%, from a baseline of 2006/07, by 2013 and will follow all national targets.	
	Gain the Carbon Trust Standard in preparation for participation in the Carbon Reduction Commitment.	Gain Standard shortly after financial year end of July 2009. Prepare for start of Carbon Reduction Commitment in April 2010.	The University will be externally audited for Carbon reduction and will be able to demonstrate and prove change.
Increase awareness of environmental issues by all staff, students, contractors and visitors, covering all topics noted within this plan.	Develop a communications plan with the Communications Team. Include regular updates within Napier News and other staff and student publications.	Communications plan for Liftshare and City Car Club completed in November 2008. Communications plans for all core working areas will be developed as they come to light.	Staff and students will become more aware of environmental work on-going at the University. All staff and students will know who to contact for information.

	Develop an education strategy to improve general awareness on practical day-to-day issues such as recycling and energy saving. Ensure that all staff and students understand and appreciate the environmental impacts arising from their activities.	Education strategy will be completed by July 2009. It will encapsulate key priority areas noted during the Carbon Management statistics gathering process.	The education strategy will ensure that all staff and students are aware of the on-going environmental work and will contribute where necessary.
	Deliver training / workshops on environmental issues at student induction, other events such as the annual Health Promotion Day and to specific personnel whose remits have particular environmental impact.	Environmental Sustainability Office will be present at all relevant events in 2009.	New staff and students and / or staff and students not usually interested in environmental issues will receive information through other teams and initiatives.
	Develop network of 'Environmental Champions' throughout the university	The Environmental Champions network will be advertised to staff in March 2009 as part of Earth Hour. The first meeting will take place in May 2009. Student environmental champions will be advertised to students, through Napier Students Association, in May 2009.	Being an Environmental Champion will give staff and student volunteers direct insight into commenting on all environmental work planned at the university.
Increase level of community involvement, in regards to the work of the Sustainability Office	Integrate the environmental work of the University, both academically and structurally and ensure educational gain is received from outside the university, and vice versa.	Grant Ferguson to attend Merchiston and Craiglockhart Community Council meetings – ongoing. Jamie Pearson to attend Edinburgh Fairtrade Group. Bi-monthly. Jamie Pearson to attend Craiglockhart Local Nature Reserve Group – bi-annually.	The development of community involvement and interaction will be a positive experience for the university and the wider community with each party gaining support, enthusiasm and knowledge from the other.

	Participate in all relevant national and international focus weeks / days such as World Environment Day, Fairtrade Fortnight and Earth Hour.	Jamie Pearson to be nominated to join the board of the Environmental Association of Universities and Colleges Scotland (EAUCS) from September 2009. The Sustainability Office will network and communicate with all interested parties on an adhoc basis. Timeline of events was created in January 2009 and will be followed by the Sustainability Office to ensure that we participate where we can.	
Funding and support in kind	Seek internal and external funding and resources to complement and enhance planned work.	£320 gained from Scottish Fair Trade Forum in January 2009. Feedback required by the end of May 2009. £1920 gained from Cycling Scotland in February 2009. Feedback required by the end of February 2010. £2100 gained from Waste Aware Edinburgh in March 2009. Feedback required by the end of March 2010. All funding to be assessed when opportunities arise.	The Environmental Sustainability Office will have adequate financial support to pursue all core and necessary education projects. The evaluation from each project will be kept to help further development of projects throughout all campuses.

B - Biodiversity

Objective	Target	Timeline / Milestones	Final Outcome
Manage all University owned and rented land in an environmentally sustainable fashion.	Carry out a programme of full, in-depth, biological reviews of all properties in partnership with lecturers and students within the Life Sciences Department.	Students and staff in the Life Sciences Department will be involved in full reviews when possible. Ideally during the 08/09 or 09/10 academic years.	All University owned and rented land will have a full in-depth review conducted and will be managed in an environmentally sustainable fashion.
	Continue to identify opportunities to preserve and enhance biodiversity on existing sites and for University developments.	External support will be utilised where and when possible whilst all work will be integrated into the 2009 – 2014 Biodiversity Action Plan for Edinburgh. Work at Craighouse and Craiglockhart will be fully integrated into the Local Nature Reserve Plan for 2009 – 2014.	All new opportunities will be fully utilised. Processes will be put in place to ensure that all new opportunities are seen.
	Investigate fully all chemicals used on-site in the grounds.	A chemicals register exists. A full evaluation will be completed in July 2009 to investigate any alternatives	Information on all chemicals used on-site will be amalgamated with records of chemicals / cleaning materials used on all campuses and will be held centrally.

C - Energy

Objective	Target	Timeline / Milestones	Final Outcome
Reduce reliance on fossil fuels and reduce overall energy consumption.	Further develop the University's Energy Policy to include position on green electricity, and Co2 targets.	Energy policy will be updated following the completion of the Carbon Management Plan – 04/09.	Overall, through education and investment in materials and physical resources, the University will reduce reliance on fossil fuels and will reduce overall energy consumption in line with targets set through the Carbon Management Plan.
	Continue to develop programme of utilities conservation meetings with Departments to promote awareness and best practice.	Education materials will be developed throughout 2009.	
	Consider on site generation from renewables and / or Combined Heat, Power & Refrigeration for existing buildings.	Will be reviewed as and when finance / opportunities arise and in-line with the 'carbon saving projects' in the Carbon Management Plan.	
	Regularly review design guidance for new buildings and refurbishments to ensure all works are carried out following current best practice.	Will be reviewed as and when opportunities arise. All work will be tied into BREEAM standard.	
	Utilise Salix funding.	Will be utilised when opportunities arise. Projects identified through the Carbon Management Plan and Estates Review.	Salix funding will be used productively to ensure that, through investment, savings in energy can be made.
	Contact relevant bodies to complete Energy Performance Certificates (EPC's) for all relevant sites.	EPC's were completed in March 2009 for all relevant sites. Information received will be shared with all staff, students and visitors on-line and by displaying the actual	The University follows compliance regarding EPC's.

	Actively investigate the use of energy saving devices such as occupancy sensing controls and intelligent controls for heating and ventilation.	certificates. The Facilities Team have already made substantial savings in this area. Proposed projects to be shared with ESAG. Ongoing.	The devices, and their energy saving capabilities will be tied into Carbon savings and the Carbon Management Plan.

D - Procurement and Building Maintenance

Objective	Target	Timeline / Milestones	Final Outcome
Develop a green / ethical procurement policy as well as an ethical investment policy.	Provide information to enable all staff and departments to make informed decisions about the environmental effect on procurement of goods and materials.	A policy is being created by the Procurement Manager. A draft should be complete early 2009.	The University will have a green / ethical procurement policy in place that will ensure that all goods and services brought into the University follow the same environmental standard set within the University itself.
	Create an Ethical Investment Policy.	Policy was created in 2006. Was further ratified by ESAG on 28/01/09 and made public on the Sustainability Office web pages.	
	Investigate feasibility of developing guidance on the use of local suppliers.	This will link into the policy being completed by the Procurement Manager with advice from APUC – Advanced Procurement for Universities and Colleges. Summer 2009.	
	Influence suppliers and contractors to ensure that goods and services procured support the environmental policy.	The university signed a construction commitment with the Waste and Resources Action Programme (WRAP) in April 2009. Work to influence building	

		contractors will follow by July 2009. All procurement contracts already require the submission of an environmental policy from the contractor. Expertise of APUC will be drawn upon continually.	
	Develop policy considering work already carried out by APUC.		
Increase provision and use of Fairtrade goods on all campuses	Investigate feasibility of achieving Fairtrade status for the University by May 2009.	The Fairtrade Working Group has met on 28/11/08, 09/01/09, 13/01/09 and 27/03/09 and will continue to meet bi-monthly. Work already carried out at the university was drawn together and developed during Fairtrade Fortnight. Application for Fairtrade Status was submitted at the start of April 2009. Feedback should be received close to the start of May 2009.	The University will increase provision and use of Fair Trade goods throughout all areas. The university will gain Fairtrade status. This will help strengthen and develop Fairtrade provision and awareness throughout all campuses.
Manage and construct the buildings used by the University in an environmentally sustainable fashion.	Continue to engage in the planning and development programme to ensure that the environmental impact of the developments are minimised and any opportunities to protect and enhance environmental features are identified and exploited through the design process and when working with consultants and contractors.	Relevant Project Managers received training, through WRAP (Waste Resources Action Programme), on sustainable construction in March 2009. The University has signed up to and participate in the 'Halving Waste to Landfill' campaign Work in this area is ongoing. Sighthill development project will	New buildings and existing buildings will be designed or refreshed in a manor that fits into the wider environmental ethos of the University.

		aim for BREEAM excellent. Results will be made public in June 2009.	
	Engage in the design and construction programme to advise on specific sustainability issues in relation to new buildings to ensure that efforts are made to achieve BREEAM target of 'excellent' for new buildings.	Ongoing. To be completed by Facilities Managers and Project Managers.	

E - Transport

Objective	Target	Timeline / Milestones	Final Outcome
Minimise environmental impact due to travel.	Review the University Strategic Transport Policy, first created February 2007. Fully integrate transport into Carbon Management Plan	Policy will be fully reviewed before the start of 2009/10 term, by September 2009. Travel has been fully integrated into the Carbon Management Plan. An overall target of reducing Carbon emissions from all university activity by 25% has been set. Reductions in transport emissions will also follow this target. Targets for reducing uncontrollable transport emissions such as from staff and student commuting will be developed in September 2009 following further consultation.	The statistics gathered through the Carbon Management Plan will be able to show direct impacts, in terms of Carbon Dioxide emissions, due to all forms of internal and external travel at the University. From this, it will be possible to measure and see change as educational and structural projects are rolled out.

	Develop a clear working Travel Plan, with specific references to each campus, that will consider all modes of transport and all reasons for using transport i.e. internal / external travel and commuter travel.	A full and comprehensive travel plan will be completed, following physical surveys of staff and student travel in June 2009. Targets for reductions in single occupancy car use, for example, will be set.	
	Promote the use of video-conferencing and other communications facilities to encourage reduction in non-essential travel.	Video-conferencing facilities are in place. Promote when and where possible through all policies.	
	Consider the conversion of vehicles to other sources of fuel where possible and when opportunities arrive.	When vehicle leases cease – ongoing and at various times.	

F – Waste, Including Emissions and Discharges

Objective	Target	Timeline / Milestones	Final Outcome
Ensure waste management practices comply with relevant legislation.	Develop Duty of Care audit methodology.	Carry out with Facilities Manager responsible for waste management – September 2009.	The University will comply with all specific legislation relation to waste management practices.
	Carry out Duty of Care audits of all identified priority waste contractors in accordance with the provisions of the Environmental Protection Act.	As above. This work will be completed when possible with the Facilities Manager.	

	Integrate waste into the Carbon Management Plan.	Waste has been fully integrated into the Carbon Management Plan. The recycle rate for the University fluctuates between 25% and 45% per month. Work will be carried out in May 2009 with the waste contractor to determine and set manageable recycling targets.	The University will ensure that as little waste as possible is sent to landfill.
	Develop methodology for implementing Site Waste Management Plans for construction projects over £250k. Also utilise external support, documentation and training for all areas of construction. See section D for more information.	Commitment to participating in the WRAP 'Halving Waste to Landfill' project was signed in April 2009.	All construction projects over £250k will have a full site waste management plan, in addition to environmental sustainability being considered at all stages.
Reduce, Reuse and Recycle Waste	Develop and implement awareness programme to promote the concept of reduce, reuse, recycle from the stage of procurement to the use of goods developing the green procurement policy.	Campaign will be launched at the end of June 2009. Will tie into existing campaigns provided by the City of Edinburgh Council.	The statistics gathered through the Carbon Management Plan will be able to show direct impacts, in terms of Carbon Dioxide emissions, due to all waste generated at the University. From this, it will be possible to measure and see change as educational and structural projects are rolled out. In terms of waste reduced and reused, procurement details for items such as paper will be investigated.
	Maintain and extend recycling schemes for paper, cardboard, plastic bottles, glass, aluminium and steel food and drinks cans, toner cartridges and fluorescent tubes.	This will be done as and when necessary and when need for extra collection facilities arises.	
Ensure that hazardous wastes are disposed of in accordance with legal requirements covering emissions and discharges. And reduce their use	Maintain existing facilities for the collection and environmentally sound disposal of redundant IT equipment and extend as necessary to comply	Facilities Manager with responsibility for waste management started investigating contractors in November 2008.	All hazardous wastes generated at the University will be disposed of in accordance with legal requirements.

	with the requirements of WEEE dir.		
where possible.	Liaise with relevant bodies over the disposal of hazardous waste and availability of disposal facilities.	Will investigate, in partnership with Health and Safety Adviser and site technicians at all campuses. Ongoing.	Clear procedures for the disposal of hazardous waste will be completed.
	Ensure that COSHH assessments are maintained for all relevant materials.	COSHH assessments controlled by Cleaning manager. Copies held at all campuses.	COSHH assessments will be collated to ensure best practice covering all areas.
	Ensure that waste from catering outlets are controlled.	Waste from all catering outlets is controlled by the Catering Manager. Evidence of control of cooking oil given by contractor.	The Catering Manager will ensure that no oils or other wastes are disposed of inappropriately.

G - Water

Objective	Target	Timeline / Milestones	Final Outcome
To reduce the use of water	The Sustainability Office will continue to liaise with all parties internal and external to the University to continue the established water conservation programme.

Integrate water management into the Carbon Management Plan. | Water usage will be continually monitored using 'smart metering' technology. Ongoing.

Water use is fully integrated into the Carbon Management Plan and reductions in use will fall in-line with overall targets to reduce Carbon Dioxide emissions by 25 by 2013. Work on reducing water consumption has already resulted in a £40,000 saving during 08/09. | The statistics gathered through the Carbon Management Plan will be able to show direct impacts, in terms of Carbon Dioxide emissions, due to all water used at the University. From this, it will be possible to measure and see change as educational and structural projects are rolled out. |

Monitoring: Progress against the stated objectives and targets outlined in the plan will be monitored and assessed by ESAG on a regular basis in accordance with the management review requirements of the Environmental Management System standard ISO 14001.

9 PROGRAM MANAGEMENT

The Programme Board – strategic ownership and oversight

The Edinburgh Napier University Carbon Management Plan will be driven and managed through the existing University systems and structures. This will allow full integration into University practices. ESAG will be responsible for the overall management of the programme.

9.1 Main roles and responsibilities

Gerry Webber, University Secretary will champion the project and have ultimate responsibility for strategic direction and for agreeing budgets outside those already available to the Sustainability Team. Also to oversee the implementation of the Carbon Management Plan, have strategic input into its development and review progress.

Project Leader: Grant Ferguson, Assistant Director Property & Facilities will coordinate the production, update and implementation of the Carbon Management Plan and report on its progress to the Project Sponsor..

Each Carbon Reduction Project being advanced will be allocated an owner and allocated resource. The owner will be responsible for adhering to milestones and producing monthly progress updates to the Assistant Director Property & Facilities on a monthly basis who will then report to ESAG.

Environmental Sustainability Advisor: Will coordinate the work of the Sustainability Office in line with developed policies and action plans. A key area of responsibility of this role is to communicate and engage with staff, students and the local community

Energy/Utilities Manager: Will work closely with the project leader and manage the technical projects included in the CMP. The Energy/Utilities Manager will also be responsible for data collection and reporting. Responsibilities will be incorporated into work action plans.

ESAG will have a major emphasis on Carbon Management and will meet six times a year.

In terms of carbon management, the ESAG role will include:

- reviewing and updating the CMP on an annual basis;

- monitoring and reporting emissions performance;

- maintenance of the opportunities database;

- internal and external communication; and

- engagement with sustainability/ environmental champions on awareness raising initiatives.

9.2 Succession planning for key roles

The establishment of the Sustainability office in 2008 has provided a strong team to drive forward the Carbon Management Plan and as the University's strategy is based on a team approach rather than key individuals the risks are minimal.

9.3 Ongoing stakeholder management

Stakeholders are those who can influence the direction, content and delivery of the plan and therefore have an impact on the level of success.

There are three broad groups:

i.   **Firstly** the key operational staff members who have the detailed knowledge of how existing systems operate, or fail to operate, and whose expertise we need to draw on to build our baseline and identify opportunities. They include all the main operational managers in Facilities Services and in the University campuses.

ii. **Secondly** a group broadly termed the opinion formers. These include existing members of environmental and sustainability working parties, academic colleagues who teach environmental management or have a significant sustainability element in the curriculum, the student union and student environmental groups. Engagement with this group will be important both in identifying and testing opportunities and in motivating others to accept change where that is required.

iii. **Thirdly**, a group termed the decision makers. The success of the strategy and implementation plan will depend on acceptance by the University's senior executive body, the Principal Executive Group and endorsement by University Court. A key member of this group is the Vice Principal, Research & Knowledge Transfer who is Project Sponsor of the project.

Engagement with project stakeholders started in Aug 08, following an identification process at a strategy and planning workshop. Initial engagement meetings were held in early autumn. The largest stakeholder event was the opportunities workshop, held in October 2008. This was attended by key stakeholders, many of whom hold senior positions at the University. Following this, further input was requested and given by e-mail.

Since the opportunities workshop, further stakeholders have been identified from two-way communication between the Sustainability Office and the University community. Further meetings and mini workshops will be held throughout the implementation period to ensure opportunities are continually explored.

As a result of the Carbon Management planning process the stakeholder groups have come together in meetings and workshops, as they have not before. The implementation of the programme will continue to build on this and promote coherent communications between inter-related departments and individuals.

9.4 Future engagement

The Carbon Management Plan will continue to engage with stakeholders throughout its implementation phase. This will be done by:

• Providing quarterly updates to existing committees and groups such as ESAG, Estates Committee, the Environmental Working Group and Eco Champions.

• Scheduling small workshops and meetings with key stakeholder groups, in particular the Facilities Services.

• Providing quarterly e-mail updates to all stakeholders identified.

• Posting news items on Sustainability Office notice boards and in the monthly Online Napier News.

• Regular updating of the Sustainability Office Carbon Management web pages. There will also be an opportunity to comment on and have input into the project via the website.

• Identifying new stakeholders and updating the stakeholder database on an ongoing basis.

• Holding regular opportunities workshops.

9.5 Annual progress review

Progress on the Carbon Management Plan will be reported bi-monthly at ESAG, quarterly at Estates Committee and discussed at Sustainability Office weekly meetings.

A formal review of performance against the Carbon Management Plan will be undertaken annually, at the end of each academic year. A report will be prepared on the basis of this review to be presented to ESAG and Estates Committee. This report will include:

• CO_2 emissions for the previous academic year;

• achievements from the past year;

• recommendations and forward look for the following year; and

• targets and action plans for the following year.

Updates on the project will be provided at least once a term to:

• all key stakeholders;

• Estates Committee;

• the Environmental Working Group;

• Eco Champions (Students and Staff)

Appendix A: Carbon Management Matrix – Embedding

	CORPORATE STRATEGY	PROGRAMME MANAGEMENT	RESPONSIBILITY	DATA MANAGEMENT	COMMUNICATION & TRAINING	FINANCE & INVESTMENT	POLICY ALIGNMENT *

BEST **5**	• Top level target allocated across organisation
	• CO_2 reduction targets in Directorate Business Plans
		• Senior Management Team/Committee/Court review progress against targets on quarterly basis
		• Quarterly diagnostic reports provided to Directorates
		• Progress against target published externally
			• CM integrated in responsibilities of senior managers
			• CM part of all job descriptions
			• Central CO_2 reduction advice available
			• Green Champions leading local action groups
				• Quarterly collation of CO_2 emissions for all sources
				• Data externally verified
				• M&T in place for:
				  ○ buildings
				  ○ waste
				  ○ transport
					• All staff given formalised CO_2 reduction:
					  ○ induction and training
					  ○ communications
					• Joint CM communications with key partners
					• Staff awareness tested through surveys
						• Finance committed for 2+yrs of Programme
						• External funding being routinely obtained
						• Ring-fenced fund for carbon reduction initiatives
							• CO_2 friendly operating procedure in place
							• Central team provide advice and review, when requested
							• Barriers to CO_2 reduction routinely considered and removed

4	• CO_2 reduction commitment in Corporate Strategy
	• Top level targets set for CO_2 reduction
	• Climate Change Strategy reviewed annually
		• Sponsor reviews progress and removes blockages through regular Programme Boards
		• Progress against targets routinely reported to Senior Mgt Team
			• CM integrated in to responsibilities of department heads
			• Senior Management Team/Committee/Court regularly updated
			• Staff engaged though Green Champion network
				• Annual collation of CO_2 emissions for:
				  ○ buildings
				  ○ transport
				  ○ waste
				• Data internally reviewed
					• All staff given CO_2 reduction:
					  ○ induction
					  ○ communications
					  ○ CM matters communicated to external community
						• Coordinated financing for CO_2 reduction projects via Programme Board
						• Finances committed 1yr ahead
						• Some external financing
							• Comprehensive review of policies complete
							• Lower level policies reviewed locally
							• Unpopular changes being considered

3	• CO_2 reduction vision clearly stated and published
	• Climate Change Strategy endorsed by Cabinet and publicised with staff
		• Core team regularly review CM progress:
		  ○ actions
		  ○ profile & targets
		  ○ new opportunities
			• An individual provides full time focus for CO_2 reduction and coordination across the organisation
			• Senior Sponsor actively engaged
				• Collation of CO_2 emissions for limited scope i.e. buildings only	• Environmental / energy group(s) given ad hoc:
					  ○ training
					  ○ communications
						• A view of the cost of CO_2 reduction is developing, but finance remains ad-hoc
						• Some centralised resource allocated
						• Finance representation on CM Team
							• All high level and some mid level policies reviewed, irregularly
							• Substantial changes made, showing CO_2 savings

2	• Draft Climate Change Policy • Climate Change references in other strategies	• Ad hoc reviews of CM actions progress	• CO_2 reduction a part-time responsibility of a few department champions	• No CO_2 emissions data compiled • Energy data compiled on a regular basis	• Regular awareness campaigns • Staff given CM information on ad-hoc basis	• Ad hoc financing for CO_2 reduction projects	• Partial review of key, high level policies • Some financial quick wins made
1 **Worst**	• No policy • No Climate Change reference	• No CM monitoring	• No recognised CO_2 reduction responsibility	• No CO_2 emissions data compiled • Estimated billing	• No communication or training	• No specific funding for CO_2 reduction projects	• No alignment of policies for CO_2 reduction

Appendix B – Edinburgh Napier University - Research and Knowledge Transfer Activities

Scottish Energy Centre (SEC) The Scottish Energy Centre is a portal for Research, Knowledge Transfer and Expert Services activity in the energy sector at Edinburgh Napier University. Founded in 1984 as a conduit for expert services to meet the needs of industry; the portfolio of activities has expanded to help support commerce and industry in meeting the challenges of energy efficiency targets, increased energy costs, government initiatives and legislature. The cross sector of work encompasses energy modelling, energy efficiency, building envelope, passive systems, mechanical systems, air tightness, life cycle analysis and renewables. A strongly renewables focussed Sustainable Energy Research Group has taken forward research initiatives which have resulted in a number of high profile demonstration projects and new products.

Contact: John Currie j.currie@napier.ac.uk (Tel: 0131 455 2253) www.napier.ac.uk/sec

Transport Research Institute Edinburgh Napier hosts the leading UK applied research and knowledge transfer institute for transport. The institute is internationally recognised and work undertaken includes:

- Transport Modelling & Technology Cluster incorporating Planning & Engineering, Freight Modelling, Infrastructure, Transport Sensing and Energy & Environment

- Social Dimensions of Transport Cluster incorporating Transport Safety, Transport & Society, Transport Psychology, Pedestrian & Mobility Planning and Travel Behaviour.

- Transport Planning & Operations Cluster incorporating Transport Policy & Economics, Passenger Transport, Maritime Research, Rail Systems, Taxi Studies and Freight & Logistics.

Contact: Prof Kevin Cullinane tri@napier.ac.uk (Tel: 0131 455 2807) www.tri.napier.ac.uk

Building Performance Centre BPC is widely recognised by industry and government as the leading centre for research and knowledge transfer for building performance and innovation in Scotland. Recent contracts have been funded by Defra, Scottish Government, Communities Scotland, Historic Scotland and the Scottish Building Standards Agency. BPC staff are involved in development, design and completion testing of over 300 construction project sites per year involving housing, schools, hospitals, auditoria, theatres, offices, cinemas and public buildings. Project Awards have included Stirling Prize for architecture, RIAS Awards, RIBA Awards and the top rated BREEAM public sector building in Scotland.

 BPC has also assisted a range of companies in the development of new products or applied systems, examples include:
- energy efficiency (BCA Insulation)
- renewable energy (Glendevon Energy www.glendevonenergy.co.uk)
- sound insulation (Icopal Monarfloor www.icopal.co.uk)
- structural requirements (Cullen Building Products www.cullen-bp.com)
- use of recycled materials and reduction in site waste (2G Environmental www.greengrinder.co.uk)

Each year since 2005 over 110,000 new build homes across the UK have been built incorporating house designs and working details from Edinburgh Napier University. The majority of these have been developed in England and Wales with Robust Details Ltd (www.robustdetails.com). BPC also works closely with other Edinburgh Napier R&KT Centres such as Scottish Energy Centre, Centre for Timber Engineering, Advanced Materials Centre and the Centre for Infrastructure.

Contact: Richard Mackenzie bpc@napier.ac.uk Tel: 0131 455 5106

Centre for Timber Engineering This unique UK centre, which was established by industry and government, provides a focus for excellence in education, research, consultancy and knowledge transfer in the constructional and engineering uses of timber. CTE takes great pride on close links with the UK timber industry and works across a broad range of different activities, main areas include:

- Education and knowledge transfer.

- Applied research (e.g. optimal use of Sitka spruce & product development).

- Strategic research – including wood & fibre science.

- Innovative design, construction and performance of timber buildings and structures.

- Logistics and optimisation of timber supply.

- The time is right for timber; its global importance has never been higher

Contact: Prof Philip Turner Tel: 0131 455 2819 Email: cte@napier.ac.uk

Photovoltaic Panels Edinburgh Napier University is proud to host one of the UK's largest array of photovoltaic panels at its Merchiston Campus building. The project was part-financed (60%) by the UK Government's PV electricity demonstration programme through the office of Energy Saving Trust. The University has plans to generate hydrogen from solar electricity that will be stored for nocturnal production of electricity using fuel–cell technology, thus completing the full cycle of generation, storage, and reproduction of sustainable energy. The current array provides electricity to the Jack Kilby Computing Centre based at Merchiston Campus.

Prof Tariq Muneer (Professor of Energy) Tel: 0131 455 2541 t.muneer@napier.ac.uk

New Ultra-Efficient Solar Water Heater Following initial ground breaking research by Edinburgh Napier University staff a new joint partnership has been formed with Windsave to develop an ultra high efficient solar water heater for existing and new build housing.

Contact: Prof Tariq Muneer (Professor of Energy) Tel 0131 455 2451t.muneer@napier.ac.uk

Centre for Informatics Research (CIR) One of 3 projects funded by the internationally recognised Scottish Enterprise Proof of Concept scheme, CIR has been successful in securing funding for a major new product that will use the power of computing to reduce carbon emissions generated by travel. The funding will allow product research and development and eventual commercialisation.

"Potentially this award will not only reduce Scotland's and many other nation's carbon footprint, but also bring commercial benefits to the Scottish and UK economy."
Contact: Dr Neil Urquhart Tel: 0131 455 2655 n.urquhart@napier.ac.uk

Biofuel Research Centre Edinburgh Napier University has launched the Biofuel Research Centre (BfRC) to find sustainable alternatives to fossil fuel-based energy.
Contact: Professor Martin Tangney Tel: 0131 455 2217 m.tangney@napier.ac.uk

DART (Microbial **D**evulcanisation **A**nd **R**ecycling of rubber from used rubber **T**yres) is an £160,000 Scottish Enterprise-funded project under the Proof of Concept scheme to tackle the problem of waste rubber tyres.
Contact: Professor Nick Christofi Tel: 0131 455 2490. n.christofi@napier.ac.uk