



University of Plymouth

University of Plymouth Carbon Management Plan 2010 - 2015

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Contents

Foreword

Management Summary

1 Introduction

1.1 [Overview of the University and Structure](#)

1.2 [The HECM Programme](#)

1.3 [Achievements to Date](#)

2 Carbon Management Strategy

2.1 [Context and Drivers](#)

2.2 [Vision](#)

2.3 [Strategic Themes](#)

2.4 [Targets](#)

2.4 [Objectives](#)

3 Emissions baseline and projections

3.1 [Scope](#)

3.2 [Baseline](#)

3.3 [Projections and Value at Stake](#)

4 Carbon Management Projects

4.1 [Behaviour Change](#)

4.2 [Improving Space Utilisation](#)

4.3 [Fuel Conversions](#)

4.4 [Energy Efficiency Projects](#)

4.5 [Project Summary](#)

5 Carbon Management Plan Financing

5.1 [Assumptions](#)

5.2 [Benefits/Savings – Quantified and Unquantified](#)

5.3 [Additional Resources](#)

5.4 [Financial Costs and Sources of Funding](#)

6 Actions to Embed Carbon Management in University Activities

6.1 [Policy](#)

6.2 [Responsibility](#)

6.3 [Data Management](#)

6.4 [Communication and Training](#)

6.5 [Finance and Investment](#)

6.6 [Procurement](#)

6.7 [Monitoring and Evaluation](#)

7 Programme Management of the CM Programme

7.1 [Sustainability Governance Structure](#)

7.2 [OVC Sustainability Council \(Advisory Group\)](#)

7.3 [Sustainability Executive Group](#)

7.4 [The Carbon and Utilities Board](#)

7.5 [Capital Executive Boards](#)

7.6 [The Carbon Management Team](#)

7.7 [Continuity planning for key roles](#)

7.8 [Ongoing Stakeholder management](#)

7.9 [Reporting and annual progress review](#)

7.10 [Regular progress reporting](#)

7.11 [Annual reporting to the Board of Governors](#)

APPENDICES

Appendix A: Carbon Management Matrix

Appendix B: Communication and awareness strategy

Appendix C: Definition of Projects

Appendix D HR Strategy

Appendix E IT Strategy

Appendix F Sustainable Procurement Strategy

Appendix G Sustainable Estate Strategy

Appendix H Finance Strategy

Foreward

The University of Plymouth is committed to minimising its carbon dioxide emissions by appropriate planning and investment, by involving staff, and by providing students with an education in sustainability relevant to a world threatened by climate change.

The University of Plymouth sustainability ambition is to be a customer focused, socially responsible organisation, demonstrating sustainability in our activities and ensuring our graduates are aware of economic, environmental, social and ethical issues including the importance of engaging with business, government, social enterprise, and communities. Consistent with this ambition, the University is establishing a new structure for the management of sustainability issues that includes Office of the Vice Chancellor oversight of a tricameral arrangement: a new Office of Procurement and Sustainability; and new University-wide Institute for Sustainability Solutions Research; and a redesigned Centre for Sustainable Futures focused on curriculum related issues, as part of our Teaching and Learning Directorate. This structure mirrors international best practice in the Sector and will ensure that our participation in the Carbon Management program has firm ownership at the most senior levels of the University.

David Wheeler

**Pro Vice-Chancellor and Dean - Plymouth Business School
May 2010**

The Office of Procurement and Sustainability (OPS) is in a unique position, bringing together the key elements in relation to carbon emissions, responsibility for: procurement, energy and environmental management, space and property management and capital projects. All our objectives lead individually and collectively to the reduction of carbon emissions in pursuit of our overarching sustainability aims. Whichever scope we talk about, OPS is at the heart of the requirement, delivery, managing the utilisation and recording the performance. In concert with our colleagues in the Institute of Sustainable Solutions Research and the Centre for Sustainable Futures (Teaching and Learning Directorate), we develop research-based strategies in which we can deliver rich learning experiences. We have adopted an evidence based approach to performance in all OPS activities and will welcome continued assessment of our carbon reduction performance. Our carbon reduction targets are reflected as corporate key performance indicators; this is not a plan to leave on the shelf, but one that will drive both our own and the wider university's behaviour for years to come.

Jenny Bushrod

**Director of the Office of Procurement and Sustainability
February 2011**

Management Summary

Sustainability and carbon reduction are firmly embedded into University of Plymouth's corporate plan, strategies, policies and governance structure. This Carbon Management Plan complements the existing strategies and policies and focuses on the on the reduction of carbon emissions from the University's operations. In addition, we recognise that we can make a significant difference through our teaching and research – creating new greener technologies and instilling commitment to a low carbon future into our students, alumni, staff and other stakeholders. We have set an ambitious target taking these three aspects:

The University of Plymouth will become carbon neutral by 2030.

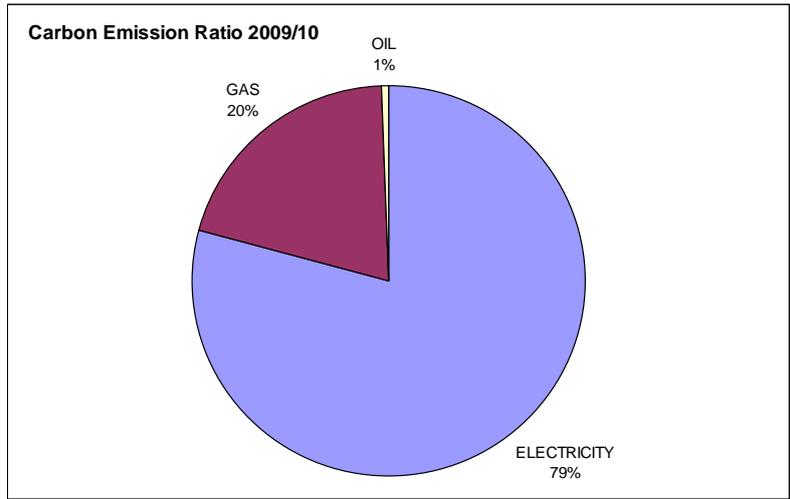
This will be achieved by:

- reducing the University's own operational emissions as far as possible and
- compensating the remaining emissions by:
 - o reductions achieved through research and development of innovative technologies and
 - o instilling low carbon values and behaviours into our students and future alumni.

With respect to University's own emissions, the remit of this document includes Scope 1 (direct use of carbon-based fuels), Scope 2 (indirect use, e.g. grid electricity, business travel) as well as waste and water from Scope 3¹. To date we have done well - since 1990 our carbon emissions have decreased by 19% when student numbers have increased by 62% over the same period. In 2009/10 our utility based carbon emissions totalled 12,293 T CO₂ and the annual cost of gas, oil and electricity was £2.12M.

¹ Emission scopes as defined by the Greenhouse Gas protocol

² Based on UK-wide energy mix data

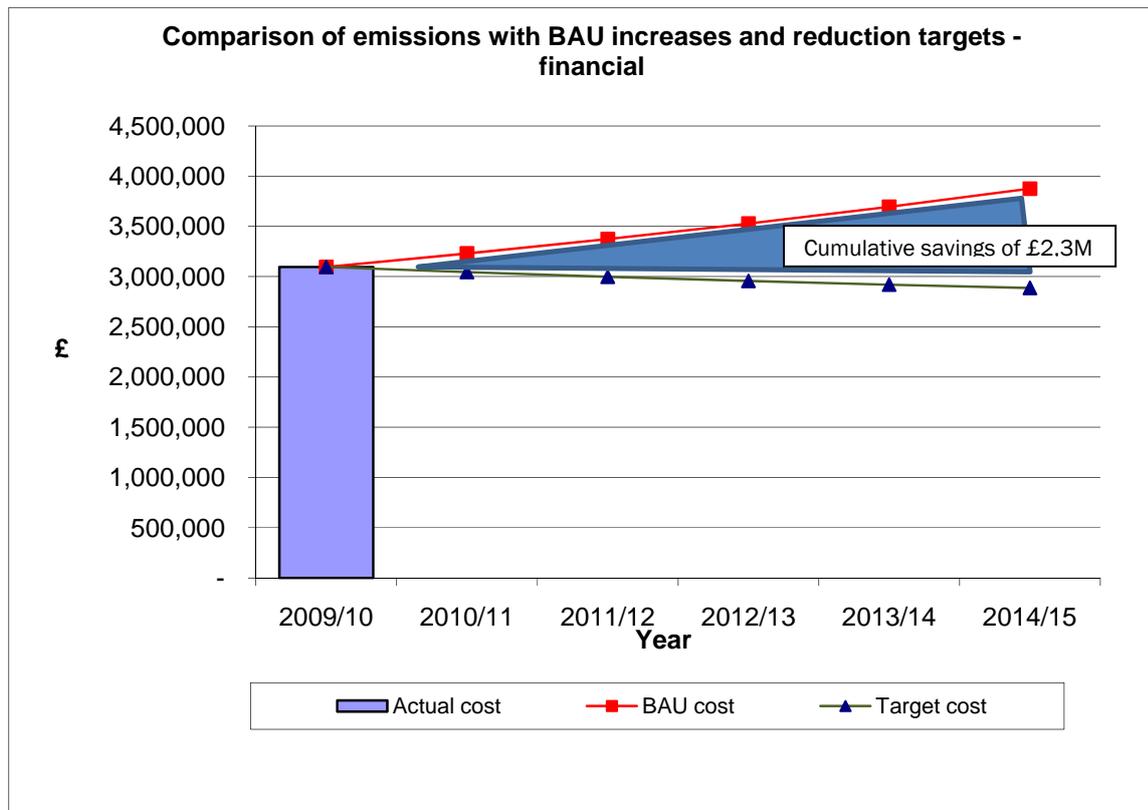


The table below shows the targets set to reduce our emissions, in line with the 2020 sector agreed target communicated by HEFCE.

University CO2 Emissions Targets. Tonnes CO2.				
HEFCE Baseline Year	UoP Current Baseline	Targets against 2005 Baseline Year		
2005	2010	2015	2020	2030
12,645	12,293	9,483	7,207	6,040
		-25%	-43%	-52%

Current Baseline and Target emissions include Scopes 1,2 and 3 emissions. A lack of available data means the HEFCE baseline year only includes gas, oil and electricity emissions.

The 2015 target translates into a 16% reduction from current emissions over the next five years. By achieving this target, the University stands to gain £2.3M over the period. This figure represents the ‘Value at Stake’, or the difference between the ‘do nothing’ scenario, in which emissions increase, and achieving the reduction target.



The following strategic themes will contribute to the achievement of these objectives:

- To reduce energy usage in buildings and equipment
- To make use of alternative and renewable energy sources where cost effective
- To reduce emissions associated with waste and procurement.
- To reduce emissions associated with travelling and vehicles
- To create policies and strategies that ensure that carbon management remains at the core of all University activities.
- To communicate with and involve key stakeholders in order to develop and implement the Plan, this includes all staff, students and local community organisations.
- To embed guidance for students' in educational and awareness-raising initiatives.
- To augment the environmental dialogue and communication with stakeholders - staff, students, peer organisations and the local community.

This plan identifies over 40 projects within the above areas that will result in a potential annual emissions reduction of nearly 3000 TCO₂ and an annual cost saving of over £500k annually. This represents 100% of the five year target. The total investment required to implement the projects is £2M, with an overall payback period of 4 years. Approximately 45% of the projects have already been approved for implementation. Funding is allocated

from the University's revolving green fund, a ring-fenced 'regenerative' budget for carbon reduction of £374k and from previously approved projects. The remaining 55% of projects have been quantified and proposals for funding will be submitted through existing channels. A pipeline of initiatives has been identified and will be added to on an on-going basis. The Carbon and Utilities Board will be responsible for evaluating and prioritising these new initiatives and for securing funding from external and internal sources.

The University is also considering a number of ambitious large-scale projects that, if implemented, will result in significant carbon reduction. These include a district heating scheme in conjunction with Plymouth City Council and other neighbouring organisations such as hotels, the Museum and The Art Gallery.

Carbon Management is firmly embedded within the university's sustainability governance structure. The strategic ownership of the carbon neutrality target rests with the Sustainability Executive Group. This Group brings together the tricameral arrangement, with the Office of Procurement and Sustainability focusing on reducing carbon from UoP's operations and the Institute for Sustainability Solution Research and the Centre for Sustainable Futures (Teaching and Learning Directorate) working towards reducing carbon emissions beyond direct control of the University.

The responsibility for achieving the delivery of this plan rests with the Director of the Office of Procurement and Sustainability and the 2015 target has been included as one of the University's key KPIs. Progress towards the target will be reported annually to the Board of Governors.

1.0 Introduction

1.1 Overview of the University and Structure

The University of Plymouth is one of the UK's most prominent and dynamic universities with an educational history dating back to 1862. Consistently ranked as one of the top three modern universities, Plymouth has over **30,000** students, **almost 3,000** staff and an annual income of around **£200** million. The university has a major role in developing the local economy and its activities make a major contribution to the South West Region. Its activities include partnerships with the Combined Universities in Cornwall. The Peninsula College of Medicine and Dentistry (a joint venture with Exeter University) is the largest provider of health education in the South West

The University houses Europe's largest Marine Institute, with a dedicated world-class marine building opening in 2012 which will include state-of-the-art research facilities and new wave tank testing equipment that will play a significant role in developing the 28GW UK marine renewable energy industry and the 200GW global industry. The University also maintains significant general research interests in climate change adaptation, non-marine renewable energies and sustainable buildings.

The university is committed to improving the experience of its students, demonstrated by a high level of investment in new facilities.

1.2 The HECM Programme

The Carbon Trust's Higher Education Carbon Management Programme is a 10 month programme aimed at reducing the direct emissions under the control of universities. The main steps in the HECMP process are as follows:



The first four steps have been undertaken systematically by the University from April 2010 to January 2011, culminating in this Carbon Management Plan. The Carbon Management Plan details target reductions over the next 5 years and specific actions regarding how these targets are to be achieved. The implementation of the plan, step 5, will be carried out over the coming months and years.

1.3 Achievements to Date

1994	Building Management System: An automated Building Management System (BMS) is introduced. It now controls approximately 95% of the Plymouth Campus buildings. This system has been one of the key factors in ensuring the university enjoys a better than average energy KPI.								
1996	Energy Policy: The University's first Energy and Water Policy. This has been updated and renewed regularly. The current policy is published on the University web site..								
2002	UK Emissions Trading Scheme (UKETS) - the University was required to account for and trade in CO2 emissions arising from gas electricity and oil usage for the period 2002 to 2007. The university is one of the first organisations to join the trading scheme; the world's first carbon trading system. The carbon trading scheme was subsequently superseded by the Carbon Reduction Commitment.								
2003	Staff, Student and Business Travel: The University develops a Green Travel Plan.								
2004	Environmental Policy: The University's first Environmental Policy. It has been updated and renewed regularly. The current policy is published on the University web site								
2005	An Environment Committee is established and takes responsibility for implementing the Environmental Policy.								
2005	Waste: University develops a Waste Strategy. By 2009 waste to landfill had reduced by 40% over the previous 3 years and continues to improve on its recycling rates. The waste management strategy includes a greatly increased level of recycling and an obligation to ensure that all opportunities to minimise landfill and to maximise recycling are introduced.								
2005	The University is accredited, under The Energy Efficiency Accreditation Scheme, by the Carbon Trust - 2005/10.								
2006	The University is extremely successful in attaining grant funding for embedding sustainability into its operations and becomes a Centre of Excellence in Teaching and Learning, it houses the Centre for Sustainable Futures on its Plymouth Campus.								
2007	Sustainability Strategy. The university adopts a comprehensive sustainability strategy. This is due to be updated in line with current UoP philosophy. A summary of the current policy is attached as an appendix.								
2007	The water conservation methods used by the university have been seen as an exemplar for which the University was highly commended in the 2005/6 HEFCE sponsored Green Gown awards.								
2008	The Office of the Vice Chancellor sets up one of its first Advisory Groups on Sustainability chaired by the Vice Chancellor's Policy Officer, replacing the Environment Committee with a wider sustainability focus.								
2009	The University's Environmental Management System is accredited to the requirements of ISO 14001. This is a clear message that the university acknowledges its operation impacts upon the environment but equally that it has a strong desire to reduce its impact and show continuous improvement.								
2010	The University has consistently been one of the top performing universities in the People and Planet Green League Table. Over the four years of the competition, it can rightly claim to be the 'greenest' university in the country. <table border="1"> <tr> <td>2007</td> <td>Position : 2nd overall</td> </tr> <tr> <td>2008</td> <td>Position : 2nd overall</td> </tr> <tr> <td>2009</td> <td>Position : 6th overall</td> </tr> <tr> <td>2010</td> <td>Position : 1st overall</td> </tr> </table>	2007	Position : 2 nd overall	2008	Position : 2 nd overall	2009	Position : 6 th overall	2010	Position : 1 st overall
2007	Position : 2 nd overall								
2008	Position : 2 nd overall								
2009	Position : 6 th overall								
2010	Position : 1 st overall								
2010	The university measures its performance against the Environmental and Social Responsibility Index through the universities that count initiative. It has achieved an overall performance score of 80 % and is ranked as one of the top five overall performers.								
2010	The University establishes a new structure for the management of sustainability. It includes Office of the Vice Chancellor oversight of a tricameral arrangement: a new Office of Procurement and Sustainability; the new Institute of Sustainable Solutions Research; and a redesigned Centre for Sustainable Futures (Teaching and Learning Directorate) focused on curriculum related issues ning The Directors of this structure make up the Sustainability Executive and this structure mirrors international best practice in the Sector.								

2.0 Carbon Management Strategy

2.1 Context and Drivers

Climate Change

Climate change is emerging as one of the great challenges for modern society. The basic mechanics of climate change are well understood; the world is warming, much of the warming is due to human emissions of greenhouse gases particularly carbon dioxide and the changes are set to accelerate in the future, bringing many and varied impacts around the world. The Stern review made it clear that the benefits of strong early action on climate change outweighed the costs.

International and national regulation

In recent years there has been a growing concern relating to climate change, air pollution, depletion of non-renewable resources and the security of supply of carbon based fuels, which have provided a new impetus for prudent management of energy consumption. Under the Kyoto Protocol, the UK Government agreed to set national targets in reducing carbon emissions, 34% by 2020 and 80 % by 2050, with respect to a 1990 baseline year.

This has provoked legislative responses such as the EU Energy Performance of Buildings Directive – this includes a number of obligations on EU member states to improve energy efficiency of buildings. The UK government has met some of the obligations by introducing more stringent Building Regulations. The Government has also enacted the Energy Performance of Buildings Regulations (2007) which requires that all public buildings larger than 1000 m² must have a Display Energy Certificate and must have an Advisory Energy Report in place by 1st January 2009. This applies to 22 university buildings. In addition the Carbon Reduction Commitment, a cap and trade scheme is being proposed which will start in 2011 following a review in light of the recent Government Spending Review This will cost the university in the region of **£136k** pa.

HEFCE requirements

The Higher Education Funding Council for England (HEFCE) has responded to Government concerns through the publication of a report on Energy Management in Higher Education in July 2003 and a consultation on Sustainable Development in Higher Education in April 2005. In addition, HEFCE commissioned SQW Consulting to develop a carbon reduction target and strategy for HE in England, supported by UUK and Guild HE.

The targets agreed are in line with the UK Government targets – 34% by 2020 from 1990 levels. However, to compensate for sector's emission growth since 1990 and 2005, a 43% is required from the 2005 baseline by 2020 to meet the sector target. The Capital Investment Framework (CIF II) linked the allocation of capital funding for Universities to carbon reduction.

Increasing and volatile energy costs

Political uncertainty and the prospect of future shortages of fossil fuels have led to significantly increased energy costs. The average unit cost of gas and electricity has risen by as much as 84% and 41% respectively over the past three years. This provides a strong incentive for investment in carbon reduction measures and energy efficient design.

Reputational drivers

Increased exposure in the media regarding climate change and the need to respond by reducing emissions fuels a rising concern from staff, students and the wider public about global warming and the environmental impact of the institution. In addition, both existing and future students have financial concerns about the cost of accommodation, of which utility costs are a significant factor.

The environmental, political, economic and social context is then naturally a driver in terms of the University's academic response, be it in terms of developing sustainable aware citizens or research into solutions to respond to the global concerns of climate change.

2.2 Vision

Our Vision is to be the enterprise university. This is supported by a Mission that includes our commitment to “driving social inclusion, economic prosperity, and environmental quality in our local community and beyond”

Our mission is supported by five University ambitions, the fourth of which is Sustainability:

“To be a customer focussed, socially responsible organisation, demonstrating sustainability in our activities and ensuring our graduates are aware of economic, environmental, social and ethical issues including the importance of social enterprise, community engagement and volunteering”.

2.3 Strategic Themes

The University has just approved a new overarching Sustainability Strategy, as one of its key Strategic Themes. Within this strategy the Office of Procurement and Sustainability sets out the wider agenda and the links to other University strategies:

- Commits to practices that minimise the possibility of negative environmental, social, economic and technological impacts;
- Recognises the importance of the well-being of staff and students and their role in helping to create a more sustainable future;
- Seeks to improve our environmental performance to meet and wherever practicable exceed national and international guidelines for environmental, social and economic sustainability;

- Commits to the triple bottom line, i.e. financial, environmental and social considerations in our decision making;
- Commits to enhancing the ecological integrity of our campus landscape;

We will deliver these commitments through the corporate strategies listed below with specific objectives identified for each relevant Policy. The relevant sustainability policies are listed in the following Appendices. Appendix D HR Strategy; Appendix E IT Strategy; Appendix F Sustainable Procurement Strategy; Appendix G Sustainable Estate Strategy; Appendix H Finance Strategy

This Carbon Management Plan is reflected across a number of these strategies, in particular the Sustainable Procurement Strategy and the Sustainable Estate Strategy, which incorporate policies and action plans on the environment, energy and water, waste, sustainable travel and sustainable food. Listed below are the key carbon reduction themes:

1. To reduce energy usage in buildings and equipment through:

- more efficient use of heating, cooling and ventilation systems
- reducing heat loss from existing buildings
- encouraging building occupants not to overheat buildings in winter or to overcool in summer
- making sure all new buildings and building refurbishments are undertaken to the best achievable energy standard
- improving energy efficiency of lighting and electrical equipment by replacing with more efficient alternatives
- encouraging users to keep electricity usage to the minimum.

2. To make use of alternative and renewable energy sources where cost effective.

3. To reduce emissions associated with waste and procurement.

4. To reduce emissions associated with travelling and vehicles by :

- reducing the need for travelling
- encouraging alternatives to private car use
- making use of alternative fuels

5. To create policies and processes which will ensure that carbon management remains at the core of all University activities.

6. To communicate with and involve key stakeholders in order to develop and implement the Plan, this includes all staff, students and local community organisations.

7. To embed educational guidance for students' in environmental matters: The University aims to lead in the Higher Education sector in offering all students a basic understanding of the science and issues of climate change. This is taken forward by the Directorate of Teaching and Learning.

8. To augment the environmental dialogue and communication with stakeholders: The University is recognised by staff, students, peer organisations and the local community as an institution which has made a major effort to reduce and continue to further reduce its carbon emissions and to achieve the emissions targets set for public institutions by the Government. In continuing with this regime, it will demonstrate and publicise good practice in carbon management for the environmental and academic benefit of its students.

2.4 Targets

The University of Plymouth will become carbon neutral by 2030.

This will be achieved by:

- reducing the University's own operational emissions as far as possible and
- compensating the remaining emissions by:
 - o reductions achieved through research and development of innovative technologies and
 - o instilling low carbon values and habits into its students

The following targets have been agreed with regards to the University's operational emissions:

University CO ₂ Emissions Targets. Tonnes CO ₂ .				
HEFCE Baseline Year	UoP Current Baseline	Targets against 2005 Baseline Year		
2005	2010	2015	2020	2030
12,645	12,293	9,483	7,207	6,040
		-25%	-43%	-52%

Current Baseline and Target emissions include Scopes 1,2 and 3 emissions. A lack of available data means the HEFCE baseline year only includes gas, oil and electricity emissions.

The University's previous Energy and Water policy successfully achieved its target reductions, reducing utility-based emissions by 15 % compared to 2003/04. The new policy will target reductions further and provide efficiency strategies to enable real cost and emission savings.

The below chart shows the historic utility based emissions and provides an indication how current and potential carbon reduction initiatives will have an impact. It also shows the short, medium and long-term targets.

For the university to achieve a long-term target of carbon neutrality by 2030, it will have to reduce or offset its emissions by typically 5% year on year.

No long-term measures are included at this stage due to the difficulty of predicting technical and political developments over such long periods. However, it is envisaged that changes in carbon emissions from fuels will occur through developments such as underground coal gasification, carbon capture and sequestration and hydrogen generation and that further technical developments such as fuel cells, and cheaper solar electricity will provide future opportunities for reducing emissions to meet the long-term target. The Carbon Management Plan is intended to be a working document, which will be updated as needed to meet the longer-term target. The initial Plan period is 5 years after which it will be re-issued.

2.5 Objectives

1. To meet the needs of the university community for high quality facilities. To achieve an agreed standard of comfort as detailed in the Energy Policy.
2. To continue to purchase energy and water at the most economic and environmentally acceptable cost.
3. To ensure compliance with the Energy Performance in Buildings Directive, including Display Energy Certificates (DECs).
4. To comply with the UK Governments Carbon Reduction Commitment (CRC) by minimising CO₂ emissions and entering the UK/EU Carbon trading system.
- 5. To reduce utility based CO₂ emissions by 25% by 2015 and 43% by 2020, to be carbon neutral by 2030. All targets relative to a 2005 baseline.**
6. To reduce water used in its existing facilities to below 4 lts/student per day by 2015 as detailed in the energy and water policy. Nb Water consumption has carbon related emissions for pumped supplies and from domestic hot water consumption.

7. To ensure, as a minimum, that all new facilities and major refurbishments adopt current best practice for water and energy efficiency and achieve an Excellent rating or higher under the BREEAM assessment as requested by Government for publicly funded new buildings.
8. To reinvest money into the HEFCE Salix Revolving Green Fund as detailed in the scheme guidance. Currently the ring-fenced budget is £374k.
9. To complete all utility efficiency projects for which the business case shows a simple payback of five years or less.
10. To take advantage of grant support and funding for energy and water saving initiatives.
11. To identify future energy, water and facilities related risks and ensure that adequate preparation and resources are in place to meet and reduce those risks.
12. To forge a stronger partnership with staff and students, improving awareness of the energy and water, and environmental policies together with this carbon plan. To create a dialog to ensure they understand the level of support and commitment required through their actions in collaboration with the UPSU.
13. To continue to be recognised by staff, students, future students and peer organisations as a University that gives a high priority to sustainability and the environment, carbon reduction, and in particular to energy and water efficiency.
14. To provide regular training for operational staff in energy efficiency awareness and practices.
15. To continue to communicate with staff and students via the university intranet environmental community and other means identified in the communication strategy.

3.0 Emissions baseline and projections

In the academic year 2009/10 the University of Plymouth emitted 12,300 tonnes of Carbon Dioxide at utility cost of approximately £2.4million.

This plan aims to reduce the Universities carbon footprint by 25% over the next five years and 43% by 2020 compared to 2005/6 levels.

The five year target equates to a Value at Stake of £2.3million

3.1 Scope

It is important to understand the scope of emissions that this plan intends to cover. The University has measured its Carbon Footprint in the 2005/6 and 2009/10 academic years. However over the last five years we have made improvements in our data capture capability and we now report on a wider range of carbon emissions, expanding the range of scope covered. The three scopes set out by the World Business Council for Sustainable Development are:

- **Scope 1** – covers direct GHG emissions generated on site eg gas and oil consumption and from onsite company owned vehicles and facilities.
- **Scope 2** – includes net indirect emissions from energy imports and exports, particularly imported and exported electricity and steam.
- **Scope 3** – includes other indirect GHG emissions, such as employee business travel, product transport by third parties, outsourcing of core activities and off-site waste disposal/management activities, Water consumption and procurement related emissions

The table below shows a summary of what scope was covered in 2005/6 and what we are including in the carbon reported now.

WBCSD	Type	2005/6	2009/10
Scope 1	CHP	Not Applicable	Not Applicable
	Solid fuels	Not Applicable	Not Applicable
	Liquid fuels	Included	Included
	Gaseous fuels	Included	Included
	Vehicle fleet	Data Not Available	Included
	Refrigerant Gases	Data Not Available	Data Not Available
Scope 2	Grid electricity	Included	Included
	Heat purchased	Not Applicable	Not Applicable
Scope 3	Employee commuting	Data Not Available	Data Not Available
	Business Travel	Data Not Available	Included

	Other (Water / Waste)	Data Not Available	Included
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As the table shows, over the last four years the University has expanded its focus on carbon and with the exception of refrigerant gases is covering all aspects of Scope 1 & 2 emissions and has made good progress on including aspects of Scope 3. As part of this plan it is intended to report emissions from refrigerant gases in 2010/11 and look to integrate employee commuting. We are also acknowledge that we can play a part in influencing our supply chain and look forward to the results of the recently commissioned HEFCE study looking at how the sector can report and reduce emissions arising through procurement.

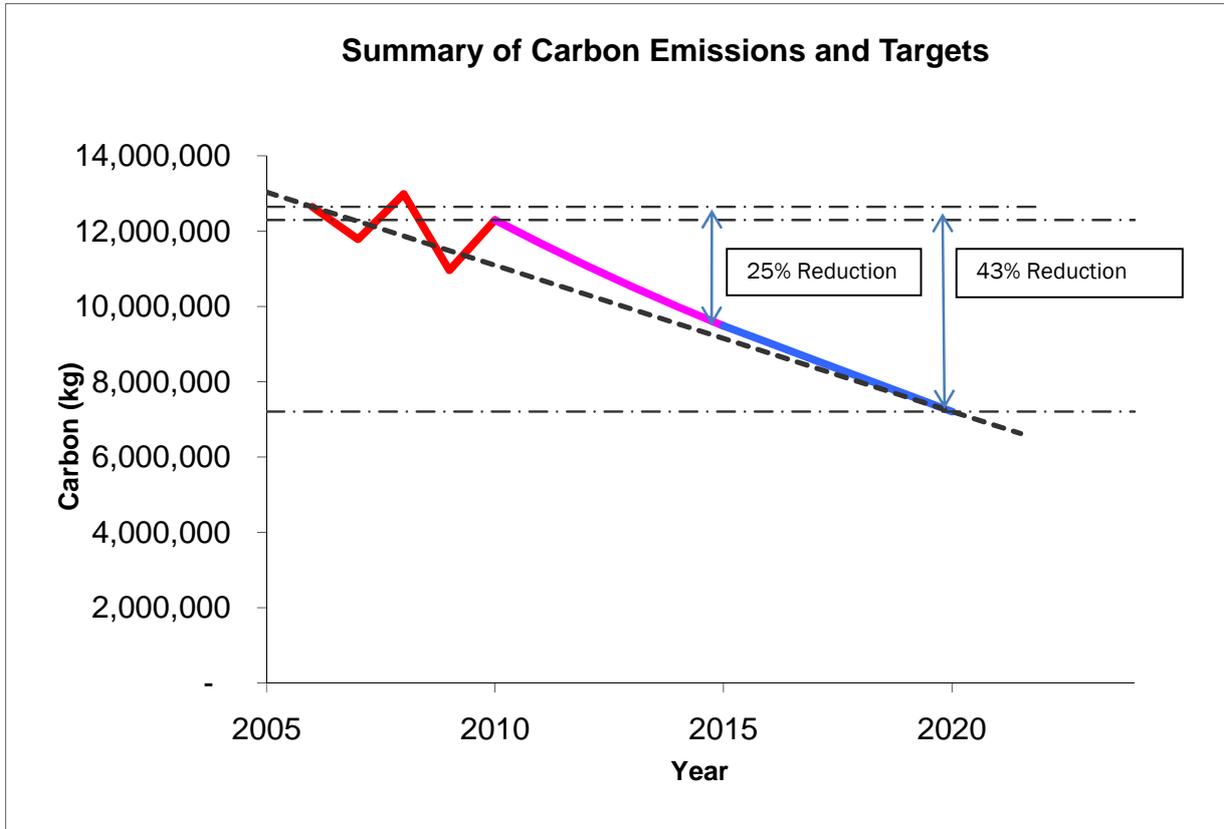
3.2 Baseline

The University of Plymouth intends to set its carbon reduction targets against a baseline of the carbon it emitted in the 2005/6 academic year. This policy for measuring performance against 2005/6 ensures the University will be aligned with the rest of the sector as defined in the HEFCE reporting guidance.

Carbon reduction targets are:

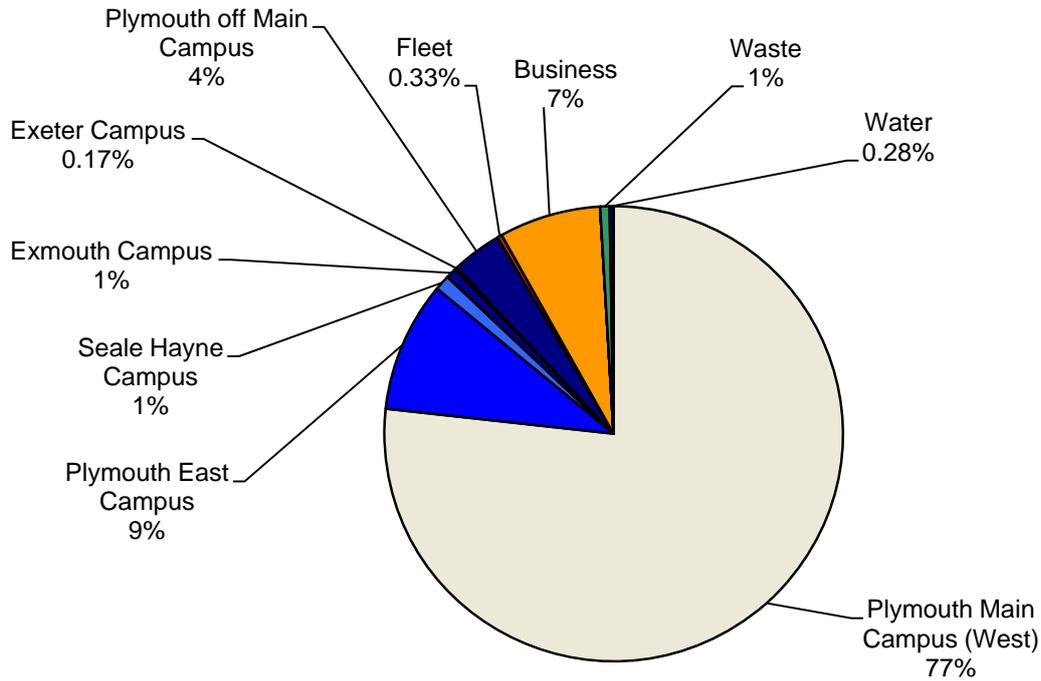
- 25% reduction by 2015/16
- 43% reduction by 2020

The University is in a fortunate position, having excellent energy consumption data for buildings as far back as the early 1990s so we are confident in the accuracy of carbon reported in 2005/6 through our EMS return. However, the data for fleet, business travel has not been available and therefore excluded from the baseline year. Based on the scope shown, the University emitted 12,645 tonnes of carbon in 2005/6 and 12,293 tonnes in 2009/10. The graph below shows our baseline, most recent year's emissions and our targets in context.



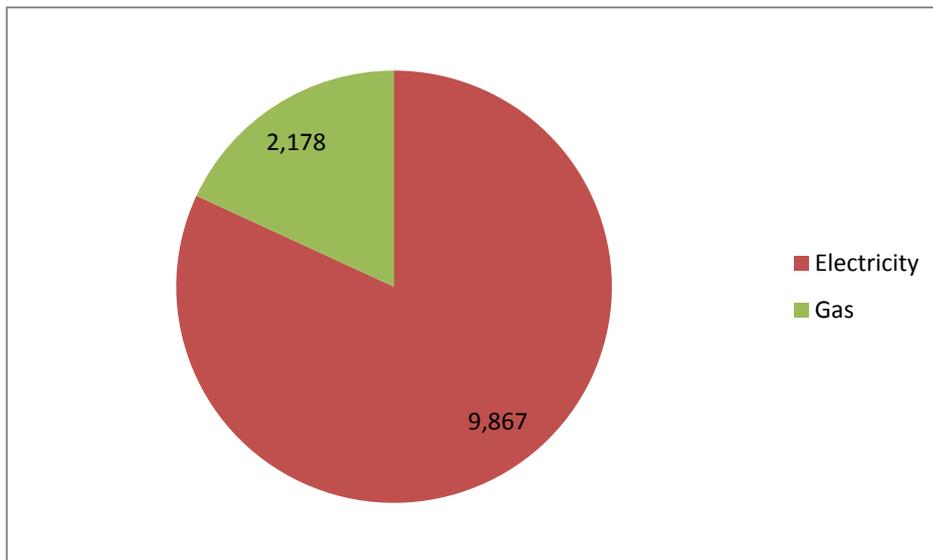
Graph Legend:

	Carbon Emission to Date
	Planned Reduction to 2015 (CMP)
	Planned Reduction from 2015 to 2020
	Construction Lines



Baseline summary of all emissions - 12293 Tonnes CO²

It is important to note that since 1990 the University has had a continuous focus on energy conservation and made significant reductions in consumption, however this has not been taken into account in this plan. The chart below shows the composition of the utility carbon footprint.



Electricity and gas emission data for Plymouth 2009/10 – Tonnes CO₂

In terms of cost, the University spent just over £3M on energy & water for buildings and fleet and business travel in the 2009/10 academic year. Over half of this, £1.62M comes from electricity and the remainder is split as £492k for heating fuel, £337k water, £636k for fleet and business travel.

The data used to compile has been taken from 2009/10 EMS return, SystemsLink (for buildings), and finance system for business travel and fleet.

3.3 Projections and Value at Stake

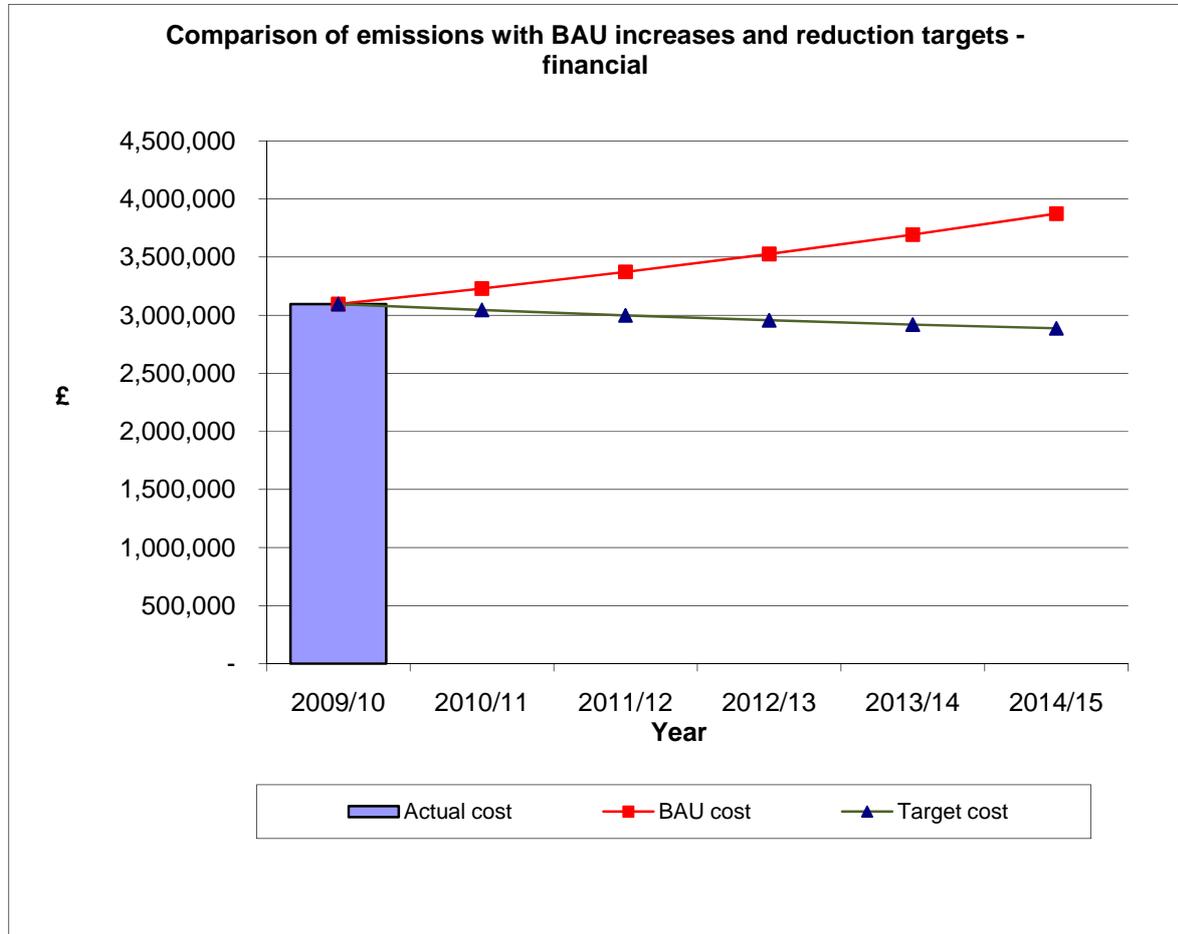
Energy costs continue to rise and there is a degree of uncertainty around the scale of increase over the coming years. In addition, if the University had not decided to take a decisive and strategic approach to Carbon Management, it is likely that its carbon emissions would rise over the coming years. This is known as the business as usual (BAU) scenario. We can also reflect the reduction we plan to deliver and the resulting energy cost if we meet our five year target. This is known as the reduced emission scenario (RES). The difference of the two projections is called the Value at Stake and cumulatively demonstrates the overall cost of inaction. The key assumptions underpinning this analysis are as follows:

- BAU Increase in Demand for all stationary sources, 0.7%, source DTI/DBERR EP68
- BAU increase in demand for Fleet, 0.7%, source DTI/DBERR EP68
- Annual fuel price rise for buildings 3%, source DECC price projections adjusted for CRC at £12/tonne
- Annual fuel price rise for business and fleet 10.7%, source DECC price projections

Although this plan states a target to 2020, the Value at Stake has only been calculated for the first 5 years, to ensure maximum reliability in the forecast. In addition, the forecast assumes a linear progression to the target. If projects were delivered earlier, the Value at Stake would be even greater.

The graph below shows the BAU and RES scenarios and highlights the **cumulative cost saving over the first 5 years of £2.3million.**

Financial value at stake



4.0 Carbon Management Projects

The proposed carbon management projects are divided into four categories:

- **Behaviour Change** (including Building Management System improvements and review of operations)
- **Improving Space Utilisation** (includes new builds and disposals)
- **Fuel Conversion** (includes use of bio-fuels and Combined Heat & Power)
- **Energy Efficiency Projects** (those compliant with the Revolving Green Fund)

4.1 Behaviour Change

The university will review how it functions including its estate operational parameters. For example, this may include the virtual campus and home working. These projects will also include no/low cost good housekeeping measures such as introducing policies around seasonal space temperature set points providing an agreed level of comfort within defined limits.

Awareness campaigns, aimed at both staff and students, have been developed by Marketing and Communications. Students have shown a keen interest in developing energy / carbon awareness campaigns. Appendix B details the Marketing and Communication Strategy.

In addition, 'Projects' which create environmental understanding throughout a student's pedagogical development should be included. These will have a direct carbon reduction on the operation of the university and in addition, the student will carry a strong environmental philosophy with them into future careers.

It is estimated the schemes in this category can achieve a reduction in carbon emissions of 1,166 tonnes.

4.2 Improving Space Utilisation

The university's strategic estates plan informs and guides the use, disposal, and new development of the building stock. The current building work for the Marine Building has been included in this plan. It also covers disposals e.g. The Hoe Centre, and potential disposal such as the Cookworthy building. It is calculated the schemes in this category will actually reduce the university's CO₂ emissions with by 1140 TCO₂.

4.3 Fuel Conversions

These projects focus on the opportunities to move to alternative low carbon fuels, such as bio-fuels and implementing combined heat and power projects (CHP). In the case of the later it is hoped that the University will work with Plymouth City Council to develop a district wide CHP heating scheme. The reduction of CO₂ should these schemes progress is 718 TCO₂.

4.4 Energy Efficiency Projects

The University has ring fenced a £374k budget to undertake carbon reduction schemes. This initiative is in partnership with HEFCE/Salix. This has presented the opportunity to produce a detailed schedule of carbon reduction schemes and a list of projects is attached as Appendix B.

The day-to-day operation of plant and equipment can be improved by replacement with high efficiency equipment and enhanced controls. The RGF budget allows improvement work to be undertaken that normally would not be done unless there was a major refurbishment or it required a high level of maintenance/ replacement. The schemes identified over the next 5 years show a reduction in carbon emissions of 1737 TCO₂.

Summary of Capital Projects detailed in Appendix C

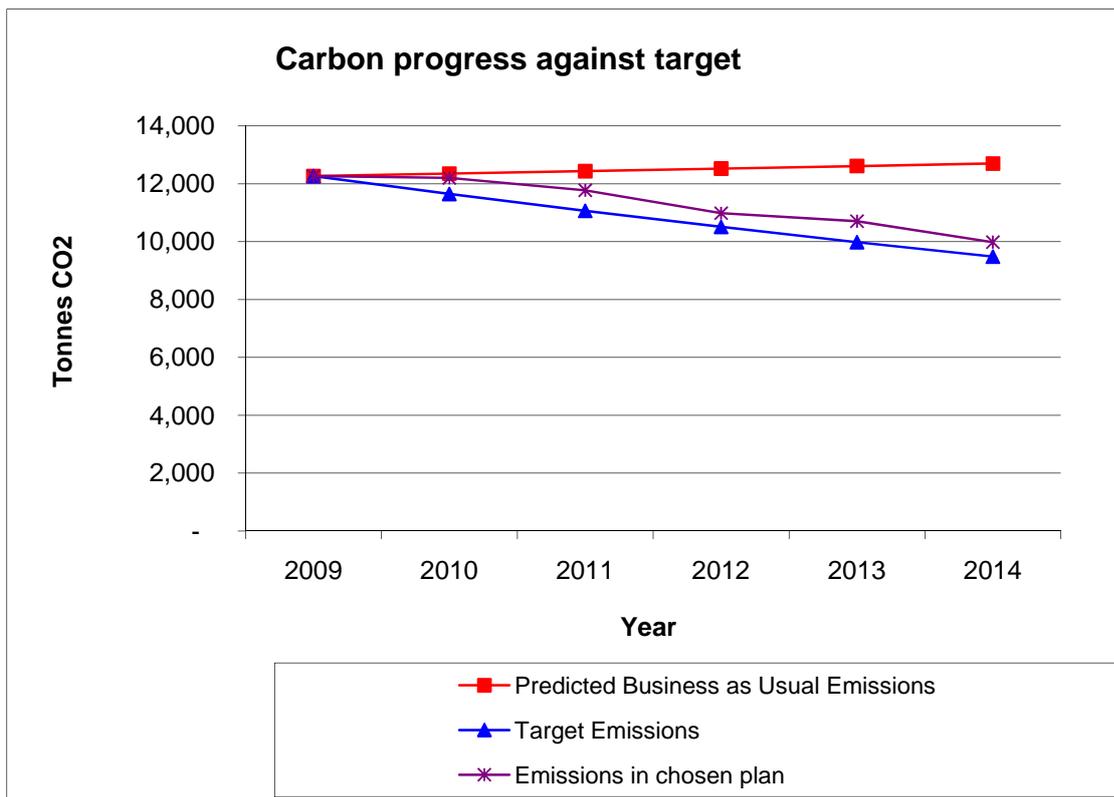
Project	Costs	Annual savings		Payback
	Capex/Opex £	£	TCO ₂	
Existing Projects	£162,088 / £10,000	£115,773	664 TCO ₂	1.4
Near Term Projects	£613,400	£32,184	174 TCO ₂	NA
Medium and Long Term Projects	£275,468 / £48,000	£158,379	899 TCO ₂	2.5

4.5 Project Summary

The University of Plymouth has identified carbon reducing projects that exceed its interim target to reduce emissions by 25% compared to 2005/6. Projects have generally been prioritised by selecting to implement those with the best pay-back first, however in some instances projects with longer pay-back periods have been brought forward to align with other organisational drivers.

It is important to note that Carbon Management is a cyclic process and throughout the life of this plan emissions will be continuously monitored with respect to the performance of the projects above. Projects may be added, changed, or removed to ensure targets are achieved. Section 7 describes in more detail the programme governance and how such decisions would be approved.

Below is a diagram setting out our progress to the interim target.



5.0 Implementation Plan - Financing

In recent years, the university has made significant improvements regarding energy performance. Without this success, the consumption of energy would have increased steadily and considerably, due to a variety of factors including the increasing use of energy intensive equipment and process air conditioning and chilling. The most apparent financial benefit from reduced carbon emissions is a significant reduction in future electricity and fuel costs and the payments required under the Carbon Reduction Commitment. Recent trends show utility unit costs have increased dramatically, and as stated above, the DTi estimates that unit cost increases will average 3.5% above inflation in the future.

The Value at Stake charts above show the effect on carbon emissions and energy costs of two scenarios; a "business as usual" scenario in which consumption continues to grow by 0.7% per year and a possible scenario were the university makes real reductions in CO₂ emissions in the order of 3% per year. To help realise this goal the university has already adopted the HEFCE /SALIX ISP Fund model and has ring fenced a 'regenerative' budget of £374k. Identified projects will be undertaken provided there is funding available and that it is compliant to the strict parameters detailed in the HEFCE / Salix Institutional Small Project Revolving Green Fund Scheme.

5.1 Assumptions

In calculating the estimated costs and savings related to this plan, the following assumptions have been made:

Project costs are submitted at 2009 prices Cost assumptions are:

- Electricity 9.5p/kWh
- Gas 4p/kWh
- Water 450p/m³
- Carbon £12/tonne
- Minimal costs for programme management have been included. Additional staffing requirements would be included with the Estates & Facilities Management Directorate
- Committed funding is sourced from the regenerative £374k Salix programme
- Funding for the above listed projects assumes approval from the University Board of Governors; this is yet to be sought
- Savings are based on project completion being achieved
- Additional revenue costs have not yet been identified but would naturally sit within the University Maintenance department

5.2 Benefits/Savings – Quantified and Unquantified

The following table identifies annual savings based on the projects detailed in section 4 above.

		2010/11	2011/12	2012/13	2013/14	2014/15
Annual Cost Saving	£	135367	181329	123797	129309	17298
Cumulative Savings	£	135367	316695	440492	569801	587099
Annual CO² saving (tonnes)		541	1023	854	713	969
% of Target Achieved		13%	25%	21%	17%	24%
Cumulative % of Target Achieved		13%	38%	59%	76%	100%

Some of the unquantified benefits of reducing carbon dioxide emissions include:

- Enhanced financial forecasting and reduced risk to the University from unavoidable and unforeseen utility budget increases,
- Access to further grant funding for energy and carbon saving measures, eg from the Carbon Trust
- Alignment with Government and HEFCE objectives
- Maintain our position as the UK's top university in environmental performance in the annual People and Planet Green league table
- An improved reputation with both Staff and Students, both physiologically and psychologically and hopefully encouraging behavioural changes
- Maintenance costs may increase slightly in the early stages of this but would reduce as new equipment is put in place
- Improved availability of data for Estates Management Statistical Return

5.3 Additional Resources

Currently we would envisage running the programmes within our current resource level. The responsibility for financial management of individual projects would sit with the Project Director and Executive Board, which is in line with the University's financial regulations.

5.4 Financial Costs and Sources of Funding

Projects identified in 2010/11 will be funded from capital works already committed and approved and the agreed Salix Management programmes. Future years projects will be funded through our Capital Programme and subject to Board of Governors approval on an annual basis as necessary. Some projects may also be appropriate for funding through the Long Term Maintenance budget but these are yet to be approved.

Figures in £	2010/11	2011/12	2012/13	2013/14	2014/15
Annual Costs:					
Capital Cost	34616	707942	759800	288476	0
Revenue Cost	10000	54505	54505	14000	14000
Total Costs	44616	762447	814305	302476	14000
Committed Funding:					
Committed Capital Cost	34616	94542	86400		
Committed Revenue Cost					
Total Funded	1084616	7110542	10375400	0	0
Unallocated Funding:					
Unallocated Capital Cost	0	613400	673400	288476	0
Unallocated Revenue Cost	10000	54505	54505	14000	14000
Total Unfunded	10000	667905	727905	302476	14000

6.0 Actions to Embed Carbon Management in University Activities

At the start of the HECMP the Project Team produced a **Carbon Management Embedding Matrix** to help identify the university's current position and highlight a course of actions that will cement carbon management into university activity. The matrix is attached as an Appendix A.

The sections below detail the university's current position within the matrix, and where it is expect to be once enabling actions have been completed.

6.1 Policy

The Office of Vice Chancellor and the Governing Body endorse the Carbon Management Plan. The Plan and CO² reduction targets are available to all interested stakeholders, on the sustainable web pages for the University. The university is keen to promote to external bodies that its commitment is clear, and reinforces the need for action within the organisation.

The following actions will to ensure carbon management is firmly embedded within the university's policies and activities.

Action	Responsibility	Timeline
Review the Sustainability Strategy and underpinning policies to include timescales, annual objectives and responsibility.	Director OPS	2011
The Energy Policy has Short, Medium and Long Term objectives. Policy review will be carried out annually to ensure targets are on track and have been achieved.	Energy and Environmental Manager	Every February
Review the Environmental Policy annually to introduce more detail and target setting in line with the university's Environmental Management System.	Energy and Environmental Manager	Every August
Produce and implement a policy on adequate temperatures in buildings, including a policy which limits the use of air conditioning to areas where temperature sensitive equipment is located or where there are exceptional circumstances	Energy and Environmental Manager	2011
All Capital projects should include energy efficiency and carbon management as key drivers. Requires an assessment of the carbon impact of the project at project inception and assessment of all practicable means of reducing the impact.	Director of OPS	2011

6.2 Responsibility

The **responsibility** for carbon reduction is firmly embedded into the University's Corporate Plan and the target of 25% reduction in carbon emissions by 2015 is one of the top key performance indicators reported annually to the Board of Governors.

A network of Environmental Champions in Departments and Faculties was set up across the University in 2006, currently there are over 40 representatives.

The following actions have been defined to embed responsibility on all levels:

Action	Responsibility	Timeline
CO2 targets will be included in Corporate Plans, Estates Strategies, and other high level plans.	Director OPS	2011
Faculty and Department Heads to provide a plan for integrating carbon management and energy efficiency into their activities.	Director OPS	2012
Continue to develop the network of Environmental Champions in Departments and Faculties	Energy and Environmental Manager	On-going

The responsibilities for taking forward the projects and actions defined in this plan is a follows:

Capital Projects and Space Utilisation

The Director of OPS will be responsible for all building related targets and oversight of the delivery of building energy and water related targets including those from Project related emissions and the Revolving Green Fund. OPS will also develop and implement space utilisation strategies to improve the utilisation of space and reduce wherever practicable the overall estate.

The Energy and Environmental Manager, will be responsible for identification of further building related projects that can be included in the Carbon Management Plan.

The Energy and Environmental Manager will be responsible for collection and management of all building related energy and carbon data, and will be responsible for reporting on progress on energy and water related targets and actions to the Carbon and Utility Board.

Waste and Recycling

The Cleaning and Waste Manager in consultation with the Energy and Environmental Manager will be responsible for implementing all waste related projects in the Carbon Management Plan.

Staff and Student Transport and Travel

The Director of OPS will be responsible for the Sustainable Travel Policy, reporting on all transport and travel related actions and for delivery of the targets. This will include business travel.

Travel, Waste and Recycling Data Collection

The Energy and Environmental Manager will be responsible for emissions inventory data collection for all other aspects of the Plan and for reporting on progress on targets and actions to Carbon and Utility Board.

6.3 Data Management

Historically the university has calculated its utility-based carbon emissions via spreadsheet. For the purpose of this plan, the Carbon Trusts HECMP6 baseline tool has been used.

Utility meter readings (gas, electricity and water) are carried out on a monthly basis as a planned maintenance function. It is proposed to enhance this with additional sub-metering of utilities within buildings with Smart Meters. This will allow sub metered data to be accessed remotely, and ensure that figures are robust. Additional Smart Metering will also act as a CRC early action metric.

The Energy and Environmental Manager will be responsible for collection and management of all building related energy and carbon data, and will be responsible for reporting on progress on energy and water related targets and actions to the Carbon and Utilities Board.

The weight of waste sent to landfill is collated monthly from data supplied by the university's waste contractor. The data is managed by the Waste Manager.

Emissions data for the university's owned or leased vehicles is also readily available from the Office of Procurement and Sustainability.

Staff business travel, car hire and train data, has been included – as a Scope 3 emission. The data is produced and held in Office of Procurement and Sustainability.

Data is currently verified through internal audit function and externally through programmes such as Universities That Count.

Action	Responsibility	Timeline
Introduce sub-metering of utilities within buildings with Smart Meters.	Energy and Environmental Manager	2011
To improve on the current arrangements for reporting utilities to staff and students to view the emissions generated by the buildings they use and waste travel and transport emissions.	Energy and Environmental Manager Waste Manager Category manager for Travel and Transport.	2011

Once these actions have been completed, the university will be at level 5 of embedding data management.

6.4 Communication and Training

Everyone in the University has a role in reducing emissions, from turning off lights to trying out alternative forms of travel other than by car. This Plan has a Communications Strategy, developed by the Directorate of External Relations and Communications and attached as Appendix B. It sets out the different media and techniques involved and includes high profile energy and carbon awareness campaigns and events, regular drip feed of information to

newsletters and display of messages on computer screens. The objectives of the Communications Strategy are to:

- Establish a clear and shared understanding of the Programme's vision and goals.
- To promote carbon management issues to all members of the University and generate enthusiasm for carbon management.
- Enable early recognition of risks and issues so that Programme's plans can be adapted where appropriate.
- Ensure accurate information and guidance is provided at the right time, for example to improve readiness for change amongst staff.

The current communication and training position reflects level 3 of the Carbon Management matrix. Training is provided to Departmental Environmental Representatives and staff and student induction have access to information. The university has a comprehensive environment intranet community page that covers a broad range of topics including the core documents of its Environmental Management System. It is intended to enhance the current situation with a rolling energy awareness campaign.

The following actions will bring the University to level 5 on of communications and training on the embedding matrix:

Action	Responsibility	Timeline
Provide training opportunities to existing staff in relation to carbon management	Energy and Environmental Manager Head of Organisational Development	Feb 2011
Include carbon management as an item to be covered by the Human Resources Department and line managers during the induction of new staff.	Energy and Environmental Manager plus others to be determined	2011
Include carbon and utility awareness into student induction	External Relations and Communications Services with assistance from the Energy and Environmental Manager	
Expand the energy / waste reduction competitions within the halls of residences to interfaculty competitions focusing on university buildings.	Energy and Environmental Manager, ERCS Student President and Student Environment Officer	Annual - starting December 2010 and will last 6 months. Interfaculty Competition 2011.

Develop an annual survey of staff and student attitudes toward sustainability and carbon reduction.	OPS	2012
Further develop annual reports on carbon management and make available to stakeholders	OPS	2012
Sustainability to be a primary link on the opening page of the university's website	OPS	2011 - complete
Develop and run energy and carbon awareness campaigns and competitions and develop a range of carbon awareness campaign materials.	Energy and Environmental Manager, Marketing Student President and Student Environment Officer,	2011
Liaise and meet with key stakeholders and promote the Carbon Management plan with stakeholders.	Carbon and Utility Board Director of OPS	2011

When these actions are complete, the University will be at level 5 of communication and training.

6.5 Finance and Investment

Financing is covered in section five of this Plan. The University is at level 5 of the Carbon Management matrix.

6.6 Procurement

The university ensures that environmental consideration is at the core of its procurement process. The Carbon Management Team believes its current position on the Carbon Management matrix is between 3 and 4. Action to be taken:-

Action	Responsibility	Timeline
Strengthen environmental demands in tendering process and include sustainability criteria as decision making metric	Deputy Director of Procurement and Sustainability	2011
Review supply chain carbon footprint, for Scope 3 emissions	OPS in conjunction with HEFCE initiative	2012
Seek ways in which the University can help suppliers reduce their carbon impact	Deputy Director of Procurement and Sustainability	2012
Develop Sustainable Food Policy to ensure	Senior Contracts	2011

that the University's procurement of food reduces environmental impact	Manager OPS	
--	-------------	--

When these aspirational actions are complete, the University will be at level 5.

6.7 Monitoring and Evaluation

The Sustainability Strategy and all supporting policies will be published on the university's sustainability web pages, ensuring transparency.

The Sustainability Strategy is managed on behalf of the University by the OVC Advisory Group for Sustainability, who will report on progress to the Office of the Vice Chancellor and the University's Board of Governors through the Sustainability Executive.

The Carbon Management Plan is monitored by the Carbon and Utilities Board, which reports through the Director of OPS to the Sustainability Executive

We aim to ensure accountability and clear direction through the setting of long term goals, medium term objectives and short term targets within our corporate strategies and policies. Our performance against these goals will be monitored through our internal audit and other external validation processes.

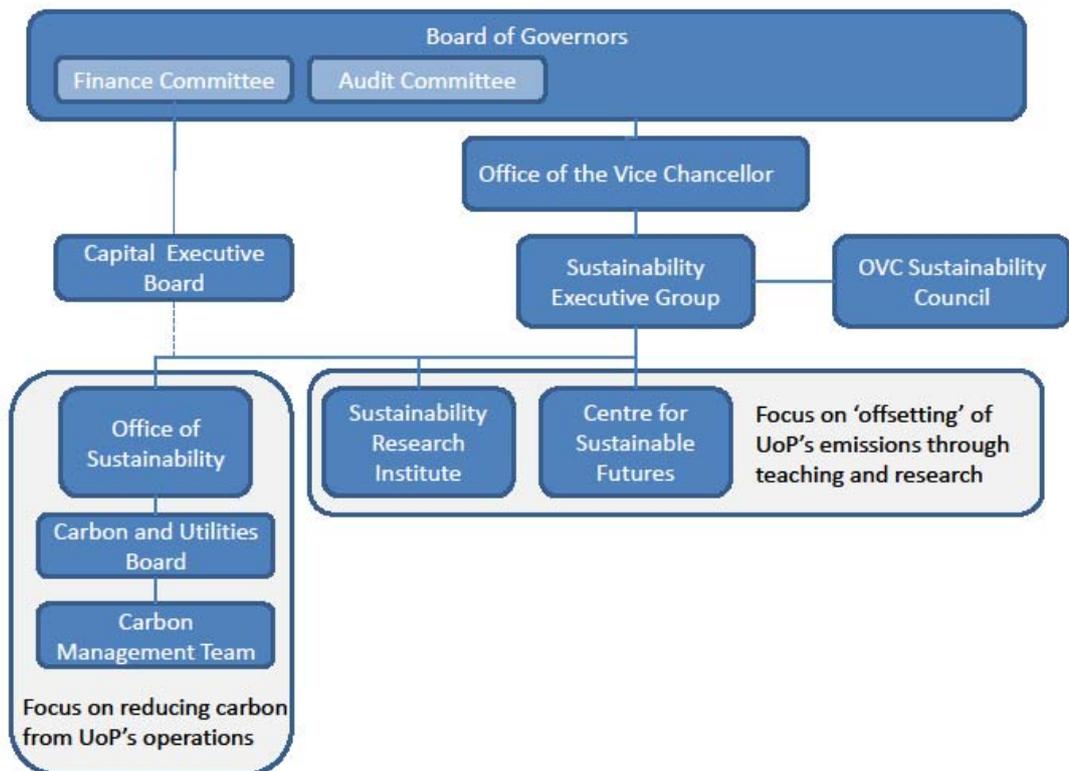
Section 7 describes in more detail how the progress against this plan will be monitored and reported.

When these actions are complete, the University will be at level 5.

7.0 Programme Management

Carbon Management is firmly embedded within the University's sustainability governance structure. The strategic ownership of the carbon neutrality target rests with the Sustainability Executive Group. This Group brings together the tricameral arrangement for sustainability, with the Office of Procurement and Sustainability (OPS) focusing on reducing carbon from UoP's operations and the Institute of Sustainability Solution Research (ISSR) and the Centre for Sustainable Futures within the Teaching and Learning Directorate working towards reducing carbon emissions beyond direct control of the University.

7.1 Sustainability Governance Structure



7.2 OVC Sustainability Council (Advisory Group)

The remit of this group is to advise the Pro Vice-Chancellor Sustainability, Sustainability Executive Group and through them, the Office of Vice Chancellor and CEG (OVC, Deans and Directors) on the University's sustainability policy. It includes a broad representation from University's operations, research and teaching and Plymouth City Council and meets at least twice a year.

Its terms of reference include assisting in the coordination of sustainability policies across the University, including between:

- The Teaching and Learning Directorate
- The Institute for Sustainability Solutions Research
- The Office of Procurement and Sustainability

7.3 Sustainability Executive Group (SEG)

The responsibility for achieving the carbon neutrality target rests with this group. It brings together the representatives of the three strands of activity (operational carbon reduction, research and teaching) that are key to achieving this target. The terms of Reference have not yet been finalised.

The membership of the Group includes:

- David Wheeler Pro Vice-Chancellor, Sustainability (Chair)
- Jenny Bushrod Director of Procurement and Sustainability
- Stephen Sterling Head of Education for Sustainable Development
- Pete Watton Learning from WOeRK Project Manager
- Pauline Kneale Pro Vice-Chancellor, Teaching and Learning
- Anita Jellings Dean of Students

The Group meets 3 times per year. The governance of the programme, as well as the strategic ownership of the carbon reduction target, rests with the **Carbon and Utility Advisory Group**. The members of the SEG will have oversight of the programme to encourage delivery and identify, and remove, the barriers to success. The members can also ensure the coherence and coordination of the carbon reduction activity. The SEG reports to the OVC and the Board of Governors

7.4 The Carbon and Utilities Board

The remit of the Board is to ensure that the University achieves its aim to achieve carbon neutrality by 2030 through reducing carbon emissions from its operations by 43% by 2020 and 52% by 2030, with respect to the 2005 baseline and off-setting these emissions through relevant research and teaching activities delivering carbon reductions.

The table below shows membership for the Board.

Name	Position	Contact Details
Chris Bunce	Acting Director of Estates and Facilities Management	
Jenny Bushrod	Director of Procurement and Sustainability (<i>HECMP Sponsor</i>)	Jenny.bushrod@plymouth.ac.uk
Simon Denham	Deputy Director of Procurement and Sustainability (<i>HECMP Deputy Project Leader</i>)	
Neil James	Head of School of Marine Science & Engineering/ Associate Dean	

Sarah Jones	Director of Finance	
Paul Lumley	Energy and Environmental Manager (<i>HECMP Project Leader</i>)	plumley@plymouth.ac.uk
David Wheeler	Pro VC (<i>HECMP Executive Sponsor</i>)	
SU Representatives Will change each year	President of Student Union plus Head of Sustainability Society	
External: Jerry Barnes	Hoare Lea Consulting	

The Board meets quarterly and is chaired by the Director of the Office of Procurement and Sustainability.

Terms of Reference of the Board are to:

- Recommend carbon reduction strategies to Sustainability Executive Group and Board of Governors (BOG) to achieve our carbon reduction target.
- Recommend strategies for the procurement of utilities and carbon allowances to the Office of Vice Chancellor (OVC) and BOG.
- Oversee the implementation of the approved procurement strategies.
- Advise OVC and BOG on the setting of utilities and carbon forecasts balancing risk against cost.
- Monitor and report on spend against forecasts and potential financial implications.
- Provide timely instructions to the Supply Chain to safeguard the University's utility and carbon expenditure and to mitigate unanticipated costs.
- Recommend projects for the Capital Investment Programme to the Finance Committee.
- Approve non-capital carbon reduction projects.
- Monitor the delivery of the Carbon Management Plan and remove or escalate barriers to success and issues reported by the Carbon Management Team.
- Monitor and review key programme risks.
- Ensure appropriate membership of the Carbon Management Team.
- Report progress to the Sustainability Executive Group, the Finance and the Audit Committees.

The Carbon and Utilities Board meets at least three weeks in advance of Board of Governors Meetings (normally three per year) – October, February and May.

7.5 Capital Executive Boards

Capital Executive Boards are part of the University's capital project delivery process. Following approval by the Finance Committee and Board of Governors, a Capital Executive Board chaired by the Director of OPS is set up for each project representing an investment

of £1m or over. Smaller projects are grouped under a single Capital Projects Board chaired by the Acting Director of Estates and Facilities Management.

The Chair of the Project Executive Board provides a direct link into the Carbon and Utilities Board.

7.6 The Carbon Management Team

The Carbon Management Team is responsible for:

- Delivering the non-capitalised projects defined in the Carbon Management Plan
- Monitoring and reporting on progress of the non-capitalised projects, and escalating any issues to the Carbon and Utilities Board.
- Generating a project pipeline: prioritising and making recommendations to the Carbon and Utilities Board.
- Identifying spend required to achieve carbon savings projected in the Plan.
- Publicising the University's performance against the targets of the Programme.
- Monitoring and reporting of progress towards the target of reducing UoP's operational carbon emissions to the Carbon and Utilities Board.

The Project Team consists of:

Name	Position & Responsibility	Contact Details
Paul Lumley	Energy and Environmental Manager (<i>HECMP Project Leader</i>) Utility related carbon emissions	plumley@plymouth.ac.uk
Simon Denham	Deputy Director of Procurement and Sustainability (<i>HECMP Deputy Project Leader</i>) Link to Capital Projects	
Phil Greenwood	Head of Mechanical and Electrical Services Link to capital projects and maintenance	
Anthony Pattern	Head of Security and Waste Management Waste data	
Linda Morris	Senior Contracts Manager – Procurement specialising in Travel and Transport and Food	
Ann Cook	Marketing and Communication Assistance with awareness and communication strategies	
Paul Nile	Maintenance Manager	
Claire Wilson	Management Accountant	

Each of the Team members has taken ownership for the actions defined within this Plan, relevant to their area of responsibility:

The team meets 4 times per year

7.7 Continuity planning for key roles

In order to ensure the continuity of the programme, the succession of key roles must be planned

Role	Name	Successor
Executive Sponsor	David Wheeler	Jenny Bushrod
Sponsor	Jenny Bushrod	Chris Bunce
Project co-Sponsor	Chris Bunce	Phil Greenwood
Project Leader	Paul Lumley	Simon Denham
Finance Champion	Sarah Jones	Claire Wilson

The Sponsor and the Project Leader will be responsible for ensuring appropriate hand-over and on-boarding of new board and team members.

The Carbon Trust operates to provide long-term assistance and advice to deliver carbon reduction. Staff that become responsible for elements of this plan, will have access to the Carbon Trust.

7.8 Ongoing Stakeholder management

The Carbon and Utilities Board will be responsible for the promotion of the Carbon Management Plan. A Communication plan is attached as an Appendix B.

7.9 Reporting and annual progress review

Carbon management reporting is embedded into the overall sustainability reporting and the Environmental Management System.

7.10 Regular progress reporting

The Project Leader will provide periodic reports to the Carbon and Utilities Board prior to each of the Group meetings. These will cover:

- Review project status, including exceptions for the projects

- Overview of benefits achievement by projects already implemented – in carbon and financial terms
- Financial savings, either cashable or returned to the revolving fund and status of the revolving fund
- CO₂ savings against the target
- Any unquantifiable benefits, such as influencing the student body/local community
- Key issues that require the Group's attention
- Top three risks from the Programme risk register
- Programme pipeline and recommendation on which projects should be taken forward
- Key activities and milestones for the next period.

7.11 Annual reporting to the Board of Governors

Progress on carbon reduction is part of an annual sustainability report prepared by the Office of Sustainability for the Audit and Finance Committees in November each year.

This will include a report on each of the six sustainability KPIs:

- Top Ten in People and Planet
- Gold standard in UtC
- Retain Fair Trade Registration
- **Carbon emissions by 2015 with respect to this plan and its targets**
- achieve 30% of spend through local suppliers
- achieve 30% of spend through SMEs
- achieve 50% average space utilisation by 2015

Capital bids are put forward to the Finance Committee through the OVC Advisory Group Estates in March of each year. These will be assessed and prioritised against the wider Sustainable Estates Strategy and this Carbon Management Plan as well as their academic business case.

Glossary

BAU	Business as Usual scenario in which the estate grows as planned and there is no concerted attempt to reduce CO ₂ emissions
HEFCE	Higher Education Funding Council for England
BREEAM	Building Research Establishment Environmental Audit Method - a widely accepted means of measuring and comparing the environmental impact of buildings covering energy efficiency, location, construction, transport, recycling etc.
Carbon Trust	Government body charged with reducing CO ₂ emissions, funded by Climate Change Levy on bills.
Carbon	carbon dioxide emissions measured in tonnes of CO ₂ per year.
CO ₂	carbon dioxide emissions
BMS	Building Management System - central electronic system for controlling heating and ventilation
FTE	Full Time Equivalent number of students
GIA	Gross Internal Area of buildings
VfM	Value for Money
CMP	Carbon Management Plan - this document
CHP	Combined Heat and Power generator, typically a large engine running on gas which produces electricity for use on site and heat for use in adjacent buildings. Likely to be located in a boiler room.
UoP	University of Plymouth

APPENDIX A - UoP Carbon Management Matrix- showing current position and after enablement actions

	POLICY	RESPONSIBILITY	DATA MANAGEMENT	COMMUNICATION & TRAINING	FINANCE & INVESTMENT	PROCUREMENT	MONITORING & EVALUATION
5 BEST	SMART Targets signed off Action plan contains clear goals & regular progress reviews Strategy launched internally & to community	CM is full-time responsibility of a few people CM integrated in responsibilities of senior managers VC support Part of all job descriptions	Quarterly collation of CO2 emissions for all sources Data externally verified M&T in place for: • Buildings • Waste	All staff & students given formalised CM: • Induction • Training Plan • Communications CM matters regularly communicated to: • External community • Key partners	Granular & effective financing mechanisms for CM projects Finance representation on CM Team Robust task management mechanism Ring-fenced fund for carbon reduction initiatives	Senior purchasers consult & adhere to ICLEI's Procura+ manual & principles Sustainability comprehensively integrated in tendering criteria Whole life costing Area-wide procurement	Senior management review CM process Core team regularly reviews CM progress Published externally on website Visible board level review
4	SMART Targets developed but not implemented	CM is full-time responsibility of an individual CM integrated in to responsibilities of department managers, not all staff	Annual collation of CO ₂ emissions for: • Buildings • Transport • waste Data internally reviewed	All staff & students given CM: • Induction • Communications CM communicated to: • External community • Key partners	Regular financing for CM projects Some external financing Sufficient task management mechanism	Environmental demands incorporated in tendering Familiarity with Procura+ Joint procuring between HEIs or with LAs.	Core team regularly reviews CM progress: • Actions Profile & Targets • New opportunities quantification
3	Draft policy Climate Change reference	CM is part-time responsibility of a few people CM responsibility of department champions	Collation of CO ₂ emissions for limited scope i.e. buildings only	Environmental / energy group(s) give ad hoc: • Training • Communications	Ad hoc financing for CM projects Limited task management No allocated resource	Whole life costing occasionally employed Some pooling of environmental expertise	CM team review aspects including: • Policies / Strategies • Targets • Action Plans
2	No policy Climate Change aspiration	CM is part-time responsibility of an individual No departmental champions	No CO ₂ emissions data compiled Energy data compiled on a regular basis	Regular poster/awareness campaigns Staff given ad hoc CM: • Communications	Ad hoc financing for CM related projects Limited task coordination resources	Green criteria occasionally considered Products considered in isolation	Ad hoc reviews of CM actions progress
1 Worst	No policy No Climate Change reference	No CM responsibility designation	Not compiled: CO ₂ emissions Estimated billing	No communication or training	No internal financing or funding for CM related projects	No Green consideration No life cycle costing	No CM monitoring

APPENDIX B - Communications plan for Carbon Management Plan

Target Audience	Information	Method Proposed	Actions Needed	Staff Involved	Date
Staff & Students	Pre & Launch Raise awareness of Carbon Management Plan & get staff / students to engage	Launch Event – eg Big Switch Off	Meeting to agree format / ideas for event	Marketing / Carbon Plan Project Team	
		Competition	Meeting to agree format / ideas for inter faculty / accommodation / support areas to see who can reduce their carbon footprint the most	Marketing / Carbon Plan Project Team	
		Promotional materials	Possible clean pavement messages outside all buildings with ‘switch off’ message Labels to remind people to ‘switch off’ at light points Bluetooth message campus wide 5pm – remember to switch off	Marketing / Carbon Plan Project Team	
		CMP webpage Website	Create dedicated webpage for plan – include events / competition information & progress to targets Front page of website for Launch week Include as news button pre launch week	Marketing / Carbon Plan Project Team Marketing / Carbon Plan Project Team Marketing /	

	Events calendar	Publicise CMP launch event information	Carbon Plan Project Team	
	Events listing	Inform for marcomms	Marketing / Carbon Plan Project Team	
	News from the VC	Highlight CMP and activities around University	PR / Marketing	
	Cascade Briefing	Highlight CMP and activities around University	PR / Marketing	
	Intranet	Information on CMP launch event on staff and student portals	Marketing/PR/Dean of Students	
	Student Union	Use of SU channels to promote event	Marketing / UPSU	
	Facebook	Posting of CMP information on Facebook	Marketing/Web team	
	Twitter	Streaming information about launch event	Marketing / Web team	
	SIA screens	Posting information about launch event	Marketing / Web team	
	Induction	Include details of plan to new staff	HR / Energy & Environmental Manager / Waste Manager	

		Staff Training	Hold training sessions for staff to highlight details of plan, aims and objectives	Energy & Environmental Manager	
		Hall of Residence Campaign	Induction including information on energy saving	Energy & Environmental Manager / UPP	
Graduates	UoP and others	Evolve	Details of University's CMP programme	Marketing	
		Facebook	Posting of events on Facebook	Marketing	
		Alumni email	Include on monthly Alumni email	Marketing	
Business community/entrepreneurs		Enterprise e-news	Highlight CMP and activities around University	Marketing	
		Enterprise Solutions	Include on Facebook and Twitter	Marketing / ES	
		Linkedin	Possibility of University Linkedin page to highlight events to business community	Marketing	
		Chamberlink	Feature in Chamberlink to highlight UoPs commitment to carbon reduction	PR	
General Public		Extranet -	Access to web pages	Marketing	
		PR and media	Press release to press to communicate launch event activities including details on	PR	

			use of University research		
		Filming of events	Depending on nature of Launch event film opportunity	Marketing	

Staff / Students	<p>On-going Post Launch</p> <p>Communicate details of launch event</p> <p>Updates on competition</p> <p>Updates on how UoP achieving against plan</p> <p>Regular tips for saving energy</p>	<p>News from the VC</p> <p>Cascade Briefing</p> <p>Extranet</p> <p>Linkedin</p> <p>Twitter</p> <p>Intranet</p> <p>SIA screens</p> <p>Student Union</p>	<p>Write up of launch event</p> <p>Significant outcomes going forward</p> <p>Regular updates on reduction plan</p> <p>Top Tips for energy saving - one a month</p> <p>Upload outcomes from event, image galleries and film</p> <p>Competition updates</p> <p>Top Tips for energy saving - one a month</p> <p>Regular Staff & Student portal updates</p>	<p>PR</p> <p>PR / Energy & Environmental Manager</p> <p>PR / Energy & Environmental Manager</p> <p>Marketing / Energy & Environmental Manager</p> <p>Marketing / Energy & Environmental Manager</p> <p>Marketing / Energy & Environmental Manager</p> <p>PR / Energy &</p>	
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				Environmental Manager	
		Post Event Review	Event review	Carbon Plan Team	
		UpFront- images from launch event & written content	Images and write up of event Regular 'Energy saving' feature Competition updates	PR Energy & Environmental Manager / PR Energy & Environmental Manager / PR	
Graduates		Evolve Facebook Twitter Alumni email	Highlights from launch event Competition Updates Significant outcomes	Energy & Environmental Manager / Marketing	
Business community/entrepreneurs		Enterprise magazine Chamberlink Linkedin Twitter ES Facebook	Feature story- launch Regular 'Energy saving' feature Competition updates Highlights from launch event Competition Updates Significant outcomes	PR Energy & Environmental Manager / PR Energy & Environmental Manager / Marketing	

General public / local community		PR and media	Highlights from launch event – Competition updates	PR	
		Facebook	Highlights from launch event Competition Updates Significant outcomes	Energy & Environmental Manager / Marketing	
		iTunesU	Upload film of launch to iTunesU site	Marketing	

APPENDIX C – Project details

Existing Projects

The following projects have already been commissioned or have been implemented since our most recently recorded emissions year (2009/10).

Project	Lead	Cost		Annual Savings (yr 1)		Pay back (yrs)	% of Target
		Capex	Opex	Financial (Gross)	tCO ₂		
CPLY01P002 - Replacement pumps - Mary Newman Plantroom	Phil Greenwood	£49,655	£0	£9,717	52.9 tCO ₂	5.1	1.90%
CPLY01P004 - Distribution pump replacement - Davy Building	Phil Greenwood	£42,931	£0	£7,584	41.3 tCO ₂	5.7	1.48%
CPLY01P008 - Boiler Upgrade	Paul Lumley	£2,480	£0	£690	4.2 tCO ₂	3.6	0.15%
CPLY01P029 - Davy rm 311 lighting	Clifton Andrew	£3,837	£0	£677	3.7 tCO ₂	5.7	0.13%
CPLY01P030 - smeaton pipework insulation	Paul Lumley	£1,831	£0	£270	1.7 tCO ₂	6.8	0.06%
CPLY01P031 - Robbins car park lighting	Paul Lumley	£8,939	£0	£2,807	15.3 tCO ₂	3.2	0.55%
CPLY01P032 - Draughtproofing improvements - Portland Villas	Paul Lumley	£3,092	£0	£1,252	7.7 tCO ₂	2.5	0.28%
CPLY01P033 - Pipework Insulation	Paul Lumley	£15,022	£0	£2,786	17.1 tCO ₂	5.4	0.61%
CPLY01P034 - Lighting Controls - 3 Portland Villas	Paul Lumley	£5,445	£0	£1,053	5.7 tCO ₂	5.2	0.21%
CPLY01P038 - Reception Area Lighting - Babbage Building	David Kingwell	£3,701	£0	£682	3.7 tCO ₂	5.4	0.13%
CPLY01P039 - Stairway Lighting - Babbage Building	David Kingwell	£4,476	£0	£977	5.3 tCO ₂	4.6	0.19%
CPLY01P040 - Comms Room - Babbage Building	David Kingwell	£3,001	£0	£562	3.1 tCO ₂	5.3	0.11%
CPLY01P041 - Main Bar - Student Union	David Kingwell	£5,326	£0	£1,022	5.6 tCO ₂	5.2	0.20%
CPLY01P051 - GLS 60W Lamp Replacement - Francis Drake Cafe	David Kingwell	£352	£0	£209	1.1 tCO ₂	1.7	0.04%
CPLY01P052 - Halogen Lamp Replacement - Francis Drake Cafe	David Kingwell	£441	£0	£231	1.3 tCO ₂	1.9	0.05%
CPLY01P053 - Robbins - Car Park Ventilation	Paul Lumley	£2,201	£0	£1,000	5.4 tCO ₂	2.2	0.20%
CPLY01P055 - Small scale Voltage Optimisation	Paul Lumley	£635	£0	£4,436	24.1 tCO ₂	0.1	0.87%
CPLY01P056 - Robbins Level 2 lighting upgrade	Paul Lumley	£8,724	£0	£4,262	23.2 tCO ₂	2.0	0.83%
TOTAL		£162,088	£10,000	£115,773	664tCO₂	1.4	24%

Near Term Projects

These are projects for which we have allocated funding for and will be implementing over the next couple of years.

Project	Lead	Cost		Annual Savings (yr 1)		Pay back (yrs)	% of Target
		Capex	Opex	Financial (Gross)	tCO2		
CPLY01P042 - Lounge Bar - Student Union	David Kingwell	£1,035		£206	1.1 tCO2	5.0	0.04%
CPLY01P043 - Lounge Bar - Student Union	David Kingwell	£4,152		£806	4.4 tCO2	5.2	0.16%
CPLY01P044 - Voltage Optimisation - Babbage Building	David Kingwell	£32,404		£30,877	168. tCO2	1.0	6.04%
CPLY01P045 - Scott Substation Voltage Optimisation	David Kingwell	£10,111		£6,725	36.6 tCO2	1.5	1.32%
CPLY01P046 - Voltage Optimisation - Brunel Building	David Kingwell	£14,174		£10,312	56.1 tCO2	1.4	2.02%
CPLY01P047 - Voltage Optimisation - Rolle Building	David Kingwell	£10,111		£5,855	31.9 tCO2	1.7	1.15%
CPLY01P048 - Nancy Astor Building - Voltage Optimisation	David Kingwell	£8,381		£4,773	26. tCO2	1.8	0.93%
CPLY01P049 - Cookworthy Building - Voltage Optimisation	David Kingwell	£14,174		£9,921	54. tCO2	1.4	1.94%
CPLY01P007 - Lighting upgrade	Paul Lumley	£10,000		£86	.5 tCO2	does not payback	0.02%
CPLY01P024 - Draughtproofing Endsleigh Place	Paul Lumley	£1,934		£0	. tCO2	0	0.00%
CPLY01P036 - Fitness Centre Lighting Controls	Clifton Andrew	£664		£111	.6 tCO2	6.0	0.02%
CPLY01P050 - Lift Lobby Lighting - Babbage Building	David Kingwell	£1,021		£639	3.5 tCO2	1.6	0.13%
CPLY01P057 - Isaac Foot Food Preparation Area	David Kingwell	£1,011		£213	1.2 tCO2	4.7	0.04%
CPLY01P058 - Isaac Foot Food Preparation Area	David Kingwell	£797		£206	1.1 tCO2	3.9	0.04%
CHP for Davy Building	Paul Lumley	£613,400		£32,184	174. tCO2	does not payback	6.26%

Phase 2 - Building Rationalisation (Elec & Gas)		£0		-£24,520		does not payback	-4.72%
Phase 2 - Building Rationalisation (Water & Oil)		£0		£0	-4 tCO ₂	0	-0.02%
Phase 2- Institutional Change (Elec & Gas)			£14,000	£81,061	448.2 tCO ₂	no financial savings	16.12%
Phase 2 - Institutional Change (Water & Oil)				£0	1.1 tCO ₂	no financial savings	0.04%
Boiler Controls		£86,400		£27,801	170.5 tCO ₂	3.1	6.13%
CHP for Mary Newman Building	Paul Lumley	£673,400		£32,391	175.2 tCO ₂	does not payback	6.30%
Phase 3 - Building Rationalisation (Elec & Gas)		£0		-£41,320		does not payback	-8.15%
Phase 3 - Building Rationalisation (Water & Oil)		£0		£0	-4 tCO ₂	0	-0.02%
Phase 3- Institutional Change (Elec & Gas)			£14,000	£43,962	246.1 tCO ₂	no financial savings	8.85%
Phase 3- Institutional Change (Water & Oil)				£0	.5 tCO ₂	no financial savings	0.02%
TOTAL		£1,483,168	£28,000	£222,288	1,242tCO₂	7.6	45%

Medium and Long Term Projects

These projects are yet to have funding allocated and are likely to be delivered in the later years of this plan.

Project	Lead	Cost		Annual Savings (yr 1)		Pay back (yrs)	% of Target
		Capex	Opex	Financial (Gross)	tCO ₂		
CPLY01P006 - Lighting upgrade - Student Union	David Kingwell	£21,000		£4,205	22.9 tCO ₂	5.0	0.82%
CPLY01P022 - Draughtproofing Isaac Foot Building	Paul Lumley	£8,193		£5,282	28.7 tCO ₂	1.6	1.03%
CPLY01P023 - Draughtproofing Fitzroy Building	Paul Lumley	£7,442		£2,562	15.7 tCO ₂	2.9	0.57%
CPLY01P026 - Lighting control - Cookworthy building	Paul Lumley	£15,257		£4,608	25.1 tCO ₂	3.3	0.90%
CPLY01P028 - Lighting controls - Portland Villas South	Paul Lumley	£23,576		£4,506	24.5 tCO ₂	5.2	0.88%
Conversion of Nancy Astor Building to biofuel	Paul Lumley	£200,000		£4,893	51.8 tCO ₂	does not payback	1.86%
Phase 4 - Building Rationalisation (Elec & Gas)		£0		£83,793	460.7 tCO ₂	0.0	16.57%
Phase 4 - Building Rationalisation (Water & Oil)		£0		£0	1.6 tCO ₂	0	0.06%
Phase 4- Institutional Change (Elec & Gas)			£24,000	£16,640	90.6 tCO ₂	no financial savings	3.26%
Phase 4 - Institutional Change (Water & Oil)				£0	.3 tCO ₂	no financial savings	0.01%
Phase 5 - Institutional Change (Elec & Gas)			£24,000	£16,474	89.6 tCO ₂	no financial savings	3.22%
Phase 5 - Building Rationalisation (Elec & Gas)		£0		£15,417	85.1 tCO ₂	0.0	3.06%
Phase 5 - Building Rationalisation (Water & Oil)		£0		£0	2.5 tCO ₂	0	0.09%
Phase 5 - Institutional Change (Water & Oil)				£0	. tCO ₂	no financial savings	0.00%
TOTAL		£275,468	£48,000	£158,379	899 tCO₂	2.5	32%