

Carbon Management Plan

2010 -2020

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1.1 Introduction

1.2 Purpose of this Carbon Management Plan

This Carbon Management Plan provides the details of the steps required to measure, reduce and monitor the University's carbon footprint over the next ten years. It is intended to provide the basis for the detailed work which will be implemented both in terms of infrastructure improvement and also by achieving efficiency savings from engaging the University's staff/students in the need to change behaviours to deliver reductions in carbon emissions.

1.3 Context and Drivers for Carbon Management

The scientific evidence indicates that global average temperature is continuing to rise in a manner that is causally related to elevated atmospheric concentrations of "greenhouse" gases, most notably carbon dioxide, CO₂. This threat to global climate posed by increasing CO₂ emissions is already defining new policy, regulation and legislation locally, nationally and internationally, a trend we can expect to accelerate.

Nationally, the UK Government has set legally binding targets through the Committee on Climate Change for reductions in UK CO₂ emissions of 34% by 2020 and 80% by 2050 against a 1990 baseline. To achieve this target further drivers have been introduced, these are:

EU Energy Performance of Building Directive (EPBD)

Sets out to promote the improvement of the energy performance of buildings within the EU through cost effective measures and to promote the convergence of building standards towards those Member States which already have ambitious levels implemented through specific measures and standards in the UK.

Provides a set methodology for calculating the energy performance of buildings; the introduction of regular inspections of cooling; heating and boiler installations; a set of performance standards applicable to both new and existing buildings; and a certification scheme for both new and existing buildings.

Energy Performance Certification is required for all new buildings and additionally when existing buildings are rented out or sold on. There is also a requirement for larger public buildings (over 1000m²) to provide a Display Energy Certificate (DEC) in a prominent position within the building. This certificate must be renewed annually.

Carbon Reduction Commitment (CRC)

Since April 2010 any organisation that consumed more than 6,000 Mega Watt hours of half hourly monitored electricity during 2008 has been obliged to participate in the CRC, the Government's new carbon trading scheme.

Participants in the CRC will pay what is effectively a carbon tax on the majority of their energy use.

A carbon reduction performance league table of all participants will be published each October. The league table and increased costs will act as an incentive for organisations to reduce carbon emissions.

Climate Change Levy (CCL)

This levy is payable on all gas and electricity consumption. Low and zero carbon technologies are CCL exempt (such as good quality combined heat and power installations and electricity from photovoltaic cells).

Building Regulations 2010 – Part L

This regulation sets out the requirements for energy efficiency and the effective control of buildings and associated plant. These regulations apply to both new buildings and refurbishments and the University must fulfil their requirements.

Future Funding

The Government have stated that Higher Education needs to play its part in meeting national targets for carbon reduction. The grant letters from the Secretary of State for Innovation, Universities and Skills to HEFCE (our funding council) of 18 January 2008 and 21 January 2009 contained specific direction incorporating the requirements of the Climate Change Act.

In January 2010 HEFCE issued a statement of Policy “Carbon reduction target and strategy for higher education in England”. The Policy identified key actions:

1. *A sector level target for Carbon Reduction that is in line with UK targets, these targets are currently included in the Climate Change Act 2008 and are identified as a reduction in Greenhouse Gas Emissions of at least 34% by 2020 and at least 80% by 2050, against a 1990 baseline.*
2. *A requirement for institutions to set their own targets for 2020 for scope *1 and 2 emissions against a 2005 baseline. (see section 2.0 for definition of Emissions).*
3. *Commitment to reduce emissions across all scopes and a wish to develop consistent methodology for reporting scope 3 emissions. (*See Section 2 for definitions of scope 1, 2 and 3 emissions).*

This was further supported in HEFCE’s circular letter 17/2010 “Arrangements for the Second Capital Investment Framework” (CIF2) issued 5 July 2010 which required the following from institutions:-

- a) *A carbon reduction policy or strategy in place by 31 March 2011.*
- b) *A carbon baseline for 2005 which covers all scope 1 and 2 emissions. Institutions are encouraged to measure a baseline for scope 3 emissions, and in the longer term we would expect these to be included.*
- c) *Carbon reduction targets. These must:*
 - See Section 2.0 for a definition of scope 1, 2 and 3 emissions
 - a. *Cover scope 1 and 2 emissions, but institutions may choose to set additional*

targets for scope 3 emissions.

- b. *Be set against a 2005 baseline.*
- c. *Be set to 2020.*

- d) *An implementation plan to achieve carbon emission reductions in scopes 1, 2 and 3 including timescales and resources. These should cover capital projects and actions to embed carbon management within the institution, for example, through corporate strategy, communication and training.*
- e) *Clear responsibilities for carbon management.*
- f) *A commitment to monitor progress towards targets regularly and to report publically annually.*
- g) *The Carbon Management Plan, including targets, must be signed off by the governing body.*

Value for Money

As public sector finances tighten, it is important that public funds are efficiently used and cost savings are realised wherever possible. Many carbon reduction measures correspond to efficiency improvements, yielding cost savings and obtaining value for money.

Volatility of the Energy Markets

Over recent years the energy market has become increasingly volatile. Despite forecasts that energy markets will stabilise they have not and, the underlying trend is for the costs to rise. In order to manage this risk, it is necessary to ensure that all energy is used as efficiently and effectively as possible.

Reputation and Image

Students and external stakeholders are increasingly looking at universities green credentials including their carbon performance when making a choice regarding where to study.

2.1 Measuring Our Emissions

Throughout the document reference is made to emissions these are defined using the “World Resources Institute (WRI) and World Business Council for Sustainable Development’s (WBCSD) Greenhouse Gas Protocol - A Corporate Accounting and Reporting Standard revised edition”. The Greenhouse Gas Protocol categorises emissions as follows:

- Scope 1 - Direct emissions. These are emissions from sources a company owns or controls.
- Scope 2 - Electricity Indirect. These are emissions from the electricity that a company buys to use in its equipment or operations.
- Scope 3 - Other Indirect. These are emissions from activities that are relevant to a company, but not within its direct control. For example by transport in vehicles not owned by the company and emissions associated with procurement.

3.1 Objectives of the Carbon Management Plan

The plan has been structured and drafted to reflect HEFCE Good Practice Guidance: Carbon management strategies and plans.

The key objective of the plan is to demonstrate how the University proposes to satisfy the requirements of HEFCE's:-

- Statement of Policy: Carbon reduction target and strategy for higher education in England.
- Circular Letter 17/2010: Arrangements for the Second Capital Investment Framework (CIF2).

as discussed at Section 1.0 above, protecting the University's access to available public sector capital funding and demonstrating its commitment to the Governments carbon reduction requirements.

The plan identifies the University's scope 1 and 2 emission levels as being:-

- 16,804 tonnes of CO₂ for the 2005 baseline year.
- 20,011 tonnes of CO₂. at the end of Financial Year (31 July 2010) as a consequence of estate development and business development during the period since 2005.

The plan proposes that the University commits to a 32.5% reduction against its 2005 baseline year in its scope 1 and scope 2 emissions detailed below:

- Up to 2020 a reduction of 5,461 tonnes CO₂ against our baseline year of 16,804 tonnes CO₂

This in effect requires the University to meet a reduction of:

- 10,850 tonnes CO₂ when set against the expected expansion of its estate by 2020

A two phase programme of carbon reduction project initiatives is identified by the plan which is designed to deliver the above reductions in carbon emissions.

Secondary objectives contributing to the delivery of the above are:-

- To strengthen the integrated strategic approach to carbon management across the University enhancing established carbon management and supporting the Corporate Strategy 2009-2014.
- To measure carbon emissions in greater detail across a wider area of activities and

operations.

- To reduce carbon emissions to as low as is reasonably practicable in line with the targets set within this Plan.
- To work with key stakeholders in delivering successful carbon management.
- To position carbon management as a key area in any relevant strategic planning in both academic and support functions.
- To deliver benefits to as wide a University group as possible such as our staff, undergraduates, postgraduates, researchers and partners.

4.0 Key Stakeholders

Everyone associated with the University can contribute to reducing carbon emissions. However the following stakeholders have a key role to play in delivering carbon emission reductions:-

Vice-Chancellor's Executive Group – The most senior support for carbon management provides the most effective platform for University-wide carbon reductions. The ownership offered by the Vice-Chancellor and the Executive Management Team enables the necessary resource in funding and time, communications and monitoring to become available to realise efficient carbon management. This support reinforces targets set within this Carbon Management Plan and demonstrates carbon reduction as a key University priority.

Deans and Directors – Endorsement of their Schools' and Services' participation in reducing carbon emissions including monitoring and reporting is key in achieving absolute carbon emission reductions.

Northumbria Students' Union Management – As the University has a significant number of students they can make a considerable contribution to reducing carbon emissions. Working with the Students' Union implementing dedicated and individualised awareness campaigns will be essential in reducing energy waste in teaching and living areas and making students more carbon aware.

External Partners – Our external partners, suppliers and the City Council can all play a meaningful and important role in reducing theirs and the University's carbon emissions, through joint working.

5.1 Measurement and Targets

5.2 Baseline Emissions

In order for the University to set a reduction target it must first establish the baseline data for Scope 1 and Scope 2 emissions for 2005.

Scope 1

From gas, petrol and diesel consumption a total of 6,176 tonnes of CO₂ emissions.

Scope 2

From purchased electricity consumed a total of 10,628 tonnes of CO₂ Emissions.

5.3 Targets Set

As referenced at section 3.0 the University is required to set its own target, as a contribution to the sector wide 43% target, against our 2005 baseline year.

Scope 1

2005 baseline year is 6,176 tonnes of CO₂.

By 2020 the University has set a reduction target of 31.64% for scope 1 emissions.

As at December 2020 the University intends to have scope 1 emissions of 4,222 tonnes CO₂

Scope 2

2005 baseline year is 10,628 tonnes of CO₂ emissions.

By 2020 the University has set a reduction target of 33% for scope 2 emissions.

As at December 2020 the University intends to have scope 2 emissions of 7,121 tonnes CO₂

5.4 Further Commitment

Scope 3 emission levels will be established by December 2012 with the Carbon Management Plan then being updated and amended to reflect a targeted reduction of these emissions by December 2013.

6.1 Carbon Management Initiatives Phase 1:

The following carbon management initiatives can be delivered over the next five years providing an initial contribution to attaining the University's 32.5% target reduction by 2020

6.2 Voltage Optimisation

The University is in the process of purchasing a Voltage Optimisation system which enables all electrical equipment to operate with reduced power consumption.

<i>Commencing:</i>	<i>December 2010</i>
<i>Ownership:</i>	<i>Campus Services</i>
<i>Total CO₂ saving:</i>	<i>1,150 tonnes</i>

6.3 General Building Solutions

A number of estate wide generic projects to reduce carbon emissions have been identified as follows:

- Boiler replacement with high efficiency boilers.
- Upgrade all lighting, deemed inefficient, with high efficiency fittings and occupancy controls.
- Re-commission existing energy efficient lighting to maximise carbon savings.
- Install more variable speed drives on pumps.
- Improve control and efficiency of air handling units through occupancy detection installation.
- Reduce consumption and chiller usage.
- Improve pump control efficiency.
- Expand the building management system to include buildings not on the system.
- Re-commission the building management system in buildings to improve indoor environmental control to increase efficiency.
- Improve and upgrade pipe insulation.
- Solve ballast failure of existing DALI lighting systems.
- Replace boilers with small scale combined heat and power units.

<i>Commencing:</i>	<i>September 2011 to July 2015</i>
<i>Ownership:</i>	<i>Campus Services</i>
<i>Total CO₂ saving:</i>	<i>3,500 tonnes</i>

6.4 Hire Car Use and Business Car Use

The University can make a number of changes in the way it uses cars by; reducing the number of cars hired; maximising the use of the City's Car Club; using low carbon or zero carbon vehicles where available and increasing the use of video and telephone conferencing.

<i>Commencing:</i>	<i>Ongoing to December 2020</i>
<i>Ownership:</i>	<i>Campus Services and Finance and Planning Department</i>
<i>Total CO2 saving:</i>	<i>50 tonnes</i>

6.5 Local Carbon Management

Schools and Service Departments will be held accountable for reducing carbon in their areas. To enable them to reduce their carbon usage monitoring equipment will be installed. Schools/Service Departments will be expected to demonstrate their reduction to the Sustainability Management Group. Additionally Schools/Service Departments should be encouraged to promote carbon saving ideas across the University through a shared electronic suggestions box.

<i>Commencing:</i>	<i>Ongoing to December 2020</i>
<i>Ownership:</i>	<i>Campus Services, Finance and Planning Department and IT Services</i>
<i>Total CO2 saving:</i>	<i>900 tonnes</i>

6.6 Staff Training and Awareness

Carbon management is a core element of staff induction, increasing the training level and extending it to all staff will play a major part in embedding carbon management.

<i>Commencing:</i>	<i>Ongoing to December 2020</i>
<i>Ownership:</i>	<i>Campus Services and Human Resources</i>
<i>Total CO2 saving:</i>	<i>250 tonnes</i>

6.7 Information Communication Technology

IT Services will provide enabling technology that can assist the University in realising carbon reduction targets. Such measures will include:

- Use of server virtualisation technology to reduce the numbers of physical servers.
- Increased provision of video conferencing and virtual meeting capacity to reduce requirement for UK and Overseas travel.

- Use of enforced power management settings on desktop PCs that reduce energy consumption when the device is not in active use.
- Promotion of the Printer Policy that encourages the use of shared rather than individual printers.

6.8 Construction

BREEAM is the BRE Environmental Assessment Method widely used in environmental assessment method for buildings. It sets the standard for best practice in sustainable design.

The University has adopted BREEAM HE which is a dedicated assessment for Higher Education buildings and has set the following BREEAM ratings in relation to its own buildings

‘Very Good’ – for all major refurbishment projects

‘Excellent’ – for all new build development projects as a general standard with the aspiration to achieve BREEAM HE

‘Outstanding’ – being considered in relation to specific ‘landmark’ development initiatives.

BREEAM ratings are compiled from various credits awarded across categories including energy, materials and transport.

6.9 Electric Vehicles

The University will support the Plugged in Places programme which will provide an infrastructure to support the development and use of electric vehicles in the region. Additionally the University will assess all fleet vehicle replacements for electric version consideration.

6.10 Business Travel

The University will reduce the amount of business travel undertaken by the use of tele and video conferencing, efficient scheduling of business trips and car clubs. Additionally the University will investigate the use of low or zero emission vehicles which could be used for business travel.

6.11 Sustainable Travel

The University’s Travel Plan has been established for a number of years and offers staff access to discounted public transport as well as bicycles and cycling equipment. There has been a major investment in cycling facilities for staff and student use which will continue up to 2020. Additionally the University will propose an increase in car parking charges annually to ensure that staff choices, when travelling to work, should favour sustainable travel modes in the first instance.

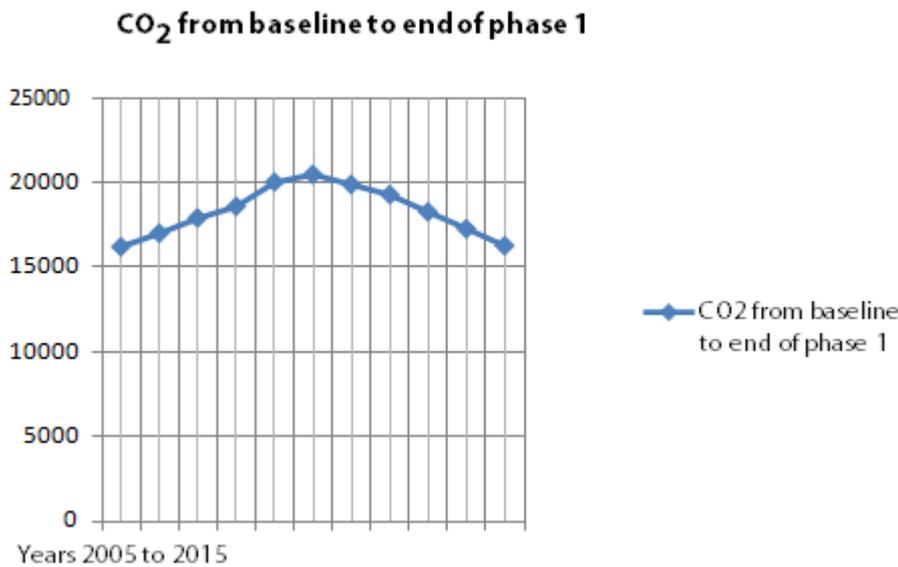
Working towards the targets set within its Travel Plan will remain a key part in the University managing its carbon emissions.

6.12 Teaching

It is essential that teaching offers our students a practical understanding of sustainability and the University will support its continued promotion of education in sustainable development within our academic provision, with a strong focus on carbon management.

6.13 Phase 1 Summary

Implementation of the carbon management initiatives discussed 6.1 to 6.10 will deliver a carbon emissions reduction of at least 5,850 tonnes of CO₂. Taking into account the expansion of the University Estate to include Sport Central, Winn Studios and New Bridge Street Halls of residence this equates to a minimum 1.7% net reduction against the required 2005 baseline. This reduction is illustrated graphically below.



7.1 Carbon Management Initiatives: Phase 2

Phase 1 carbon management initiatives deliver a 5,850 tonnes CO₂ reduction against the University's July 2010 20,011 tonnes CO₂ (identified at 5.1). This equates to only 1.7% reduction in CO₂ against the 2005 baseline. A further reduction of 5,000 tonnes CO₂ is required to achieve the target 32.5% reduction in scope 1 and scope 2 emissions by 2020. The following estate wide schemes have been identified for potential implementation between 2015 and 2020 to achieve this reduction.

7.2 Phase 2 Project Initiatives

- Tri-generation and biomass combined heat and power feeding the University through a city wide district heating.
- Replace all lighting systems with LED systems.
- Sun pipes on all top floors of University buildings.
- Double glazing and insulation programme.
- Energy monitoring zoning introduced.
- Solar reflective film.
- Air based heat pumps systems adopted wherever suitable.
- Solar panels with interactive feed in tariffs on all suitable buildings.
- Solar domestic hot water systems extended.
- Kinetic road plate installation.
- Wind turbine generation.
- Heat reclaim on waste hot water.

<i>Commencing:</i>	<i>Ongoing to December 2020</i>
<i>Ownership:</i>	<i>Campus Services</i>
<i>Total CO₂ saving:</i>	<i>5,000 tonnes</i>

7.3 Phase 2 Summary

The implementation of the above project initiatives would deliver a further estimated 5,000 tonnes CO2 emissions allowing the University to achieve its proposed 32.5% reduction target against its 2005 baseline by 2020. This reduction, along with target dates is illustrated graphically below:

Target date 2017

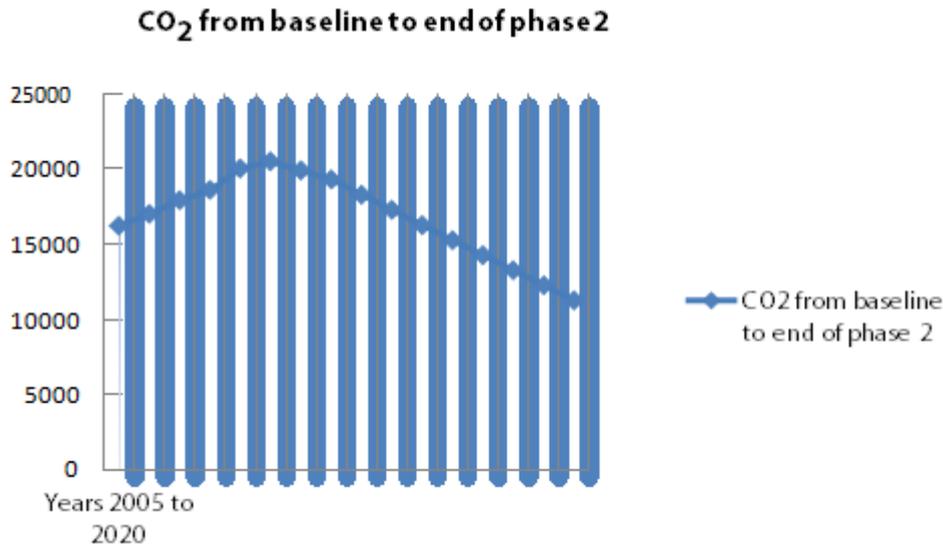
Reduction target of 12.32% on baseline year

Target date 2018

Reduction target of 18.48% on baseline year

Target date 2020

Reduction target of 32.50% on baseline year



8.1 Further Fundamental Reduction Measures for Consideration

In order to make a carbon emissions reduction contribution greater than the proposed 32.5% towards HEFCE's 43% target, the University would need to consider the implication of more fundamental initiatives. Many of these would have a significant impact on how it currently operates.

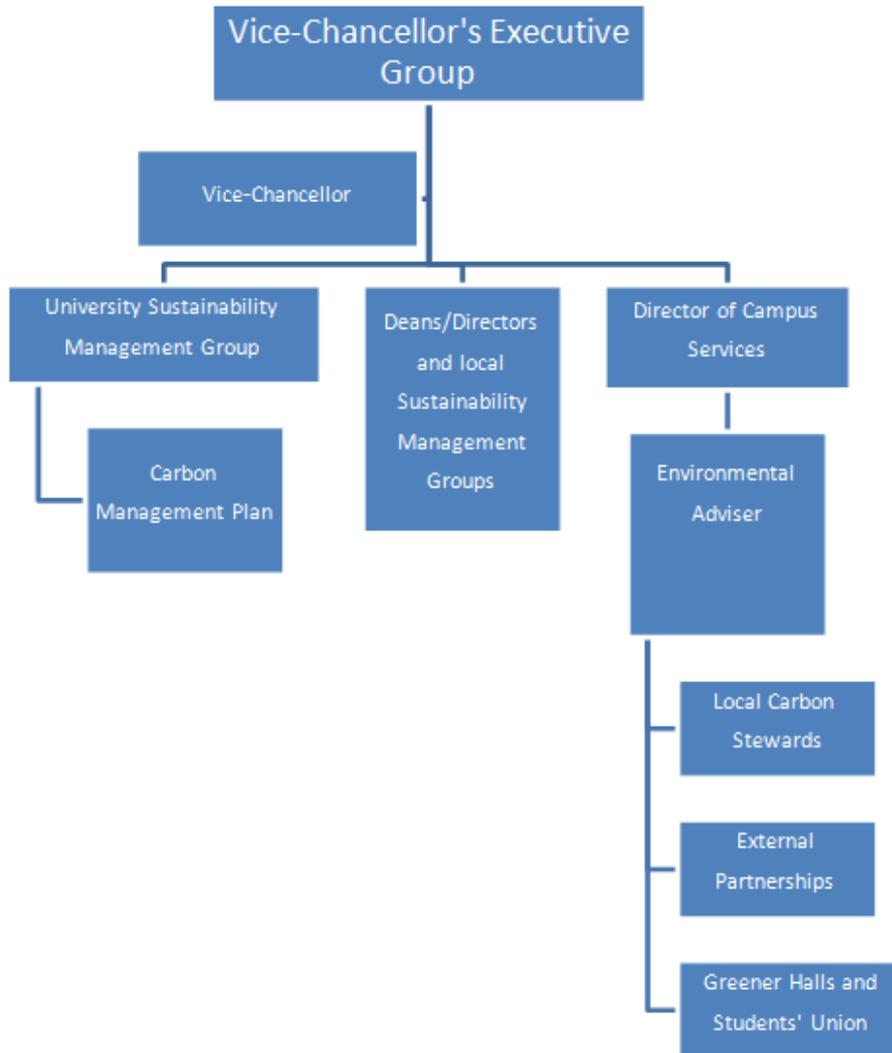
Examples could include:

- Cease the selling of bottled water.
- Remove all coffee/tea vending machines.
- Re-route all deliveries to once per week through a select few courier companies.
- Cease the use of all disposable catering items.
- Cease the use of solvent based paints.
- Cease the use of petrochemical based cleaning products.
- Procure second-hand furniture.
- Procure recycled stationery.
- Replace whole fleet with low emission alternative vehicles.
- Run staff and student bus service to remove the amount of cars coming to campus.
- Offer cash rewards for staff to give up car parking permits.
- Install a campus congestion charge.
- Remove all but disabled parking on campus.
- Periodically close/shut corridors and blocks during vacation times.
- Remove all desk and office electrical fans.
- Remove all small personal sized fridges in favour of multi shared fridges.
- Consider more home working or target set shut down periods where staff are free to work from home e.g. building shut down at 1400 on Friday.
- Reduce the agreed temperature for indoor working in offices and teaching areas to 17c.
- Introduce an air miles limit of air travel for all staff.
- Prohibit the use of out of season foodstuffs.
- Procure as many goods as possible within 100 miles of campus.
- Set aside guaranteed capital for carbon offsetting.
- Disposal/demolition of inefficient buildings.

The University's Sustainability Management Group will consider which of these measures can be adopted to realise scope 3 carbon emission reductions.

9.0 Monitoring and Reporting

The Sustainability Management Group will monitor progress being made towards achieving the proposed 32.5% reduction targets by 2020. The following table highlights the proposed reporting and monitoring structures.



It will be further required that Deans and Directors will report on local carbon management (mandatory where monitoring software by Campus Services has been installed) to the University Sustainability Management Group.

Additionally there will be another level of reporting via Caretakers and Cleaning staff as well as volunteer carbon stewards reporting on unnecessary use of energy, unauthorised use of portable electrical heating, overheated areas and poor carbon management practice in general to the Environmental Manager for action to be taken.

The Students' Union will be encouraged to set up a People and Planet Group which can work with Campus Services as well as working directly with People and Planet to achieve carbon reductions.

10.0 Conclusion

This Carbon Management Plan commits the University to deliver a target reduction of 32.5% in relation to its 2005 carbon emissions baseline.

Scope 3 emission levels will be established by December 2012 with the Carbon Management Plan then being updated and amended to reflect a targeted reduction of these emissions by December 2013.

Whilst this falls short of the HEFCE sector wide target of 43% reduction it is considered to be both a significant and worthwhile reduction contribution. The plan additionally identifies the mechanism and controls to be implemented to monitor the progress being made towards achieving the 32.5% reduction target by 2020, whilst offering the potential to exceed this target.