

Birmingham City University Carbon Management Programme

Carbon Management Plan (CMP)



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Foreword from Project Sponsor

“The University’s participation in the HE Carbon Management Programme is a clear signal of our efforts to reduce the impact our activities have on the environment. I believe it is the right thing to do in delivering a strategy to cut carbon emissions and the added value it brings from the significant financial savings we can achieve in reducing energy consumption.”

Graham Rhodes
Project Sponsor, Director of Estates

General Summary

Background and vision

This Carbon Management Plan (CMP) has been prepared as a result of Birmingham City University's participation in the Carbon Trust Higher Education Carbon Management programme. The purpose of this CMP is to inform and direct the actions taken by the University in understanding and reducing carbon dioxide emissions up to 2020. The CMP illustrates the financial savings and carbon reduction arising from specific proposals and targets set. It also details the framework required to embed carbon management into future University activities.

The recent University Corporate Plan demonstrates that the University seeks positive action in the way it operates as an organisation in the context of the wider environment with the commitment to the promotion of sustainability in our policies and activities. Along with the Environmental Policy, approved by the Vice Chancellor in December 2009, this aims to improve the sustainable nature of the University's physical environment through more efficient consumption of utilities, attention to sustainability in construction, reduced waste to landfill and looking to new ways of working and a sustainable transport policy. It is now widely agreed that climate change is evident and the results are set to impact worldwide. This, coupled with the highly volatile nature of energy prices seen over the last decade, provides a strong incentive to reduce the University's contribution to this and improve the ability to adapt to the effects. Further key drivers for change include pressure from staff, students and the public, HEFCE sustainability initiatives and funding pressures, Government policy and legislation and developing partnerships with the commercial sector.

Current position

The Carbon footprint of the University (including energy & water consumption, air travel, fleet transport and waste disposal) is almost 17,500 tonnes of carbon dioxide equivalent. This is enough CO₂ to fill 1.75 billion party balloons or equivalent energy needed to power 50,000 100W lightbulbs for a year! The most significant contribution to the carbon emissions is the consumption of energy in buildings, accounting for over 95% of emissions. The cost analysis highlights the importance of working to reduce the impact of air travel, waste and water as although these are only 5% of emissions, they account for over 20% of the costs.

The Business as Usual Scenario has been calculated for energy consumption as this data is more reliable. Energy consumption data from previous years has been taken into account and this shows that energy consumption is set to decrease, although not at a sufficient rate to meet the University's targets. The first phase of the new City Centre campus will reduce the University's carbon emissions, as the new building will be built to best practice standards. Predictions have been made as to energy related costs using government figures from the DECC. Birmingham City University operate fixed rate contracts for electricity and gas so contract costs have been applied until the end of current contracts then estimates made of potential increases. It should be noted that these are likely to be conservative at best. These costs have also been applied to the

Reduced Emissions Scenario where carbon emissions are reduced by 48% by 2020 from the 2005/06 baseline as per the agreed target for the programme.

The Value at Stake is the difference in emissions or costs between the two scenarios and represents the total savings that can be expected in financial and carbon emissions terms if the Carbon Management Plan is successful. The Value at Stake comprises of the savings in Climate Change Levy, energy efficiency and energy price increases. From the assumptions and predictions made the total aggregated Value at Stake (all years) from 2010/011 to 2020/21 is shown below:

**The total aggregated Value at Stake from 2010/11 to 2020/21
in energy-related costs is £8 million and in carbon emissions is 30,000 tCO₂e.**

Targets and objectives

Our low carbon vision: Birmingham City University will contribute to a sustainable future and low carbon economy by systematically reducing the University's carbon footprint, by integrating principles of sustainability into corporate strategy and operational procedures and by raising awareness of environmental issues amongst our staff, students and wider community.

Target: The University will reduce carbon emissions by 48% by the end of 2020/21 compared to a baseline of the energy used in 2005/6, in line with the HEFCE sector target.

Much of this target will be achieved through energy reduction and efficiency measures as energy consumption in buildings accounts for 95% of carbon emissions.

- Objectives:**
- To establish a better understanding of the University's Carbon Footprint
 - To manage and reduce energy consumption and expenditure
 - To establish targets for reducing energy consumption
 - To contribute to National and Local carbon reduction objectives
 - To establish a carbon management plan and policy for the University
 - To raise awareness of carbon management issues amongst staff and students

Management and responsibility

Good Programme Management will be essential to achieve the ambitions of this Carbon Management Plan. The Carbon & Energy Reduction Officer, working in conjunction with the Environmental Officer is the Project Leader for the Carbon Management Plan; however, all energy efficiency projects will be supervised by the most appropriate member of staff. The Carbon Reduction target should have senior, strategic ownership to ensure that it is aligned with Corporate Strategy and other policies and therefore achieves appropriate priority and drive.

The Environmental Committee will review the Carbon Management Programme as this will ensure that the CMP is implemented and reviewed in context with the overall sustainability strategy of the University. This Committee will be a high level group responsible for developing the overall environmental strategy, and recommending the Environmental Policy, key commitments and objectives and targets to the Corporate Management Group. This Committee will then report to the Corporate Management Group at least annually on a formal basis.

The group will also develop and grow links with relevant external agencies and organisations in relation to environmental issues and activities such as the Carbon Trust and EcoCampus programmes and local organisations such as Birmingham City Council and Birmingham Cutting CO₂ campaign. The Group will communicate with the Corporate Social Responsibility Strategy Group to allow its work to feed into the wider CSR Strategy for the University.

Reducing emissions

In order to achieve our vision and targets we will focus on the following areas:

- Raising staff awareness, education and training, including appointing Environmental Champions to encourage good housekeeping practices in University buildings.
- Reducing energy consumption in buildings by reducing unnecessary usage (e.g. via Switch off campaigns), increasing energy efficiency (e.g. insulation, lighting, heating) and strengthening our approach to data monitoring and targeting.
- Increasing the use of renewable energy by integrating renewables capacity in buildings.
- Reducing water usage through the use of technological innovation and staff education.
- Reducing waste by improving waste minimisation and recycling initiatives at University offices and reducing paper consumption.
- Reducing emissions from our vehicle fleet by procuring fuel-efficient and low emission vehicles, driver training and monitoring of the fleet.
- Encouraging staff to reduce carbon emissions through development of a sustainable travel plan.
- Developing systems to improve the sustainability of the University's procurement activities.

A number of specific projects have been identified as part of this CMP and evaluated for their expected carbon and financial savings. This is ongoing and predictions will be updated.

Financing the programme

The financial risks to the University of this plan if not implemented are significant. As detailed previously, energy costs are highly volatile and increasing amounts of legislation and publicity will have an impact on operations and reputation. Financing of energy efficiency projects is currently on an ad-hoc basis and concentrated on heating and lighting efficiency. Future financing to ensure a successful CMP should be structured, committed and sustained. Projects will be assessed prior to funding for feasibility and payback. Projects with the shortest paybacks will be given the highest

priority, however, all reasonable payback options will be considered in conjunction with the wider benefits the project may create and ease of implementation.

Embedding carbon management into the University

Sustainability and carbon management will be integrated into the responsibilities of relevant people in different departments such as Campus Management & Services, Finance, HR, Corporate ICT and Faculties. Additionally, accountability for sustainability, particularly environmental management will be defined at a senior level. As above, sustainability objectives, including carbon reduction, will be embedded into business plans and personal objectives at a local level.

A network of Environmental Champions will be established across the organisation to build engagement and communication at the local level. This will support the effectiveness of awareness campaigns which are an essential element of achieving the sustainability and carbon reduction objectives. Eventually, environmental responsibilities should be included in all relevant job descriptions and communicated to students as they join the University to encourage a high level performance in sustainability.

The carbon management plan will be made public, via the internet or other means if deemed more effective. The carbon management plan will be reviewed annually and linked in with the annual environmental report.

1. Introduction

Climate Change

It is now widely recognised by governments and industry that climate change is happening. Scientific evidence showing that climate change is occurring is more compelling than ever and points to the release of greenhouse gases such as carbon dioxide (CO₂) into the atmosphere by human activity as the primary cause. Changes in weather patterns and sea levels are being observed and are affecting our lives. Resources that were once treated as 'free' such as the atmosphere are increasingly being recognised in economics. The price of CO₂ emissions, for example, is growing as the need for reductions and cost of energy increase and, if left unaddressed by businesses and organisations will radically affect their profitability.

Some degree of further climate change is inevitable due to the greenhouse gas emissions already released into the atmosphere and this will have an impact on our economy, society and environment as detailed in the Stern Report¹. Therefore some level of adaptation to the impacts of climate change will be necessary. However, the only sustainable long-term approach is to substantially reduce greenhouse gas emissions.

Carbon dioxide is the universally accepted metric for measuring greenhouse gas emissions. Emissions of all other greenhouse gases, such as methane, are given as an equivalent amount of carbon dioxide. In this document, carbon and CO₂ are both used as abbreviations for carbon dioxide.

Birmingham City University

Birmingham City University is a large, diverse, historic provider of higher and further education for the people of Birmingham and beyond. A modern, evolving university, it was formed by combining smaller institutions in Birmingham and established by statute in March 1992 to create the major educational force the University is today. Over 300 courses are delivered to more than 23,000 students across eight sites. The catchment area extends from inner Birmingham to the Far East and the United States. There are six Faculties consisting of:

- Faculty of Health
- Faculty of Education, Law & Social Sciences
- Birmingham City Business School
- Faculty of Performance, Media & English
- Faculty of Technology, Engineering & Environment
- Birmingham Institute of Art and Design



¹ Nicholas Stern (30 October 2006). ""Stern Review executive summary"". New Economics Foundation.

In 2007 the University launched its Corporate Plan detailing its ambitions for the next 10 years and highlighting a significant investment in an exciting estates strategy which will provide state of the art learning facilities with the employability of students as a priority.

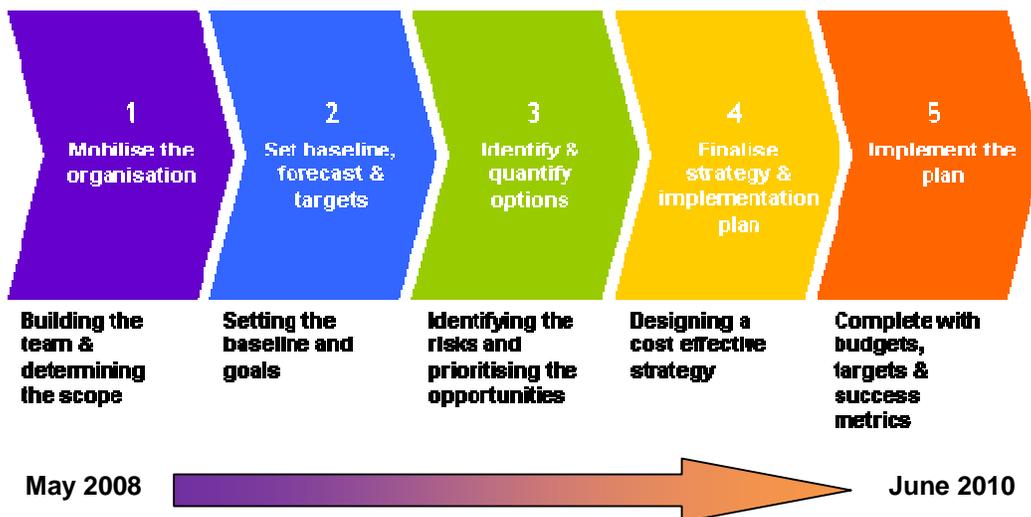
Firmly integrated into this strategy is a commitment to positive action in the way the University operates as a business in the context of the wider environment. In 2008 a programme of environmental improvements was initiated with the creation of a new Environmental Officer role and the launch of an Environmental Policy. The Environmental Policy sets out a series of commitments to reduce the University's environmental impact in energy and water consumption, transport, procurement, waste and construction, as well as identifying the need to integrate sustainability into the curriculum.

In 2010 the University created the post of Carbon & Energy Reduction Officer, building on our commitment to a more sustainable future. The introduction of the Carbon Reduction Commitment Energy Efficiency Scheme (abbreviated to CRC) has increased the financial incentive for energy efficiency and put carbon reduction at the top of the agenda.

Carbon Management at Birmingham City University

Birmingham City University is one of 19 Universities which has taken part in Phase 4 of the Carbon Trust's Higher Education Carbon Management (HECM) Programme. Participation in the Higher Education Carbon Management Programme is an opportunity to make significant progress towards the University's commitments to reduce our impact on the local and global environment using a coordinated and sustained approach.

The programme has supported Birmingham City University to establish a Carbon Footprint and develop this Carbon Management Plan (CMP) to reduce it. The CMP has been updated since to reflect developments nationally and also within the University. The CMP is a dynamic plan to reduce carbon emissions and sustain Carbon Management in the longer term. In line with HEFCE requirements, targets have been set up to 2020 (i.e. for the next ten years) covering scope 1 and 2 emissions. The targets are set against a 2005 baseline and shall be made publicly available by the University. The following 5 step process has been followed:



The CMP also includes an implementation plan to reduce scope 1, 2 and 3 emissions, including the responsibilities for delivering this.

A Project Team of representatives from across the University including academic, management, facilities and professional staff and student representation has been established to steer the programme.

The benefits to the University of participating in the project will include:

- Improved understanding of the University's energy consumption in terms of carbon emissions
- Effective targets for reductions in energy use with the potential to lead to significant savings on current expenditure
- Improved understanding of the impact of University waste management so the current strategy can be improved with the aim of reducing waste to landfill
- Improved understanding of the impact of University travel which can feed into planned changes in parking/transport policy
- Carbon management is a key consideration in University policy and enables the University to incorporate principles of sustainability in response to funding bodies and Government strategy
- Improved awareness of carbon management issues amongst the University community and external stakeholders to enable reduced carbon impact of their activities
- Enhanced University environmental profile internally and externally
- Good performance in CRC, which will in turn minimize our financial liabilities under this scheme and lead to an improvement in the University's reputation.
- The implementation of this CMP should put the University in a good position with regard to HEFCE funding under the Capital Investment Framework; funding under this is linked to carbon management performance and a CMP is a pre-requisite.

2. Carbon Management strategy

Context and drivers for Carbon Management

There are a number of drivers which have motivated the University to initiate its programme of sustainability and, more specifically, become more proactive with regards to environmental improvements. These include legal, policy, financial, moral and reputational factors. Some of the key drivers are detailed below and summarised in the concluding table. This is not an exhaustive list as many factors will have an impact on the University's drive for sustainable development.

Climate Change and Oil

There is now overwhelming evidence and a consensus amongst the International community that climate change is occurring and is mainly attributable to greenhouse gas emissions arising from human activities. For example, eleven of the last twelve years (1995-2006) rank amongst the twelve warmest since records began in 1850. Respected sources such as the Intergovernmental Panel on Climate Change and NASA report a tipping point in atmospheric CO₂ concentration of 450ppm. The current figure is over 380ppm and is increasing year on year.

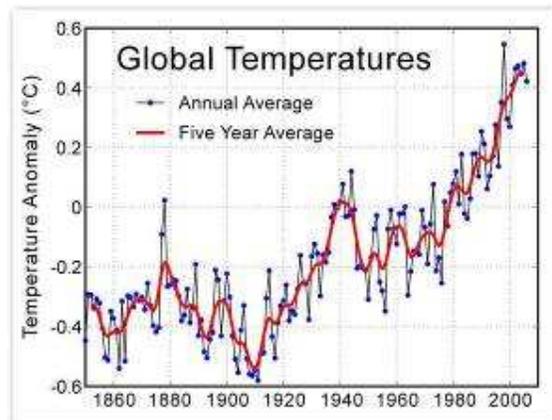


Figure 2.1.1 Global Temperatures (take from www.newscientist.com 1st December 2008)

There is also a growing understanding of how the impacts of climate change will vary across the world. These involve increasing global temperatures, rising sea levels which could cause flooding of low lying areas, increasing frequency and severity of extreme weather events, changes to rainfall patterns including increased drought and flooding, and ocean acidification. The ecological and economic consequences of these changes (such as crop yield, disease spread, trade and conflict) are likely to be huge, and much larger than the costs associated with dealing with the issues of climate change now. It is also possible that the effects of climate change will be more severe than estimated.

Peak oil refers to the point when the maximum amount of oil that can be extracted globally is reached. Thereafter, production will tail off as remaining reserves become more difficult and more expensive to extract. Many of the services that we currently take for granted - cheap flights, cheap imported consumer goods and global distribution of food - will be radically curtailed. This theory was first suggest by geoscientist Marion King Hubbert, who in 1956 predicted that US oil production would peak between 1965 and 1970. This theory has since been amended and there is still much debate about existing oil reserves and predicting new finds but it has been predicted that the production of oil will likely peak within the next twenty years.

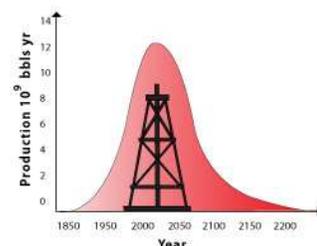


Figure 2.1.2 Hubbert's Peak

National Drivers

There is an increasing need to respond to climate change and this is driving Global, European and UK policies to encourage sustainable development. Increasingly, public sector organisations are being looked at to demonstrate low carbon solutions.

The government recognised the importance of climate change and took responsibilities from DEFRA and BERR to create the Department for Energy and Climate Change (DECC). The Climate Change Act (2008) committed the government to legally binding carbon reduction targets: an 80% reduction in carbon emissions by 2050 and a 34% reduction by 2020, based on 1990 levels. The achievement of these targets will require the efforts of all organisations and individuals. The Act also created a legal framework for mandatory domestic carbon emissions trading schemes for low intensity energy consuming organisations. The first such scheme is the Carbon Reduction Commitment Energy Efficiency Scheme (CRC), which commenced in April 2010.

Birmingham City University is participating in the CRC. The University must buy and surrender allowances to cover carbon emissions each year (initially at £12/tonne CO₂). Each year the participants receive revenue recycling payments with a bonus or penalty depending on their carbon performance. There is a double incentive for carbon reduction, as not only do participants benefit from reduced energy bills but also from larger bonus / smaller penalty payments. The bonus/penalty starts at 10% but increases to 50% by the fifth year. This represents a significant financial opportunity and potential liability. There is also a cap placed on the number of allowances in the third year, which will force the price of carbon up, increasing the financial opportunity and potential liability. The CRC is therefore a significant driver for carbon reduction. The vast majority of universities will be participating and will be ranked in a league table along all scheme participants including private businesses, leading to an additional reputational incentive to improve carbon performance. League table ranking for the first year of the CRC is dependent on having a Carbon Management Plan.

The Higher Education Funding Council for England (HEFCE) has set its own targets for carbon reduction, taking into account the expansion of the HE sector since 1990 and setting targets relative to the 2005/06 academic year. These targets are a 20% reduction by 2012, 35% reduction by 2017, and a 48% reduction by 2020. These targets are a further incentive for the University to reduce carbon emissions.

The Department for Innovation Universities and Skills' grant letter to HEFCE requires them to link capital funding allocation to carbon performance. HEFCE will implement this via their capital Investment Framework (CIF). HEFCE require Universities to have a Carbon Management Plan in Place, which is approved by the Board. The absence of a Carbon Management Plan is likely to negatively affect Universities' funding applications.

A new Part L of the building regulations is coming into force in October 2010. This will enforce a 25% improvement in carbon emissions over and above the existing Part L and will act as a driver for improving energy efficiency standards in new buildings. It will also enforce higher standards in



Figure 2.1.3 Display Energy Certificate (www.energy-saving-expert.com)

refurbishment of existing buildings. It is the government's aspiration that all new buildings will be zero carbon by 2019 and all new public sector buildings will be zero carbon by 2018.

In response to EU Energy Performance of Buildings Directive, the UK government has introduced a requirement for public buildings to have Display Energy Certificates (DEC's), which are building labels for energy performance which must be displayed in a public area and assessed on an annual basis. This will be highly visible parameter and will be picked up by organisations comparing the sustainability of Universities such as People and Planet and HEFCE, as well as delivering a potential impact to building financial value.

The Green Education Declaration was launched in early 2008 by People and Planet, the national student action group for environmental and ethical issues. The Declaration called for the Climate Change Bill (since passed into law) to commit the education sector to a clear carbon reduction strategy. In signing up to the Declaration, Birmingham City University demonstrated support for this aim and for working to achieve the targets mentioned in this section of the Carbon Management Plan. People and Planet also produce an annual League Table of environmental performance of Universities (the Green League). In the latest table (2010) Birmingham City University was ranked in the Upper Second Class Category, 29th overall. This is a good improvement on previous performance, however the University scored relatively lowly in carbon management and reduction areas, something which the University is keen to improve on in future years.

Local Drivers

The University has an obligation to manage its funds efficiently and cost-effectively. The Carbon Management Programme will support this obligation and enable the University to become more sustainable for the future.

In 2005/06 Birmingham City University consumed over 51GWh of energy from oil, gas and electricity, which equates to approximately 17,500 tonnes CO₂.

Since 2004, the UK has been a net importer of energy and is increasingly exposed to the volatile oil and gas prices that can only spiral upwards with global fossil fuel consumptions increasing at unprecedented levels of 4% per annum. It is anticipated that the future trend in energy prices will continue to be upwards, driven by increases in world demands, decreasing fossil fuel reserves and concerns about environmental impacts such as climate change. Reducing the exposure and consequent risk from energy prices is a key driver for a long term low carbon strategy.

The University has ambitious expansion and building plans and whilst attention is presently given to energy efficiency within new builds and refurbishment there will be increasing requirements to incorporate renewable technologies into developments, growing from the present 10% guideline for building control. It is anticipated that future Part L revisions will require a higher percentage of

renewables. Birmingham City Council has indicated that carbon emission targets will be set through revised planning guidance for all new developments within the new climate change Strategic Framework – Cutting CO₂ for a Smarter Birmingham.

The new Strategic Framework for Birmingham City Council has been put together to determine how Birmingham should deal with climate change. The aim is that Birmingham should take a strong lead in tackling climate change as the biggest city outside London and as the birth-place of the first carbon-based industrial revolution. This has been highlighted with the City Council setting a challenging target of cutting greenhouse gas emissions by 60% by 2026. Work with Universities is one of the key objectives within the Strategic Framework developed to achieve this target, to develop new technologies which will have major impacts in countering climate change and grow low carbon business opportunities. Ensuring that the operation of the Universities themselves is low carbon will also be a key component of this strategy.

There is an increasing recognition amongst staff and students of the importance of climate change and Birmingham City University will benefit from demonstrating commitment and coordinating an approach to this issue for all stakeholders and interested parties. The University's position relative to other local universities in league tables such as CRC and the Green League has an effect on the way we are perceived internally and externally. It is hoped that the creation of a "green ethos" at Birmingham City University can improve the experience that students and staff have working here.

Table 2.1.1: The key drivers for participation in the Carbon Management Programme

Generic Category	Driver	Areas of Impact	Nature of Impact	Importance (High, medium or low)	Consequences/opportunities/issues for carbon management
Political/ Economic	HEFCE sustainability consultation, action plan & CIF	The University	HEFCE capital funding under CIF linked to carbon performance HEFCE carbon reduction targets	High	Capital funding now related to sustainability criteria for new builds and refurbishments will strengthen in the future. HE BREEAM standards may be required.
Political/ Legislative	Climate Change Act	The UK	UK targets for carbon reduction	High	Strong Governmental policies to reduce carbon emissions
Economic	Rising cost of utilities and volatility of energy market (plus rise in Climate Change Levy charge)	The University	Utility prices unstable and rising – lead to financial pressures & less money to spend overall	High	Opportunities for lower utilities consumption & usage of renewables to lessen exposure to market volatility
Ethics	Corporate Social Responsibility	The University	Responsibility to do the right thing Attracting new employees & students Relationship with local community	High	Taking leading role in town and local community Reducing environmental impact on wider community – energy, waste, transport etc
Legislative	UK Carbon Reduction Commitment - Carbon trading scheme	The University	Potential financial and reputational impact	High	Costs in purchasing carbon allowances Bonus/penalty payments League Table of performance
Reputation	Increased public awareness of climate change and environmental issues in general	Students – current, alumni, future Staff Local community Commercial aims – business expectations of CSR	Attracting new employees, students and business Green League	High	Potential loss of market share with lack of action Attract more employees, students and business with good performance Good morale, positive opinion of involvement with University of staff, students & alumni
Legislative	EU Energy Performance of Buildings Directive	Estates Management	All campus buildings >1000m ² require a DEC (energy label) Any buildings sold or rented need an Energy Performance Certificate	Medium	Higher visibility of carbon performance by all building users

Legislative	Building Regulations Part L 2010 update	Estates Management	Stricter design controls for refurbishment & construction	Medium	Added up-front cost means life-cycle analysis is now a higher priority Opportunity to exceed legislation for long term benefits
University Policy	Environmental Policy	The University	University's Environmental Policy launched in 2008	Medium	Energy reduction commitment
Reputation	P&P League Table / Sound Impact Awards	The University / The Student Union	Environmental performance ranked in league table	Medium	Improvements in CO ₂ emissions, waste arisings & water usage will improve ranking
Political	Birmingham City Council	The University	BCC targets to reduce local carbon emissions by 60% by 2026	Medium	Local pressure to contribute to targets Opportunity to work with local partners on improvements

Our low carbon vision

Birmingham City University will contribute to a sustainable future and low carbon economy by systematically reducing the University's carbon footprint, by integrating principles of sustainability into corporate strategy and operational procedures and by raising awareness of environmental issues amongst our staff, students and wider community.

Strategic themes

In order to achieve our vision and targets we will focus on the following areas:

- Raising staff and student awareness through education and training, including appointing Environmental Champions and engendering a sense of ownership of environmental issues in all staff and students to encourage good housekeeping practices in University buildings.
- Reducing unnecessary energy usage in buildings by changes to behaviour and ways of working (e.g. via Switch off campaigns and strategic use of space), increasing energy efficiency (e.g. controls, insulation, lighting, heating) and strengthening our approach to data monitoring and targeting.
- Increasing the use of renewable energy by integrating renewables capacity in buildings. Taking advantage of feed-in tariffs where viable.
- Reducing water usage through the use of technological innovation and staff education.
- Reducing waste by improving waste minimisation and recycling initiatives at University offices and reducing paper consumption.

- Reducing emissions from our vehicle fleet by procuring fuel-efficient and low emission vehicles, driver training and monitoring of the fleet.
- Encouraging staff to reduce carbon emissions through implementation of the sustainable travel plan.
- Developing systems to improve the sustainability of the University's procurement activities.

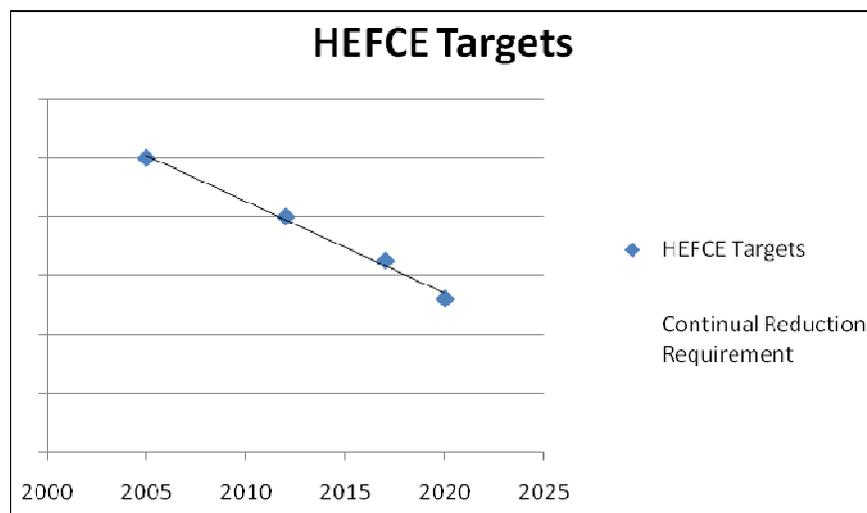
Targets and objectives

The objectives of this project are:

- To establish a better understanding of the University's Carbon Footprint
- To manage and reduce energy consumption and expenditure
- To establish targets for reducing energy consumption
- To contribute to National and Local carbon reduction objectives
- To establish a carbon management plan and policy for the University
- To raise awareness of carbon management issues amongst staff and students

Targets

The graph shows the continual reduction required to achieve the HEFCE carbon reduction targets, which equates to an annual reduction of 3.2% of baseline emissions. This is derived from the individual milestone targets set by HEFCE (20% by 2012/13 and 35% by 2017/18 from a baseline of 2005/06). The University is setting its targets in terms of a year-on-year reduction to achieve a final carbon emissions target by 2020.



The University will aspire to match HEFCE targets and reduce carbon emissions by 48% by 2020 compared with 2005/06 levels. This entails a 3.2% reduction each year.

Much of this target will be achieved through energy reduction and efficiency measures as energy consumption in buildings accounts for 95% of carbon emissions.

3. Emissions baseline and projections

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

3.1 Scope

The scope for identifying carbon emissions within the key areas is considered below:

Buildings – energy and water consumption.

The aim will be to identify and quantify all direct emissions from energy use and indirect emissions from electricity use at the University level. Estate Management Statistics have been used. The University's programme of smart meter installation will allow this data gathering to be broken down in future to campus and if possible building level. Buildings will be split into residential and non-residential.

Transport.

The impacts of business travel and the University's own vehicle fleet will be included subject to suitable data being available. Ideally, commuting emissions data would be included; however, there is a lack of data available for the footprint year. The Atkins travel survey (2009) has commuting data.

The University has developed a Sustainable Travel Plan. Implementation of the analysis of this is pending approval.

Waste Management.

Waste disposal will be included in the carbon footprint calculation as this is an area where significant improvements can be made. However, accurate data is only available for non-residential waste, although this also includes some "average weight of load" data.

Procurement.

There is a lack of data available in this area both internally (Purchasing & Insurance Section) and from suppliers. Many purchases are made off contract so cannot be tracked and it is unknown from which sources suppliers obtain goods. The impact of paper consumption (Digital Print Services) will be included in the baseline report but the carbon impact of this is approximate so will not be included as a Carbon Reduction Project within this Plan. The main obstacle to good procurement data is purchasing by the devolved departments.

3.2 Baseline

The material emission sources included in the creation of the institution's carbon emissions baseline are detailed below.

Table 3.2.1 Material Emission Sources

Source	Details
Utilities	Gas, electricity, oil & water in residential & non-residential buildings. The utility consumption data is taken from records from the Estates Management Statistics (05/06).
<i>Electricity</i>	<i>Green tariffs have been used in the past but do not give any carbon reduction benefit under the carbon management plan. HEFCE guidance indicates that where the provider goes above their Renewables Obligation requirement, this may count in future. The University will review this.</i>
<i>Gas</i>	<i>All boilers, kitchens and workshops</i>
<i>Oil</i>	<i>Where in use for central heating</i>
<i>Water</i>	<i>From metering data</i>
Vehicle fuel	The annual mileage for the fleet transport data has been estimated from MOT records; therefore the accuracy is limited but does give an indication of the scale of the impact so is still valuable. Vehicles identified as diesel or petrol and size. This data has been carried over from the original CMP as significant year on year changes are not anticipated at present.
Miles of air travel	Staff air travel data has been obtained from records from the booking agency used by the University and was provided in terms of number of miles and whether short or long haul journeys. This data has been carried over from the original CMP as significant year on year changes are not anticipated at present.
Waste	Tonnes to landfill or incineration (note that for 06/07 and particularly 07/08 some data has been estimated due to failure of the pay by weight system. Emissions detail does not include transport to landfill or incinerator. Waste from residential buildings not included as data is not available from the Local Authority.
Paper	Paper consumption records include the volume of paper purchased for general printing purposes, it does not include paper consumed in producing publications, prospectuses etc. Data is not currently available to convert consumption to CO ₂ equivalent so this will not be included within the carbon footprint at present.

Various sources of emissions have not been considered at this point in the project for a number of reasons, but could be considered in future work; they are:

- Staff business travel other than central transport booked travel (data cannot be segregated reliably or easily from paper-based expense claim forms);
- Staff and student commuter travel (historical survey data unreliable due to small sample size);
- Visitor, contractor or supplier travel (data not collected);
- Procurement of other materials (data cannot be collated easily).

The institution's carbon emissions baseline will be calculated using data from 2005/06 academic year (1st August 2005 to 31st July 2006). Table 3.2.2 identifies the sources of data used to calculate the baseline, as well as assumptions and CO₂ conversion factors (as supplied by HEFCE in their "Carbon management strategies and plans – A guide to good practice" which is itself taken from DEFRA guidance). This information is documented to ensure that any future carbon emissions calculations can be performed using the same methods, therefore ensuring consistency throughout the programme.

Table 3.2.2: Data obtained to calculate baseline.

Data	Owner	Sources	CO ₂ Conversion Factors
Utilities use (gas, electricity, oil & water)	Estates: Energy Manager	Estates Management Statistics	Electricity 0.54013 kgCO ₂ /kWh Gas 0.20417 kgCO ₂ /kWh Oil 0.28045 kgCO ₂ /kWh Water 0.400 kgCO ₂ /m ³
Fleet transport (University's owned or leased vehicles)	Campus Management & Services: Post & Transport	MOT records (as close as possible for the year)	Car – diesel large 0.19 kgCO ₂ /km Car – diesel small 0.16 kgCO ₂ /km Car – petrol large 0.22 kgCO ₂ /km Car – petrol medium 0.19 kgCO ₂ /km Car – diesel small 0.16 kgCO ₂ /km
Air Travel	Purchasing & Insurance Section	Miles travelled by department for short and long haul (supplied by Travel Management agency)	Air – long flight 0.11 kgCO ₂ /km Air – short flight 0.15 kgCO ₂ /km
Waste Management	Campus Management & Services	Invoices Tonnage estimates for waste sent to landfill and recycling (supplied by contractors) NB: estimated values where weights not recorded: 0.035 tonnes Euro 1100litre 0.25 Euro Cage (cardboard) 0.54 tonnes RORO 25YD ³ /19.1M ³	Waste sent to landfill 447kgCO ₂ e/tonne Waste incinerated 730kgCO ₂ /tonne
Paper Consumed	Digital Print Services	Invoices	N/A

Notes to Table 3.2.2:

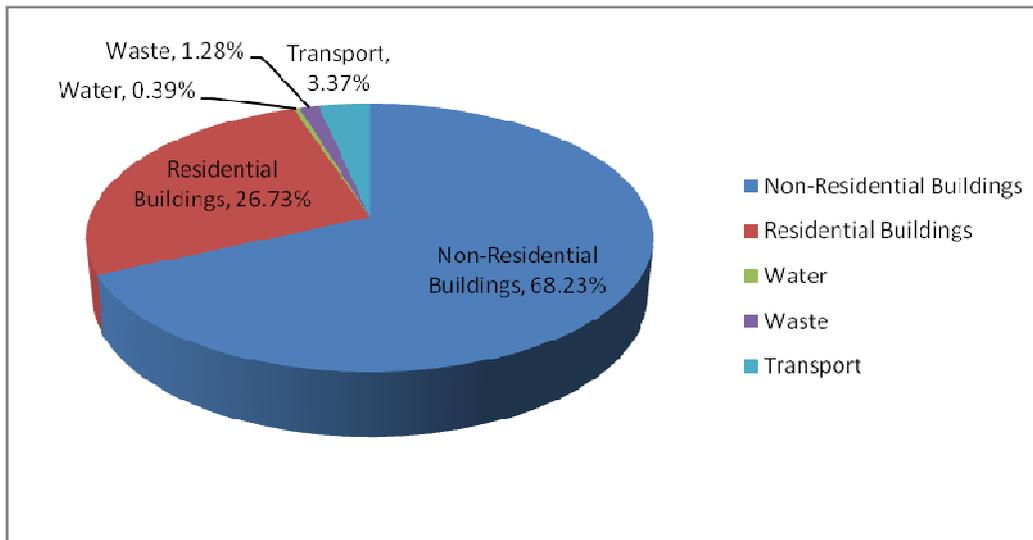
1. The emissions from waste sent to landfill only account for the direct emissions given off by the waste as it decomposes and take no account of the off-campus transport to its disposal point.
2. CO₂e is a unit into which greenhouse gases other than CO₂ are converted so that they can be directly compared ('e' is for equivalent).
3. Zero emissions have been allocated to the recycling of waste, as these will be counted by the recycling organisation.

The University's CO₂ emissions baseline for 2005/6 is shown in Table 3 below.

Table 3.2.3: Breakdown of baseline CO₂ emissions for 2005/6

Tonnes of CO ₂ (tCO ₂ e) (nearest 10 tonnes)						
Baseline Year	Non-residential buildings	Residential buildings	Transport – air travel & fleet	Waste – landfill & incineration	Water consumption	Annual Total
2005/6	11749.083	4602.68675	580	220	67.4096	17480
	68.23%	26.73%	3.37%	1.28%	0.39%	

Chart 3.2.1: Breakdown of baseline CO₂ emissions for 2005/6

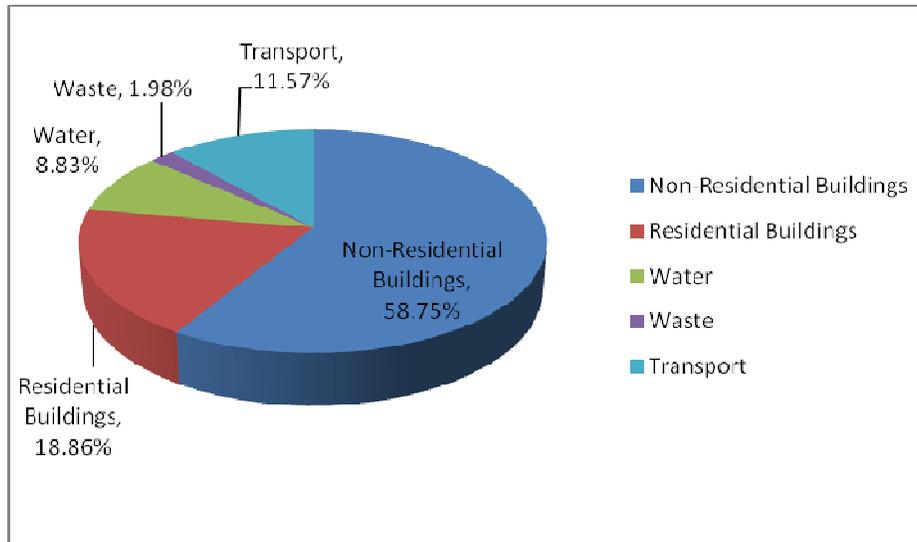


The baseline of carbon emissions shows that energy consumption in buildings account for most emissions, with non-residential buildings being the most intensive.

Table 3.2.4: Cost breakdown

Cost (£) (to nearest £1000)						
Baseline Year	Non-residential buildings	Residential buildings	Transport – air travel & fleet	Waste – landfill & incineration	Water consumption	Annual Total
2005/6	£1,569,440	£503,811	£309,000	£53,000	£236,000	£2,987,000
	58.75%	18.86%	11.57%	1.98%	8.83%	

Chart 3.2.2: Breakdown of baseline costs for 2005/6



The analysis of costs highlights the value of considering water efficiency and sustainable travel within the carbon management programme as although they may only be a small percentage contribution to carbon emissions, they have a higher impact in terms of cost for the University.

Paper consumption.

The data for 2006/07 has been used in the absence of data for 2005/06, as a significant year on year change is not anticipated. 39015 reams of paper were consumed at a cost of £82, 717. All paper purchased was virgin paper.

A carbon conversion could not be obtained currently; however, research has show that on average, when comparing the manufacture of 100% recycled content paper to virgin paper, 1 tonne of recycled paper can save 1.32 tonnes of CO₂ equivalent. This considers the complete life cycle and takes into account that the recovered fibre may otherwise be landfilled or incinerated. (WRAP, Information Sheet Recycled Paper and the Environment, 2007).

Birmingham City University consumed approximately 98 tonnes of virgin paper in the baseline year. Therefore by converting to 100% recycled paper there is the potential to save 130 tonnes of carbon.

3.3 Projections and Value at Stake

The Business as Usual projections for Birmingham City University has been calculated up until 2020/21. The Business as Usual scenario has only been applied to energy consumption (electricity, gas and oil) as this is the most accurate baseline data available and accounts for 95% of carbon emissions. The baseline forecasts are based on planned developments within the campus estate (as in Table 3.3.1 below). The largest development will be the discontinuation of Gosta Green, to be replaced with the new City Centre Campus. This will involve replacement of an old building with oil-fired boilers by a new highly efficient building and to account for this the new demand (assumed to be gas) is estimated to be 2/3 of the existing. The business as usual trend for energy consumption has been estimated by taking the trend for 2005/06 to the present and extrapolating that annual reduction to 2020/21. Energy prices have been taken from the DECC forecasts. It should be noted that these forecasts are estimates only and some variance is expected.

Table 3.3.1 Planned developments in the estate accounted for in forecasting

Year	Planned developments
2010/11	New halls at Edgbaston (300 bedspace ~6900 m ²)
2012/13	New City Centre Campus to replace certain existing facilities (no net change in area assumed)

The volatile nature of the energy markets in recent times means it is very difficult to predict the price of fuel and utilities in five or even one year's time. Therefore, a number of assumptions have been made during the calculation of Business as Usual and Value at Stake. The University purchases gas and electricity under fixed price contracts which are tendered every two years. Since 2005, the University's expenditure on fuels has risen by the following, despite decreases in consumption:

- Electricity +69%
- Gas +151%
- Oil +55%

DECC forecasts for energy prices have been assumed for future years. This assumption sets an upward trend of costs, but this may well prove to be conservative.

The Climate Change Levy (CCL) is paid by the University on all non-residential gas and electricity consumption. CCL for gas started at 0.150p/kWh in 2001 but increased to 0.154p/kWh in April 2007, then to 0.159p/kWh in April 2008. Similarly, CCL for electricity increased from 0.43p/kWh, then to 0.456p/kWh at the same time. CCL increases have been taken as being included in the DECC forecasts as the government has indicated that this is likely to be increased in line with inflation in the future.

Table 3.3.2 Business as Usual assumptions

Aspect	Assumption
Electricity consumption	Decreasing as per trend for 2005/6 to present
Electricity cost	Contract cost up to end 08/09 then rising 5% as per DECC estimate
Gas consumption	Decreasing as per trend for 2005/6 to present, plus decreases/increases as changes in estate
Gas cost	Previous contract cost up to end 07/08, new contract cost until end of 10/11 then rising as per DECC estimate
Oil consumption	Constant until 2012/13 as last building using oil removed
Oil cost	Rising as per DECC estimate
Climate Change Levy	Assumed included in DECC forecasts

The charts below illustrate the Business as Usual and Reduced Energy scenarios for energy consumption.

Chart 3.3.1: Energy consumption Business As Usual scenario

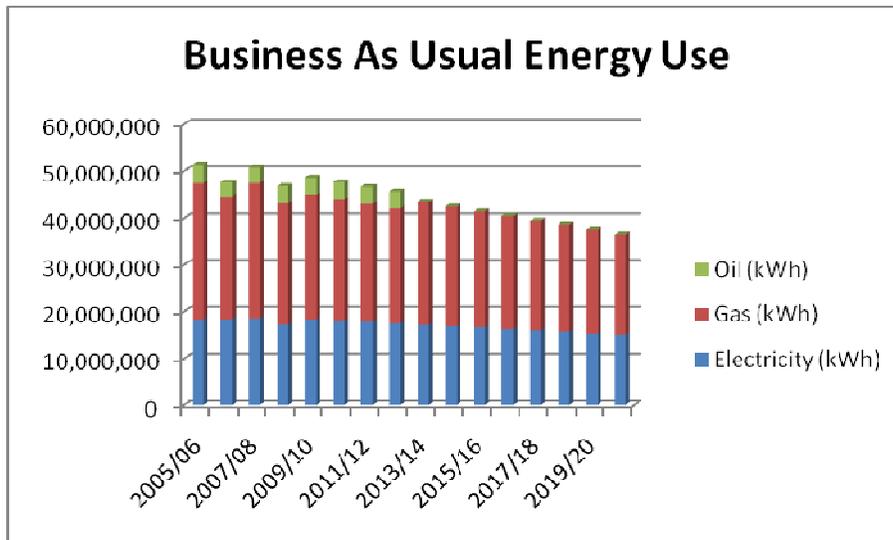
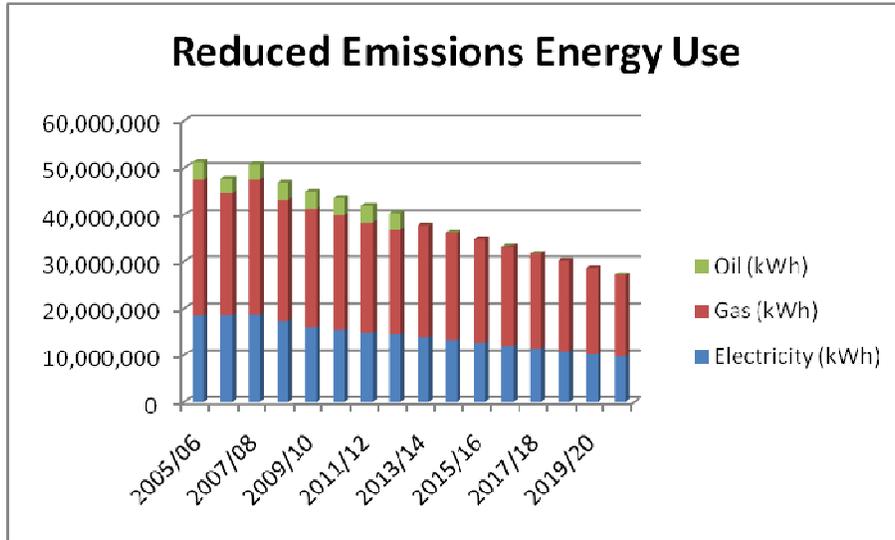


Chart 3.3.2: Energy consumption Reduced Emissions scenario



The charts below illustrate the Business as Usual and Reduced Energy scenarios for energy costs.

Chart 3.3.3: Energy related costs Business as Usual scenario

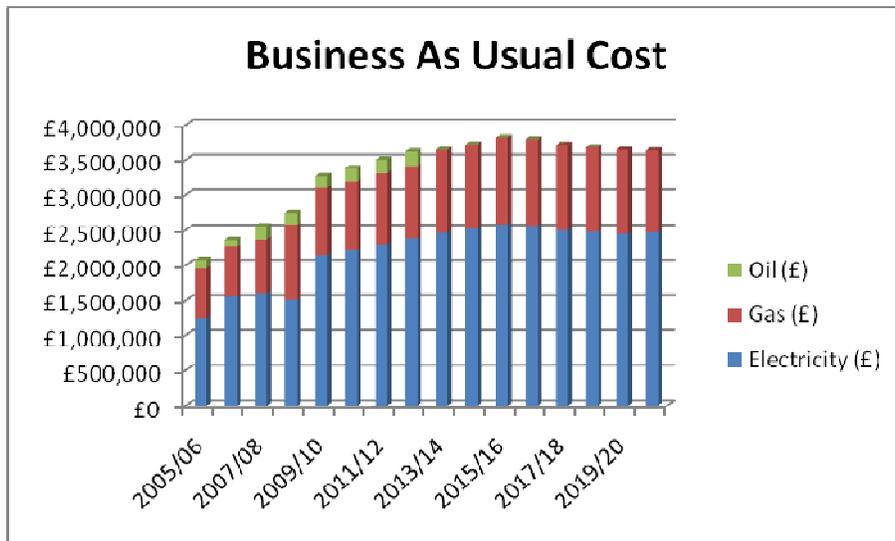
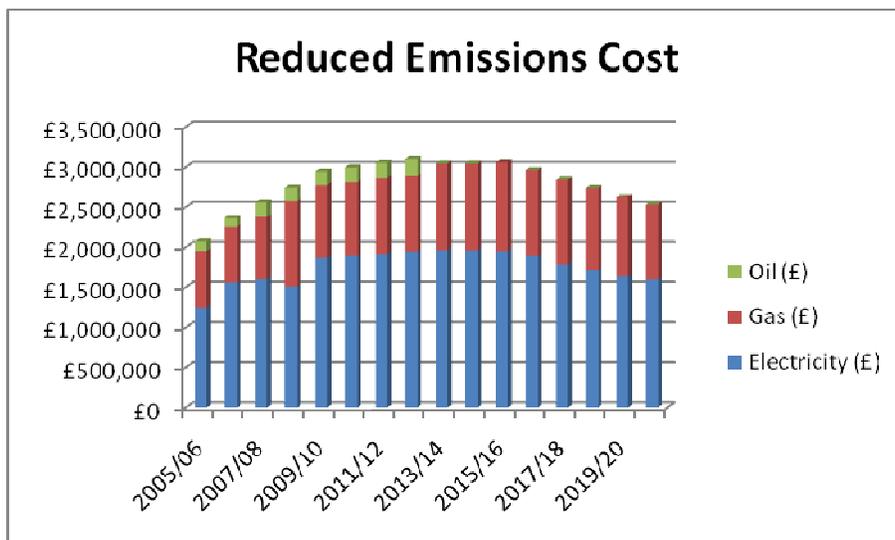


Chart 3.3.4: Energy related costs Reduced Emissions scenario



The charts below illustrate the Business as Usual and Reduced Energy scenarios for energy costs. The business as usual scenario assumes that the current trend (from 2005/06 to present) continues until 2020/21. The reduced energy scenario assumes that the target of 48% reduction in CO₂ will be achieved by 2020/21 with the proportion of emissions across gas and electricity constant (and taking account of the removal of oil from 2012/13).

Chart 3.3.5: Carbon Emissions Business As Usual scenario

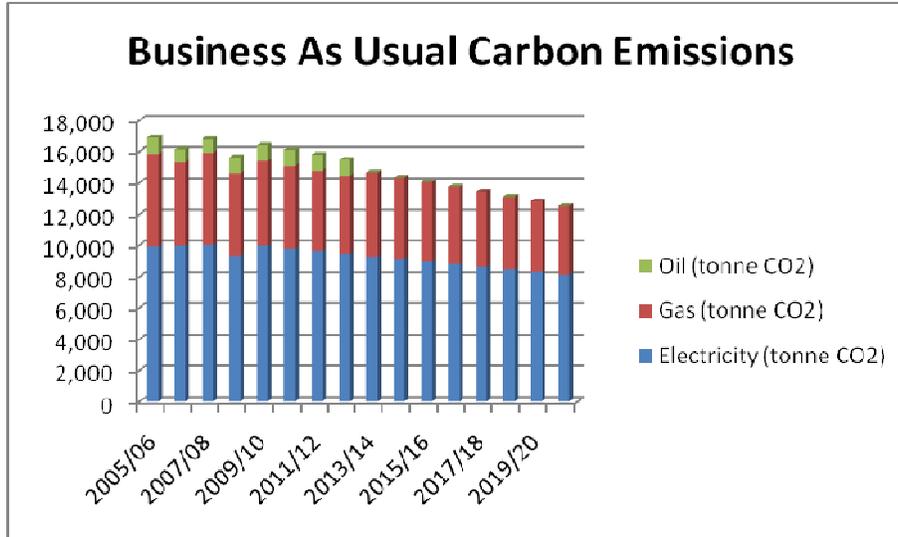
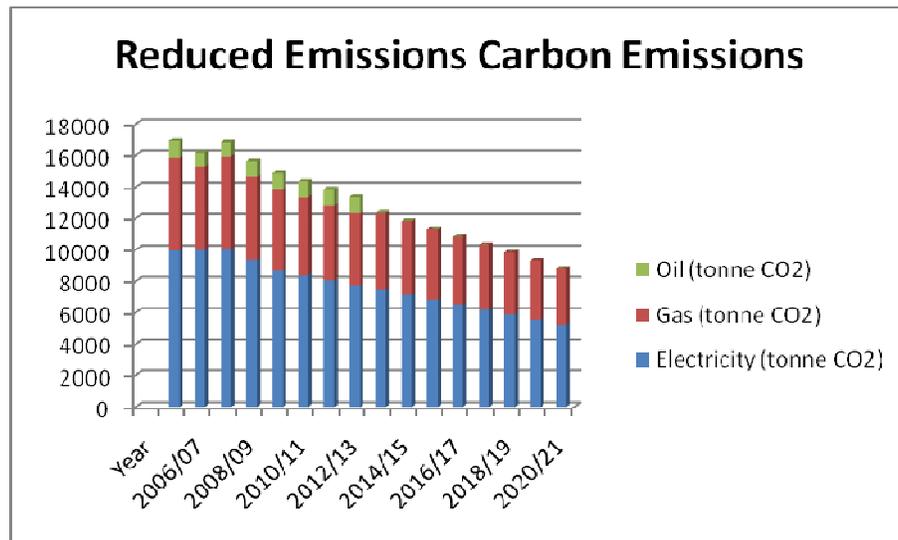


Chart 3.3.6: Carbon Emissions Reduced Emissions scenario



The Value at Stake is the difference in emissions or costs between the Business as Usual Scenario and Reduced Emissions Scenario; i.e the potential carbon and cost savings of managing carbon and implementing projects to reduce carbon emissions by 48% by 2020/21. The charts below show the financial and carbon value at stake between the Reduced Emissions scenario (where the University meets the target of 48% by 2020) and the business as usual scenario.

Chart 3.3.7: Financial Value at Stake

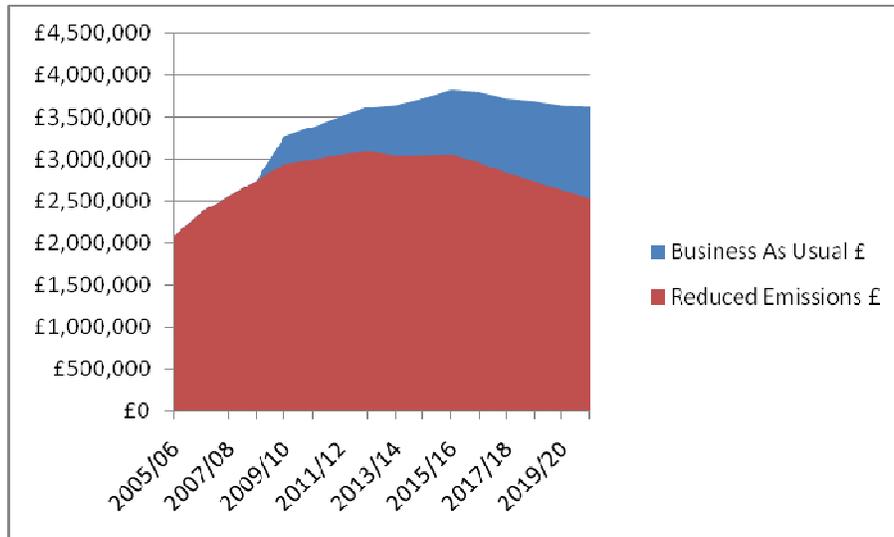
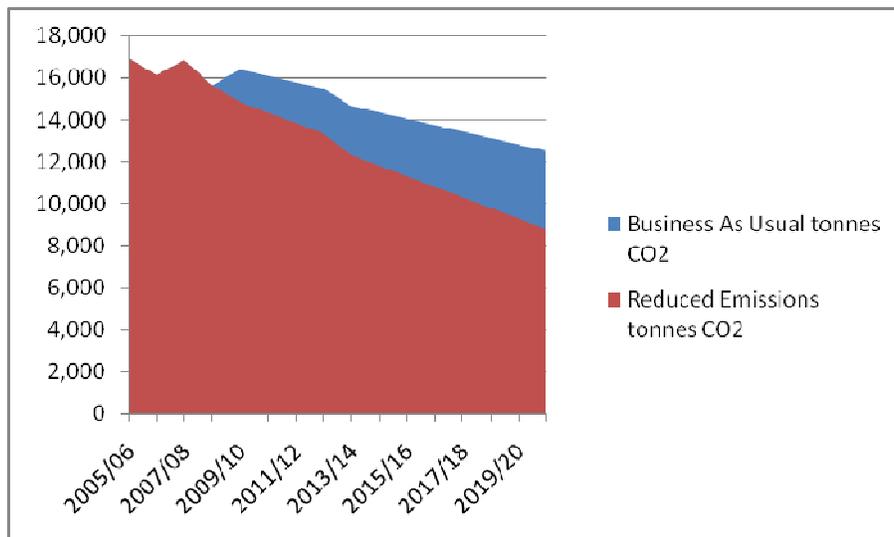


Chart 3.3.8: Carbon Value at Stake



3.4 Summary

The Carbon footprint of the University (including energy & water consumption, air travel, fleet transport and waste disposal) is almost 17,500 tonnes of carbon dioxide equivalent. This is enough CO₂ to fill 1.75 billion party balloons or equivalent energy needed to power 50,000 100W lightbulbs for a year! The most significant contribution to the carbon emissions is the consumption of energy in buildings, accounting for over 95% of emissions. The cost analysis highlights the importance of working to reduce the impact of air travel, waste and water as although these are only 5% of emissions, they account for 22% of the costs.

The Business as Usual Scenario has been calculated for energy consumption (electricity, gas and oil) as this data is more reliable and predictable. The trend from footprint year (2005/06) to present has been extrapolated to 2020/21, with the new City Centre Campus first phase being accounted for by the replacement of the oil requirement with a gas requirement two thirds the size to account for improved efficiency of the new campus. The changes in estate since the footprint year have

been assumed to have evened out. Whilst this may be subject to some variation it is the best basis upon which to make the projection. Predictions have been made as to energy related costs based on DECC's estimates. Birmingham City University operates 2 year fixed rate contracts for electricity and gas so contract costs have been applied until the end of current contracts then estimates made of potential increases. It should be noted that these may well prove to be conservative. These costs have also been applied to the Reduced Emissions Scenario where carbon emissions are reduced by 48% by 2020/21 from the 2005/06 baseline as per the agreed target for the programme.

The Value at Stake is the difference in emissions or costs between the two scenarios and represents the total savings that can be expected in financial and carbon emissions terms if the Carbon Management Plan is successful. The Value at Stake comprises of the savings in Climate Change Levy, energy efficiency and energy price increases. From the assumptions and predictions made the total aggregated Value at Stake (all years) from 2010/011 to 2020/21 is shown below:

**The total aggregated Value at Stake from 2010/11 to 2020/21
in energy-related costs is £8 million and in carbon emissions is 30,000 tCO₂e.**

It should be noted that the impact of the Carbon Reduction Commitment Energy Efficiency Scheme CRC has not been accounted for, as this is a highly unpredictable variable which depends on the performance of all other scheme participants, not just Birmingham City University. It should be noted however that the CRC is likely to exaggerate the effects of both poor and good carbon reduction performance. Meeting the carbon reduction targets in this plan is likely to lead to a good ranking in the CRC league table and hence a higher revenue recycling payment. Conversely, failing to meet the carbon reduction targets is likely to lead to a poorer ranking in the CRC league table and hence a lower revenue recycling payment. This gives a further financial incentive for reducing carbon emissions.

4. Carbon Management Projects

4.1 Existing and Potential Future Projects

Table 4.1.1: Ca Projects

Ref	Project	Lead	Cost	Annual Saving	
				Fin	CO ₂
CMP_E_01	Environmental and Energy Awareness Training Programme for Staff	RB/JH	TBC	TBC	TBC
CMP_E_02	Energy Efficiency Training for Catering, Cleaning and Security Staff	RB/JH	TBC	TBC	TBC
CMP_E_03	Student Switch Off Campaign	RB/JH	£3,000	£12,000	60 t
CMP_E_04	Lighting Occupancy Sensors	JE	£51,000	£18,250	141 t
CMP_E_05	Automatic Switch Off City North	RM	-	£1350	80 t
CMP_E_06	Upgrade of IT Equipment	RM	£500,000	TBC	TBC
CMP_E_07	Out of Hours Building Use Review	RBM	TBC	TBC	TBC
CMP_E_08	In Hours Building Use Review	RBM	TBC	TBC	TBC
CMP_E_09	Installation of Value Insulation Jackets	JO	£5299.11	£2500	23 t
CMP_E_10	Metering Improvements	JO	£23,495	-	-
CMP_E_11	Roofing Upgrade Conservatoire	AJ	£220,000	£4,500	30 t
CMP_E_12	Roofing Upgrades Cox, Edge and Feeney	AJ	£80,000 (each)	£5,600 (tot)	39 t (tot)
CMP_E_13	Upgrading of existing lifts	FC	TBC	TBC	TBC
CMP_E_14	Boiler House Upgrades – Baker, Cenfac and Galton	JO/FC	£250,000 (each)	TBC	TBC
CMP_E_15	Installation of Solar Water Heating at Oscott Gardens	JO	£6,000	£500	3 t
CMP_E_16	Butler West Redevelopment	MW	£3,000,000	TBC	TBC
CMP_E_17	Butler West – Demolition of First Floor Lecture Theatre	MW	Inc. With CMP_E_16	Inc. With CMP_E_16	Inc. With CMP_E_16
CMP_E_18	Phase I – New City Centre Campus	DS	TBC	TBC	TBC
CMP_E_19	University Sustainable Travel Plan	SB/GR	TBC	TBC	TBC
CMP_E_20	Waste Management Facilities and Awareness Campaign	DH/RB	TBC	TBC	TBC

4.2 Additional Medium to Long Term Projects

Table 4.2.1.: Medium to long term projects

Ref	Project	Lead	Actions	Anticipated Year
R1	Installation of variable speed drives and pumps	CERO	Identify drives and pumps without variable speed upgrades Produce cost/benefit analysis	2010/11
R2	Time switches for vending	Catering/CERO	Monitor sample of vending machines to identify	2010/11

	machines – monitor with energy meter initially to determine feasibility		energy consumption Produce cost/benefit analysis with potential carbon savings and payback periods	
R3	Glazing Improvements	CERO	Identify areas where glazing improvements may be required Obtain quote for work in example area to review payback periods	2010/11
R4	Thin client technology	CICT	Investigations into a trial Investigate implementation into City Centre Campus	2010/11 2012/13
R5	Green data centre	CICT	Investigate feasibility/options	2012/13
R6	Combined Heat and Power	CERO/Project Office Team	Investigate feasibility of adding Gosta Green, in conjunction with Aston University, to district CHP plant and also potentially the new City Centre Campus	2011/12
R7	Photovoltaic generation	CERO	Investigate feasibility of photovoltaic electricity consumption	2012/13
R8	Solar Water Heating	CERO	Investigate feasibility of solar water heating	2012/13
R9	Tri-Generation system	CERO/CITC	Investigate feasibility of small scale Tri-Generation system as an alternative to conventional separate boiler and chiller systems	2012/13

4.3 Other Projects

The projects below relate to areas where the carbon savings cannot be measured, so will not directly contribute towards the carbon reduction targets, but are included within the programme as will have further benefits.

Table 4.5.1.: Procurement, waste and transport projects

Ref	Project	Lead	Actions	Anticipated Year
CMP_W_02	Encourage electronic communication	CICT/EO/CERO	Develop awareness campaign to encourage effective/efficient electronic communication	2010/11
CMP_W_03	Implement the Sustainable Procurement Policy	EO/Procurement Team	Set target for level of Flexible Framework Develop Policy Develop Implementation Plan Communicate policy	2010/11
CMP_W_04	Develop a University forum/discussion board for reuse of items	CICT/Env Officer/ Procurement	Investigate appropriate format Establish appropriate format Integrate into procurement procedures Encourage use	2010/11
CMP_W_05	Increase recycling programme for plastic, metal, paper etc	EO/Campus Services	Review waste management strategy and working practices to establish effective collection regime	2010/11
CMP_W_06	Increase awareness of 3Rs	EC/Campus Services/Marketing	Develop communication programme for waste management	2010/11
CMP_W_07	Electronic payslips	HR	Investigate feasibility	2010/11
CMP_T_01	Encourage mains fed water coolers where possible	Estates/Purchasing/ Blue Mountain/ EO	Complete site review to assess feasibility	2009/10
CMP_T_02	- Implement Sustainable Travel Plan	EO/Campus Services	Carry out staff consultation regarding proposed changes and then implement agreed proposals.	2010/11
CMP_T_03	Implement home/flexi/teleworking policy and actively support	HR/EO/CERO	Develop policy, consult and implement	2010/11
CMP_T_04	Increase and promote audio/video-conferencing	CICT/EO/CERO	Develop policy and consult Implement policy.	2010/11

CMP_T_05	Implement a policy for low emission University vehicles	EO/CERO/Campus Services	Develop policy and consult Ensure integration into planned review of Sustainable Transport Plan	2010/11
CMP_T_06	Review post-run – minimise journeys	EO/CERO/Campus Services	Investigate feasibility Ensure integration into planned review of transport and Sustainable Transport Plan	2010/11
CMP_T_07	Promote cycle scheme for staff	HR/EO/CERO	Develop communication programme	2010/11
CMP_T_08	Promote intercampus cycle/bus/train routes	CERO/EO	Develop communication programme Ensure integration into planned review of transport and Sustainable Transport Plan	2010/11
CMP_T_09	Continue to provide cycle training	HR/EO	Ensure adequate budget provision Schedule dates for 2011 Ensure integration into planned review of transport and Sustainable Transport Plan	2010/11
CMP_T_10	Improve cycle facilities	EO/Campus Services/Estates	Ensure integration into planned review of transport and Sustainable Transport Plan	2010/11
CMP_T_11	Raise awareness of impacts of travel	EO/CERO/Campus Services	Develop communication programme Ensure integration into planned review of transport and Sustainable Transport Plan	2010/11
CMP_T_12	Encourage local, seasonal, vegetarian food and provide information on benefits	Ethical & Fairtrade Working Group CSR Director	Investigate feasibility of encouraging local, seasonal and vegetarian food Develop Implementation Plan	2010/11

5. Implementation Plan financing

The financial risks to the University if this programme is not implemented are significant. As detailed in previous sections, energy costs are highly volatile, rising at rates much higher than inflation and predicted to do so for the foreseeable future. In addition, increasing amounts of legislation and publicity will also have an impact on operations and reputation. By implementing and developing this plan, CO₂ emissions will not only be reduced but it will also be helping to mitigate against these future price rises. The HE Sector is becoming a highly competitive marketplace and keeping overheads down to a minimum will enable more funding to be applied to student facing activities to help keep the University competitive and improving student experience.

5.1 Assumptions

The key assumptions made in calculating the benefits and savings in the previous section are shown below:

- The business as usual scenario assumes that the average trend of the years since 2005 will continue until 2020, with the new campus replacing an equivalent area of existing building with two thirds of the energy demand. This would result in a saving of 26% by 2020 (equivalent to an annual decrease of 1.7%)
- The reduced energy scenario shows targeted savings of 48% by 2020 (equivalent to an annual decrease of 3.2%)
- Energy prices rising in accordance with the DECC's estimates

The assumptions made for decreasing energy consumption are based on previous year's results; however, these may be affected by changing circumstances within the University such as increasing opening hours, for example, in the library. In addition the assumptions for energy costs are based on guidance provided by government bodies; however, higher increases have been seen in recent years. In both cases the assumptions made are likely to be conservative at best and may result in higher savings than predicted being seen if the programme is successful.

5.2 Benefits / savings – quantified and un-quantified

It is estimated that meeting the University's carbon reduction targets will save £8M by 2020

Unquantified benefits:

- Improved understanding of the University's Carbon Footprint and Energy Consumption
- Mechanism in place to monitor annually and set targets for improvement
- Increased awareness amongst staff and Student Union of environmental issues in general and University's actions and plans to improve this
- Improved position in People and Planet Green League
- Improved student satisfaction due to perception of the University as "green".

5.3 Additional resources

Sufficient resources are required for this plan to be effective and in addition to financial resources, the support that can be offered by various personnel throughout the University is essential. A significant area for improvement identified is behaviour change of users; therefore engagement of the University community is crucial. The table below lists the different support services and academic departments and the level of support (resources) that will be required for effective implementation of the Carbon Management Plan and wider Environmental Strategy.

Table 5.3.1.: Additional resources required

Area	Resources Required
SUPPORT SERVICES	
Campus Management & Services	Key personnel on Environmental Committee. Work with Environmental Officer on specific issues such as Catering energy efficiency. Environmental Champions for offices and other areas as necessary.
Corporate Development Centre	Continue support for Environmental Strategy through initiatives such as Green. Environmental Champions for office area.
Digital Print Services	Environmental Champion for area.
Directorate	Senior management Environmental Champion. Key personnel on Environmental Committee. Environmental Champion for office area.
Corporate Social Responsibility	Champion for Sustainability at Corporate Management Group.
Estates	Director support for Environmental Strategy. Key personnel on Environmental Committee. Management of budget and projects for energy efficiency in buildings. Environmental Champion for office area.
Finance	Director support for carbon reduction projects. Key personnel on Environmental Committee.
Human Resources	Environmental Champion for office area.
International Office	Environmental Champion for office area.
Corporate ICT	Key personnel on Environmental Committee. Environmental Champion for office area.
Library & Learning Resources	Environmental Champions for library areas – Library Go Green Group.
Marketing & Communications	Key representatives to provide support for internal and external communications. Environmental Champion for office area.
Student Services	Environmental Champion for office area.
Student Union	Key personnel on Environmental Committee. Environmental Champion for office area.
ACADEMIC DEPARTMENTS	
Academic Planning	Environmental Champion for office area.
Academic Registry	Environmental Champion for office area.
Awarding Body for the Built Environment	Environmental Champion for office area.
Birmingham Institute of Art & Design	Network of Environmental Champions for key departments and areas. Support for carbon reduction/environmental improvement initiatives with the development of student projects and support from academics
Birmingham City Business School	Network of Environmental Champions for key departments and areas. Support for carbon reduction/environmental improvement initiatives with the development of student projects and support from academics
Centre for Research into Quality	Environmental Champion for office area.
Centre for the Enhancement of Learning & Teaching	Environmental Champion for office area.
Education, Law & Social Sciences	Network of Environmental Champions for key departments and areas. Support for carbon reduction/environmental improvement initiatives with the development of student projects and support from academics
Health	Network of Environmental Champions for key departments and areas. Support for carbon reduction/environmental improvement initiatives with the development of student projects and support from academics
Performance, Media & English	Network of Environmental Champions for key departments and areas. Support for

	carbon reduction/environmental improvement initiatives with the development of student projects and support from academics
Technology Engineering & Environment (formerly Technology, Innovation & Development)	Network of Environmental Champions for key departments and areas. Support for carbon reduction/environmental improvement initiatives with the development of student projects and support from academics. Creation of Low Carbon Centre of Excellence for research into low carbon technologies.

Financial costs and sources of funding

Capital investment into carbon reduction projects that is structured, committed and sustained will help ensure the success of the Carbon Management Plan and realise the longer term savings available. This will also support the embedding of the Low Carbon Vision into the University's corporate strategy and operations to ensure a sustainable organisation. This is increasingly difficult in the current financial climate of budget cuts. It should however be noted that energy costs will make up a rising proportion of University expenditure in the future, with price rises, and also with the introduction of the CRC. Poor energy performance will lead to a poor standing in the CRC league table which will also affect the University's reputation.

The table below details the current position in terms of identified project opportunities and allocated funding.

Table 5.3.1.: Financial costs and sources of funding for Carbon reduction projects.

figures in £ 's	2009/10	2010/11	2010/11	2011/12	2012/13
Total annual capital cost	TBC	TBC	TBC	TBC	TBC
Committed annual capital	TBC	TBC	TBC	TBC	TBC
Unallocated annual capital	TBC	TBC	TBC	TBC	TBC

There is currently an annual budget allocated to energy efficiency projects in buildings; however, this is allocated on an annual basis and there is no set structure for identifying and allocating funding to projects. This funding is also mainly available for heating and lighting efficiency projects with little or no coordinated funding for awareness raising and environmental projects in other areas such as transport and waste which may also realise carbon savings.

Projects identified through the Carbon Management programme may require extra investment beyond existing budgetary allocations. There may also be instances where larger projects require greater investments from a number of budget areas. These projects will be considered on a case by case basis with thorough feasibility proposals. It should be recognised that whilst a degree of flexibility is necessary in scheduling the projects in the Carbon Management Plan, those identified have been included because they are likely to be cost effective and have wider positive benefits to the University. In cases where further projects are identified for funding, those with the shortest paybacks will be given the highest priority. However, all reasonable payback options are given consideration on a case by case basis, wherein the factors to be considered include the wider benefits the project may create and the ease of implementation. In light of the current financial climate, external funding sources should also be identified in a structured manner for consideration, as well as ways of transferring costs from the University.

6. Actions to Embed Carbon Management in your Organisation

In order for the Carbon Management Plan to be successful, and the Low Carbon Vision of the University to be realised, it is necessary to embed Carbon Management in the day-to-day working of the University. The Carbon Management Matrix in Appendix A benchmarks where the University is currently operating in terms of Carbon Management. A summary of the current position is provided below and the improvements that are planned to ensure Carbon Management is improved and embedded throughout the organisation.

6.1 Policy

Current position

The University has had a Carbon Management Plan, approved by the Vice Chancellor and his Corporate Management Group, since February 2009. This current version has been produced as a result of the annual review and with a view to incorporating the new requirements for Carbon Management Plans as specified this year by the Higher Education Funding Council for England (HEFCE).

Moving forward

The Universities Low Carbon Vision and resultant Carbon Reduction Targets will be referred to within future Corporate Plans and are already displayed publically on our website as part of our EcoCampus Environmental Management Systems Objectives and Targets document. Subsequent targets will be discussed and established as necessary for different service areas. The overall carbon reduction objective and any local targets will be embedded into local business plans to reinforce local commitment and ensure the necessary resources are available to meet them. Further sustainability targets relating to specific areas such as transport and waste will also be set.

The Low Carbon/Sustainability Vision will be embedded into key policies by consideration at their review, particularly:

- The Environmental Policy
- The Sustainable Procurement Policy,
- Sustainable commitments and principles inherent in construction and refurbishment projects,
- Energy/carbon whole-life costing in Capital Projects, and
- Reviewing business travel policy with a view to reducing environmental impact.

6.2 Responsibility & Programme Management

Current position

The University employs a full-time Carbon and Energy Reduction Officer who has overall responsibility for the production and implementation of the Carbon Management Plan. This post holder is supported by a full-time Environmental Officer, who is tasked with improving the wider environmental management and performance of the University, and the part-time Energy Manager (energy management being part of the Mechanical Engineer's role). All these posts are

moderately ranked within the University and therefore require the support of more Senior Management in order to progress and implement projects and initiatives. The Director of Estates is the primary contact at Directorate and Corporate Management Group level for the Carbon Management Plan.

Although the Carbon Reduction and Energy Officer has overall responsibility for the implementation of this plan, many of the projects themselves will be overseen by the Mechanical and Electrical Engineers.

Moving forward

It is the University's intention to embed sustainability and carbon management into its wider culture and curriculum. In order to ensure that the agenda is given the precedence needed, key responsibilities for these areas have been allocated to Senior Management Representatives and objectives will be embedded both at the business plan and personal objective levels.

In the future we aim to include environmental responsibilities in all relevant job descriptions.

A network of staff Environmental Champions has also been established across the organisation to build engagement and communication at the local level. We aim to continue to build this network to support the effectiveness of our awareness campaigns which are an essential element of achieving the behaviour and cultural change we are striving to achieve.

Our commitment is also communicated to our students as they join the University in 'The Partnership Agreement' and through our joint campaigns and work with the Student Union.

Specific Programme Management is covered further in section seven of this Plan.

6.3 Data Management

Current position

The University is committed to measuring and monitoring its carbon emissions to enable it to effectively reduce its carbon footprint. This commitment was reinforced when the University was awarded the Carbon Trust Standard, in March 2010, having demonstrated a 5.4% absolute reduction in our emissions, or an 8.3% reduction relative to our turnover, over the last 3 years. We remain committed to achieving further reductions in line with our targets.

Data collection for energy and water consumption at all our sites is now via half hourly meters and sub-meters and this information is currently recorded in bespoke Monitoring and Targeting spreadsheets. In the case of our larger, multi-building sites, such as City North and City South Campuses, energy and water consumption data can be provided down to individual building level. This data is available through an online system for monitoring for key staff. Monthly energy and water consumption and CO₂ data is also available to all staff on the Estates Intranet homepage. This data is currently displayed on a University-wide basis rather than by individual sites and buildings.

CO₂ emissions data for air and rail travel is currently provided on an annual basis by the booking agency Co-op Travel. Data for the University fleet was obtained from the recorded mileage, MOT

and Service records stored on the Estates Intranet. Good data does not exist for the footprint year so the next year (06/07) has been used instead.

All staff business and commuter transport patterns were reviewed in 2009 as part of a Sustainable Travel Survey that was carried out by Atkins Global. Recommendations and targets for the reduction of our travel related emissions have been included in the Sustainable Travel Plan which Atkins produced, as a result of this work, which is currently going through the approval process. Recommendations have also been made around the monitoring of fleet transport with a view to increasing the reliability and accuracy of data.

Data on waste production and recycling is of variable quality from the University's different sites and areas due to differences in management, contractors and weigh-on-board facilities available. Accurate waste data from accommodation sites is not available as this waste is removed by the Local Authority as part of a wider area collection scheme. General waste from non-residential buildings is collected by the University's waste contractor who currently operates a partial 'pay-by-weight' system. At present, not all of the contractor's vehicles have been fitted with the weigh on board facility and consequently some of the data is still being estimated on an average weight per lift basis. In addition, there is still some waste being removed from site that is not recorded centrally. This tends to be when Faculties or Departments make their own arrangements without using the central services. This is not monitored centrally. The University intends to move away from this sort of devolved waste management in the future to improve the accuracy of its data.

Moving forward

Data as collected for the baseline year within this report will be collated annually by the Carbon & Energy Reduction Officer and the Environmental Officer to report on progress towards the targets set in September each year (in line with the update to Corporate Management Group). This will be internally reviewed by relevant personnel in Estates and Campus Management and Services. This will be reported to senior management and available to staff and students via the Environmental Intranet pages. We also report our emissions annually to the Business in the Community May Day Network project.

The University currently uses Energy Remote Monitoring (ERM) to monitor building energy use. This is currently in the process of being reviewed to ensure that best use is made of the functionality present and that any further functionality required is provided.

The annual data and review reports will be used to monitor and target carbon saving projects and ensure continual improvement in this area.

A new waste contract is due to be implemented in the autumn of 2010 and data management will form an important part of the tender specification. We envisage that the accuracy of this data will therefore improve. We also intend to work closer with the Local Authority to try to improve the accuracy of our data for our student residences.

Data on energy and water consumption and emissions will continue to be recorded via the half hourly meters and be made available to staff via the Estates Intranet pages for each year. This will be enhanced to include data for individual sites and then buildings where possible.

6.4 Communication and Training

Current position

Communication on environmental issues is currently on an ad hoc basis via tools such as the staff induction, staff newsletter, staff 'Did You Know' e-bulletin, iCity, estates and environmental intranet pages. This communication is mainly focussed at staff. For students within University-owned Halls of Residence, the Student Switch Off campaign run externally has communicated a number of energy saving measures via posters, email and social networking sites.

General Environmental Awareness training is offered through the staff development scheme. Energy efficiency training has been completed previously in the form of workshop sessions for Campus Services and Management, Cleaning, Catering and Security staff to help them operate and maintain buildings for minimum energy consumption.

Moving forward

An Environmental Champions programme for staff has been developed to facilitate communication throughout the University on environmental initiatives and harness the enthusiasm of already committed individuals. This scheme will facilitate initiatives to raise awareness of the University's carbon footprint and actions to reduce it such as energy saving actions, waste minimisation and more sustainable travel options. Awareness raising measures will take the form of workshops, written communication, posters, email, discussion forums, websites and competitions. This will be formalised into a Communications Plan with support from the Marketing and Communication department.

The Student Union has enrolled in the NUSSL Sound Impact Awards and was this year awarded the Bronze award. This scheme prompts and supports Unions to take immediate steps towards reducing their carbon emissions and includes a section on raising awareness on energy saving actions and environmental issues in general. The Environmental Officer will continue to provide support to the Union to aid them in progressing towards the Silver award.

The Low Carbon Vision will be added to the environmental information provided within staff inductions and investigations will be made into inclusion of information within other sources such as prospectuses, open days and welcome packs.

Environmental Awareness training and specific sessions such as energy efficiency will be made available for all staff but targeted at particular groups including the Environmental Champions, cleaning staff, Building Managers and security where appropriate. Refer to Appendix G for the policy detailing this. A Training Plan is being developed as part of the EcoCampus Environmental Management System to ensure a consistent approach. Integration of environmental issues into existing training will also be investigated where appropriate, such as ICT.

Feedback from staff and students will be encouraged through the environmental intranet discussion forums already in place. This will be evaluated to monitor staff attitudes to carbon saving.

Information publicly available will be reviewed and enhanced where possible to demonstrate the work that is being done to reduce environmental impact and improvements made to environmental performance; this will be mainly via the Internet pages.

The University has recently completed its second year in the Universities that Count, Business in the Community programme. This is an external process to enable benchmarking of the University's performance in Corporate Responsibility and we intend to continue with this.

Success on carbon saving projects will be reported locally via the Birmingham Cutting CO₂ campaign operated by the Local Strategic Partnership, Be Birmingham. This will also ensure that the University's carbon reductions will contribute to local and national targets.

A full Communications Plan is available in Appendix E but this will be a live, working document updated regularly.

6.5 Finance and Investment

Current position

There is some internal financing, on an ad hoc basis, for carbon and energy efficiency related projects. A proportion of the Estates annual budget has been allocated for such projects over the past few years. However, funding cuts are expected across the sector over the next few years which are likely to impact upon the University's budget and consequently this budget. The University has also sought external funding where appropriate, in the form of interest free loans from Salix, to carry out further efficiency efficient projects.

No funding has been allocated to date for environmental or energy awareness projects and training.

For projects that have been recommended through the energy surveys previously carried out, data is available on payback periods and annual CO₂ savings; however, completed projects are not monitored for effectiveness nor are savings added to the energy efficiency budget. For other projects with carbon saving benefits, this data is not available. There is no central funding available specifically for energy efficiency for other departments other than Estates.

Moving forward

Internal financing for carbon reduction projects will be managed with a structured, integrated approach through this Carbon Management Plan where projects are identified, evaluated, adequately prioritised and monitored for success. This will be done on an annual basis in line with budget reviews and allocations. Carbon Management finance will be managed through the Estates department as with current practice but an internal 'invest to save' scheme where Faculties and other departments can bid for opportunities to reduce carbon emissions as necessary will be investigated. An investigation into better ways of incentivising faculties and departments to save

energy and operate more sustainably will also be carried out. This will consider different methods of charging for energy and resources use, as well as potential rewards for good environmental performance, amongst other topics.

A regular review (annual) of external funding sources will be conducted. As well as new funding streams, the following will be fully investigated in the near term:

- Low Carbon Buildings Programme – funding for micro renewable generation technologies. 50% funding available, BERR.
- Feed-in Tariffs for small scale renewable energy installations.
- Community Sustainable Energy Programme - funding for micro renewable generation technologies. 50% funding available, Big Lottery.
- Revolving Green Fund – grant to establish an ‘invest to save’ internal fund for eligible energy efficiency projects, some match funding required, Salix.

6.6 Monitoring & Evaluation

Current position

There is no monitoring of existing carbon or energy strategies. No targets for reducing energy consumption have been set previously before the carbon management plan was introduced. Completed energy efficiency projects have not been evaluated for effectiveness.

Moving forward

The Carbon Management Plan and progress will be reviewed on a regular basis as described in the Programme Management section 7. This will include a review of actions, emissions profile and targets as well as the identification of new opportunities.

The Carbon & Energy Reduction Officer and the Environmental Officer will provide regular formal reviews to the Corporate Management Group via the Director of Estates, who will additionally undertake a Management Review of carbon management on at least an annual basis. In addition the Carbon & Energy Reduction Officer and the Environmental Officer will provide regular communication with the Environmental Committee and Corporate Social Responsibility Group. This will be two-way communication with feedback on progress and proposed amendments.

The carbon management plan will be made public, via the internet or other means if deemed more effective. The carbon management plan will be reviewed annually and linked in with the annual environmental report.

7. Programme Management of the CM Programme

Good Programme Management will be essential to achieve the ambitions of this Carbon Management Plan. The Carbon Reduction target should have senior, strategic ownership to ensure that it is aligned with Corporate Strategy and other policies and therefore achieves appropriate priority and drive. The Programme Management should include regular review of progress and identification and removal of any blockages. As well as involving senior management, project owners and other stakeholders will need to be involved in the Programme Management to bring together the diverse set of projects across the organisation and ensure coherence and coordination of carbon reduction activity as well as demonstrating results.

7.1 The Programme Board – strategic ownership and oversight

The structure of Environmental Management at the University is shown in Appendix C. The Carbon & Energy Reduction Officer (CERO) will oversee the Carbon Management Programme (CMP), providing a single coordination point for all carbon reduction issues. All additions, amendments and updates to the CMP will be carried out through the CERO, or if appropriate through the Environmental Officer (EO) with the involvement of the CERO. In overseeing implementation of the programme, the CERO will liaise closely with all members of the Estates Department, including the EO, mechanical engineers, electrical engineers, surveyors etc, as well as the Environmental Committee and CSR Group. This will ensure that the CMP is implemented and reviewed in context with the overall sustainability strategy of the University and that a variety of University members have the opportunity to contribute to, and comment on, the programme.

The Environmental Committee is a newly formed group developed to ensure a coherent approach to environmental initiatives and coordination of environmental projects. This group is a high level group, chaired by the Environmental Officer. Its responsibilities include contributing to the carbon reduction programme, developing the overall environmental strategy, and recommending the Environmental Policy, key commitments and objectives and targets to the Corporate Management Group.

The group will also develop and grow links with relevant external agencies and organisations in relation to environmental issues and activities such as the Carbon Trust and EcoCampus programmes and local organisations such as Birmingham City Council and Birmingham Cutting CO₂ campaign.

This committee shall include representatives from key activity areas throughout the University, including:

- Student Union
- Waste Management
- Transport
- Ethical & Fairtrade
- Sustainability in the Curriculum

- Procurement
- Energy & Water Management
- Construction & Design
- EMS Manager

The Group will review and report on the progress of all environmental projects including the CMP and review any risks to the projects. The report will be collated by the Environmental Officer and agreed by the Group.

The Group will communicate with the Corporate Social Responsibility Strategy Group bi-annually to feed into the wider CSR Strategy for the University. The Environmental Officer will also report to the Corporate Management Group at least annually on a formal basis. In addition, where necessary, issues will be reported directly to the Corporate Management Group via the Director of Estates.

The CERO will report to the Director of Estates, who will report to the Corporate Management Group. The Director of Estates will submit proposals to the Board when required for approval, for example this Carbon Management Plan.

7.2 The Carbon Management Team – delivering the projects

Individual carbon reduction projects under the programme will be managed by the most appropriate member of staff, which will be decided on the basis of each individual project, as determined by discussion amongst the CERO and other Estates staff members. The final decision will rest with the Director of Estates. It is anticipated that the project leaders will be self-selecting as, for example, electrical works will be managed by the electrical engineer.

Core carbon reduction activities covering scope 1 and 2 emissions will be directly monitored by the CERO. However it is recognised that a variety of related areas covering scope 3 emissions and areas such as Waste Management, Sustainable Transport, Sustainable Procurement, Ethical and Fairtrade also fall under the remit of the CMP as well as the broader category of environmental management. Work in these areas will be driven by the EO. Project delivery will be managed by the most appropriate member of the Environmental Committee, as decided by committee members themselves. Involvement should be open to any member of staff or student who wishes to be involved but must include University staff that have direct responsibility for areas covered by scope of projects.

In addition to the Environmental Committee, the University has a number of Environmental Champions.

Environmental Champions can be employees from any area or level of the University. These individuals have a key role in ensuring that environmental improvements are implemented in practice by getting people involved. Having champions from all areas helps to ensure that the barriers to changes are overcome and that we consider the needs of everyone when we are producing and implementing new procedures and processes etc.

The Environmental Champions will feed back to the Environmental Officer who will ensure that their views are communicated to both the Environmental Committee and the CMG.

7.3 Risks and Issues for the programme

The key risks and issues for the programme are detailed in Appendix D.

One of the risks of the success of the CMP is if key individuals leave post before the Programme is fully established and embedded into the organisation. To reduce the risk of this affecting the success of the programme, clear programme documentation has been developed. The key roles are the Project Leaders (Carbon & Energy Reduction Officer and Environmental Officer) and Project Sponsor (Director of Estates). These roles are not likely to be removed if individuals leave, therefore the replacements will take over the Project roles. However, in the interim, the following delegation routes have been established.

Table 7.3.1 Succession planning for key roles

Role	Responsibility	Interim Management
Project Leader	Carbon & Energy Reduction Officer Environmental Officer	Mechanical Engineer
Project Sponsor	Director of Estates	Assistant Director of Estates (Engineering)

Another key issue is lack of engagement of the wider University community which is essential for the proposed environmental management structure to operate effectively and for successful progression on environmental objectives. Communication and demonstration of the level of senior management commitment towards this programme and overall environmental strategy is vital to obtain and sustain support. The importance of personal and departmental/Faculty responsibility and support should also be communicated by the VC. Wider communications are detailed in the section below.

7.4 Ongoing stakeholder management/Communications plan

The University has defined Key Stakeholders as those individuals in the organisation who can influence and motivate staff and students within their respective area of responsibility to ensure the programme objectives are successfully delivered and those who would have an interest in action the University is taking to reduce environmental impact.

Internally, they are generally senior members of staff responsible for significant teams and budgets, but may also be individuals with specialist knowledge. The support and commitment of the key stakeholders is critical to the success of the programme. The members of the Environmental Committee are key stakeholders, with specific responsibility for delivery of the programme, including:

- Provision of data and expertise relating to sources of emissions for monitoring progress in future years.
- Identification of emissions reduction opportunities including project life cycle assessments and conformity with University financial procedures.

- Contributing to the development of University policy for energy, transport, waste and procurement.
- Communication strategy for Carbon Management, including evaluation of behavioural change.
- The degree to which the University Carbon Management Strategy is integrated within the University core activities of teaching and research

A summary of all stakeholder groups and communication pathways is provided in Appendix E.

In the first phase of this project in 2008 communication with stakeholders was initiated to start to build an awareness of the University's involvement in the HECM through:

- Feedback from members of initial Project Team to their departments/networks.
- Launch publicity in the University's staff newsletter, Connect, and through electronic publications at Faculty and department levels.
- Building a web presence by developing project pages within an Environment section on the Estates Intranet homepage.
- Inviting all staff and students to suggest ideas for reducing the University Carbon Footprint and holding an awareness raising event.

Communication Strategy

The communication strategy is key to engaging all staff and students in the programme and maintaining the momentum into the future. It is vital that all stakeholders understand the need to improve our carbon management and how critical this will be for the future of the University. Staff and students must be given a clear signal from the senior management team that the University is committed to this issue for the long term and must also understand their personal responsibility.

Approach to Stakeholder Communication

Communication will be face to face where possible, particularly for critical messages and where stakeholders are highly impacted or where their seniority makes their involvement critical.

The project leaders of the CMP will develop training courses for new and existing staff, in order to communicate effectively the aims of the programme and achieve buy-in from all University members. The project leaders of the CMP will develop other communication strategies for communicating with the student body for the same purpose.

The programme will use existing communication channels where possible, but will establish new, specific channels where necessary such as the Environmental Intranet pages and discussion forums. Feedback and input from Marketing and Communication and the Student Union will be important to identify effective channels both internally and externally.

Feedback mechanisms will be incorporated into all communication to enable the programme to evaluate the success of the communication and understand stakeholder response.

Challenges

- Achieving and maintaining visibility of the programme with the recent restructuring of the University and new development plans.
- Establishment of an appropriate budget to fund communication activities.
- Availability of key marketing and communication staff to adequately support the communication plan and Environmental Officer.

Communications Plan

The Communications plan is shown in Appendix F. It provides a summary of the proposed communications actions for each stakeholder group, Identifying timescales and individuals responsible for specific actions

7.5 Annual Progress review

The CMP will be formally reviewed on an annual basis (December for previous academic year) from 2009. The review will be completed by the Project Leaders (Carbon & Energy Reduction Officer and Environmental Officer) and agreed by the Environmental Committee and Director of Estates. The review will, as a minimum, include:

- CO₂ savings against the targets
- Financial savings
- Less quantifiable benefits, where possible
- Costs associated with the programme
- Review of any blockages and risks
- Recommendations for future progress and targets
- Provide feedback for the annual review by the Carbon Trust

Appendix A: Carbon Management Matrix

	POLICY	RESPONSIBILITY	DATA MANAGEMENT	COMMUNICATION & TRAINING	FINANCE & INVESTMENT	MONITORING & EVALUATION
5 BEST	<ul style="list-style-type: none"> SMART Targets signed off Action plan contains clear goals & regular progress reviews Strategy launched internally & to community 	<ul style="list-style-type: none"> CM is full-time responsibility of a few people CM integrated in responsibilities of senior managers VC support Part of all job descriptions 	<ul style="list-style-type: none"> Quarterly collation of CO₂ emissions for all sources Data externally verified M&T in place for: <ul style="list-style-type: none"> Buildings Waste 	<ul style="list-style-type: none"> All staff & students given formalised CM: <ul style="list-style-type: none"> Induction Training Plan Communications CM matters regularly communicated to: <ul style="list-style-type: none"> External community Key partners 	<ul style="list-style-type: none"> Granular & effective financing mechanisms for CM projects Finance representation on CM Team Robust task management mechanism Ring-fenced fund for carbon reduction initiatives 	<ul style="list-style-type: none"> Senior management review CM process Core team regularly reviews CM progress Published externally on website Visible board level review
4	<ul style="list-style-type: none"> SMART Targets developed but not implemented 	<ul style="list-style-type: none"> CM is full-time responsibility of an individual CM integrated in to responsibilities of department managers, not all staff 	<ul style="list-style-type: none"> Annual collation of CO₂ emissions for: <ul style="list-style-type: none"> Buildings Transport waste Data internally reviewed 	<ul style="list-style-type: none"> All staff & students given CM: <ul style="list-style-type: none"> Induction Communications CM communicated to: <ul style="list-style-type: none"> External community Key partners 	<ul style="list-style-type: none"> Regular financing for CM projects Some external financing Sufficient task management mechanism 	<ul style="list-style-type: none"> Core team regularly reviews CM progress: <ul style="list-style-type: none"> Actions Profile & Targets New opportunities quantification
3	<ul style="list-style-type: none"> Draft policy Climate Change reference 	<ul style="list-style-type: none"> CM is part-time responsibility of a few people CM responsibility of department champions 	<ul style="list-style-type: none"> Collation of CO₂ emissions for limited scope i.e. buildings only 	<ul style="list-style-type: none"> Environmental / energy group(s) give ad hoc: <ul style="list-style-type: none"> Training Communications 	<ul style="list-style-type: none"> Ad hoc financing for CM projects Limited task management No allocated resource 	<ul style="list-style-type: none"> CM team review aspects including: <ul style="list-style-type: none"> Policies / Strategies Targets Action Plans
2	<ul style="list-style-type: none"> No policy Climate Change aspiration 	<ul style="list-style-type: none"> CM is part-time responsibility of an individual No departmental champions 	<ul style="list-style-type: none"> No CO₂ emissions data compiled Energy data compiled on a regular basis 	<ul style="list-style-type: none"> Regular poster/awareness campaigns Staff & students given ad hoc CM: <ul style="list-style-type: none"> Communications 	<ul style="list-style-type: none"> Ad hoc financing for CM related projects Limited task coordination resources 	<ul style="list-style-type: none"> Ad hoc reviews of CM actions progress
1 Worst	<ul style="list-style-type: none"> No policy No Climate Change reference 	<ul style="list-style-type: none"> No CM responsibility designation 	<ul style="list-style-type: none"> Not compiled: <ul style="list-style-type: none"> CO₂ emissions Estimated billing 	<ul style="list-style-type: none"> No communication or training 	<ul style="list-style-type: none"> No internal financing or funding for CM related projects 	<ul style="list-style-type: none"> No CM monitoring

Appendix B: Definition of Projects

Project: Ref:	CMP_E_01 Environmental and Energy Awareness
Owner (person)	<i>Rebecca Barnett, Environmental Officer Jon Hammond, Carbon and Energy Reduction Officer</i>
Department	<i>Estates</i>
Description	<i>Awareness raising programme for all staff and students, including:</i> <ul style="list-style-type: none"> - <i>Staff Environmental Champions programme</i> - <i>Mandatory basic environmental and energy awareness training for all staff</i> - <i>Environmental Intranet information and news stories for staff and students</i> - <i>Working with the Student Union to raise awareness with students</i>
Benefits	<ul style="list-style-type: none"> • Financial savings: 2% of electricity 340,000kWh approx £ 24,000 (annually) • Payback period: 2 years • CO₂ Emissions reduction: 146 tonnes of CO₂
Funding	<ul style="list-style-type: none"> • <i>Predominantly staff time costs as programme can be delivered internally.</i> • <i>Annual investment required.</i> • <i>Source of funding: Estates.</i> • <i>Request for specific annual funding to be made for 10/11 (estimate £10,000)</i>
Resources	<ul style="list-style-type: none"> • <i>Environmental Champions to be allocated for each department</i> • <i>Environmental Officer to lead on awareness raising and training for Environmental Champions, and other roles with specific requirements, but drafting in further external support if necessary</i> • <i>Awareness raising tools such as posters, energy meters, publications, promotional products (recycled pencils, recycled pads, cotton/jute bags)</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Senior management support</i> • <i>Environmental Champions from different levels and areas of the University identified</i> • <i>Environmental Champions adequately supported in their department and centrally with resources</i> • <i>Environmental Champions permitted adequate time for role – attendance at workshops etc</i> • <i>Principal risks: financial, Environmental Officer time, lack of Senior Management and Departmental Commitment</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Number of Environmental Champions</i> • <i>Number of staff/sub-contractors trained in environmental/energy issues</i> • <i>Reviewed annually (Sept 11)</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>Start date: Oct 2010</i> ○ <i>Ongoing programme for staff and students</i>
Notes	

Project Ref:	CMP_E_02 Energy Efficiency training for Catering, Cleaning and Security Staff
Owner (person)	<i>Rebecca Barnett, Environmental Officer Jon Hammond, Carbon and Energy Reduction Officer</i>
Department	<i>Estates</i>
Description	<i>Ongoing energy efficiency programme for catering, cleaning and security departments, to include:</i> <ul style="list-style-type: none"> - <i>Energy awareness training for staff</i> - <i>Energy assessments</i>
Benefits	<ul style="list-style-type: none"> • Financial savings: TBC after energy assessment • Payback period: TBC • CO₂ Emissions reduction: TBC
Funding	<ul style="list-style-type: none"> • <i>Predominantly staff time as a programme could be delivered internally.</i> • <i>Annual investment required (TBC, estimate £5,000)</i> • <i>Source of funding: Estates.</i> • <i>Request for specific annual funding to be made for 10/11</i>
Resources	<ul style="list-style-type: none"> • <i>Environmental Champions to be allocated for each catering outlet</i> • <i>Carbon and Energy Reduction Officer to lead on energy assessment of each facility</i> • <i>Awareness raising and training for staff with specific roles that affect energy use</i> • <i>Use of external support if necessary</i> • <i>Awareness raising tools such as posters, energy meters, labelling of equipment</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Senior management support</i> • <i>Energy Champions from all catering outlets identified</i> • <i>Energy and environmental Champions adequately supported locally and centrally</i> • <i>Energy and Environmental Champions permitted adequate time for role – attendance at training etc</i> • <i>Principal risks: financial, Carbon & Energy Reduction Officer and Environmental Officer time, lack of Senior Management and Departmental Commitment</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Number of Environmental Champions</i> • <i>Number of staff trained in energy issues</i> • <i>Consumption of sub-metered sites compared to previous years/sales</i> • <i>Reviewed annually</i>

Project: Ref:	CMP_E_03 Student Switch Off Campaign
Owner (person)	<i>Rebecca Barnett, Environmental Officer Jon Hammond, Carbon and Energy Reduction Officer</i>
Department	<i>Estates/Accommodation</i>
Description	<i>Awareness raising programme for students: - Inter-halls energy saving competition</i>
Benefits	<ul style="list-style-type: none"> • <i>Financial savings: 10% of Residences energy bill ~£ 12,000 (approx 167,000kWh) (annually)</i> • <i>Payback period: <1 year</i> • <i>CO₂ Emissions reduction: ~60 tonnes of CO₂/year</i>
Funding	<ul style="list-style-type: none"> • <i>£3,000</i> • <i>Annual investment required (10% of savings + awareness materials such as posters + contribution to end of term event (£1000))</i> • <i>Source of funding: Estates/Accommodation/Student Union.</i> • <i>Request for specific annual funding to be made for 10/11</i>
Resources	<ul style="list-style-type: none"> • <i>Support required from Accommodation Managers to promote scheme to students at events and with posters, advice etc.</i> • <i>Student accommodation reps to support by advising students, promoting at meetings.</i> • <i>Environmental Officer to support by providing training and advice where possible.</i> • <i>Carbon and Energy Reduction Officer to provide monitoring data.</i> • <i>Student Union to support by providing tickets to events/venues as prizes and support for winning hall event.</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Senior management support</i> • <i>Recruiting students as Eco-power rangers</i> • <i>Adequate awareness of programme in Accommodation, Student Union and Estates</i> • <i>Incentives for students to take part – ongoing incentives and winning event</i> • <i>Principal risks: financial, Accommodation Managers and Student Reps time, external support not available</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Number of Ecopower rangers recruited</i> • <i>Average consumption per student compared to last year</i> • <i>Reviewed annually (August 11)</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>start date: Sept/Oct 2010</i> ○ <i>completion date (when it will deliver savings): Savings calculated in May of each year, ongoing if programme continues</i>
Notes	<i>First year of programme generated savings around £12,000, almost 10% of the Accommodation energy consumption compared to previous years.</i>

Project: Ref:	CMP_E_04 Lighting Occupancy Sensors
Owner (person)	John Everill (Electrical Engineer)
Department	Estates
Description	<p><i>Installation of energy conserving lighting controls.</i></p> <p><i>Some work has been undertaken in this area already but there are still common areas such as corridors, stairwells, store rooms, toilets and large class rooms where no lighting control is present. Lighting is therefore needlessly left on both during operating hours of the university day (7am-7pm) and on occasions longer.</i></p> <p><i>Upcoming programmed projects include the following:</i></p> <ul style="list-style-type: none"> - <i>Installation of lighting sensors to 4th, 5th, 7th and 8th floor Baker.</i> - <i>Replacement of the stair lighting in Edge building (Dawson and Feeney ends) with energy efficient lights.</i> - <i>Installation of lighting sensors in Baker building.</i> - <i>Installation of lighting sensors to level 1, 2 and 3, and on the stairs, in Cenfac building.</i> - <i>Installation of lighting sensors to level 1 corridors in Kendrick building.</i> - <i>Replacement of the N and S stairs lighting in Baker with energy efficient alternatives and install sensor control.</i> - <i>Installation new light fittings and sensor controls in Baker building lifts lobbies floors 1 to 8.</i> - <i>Installation of new lighting fittings with sensor controls to Baker central staircases floors 1 to 8.</i> <p><i>Priority buildings for this work are would be Feeney, Kenrick, Cenfac, Vittoria St, Maple, Seacole, Edge, Cox/Dawson, Margaret St, Galton, Bevan, Linden.</i></p> <p><i>It is recommended that funds be set aside for carrying out a proportion of these works during each summer period.</i></p>
Benefits	<ul style="list-style-type: none"> • Financial savings for projects : approx. £18,250/year • Payback period: 2 to 3 years • CO₂ Emissions reduction: ~ 141 tonnes of CO₂/year
Funding	<ul style="list-style-type: none"> • <i>Total cost of specified projects: ~ £51,000</i> • <i>Ongoing annual investment required to complete further projects with similar savings.</i> • <i>Source of funding: Estates</i>
Resources	<ul style="list-style-type: none"> • <i>Support required from Corporate Management Group for an annual energy efficiency works budget for ongoing lighting efficiency programme</i> • <i>Identification of areas on an annual basis</i> • <i>Suitable staff/contractors to carry out works.</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Senior management support</i> • <i>Detailed programme of works to be compiled</i> • <i>Monitoring to provide evidence of savings</i> • <i>Principal risks: financial, overlooked in programme of energy efficiency works</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Number of sensors installed annually</i> • <i>Average consumption for each building compared to previous years</i> • <i>Reviewed annually (August/September 11)</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>start date: already started spring 2010</i>

	o <i>completion date (when it will deliver savings): annually from 10/11</i>
Notes	

Project Ref:	CMP_E_05 Automatic Switch off at City North Campus
Owner (person)	<i>Rajesh Mistry / Trevor Potten (Corporate ICT – City North Campus)</i>
Department	<i>CICT</i>
Description	<i>To implement a programme of automatically shutting down equipment as has been implemented at Edgbaston Campus. Focus on equipment for public use including PC and plasma screens.</i>
Benefits	<ul style="list-style-type: none"> • Financial savings: approx. 187,380kWh/year = £1,350/year • Payback period: immediate • CO₂ Emissions reduction: ~80 tonnes of CO₂/year
Funding	<ul style="list-style-type: none"> • <i>None required</i> • <i>Source of funding: CICT</i>
Resources	<ul style="list-style-type: none"> • <i>Time required to install software</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Resolution of issues around overnight updates of PCs</i> • <i>Areas identified for automatic shut down</i> • <i>Principal risks: overlooked in programme of energy efficiency works, lack of knowledge/time to install software and manage effectively</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Average consumption for each building compared to previous years</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>start date: TBC with CICT</i> ○ <i>completion date (when it will deliver savings) TBC with CICT</i>
Notes	

Project Ref:	<i>CMP_E_06 Upgrade of IT Equipment</i>
Owner (person)	<i>Rajesh Mistry (Head of Client Support Services - CICT)</i>
Department	<i>CICT</i>
Description	<p><i>Replacement of 750 pieces of IT equipment with more energy efficient technologies. These upgrades will include:</i></p> <ul style="list-style-type: none"> <i>80 new pcs and apple macs in Kendrick library</i> <i>96 new in Mary Seacole building</i> <i>48 new pcs in Edge building level 6</i> <p><i>In addition a number of smaller projects, such as the upgrade of individual staff computers, will be carried out.</i></p>
Benefits	<ul style="list-style-type: none"> • <i>Payback period: ~10 years</i> • <i>CO₂ Emissions reduction: 290 tonnes CO₂ / year</i>
Funding	<ul style="list-style-type: none"> • <i>~ £500,000</i> • <i>Source of funding: CICT</i>
Resources	<ul style="list-style-type: none"> • <i>Time required to install equipment</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Principal risks: lack of knowledge/time to install software and manage effectively</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Installation of more energy efficient IT equipment</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>start date: Summer 10</i> ○ <i>completion date: Project to be completed with 12 months</i>
Notes	

Project Ref:	<i>CMP_E_07 Out of hours building use review</i>
Owner (person)	<i>Graham Rhodes (Director of Estates) Room Booking Manager (post currently being recruited) Donna Harrison (Assistant Director of Campus Management and Services) Rebecca Barnett (Environmental Officer) Jon Hammond (Carbon and Energy Reduction Officer)</i>
Department	<i>Estates/Campus Management and Services</i>
Description	<p><i>There is a dual responsibility for the allocation of space within the University. The allocation of areas and/or classroom and teaching facilities, to Faculties and Departments, is the responsibility of Estates. Timetabling, however, is the responsibility of the Campus Services and Management Team.</i></p> <p><i>Meeting rooms can also be booked by staff using the central electronic Celcat booking system.</i></p> <p><i>Currently activities/meetings/classes/events held out of hours can be held in any of the buildings and often this results in a number of buildings being heated, and having lighting on, for just a small number of classes. This results in unnecessary energy usage.</i></p> <p><i>This project aims to review the current out of ours space usage practice and identify areas of potential cost savings through the coordination of out of hours activities in fewer buildings. This should also have further benefits in terms of security, improvements in facilities and easier management.</i></p>
Benefits	<ul style="list-style-type: none"> • Financial savings: TBC after initial assessment • Payback period: TBC • CO₂ Emissions reduction: TBC
Funding	<ul style="list-style-type: none"> • TBC • Annual investment required from savings • Source of funding: Estates.
Resources	<ul style="list-style-type: none"> • Initial review to be completed by the Carbon and Energy Reduction Officer, Environmental Officer and Room Booking Manager . • Consultation with users to evaluate opinion/options • Procedure/policy for out of hours activity to be developed • Communication/implementation plan for procedure/policy • Monitoring of success of procedures/policy • Reporting of results – savings and further benefits
Ensuring Success	<ul style="list-style-type: none"> • Senior management support • Support from identified departments and users • Principal risks: financial (if equipment upgrades required), Carbon and Energy Reduction Officer/Environmental Officer/Room Booking Managers time, lack of support from users no adherence to procedures
Measuring Success	<ul style="list-style-type: none"> • Repeat initial review to identify results • Consumption of buildings compared to previous years • Reviewed annually
Timing	<ul style="list-style-type: none"> • Milestones / key dates e.g. <ul style="list-style-type: none"> ○ start date: Jan 2011 ○ completion date (when it will deliver savings): Ongoing
Notes	

Project Ref:	CMP_E_08 In hours building use review
Owner (person)	Graham Rhodes (Director of Estates) Room Booking Manager (post currently being recruited) Donna Harrison (Assistant Director of Campus Management and Services) Rebecca Barnett (Environmental Officer) Jon Hammond (Carbon and Energy Reduction Officer)
Department	Estates/Campus Services and Management
Description	There is a dual responsibility for the allocation of space within the University. The allocation of areas and/or classroom and teaching facilities, to Faculties and Departments, is the responsibility of Estates. Timetabling, however, is the responsibility of the Campus Services and Management Team. Meeting rooms can also be booked by staff using the central electronic Celcat booking system. This project aims to review the current utilisation of space and identify areas of potential cost savings through the coordination of activities in fewer buildings. This should also have further benefits in terms of security, improvements in facilities and easier management.
Benefits	<ul style="list-style-type: none"> Financial savings: TBC after initial assessment Payback period: TBC CO₂ Emissions reduction: TBC
Funding	<ul style="list-style-type: none"> Source of funding: Estates
Resources	<ul style="list-style-type: none"> Initial review to be completed by the Carbon and Energy Reduction Officer, Environmental Officer and Room Booking Manager. Consultation with users to evaluate opinion/options Procedure/policy for out of hours activity to be developed Communication/implementation plan for procedure/policy Monitoring of success of procedures/policy Reporting of results – savings and further benefits
Ensuring Success	<ul style="list-style-type: none"> Senior management support Support from identified departments and users Principal risks: financial (if equipment upgrades required), Carbon and Energy Reduction Officer/Environmental Officer/Room Booking Managers time, lack of support from users no adherence to procedures
Measuring Success	<ul style="list-style-type: none"> Repeat initial review to identify results Consumption of buildings compared to previous years Reviewed annually
Timing	<ul style="list-style-type: none"> Milestones / key dates e.g. <ul style="list-style-type: none"> start date: Jan 2011 completion date (when it will deliver savings): Ongoing
Notes	

Project Ref:	<i>CMP_E_09 Installation of valve insulation jackets</i>
Owner (person)	<i>John O'Connor (Mechanical Engineer)</i>
Department	<i>Estates</i>
Description	<i>Installation of valve insulation jackets in Baker and Kenrick boiler houses and various plant rooms in the Conservatoire.</i>
Benefits	<ul style="list-style-type: none"> • <i>23 tonnes of carbon saved annually.</i> • <i>Reduced energy wastage.</i> • <i>Payback period 2.12 years.</i>
Funding	<ul style="list-style-type: none"> • <i>£5299.11</i> • <i>Source of funding: Estates Sustainability Budget</i>
Resources	<ul style="list-style-type: none"> • <i>Total cost £5299.11</i> • <i>Suitable contractor to install insulation jackets</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Selection of a suitable contractor to complete the works</i> • <i>Principal risks: financial, overlooked in programme of energy efficiency works</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Use of data</i> • <i>Installation of valve insulation jackets.</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>start date: May 2010</i> ○ <i>completion date: July 2010</i>
Notes	

Project Ref:	CMP_E_10 Metering Improvements
Owner (person)	<i>John O'Connor (Mechanical Engineer)</i>
Department	<i>Estates</i>
Description	<p><i>An effective sub-metering system has already begun to be installed across the Birmingham City University sites. The following projects are outstanding but have been programmed for completion:</i></p> <ul style="list-style-type: none"> - <i>Completion of the Phase 2 metering schedule.</i> - <i>Installation of SMART metering connections for 6 meters at Bevan and Ravensbury (City South Campus).</i> - <i>Installation of electricity meter and enclosure for SMART metering at Ravensbury.</i> - <i>Installation of electricity meter for SMART metering at Murdoch building</i> - <i>SMART metering connection for electricity meter at Murdoch building</i>
Benefits	<ul style="list-style-type: none"> • <i>No direct financial or carbon savings from metering but will support energy awareness benefits</i>
Funding	<ul style="list-style-type: none"> • <i>Source of funding: Estates Sustainability Budget</i>
Resources	<ul style="list-style-type: none"> • <i>Total cost £23,495.25</i> • <i>Suitable contractor to install metering</i> • <i>Appropriate software for monitoring the system</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Selection of a suitable contractor to complete the works</i> • <i>Principal risks: financial, overlooked in programme of energy efficiency works</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Use of data</i> • <i>Installation of meters</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>start date: June 2010</i> ○ <i>completion date: July 2010</i>
Notes	

Project Ref:	CMP_E_11 Roofing upgrade Conservatoire
Owner (person)	<i>Anthony Jarrett (Building Surveyor)</i>
Department	<i>Estates</i>
Description	<p><i>As a result of the development of the wider area, by the Local Council, it is currently unknown as to whether the University will continue to house its Conservatoire in the existing City Centre location or build a new state of the art facility on another site. If the University does decide to retain its existing facility, the following energy efficiency project could be carried out.</i></p> <p><i>Upgrade of the roofing insulation and lighting, to meet the requirements of Part L, and re-laying of the flat felt on timber roof.</i></p>
Benefits	<ul style="list-style-type: none"> • <i>Financial savings: TBC after initial assessment</i> • <i>Payback period: >25 years</i> • <i>CO₂ Emissions reduction: 30 tonnes CO₂/ year</i>
Funding	<ul style="list-style-type: none"> • <i>£220,000</i> • <i>Source of funding: Estates</i>
Resources	<ul style="list-style-type: none"> • <i>Funds to carry out the works</i> • <i>Selection of a suitable contractor to complete the works</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Selection of a suitable contractor to complete the works</i> • <i>Principal risks: financial - sufficient budget to undertake the works given the cuts envisaged to the Estates maintenance budget as a result of the current economic climate. Also the possibility that the Conservatoire will be moved to a new location.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>New roof and roof lighting installed</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>start date: TBC</i> ○ <i>completion date: TBC</i>
Notes	

Project Ref:	<i>CMP_E_12 Roofing upgrades Cox, Edge and Feeney</i>
Owner (person)	<i>Anthony Jarrett (Building Surveyor)</i>
Department	<i>Estates</i>
Description	<p><i>The University is currently developing proposals for a new City Centre Campus. Consequently the life span of some of its existing sites is undetermined. However, if the University does retain its existing facilities at the City North Campus, the following energy efficiency projects could be carried out on the roofs of Cox, Edge and Feeney buildings.</i></p> <p><i>Upgrade of the roofing insulation, to meet the requirements of Part L, and re-laying of the flat felt on timber roof.</i></p>
Benefits	<ul style="list-style-type: none"> • <i>Financial savings: TBC after initial assessment</i> • <i>Payback period: >25 years</i> • <i>CO₂ Emissions reduction: 39 tonnes CO₂/year</i>
Funding	<ul style="list-style-type: none"> • <i>TBC</i> • <i>Source of funding: Estates</i>
Resources	<ul style="list-style-type: none"> • <i>~£80,000 per project</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Principal risks: financial - sufficient budget to undertake the works given the cuts envisaged to the Estates maintenance budget as a result of the current economic climate. Also the possibility that the activities currently carried out in these City North Campus will be moved to the new City Centre location.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>New roof installed.</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>start date: TBC</i> ○ <i>completion date: TBC</i>
Notes	

Project Ref:	<i>CMP_E_13 Upgrading of the lifts</i>
Owner (person)	<i>Fred Coke (Assistant Director of Estates)</i>
Department	<i>Estates</i>
Description	<ul style="list-style-type: none"> • <i>Upgrades to the lifts in Student Union and Galton Buildings, changing from contactor arrangement to variable voltage variable frequency operation.</i>
Benefits	<ul style="list-style-type: none"> • <i>Financial savings: TBC after initial assessment</i> • <i>Payback period: >25 years</i> • <i>CO₂ Emissions reduction: 1.5 tonnes CO₂/year</i>
Funding	<ul style="list-style-type: none"> • <i>TBC</i> • <i>Source of funding: Estates</i>
Resources	<ul style="list-style-type: none"> • <i>TBC</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Selection of a suitable contractor to complete the works</i> • <i>Principal risks: financial, overlooked in programme of energy efficiency works</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Use of data</i> • <i>Installation of more energy efficient lifts</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>start date: TBC</i> ○ <i>completion date: TBC</i>
Notes	

Project Ref:	CMP_E_14 Boiler House Upgrades – Baker, Cenfac, and Galton
Owner (person)	<i>John O'Connor (Mechanical Engineer)/Fred Coke (Assistant Director of Estates)</i>
Department	<i>Estates</i>
Description	<i>The University is currently developing proposals for a new City Centre Campus. Consequently the life span of some of its existing sites is undetermined. However, if the University does retain its existing facilities at the City North Campus, the boiler houses in Baker, Cenfac and Galton buildings could be upgraded to make them more energy efficient.</i>
Benefits	<ul style="list-style-type: none"> • <i>Financial savings: TBC after initial assessment</i> • <i>Payback period: ~20 years</i> • <i>CO₂ Emissions reduction: ~ 30 tonnes per annum</i>
Funding	<ul style="list-style-type: none"> • <i>Approximately £250,000 per project</i> • <i>Source of funding: Estates</i>
Resources	<ul style="list-style-type: none"> • <i>Approximately £250,000 per project</i> • <i>Selection of a suitable contractor to complete the works</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Principal risks: financial - sufficient budget to undertake the works given the cuts envisaged to the Estates budget and possible capital funding cuts as a result of the current economic climate. Also the possibility that the activities currently carried out in these City North Campus will be moved to the new City Centre location.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Boiler house upgrades completed</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>start date: TBC</i> ○ <i>completion date: TBC</i>
Notes	

Project Ref:	<i>CMP_E_15 Installation of solar hot water panels at Oscott Gardens</i>
Owner (person)	<i>John O'Connor (Mechanical Engineer)/Fred Coke (Assistant Director of Estates)</i>
Department	<i>Estates</i>
Description	<i>The University has some solar hot water panels which it intends to install at its Oscott Gardens student residence to heat the hot water.</i>
Benefits	<ul style="list-style-type: none"> • <i>Financial savings: £500/year</i> • <i>Payback period: ~ 12 years</i> • <i>CO₂ Emissions reduction: ~ 3 tonnes per annum</i>
Funding	<ul style="list-style-type: none"> • <i>£6,000 for installation</i> • <i>Source of funding: Estates</i>
Resources	<ul style="list-style-type: none"> • <i>Funding for the installation of the panels</i> • <i>Selection of a suitable contractor to complete the works</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Principal risks: financial - sufficient budget to undertake the installation works given the cuts envisaged to the Estates budget and possible capital funding cuts as a result of the current economic climate.</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Solar hot water panels installed</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>start date: within the next year</i> ○ <i>completion date: TBC</i>
Notes	

Project Ref:	<i>CMP_E_16 Butler West Redevelopment</i>
Owner (person)	<i>Mervyn Wood (Projects Manager)</i>
Department	<i>Estates</i>
Description	<i>The University intends, subject to planning requirements, to redevelop the currently mothballed Butler West side of its Seacole building on the City South Campus. This development will be carried out with a view to relocating the remainder of the Faculty of Health onto the City South Campus. This project will include the replacement of the external doors and windows to improve the energy efficiency of the building.</i>
Benefits	<ul style="list-style-type: none"> • <i>Financial savings: TBC after initial assessment</i> • <i>Payback period: ~25 years</i> • <i>CO₂ Emissions reduction: TBC</i>
Funding	<ul style="list-style-type: none"> • <i>£3million (total refurbishment project)</i> • <i>Source of funding: Estates</i>
Resources	<ul style="list-style-type: none"> • <i>Finances to undertake the project as a whole</i> • <i>Appropriate contractors to undertake the works</i>
Ensuring Success	<ul style="list-style-type: none"> • <i>Finance to complete the project</i> • <i>Selection of a suitable contractor to complete the works</i> • <i>Principal risks: financial and planning permission/requirements</i>
Measuring Success	<ul style="list-style-type: none"> • <i>Use of data</i> • <i>New windows and external doors installed as part of the refurbishment project.</i>
Timing	<ul style="list-style-type: none"> • <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> ○ <i>Start date: subject to planning requirements. However, it is hoped that the redevelopment project will be completed within the next 2 years.</i> ○ <i>completion date: 2012</i>
Notes	

Project Ref:	<i>CMP_E_17 Butler West - Demolition of First Floor Lecture Theatre</i>
Owner (person)	Mervyn Wood (Projects Manager)
Department	Estates
Description	As part of the redevelopment of the Butler West wing of the Seacole building, the University intends to demolish the first floor wooden lecture theatre that is sited above the refectory. The construction of this building is such that it is not energy efficient. Once the rest of Butler West has been redeveloped for use this facility will no longer be required (as a more efficient replacement will be in place).
Benefits	<ul style="list-style-type: none"> • Financial savings: TBC after initial assessment • Payback period: Immediate • CO₂ Emissions reduction: TBC
Funding	<ul style="list-style-type: none"> • Source of funding: Estates
Resources	<ul style="list-style-type: none"> • Suitable contractor to carry out the works
Ensuring Success	<ul style="list-style-type: none"> • Planning permission for the redevelopment of Butler West as a whole. • Selection of a suitable contractor to complete the works. • Principal risks: financial and planning.
Measuring Success	<ul style="list-style-type: none"> • Redevelopment complete and lecture theatre removed
Timing	<ul style="list-style-type: none"> • Milestones / key dates e.g. <ul style="list-style-type: none"> ○ Start date: subject to planning requirements. However, it is hoped that the redevelopment project will be completed within the next 2 years. ○ completion date: 2012
Notes	

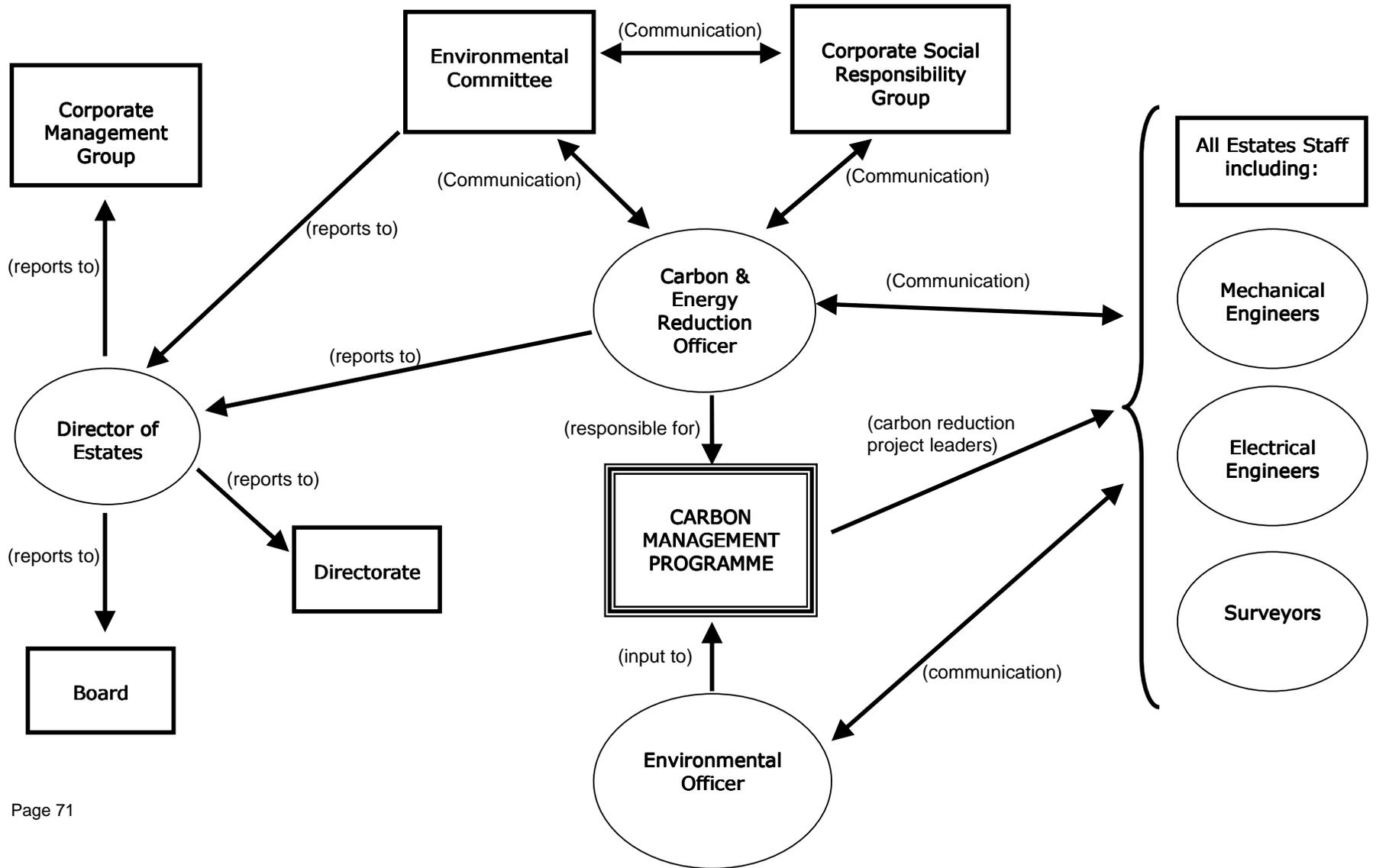
Project Ref:	<i>CMP_E_18 Phase I – New City Centre Campus</i>
Owner (person)	Dave Stanley (Senior Project Manager)
Department	Estates
Description	<p>The University is committed to the consolidation of its campuses with a view to reducing the number of sites it operates on and therefore its associated carbon emissions. The University is also committed to constructing a new state of the art City Centre Campus in the Eastside District of Birmingham. This project is currently in the early stages of the design process but the University has committed to achieving a minimum rating of BREEAM excellent and aspiring to achieve BREEAM outstanding if practicable. The project will also be designed to ensure a minimum enhancement of 20% against the requirements of the Building Regulations Part L and also to achieve a minimum of a B rated Energy Performance Certificate. Wherever practicable the University will also utilise materials with an A or A+ rating within the Green Guide. The new Campus is expected to be completed by September 2013.</p> <p>A range of intelligent IT systems are also being considered in the design of this building.</p>
Benefits	<ul style="list-style-type: none"> • Financial savings: TBC following comparison of new build with equivalent area in older sites • CO₂ Emissions reduction: TBC following comparison of new build with equivalent area in older sites
Funding	<ul style="list-style-type: none"> • Source of funding: Birmingham City University and banks
Resources	<ul style="list-style-type: none"> • Appropriate consultants and contractors to design and implement the project. • Adequate funding/support from the banks. • Ongoing support from our stakeholders.
Ensuring Success	<ul style="list-style-type: none"> • Planning permission. • Selection of a suitable design team and contractor to complete the works. • Principal risks: financial and time constraints.
Measuring Success	<ul style="list-style-type: none"> • New more energy efficient campus constructed.
Timing	<ul style="list-style-type: none"> • Milestones / key dates e.g. <ul style="list-style-type: none"> ○ Start date: June 2010 ○ completion date: Sept 2013
Notes	

Project Ref:	<i>CMP_E_19 University Travel Plan</i>
Owner (person)	Stephen Bradley (Director of Campus Services and Management) Graham Rhodes (Director of Estates)
Department	Campus Services and Management and Estates
Description	<p>The University undertook a survey of its staff business and commuter travel in 2009. Using the information gathered, Atkins Global produced a Sustainable Travel Plan for the University. The recommendations specified in the Travel Plan are designed to encourage greater use of more sustainable forms of travel, including walking, cycling, bus and rail travel, and reducing therefore the associated carbon emissions. The Travel Plan is currently going through the approval process, and a staff consultation, and will then be rolled out for staged implementation from 2011.</p> <p>In the long-term a similar survey and travel plan could also be produced to address the travel behaviours of students.</p>
Benefits	<ul style="list-style-type: none"> CO₂ Emissions reduction: TBC following another survey of staff travel once the Travel Plan has been implemented.
Funding	<ul style="list-style-type: none"> Source of funding: The production of the Travel Plan was funded by the Estates Department. However, it is intended that, in the long-term, the project will be self-funded through the introduction of parking charges.
Resources	<ul style="list-style-type: none"> Staff time to implement the Travel Plan. Ideally this would involve a member of staff with travel planning included in their job description. Adequate funding to implement the improvement of the facilities or initiatives in the plan.
Ensuring Success	<ul style="list-style-type: none"> Identifying a member of staff to implement the Travel Plan. Principal risks: financial and time constraints.
Measuring Success	<ul style="list-style-type: none"> Reduction of staff travel by single occupancy car and an increased use of more sustainable modes of transport.
Timing	<ul style="list-style-type: none"> Milestones / key dates e.g. <ul style="list-style-type: none"> Start date: Jan 2011 – Implementation to begin following the staff consultation. Completion date: Ongoing project but review progress at least bi-annually.
Notes	

Project Ref:	<i>CMP_E_20 Waste Management Facilities and Awareness Campaign</i>
Owner (person)	Donna Harrison (Assistance Director of Campus Services and Management) Rebecca Barnett (Environmental Officer)
Department	Campus Services and Management and Estates
Description	<p>The University is committed to reducing the carbon emissions associated with its waste. The University intends to do this both by reducing the quantity of waste it produces and increasing the reuse and recycling of waste where its production could not be avoided.</p> <p>The University is currently retendering its waste contract with a view to reducing the quantity of waste sent to landfill and improving its waste management facilities to increase reuse and recycling. The University is also working with its waste contractors to improve the collection and accuracy of its waste reporting data to enable more accurate monitoring of progress in this area.</p> <p>The University endeavours to have the new contract in place from late 2010. It is the intention to run a waste minimisation and awareness campaign, with staff and students, to coincide with the introduction of these new facilities. A bin less office programme may also be considered once the recycling facilities on site are considered adequate to meet demand.</p> <p>In the long-term the University could consider a programme to facilitate the reuse of items on and between campuses. This would require a storage facility to be designated for the short-term storage of suitable items. An online photo gallery could then be created to advertise items available for reuse. This would potentially reduce both disposal and procurement costs.</p>
Benefits	<ul style="list-style-type: none"> CO₂ Emissions reduction: TBC following comparison of waste data year on year following the introduction of the new scheme.
Funding	<ul style="list-style-type: none"> Source of funding: Campus Services and Management (facilities and waste contract) and Estates (awareness raising campaign).
Resources	<ul style="list-style-type: none"> Funding for the purchase of additional recycling bins. Staff to empty bins and process materials for recycling. A short term storage area to store items for reuse.
Ensuring Success	<ul style="list-style-type: none"> Ensuring the funding and staff time required to implement scheme. An effective awareness campaign to ensure staff and students actively participate in the scheme.
Measuring Success	<ul style="list-style-type: none"> Reduction in overall waste production. Reduction in the quantity of waste being disposed of to landfill. Increase in the quantity of waste being reused and recycled.
Timing	<ul style="list-style-type: none"> Milestones / key dates e.g. <ul style="list-style-type: none"> Start date: Autumn 2010 Completion date: Ongoing project but review progress annually.
Notes	



Appendix C: Environmental Management Structure



Appendix D: Risks and Issues Log

Description	Risk	Impact	Probability	Mitigating actions
Lack of support from the Vice Chancellor	Could stop programme from progressing or divert resources	H	L	Ensure the VC is fully briefed and aware of the benefits and regular progress reviews
Lack of support from Corporate Management Group	Could stop programme from progressing or divert resources	H	L	Regular reporting of progress to Corporate Management Group with full annual management review
Inadequate management time for project	Project could slip and therefore reduce effectiveness	H	L	Key staff require dedicated time and support particularly the project leader
Competing Priorities	Could slow progress	M	M	Dedicated time and support to be managed
Failure to convince finance and purchasing staff of the benefits of the scheme	Could prevent investment and restrict progress in key areas	M	M	Regular briefings and involvement of staff. Clear financial justification for actions
University's financial position	Lack of capital to meet programme objectives	H	H	Ensure robust business cases with life cycle costing and reinforce the value at stake. Consider Salix funding if appropriate.
Loss of key staff particularly Project Leaders, Carbon & Energy Reduction Officer, Environmental Officer and Project Sponsors	Would probably stall programme	M	L	Need to have back up staff where necessary and clear project documentation.
New University Campus & Masterplan	New development and Masterplan could contradict programme objectives	M	L	Ensure no incompatibilities between development, Masterplan and Carbon Trust programme
Estate Masterplan	Uncertainty over future plans for estate could delay decisions	H	H	Ensure input into process to enable ideas to be included in future plans
New legislation such as Carbon Reduction Commitment and Energy Performance of Buildings Directive	Implementation cost could reduce funding for programme objectives	L	H	Programme objectives will reduce impact of CRC when implemented and improve energy rating for buildings
Limited data for transport and procurement impacts	Unable to provide accurate data to measure impact	H	H	Need to establish available data and arrange for its collation
Ongoing support and commitment for programme	Programme loses steam and fades away	M	H	Publicise senior management commitment and ensure resources are applied to programme

Appendix E: Stakeholder Analysis

KEY:

H = High, M = Medium, L = Low

B = Blocker, U = Undecided/Undeclared, C = Champion

Individual or Group	Influence	Impact	Current Position	Future Position	Their interest or issues	Means of Communication
VC & Directorate	H	H	U	C	Reputation, costs, compliance with legislation, investments	Face to face meetings, regular briefings to senior management (CMG)
Students	H	H	U	C	Financial, academic achievement, university environment, global issues, personal level/impacts, travel	Freshers' fair, via SU, Student publications, student eco-reps?, events, website, social networking groups
Student Union	H	H	C	C	Representing student views - Financial, academic achievement, university environment, global issues, personal level/impacts, travel. Also reputation, future environment	Face to face meetings, briefings to SU exec, email
Academic Staff	H	M	U	C	Academic achievement, workload, financial, working environment - lighting, heating, cooling.	Events, website, staff newsletter, presentations at key groups
Support Staff	M	H	U	C	Lighting, heating, cooling	Events, website, staff newsletter, presentations at key groups
Building Services	H	H	U	C	Control of buildings - waste, post, transport	Face to face meetings, emails, guidance, briefings, workshops
Accommodation Services	H	H	U	C	Control of residential buildings, living environment - student requirements.	Face to face meetings, emails, guidance, briefings, workshops
Cleaning Staff	H	H	U	C	Awareness of environmental issues - lighting, cleaning materials, waste management	Face to face meetings, emails, guidance, briefings, workshops
Catering	M	L	U	C	Financial, energy consumption, waste, procurement, reputation, health	Face to face meetings, emails, guidance, briefings, workshops
Estates	H	H	C	C	Energy management, planning, refurbishment	Face to face meetings, emails, guidance, briefings, workshops

Carbon Management Core Team	H	H	C	C	Communication to others, HECM programme, application to area/role, reporting, coordination and support, progress & benefits realised	Regular project meetings, emails
Finance	H	H	U	U	Budget setting process, funds for carbon management, financial incentives, costs & savings, life-cycle costing, procurement decision making, monitoring, external funding sources.	Face to face meetings, emails, guidance, briefings, workshops
Placement Providers	M	H	U	C	Financial, quality of students, workload implication, resources implication, student skills for sustainability	Website, messages in key documents, local & national press coverage
Parents	M	L	U	U	Academic achievement, university environment, university reputation, financial - fees and costs	Website, messages in key documents, e.g. prospectus, local & national press coverage
Suppliers	L	H	U	U	Financial, reputation, University purchasing	Website, messages in key documents, e.g. tender specifications, contract requirements & management, local & national press coverage
Government	H	H	C	C	Global issues, public awareness, impacts on Country, future environment	Website, messages in key documents, e.g. annual report, local & national press coverage
Higher Education Funding Council for England	H	M	U	C	Learning & teaching, academic achievement, financial, reputation, Government policy, global environmental issues, environmental performance of universities, progress against Carbon Management Plans	Website, messages in key documents, e.g. annual report, local & national press coverage
Public Transport Organisations	H	H	B	U	Profitability, reputation, use of services	Website, messages in key documents, e.g. annual report, local & national press coverage
Birmingham City Council	M	L	C	C	Global issues, public awareness, impacts on local area, future environment, reputation of area, planning	Website, messages in key documents, e.g. annual report, attendance at key local events & groups, e.g. Be Birmingham partnership, local & national press coverage
Advantage West Midlands	M	L	C	C	Sustainability in WM - economic, social and environmental issues, planning and development, reputation of WM	Website, messages in key documents, e.g. annual report, attendance at key local events & groups, e.g. Be Birmingham partnership, local & national press coverage, bids for funding for environmental technologies
Southern Universities Purchasing Consortium	L	H	U/C	C	Procurement, sustainability issues	Attendance at SUPC Sustainability group
European Union	H	L	C	C	Global environmental issues, EU Policy & Regulation	Awareness of EU policy/legislation

Appendix F: Communication Plan

Communication Strategy

The communication strategy is key to engaging all staff and students in the programme and maintaining the momentum into the future. It is vital that all stakeholders understand the need to improve our carbon management and how critical this will be for the future of the University. Staff and students must be given a clear signal from the senior management team that the University is committed to this issue for the long term and must also understand their personal responsibility.

Strategic Objectives of the Communication Strategy

The Strategic objectives of Carbon Management are:

- To reduce the consumption of utilities
- To reduce the environmental impact of emissions associated with the consumption of fossil fuels and waste production
- To reduce the costs associated with the procurement of utilities and disposal of waste
- To understand, and quantify the potential to reduce consumption and waste
- To develop a prioritised list of investment opportunities to deliver the savings
- To promote the University internally and externally as an organisation that cares about these issues
- To demonstrate to staff, students and the wider community that the University has in place a progressive and comprehensive programme to manage its impact upon the environment
- To integrate the objectives of carbon management into the procurement and development of new buildings and refurbishment projects
- To embed the principles of carbon management into the culture of the University

To assist in achieving these, the **objectives of the Communication Strategy** are:

- Establish a clear shared understanding of the Programme's vision and goals
- Generate enthusiasm for carbon management and therefore help the programme secure the necessary resources
- Keep the programme in touch with changing academic, estates, student and other needs
- Enable early recognition of risks and issues so that the programme plans can be adapted where appropriate
- Ensure accurate information and guidance are provided at the right time
- Ensure that decisions are based on accurate information

- Improve readiness for change amongst staff that may be impacted by the carbon management programme, through changes to working practices

Key Target Audiences

- **Staff and students**
- **External stakeholders:** Birmingham City Council, Advantage West Midlands, HEFCE, Environment Agency
- **Other interested parties:** Carbon Trust, People and Planet

Key Messages

- All staff and students can contribute to reduce the University's carbon consumption
- Reducing carbon emissions and environmental impact in general should be a key priority for universities as publicly funded bodies, both to set an example and to provide the solutions

Table A:F.1 Communication Plan

Stakeholder Group	Key messages	Means of Communication	Timing	Responsibility
VC & Directorate	Increased cost of utilities Carbon Reduction Commitment Increased waste management costs Compliance with environmental legislation Improving Environmental Reputation – Green League and Universities that Count Meeting planning requirements Meeting Capital Funding Framework requirements	Corporate Management Group meetings – general update/feedback Specific presentation to CMG on environmental issues Environmental review report	Quarterly Annual Annual	Director of Estates Environmental Officer Carbon and Energy Reduction Officer Environmental Officer
University Board	Increased cost of utilities Carbon Reduction Commitment Increased waste management costs Compliance with environmental legislation Improving Environmental Reputation – Green League Meeting planning requirements Meeting Capital Funding Framework requirements Approval of Carbon Management Plan	Briefings for the Board – Board meetings Environmental review report	Annual	Director of Estates Carbon and Energy Reduction Officer Environmental Officer
Academic Registrar	Increased utility costs leading to higher fees and rents Attracting students – environmental credentials	One to one meeting	Annual	Environmental Officer
Finance Director	Increased cost of utilities Carbon Reduction Commitment Capital funding links to performance against Carbon Management Plan Increased waste management costs Life Cycle Analysis	One to one meeting	Annual	Environmental Officer Carbon and Energy Reduction Officer
Director of Campus Management & Services	Increased cost of utilities Carbon Reduction Commitment Increased waste management costs Increased transport costs Compliance with relevant environmental legislation	One to one meeting	Bi-annual	Environmental Officer Carbon and Energy Reduction Officer
Accommodation Services	Increased cost of utilities Estates Management Statistics comparison for residential property Value at Stake, impact on future rents Meeting student requirements/expectations for waste management	One to one meeting	Bi-annual	Environmental Officer/ Environmental Reps - accommodation
Estates Staff	Opportunities within new build and refurbishment projects Extra funding available (internal/external) for energy efficient projects Life cycle analysis consideration rather than initial cost Compliance with building/energy regulations	Estates Away Days Estates Job Progress Meetings	Annual Weekly	Environmental Officer Carbon and Energy Reduction Officer Carbon and Energy Reduction

	Good housekeeping practices/reporting/identification of opportunities – leading by example			Officer Director of Estates/Mechanical Engineer(Energy Manager)
Building Managers	Compliance with environmental regulations Good housekeeping practices/reporting/identification of opportunities – leading by example	Briefing session – via team meeting	Bi-annual	Environmental Officer
Cleaning Staff	Good housekeeping practices/reporting/identification of opportunities	Briefing session	Bi-annual	Environmental Officer
Catering Staff	Good housekeeping practices/reporting/identification of opportunities	Briefing session	Feb/March 09 & repeated quarterly	Environmental Officer
Director of Marketing (or appropriate staff)	University commitment to sustainability Improvements in environmental performance Reduction in marketing waste Improving Environmental Reputation – Green League and Universities that Count	One to one meeting	Quarterly meeting	Environmental Officer
Purchasing & Insurance Manager	University commitment to sustainability Improvements in environmental performance Adapting procurement policy to changing market Whole life costing	One to one meeting Procurement representative to sit on EcoCampus Environmental Committee	Quarterly meetings	Environmental Officer
Director of CICT	University commitment to sustainability Improvements in environmental performance Increasing costs of utilities Increasing energy demands of IT equipment Compliance with legislation for disposal of IT Environmental procurement of IT	One to one meeting	As required	Environmental Officer CICT Environmental Champion
Executive and Associate Deans	Increasing costs of utilities Student expectations Good housekeeping practices/reporting/identification of opportunities – leading by example Potential opportunities for sustainable curriculum development and student projects Reducing environmental impact on campus = more investment into core activities More sustainable purchasing methods for faculties to include consideration of whole life costing.	One to one meetings Updates via CMG	Annually Quarterly	Environmental Officer
Academic Staff	Increasing costs of utilities Student expectations Good housekeeping practices/reporting/identification of opportunities Potential opportunities for sustainable curriculum development and student projects Reducing environmental impact on campus = more investment into core activities	Environmental Champions actions Connect – staff newsletter Did You Know – regular updates Environmental Intranet pages Faculty/department newsletters	Quarterly Quarterly As required As required As required	Environmental Champions Environmental Officer Environmental Officer Environmental Champions Environmental Officer

		Digital signage	As required	Environmental Officer
		Staff training	As required	Staff Development
		Staff induction	As required	Environmental Officer
		Roadshow/events	As required	As required
Support Staff	Increasing costs of utilities Student expectations Good housekeeping practices/reporting/identification of opportunities Reducing environmental impact on campus = more investment into core activities	Environmental Champions actions	Quarterly TBC	Environmental Champions
		Connect – staff newsletter	As required	Environmental Officer
		Did You Know electronic newsletter	As required	Environmental Officer
		Intranet newspaper	As required	Environmental Officer
		Environmental Intranet pages	As required	Environmental Champions
		Faculty/department newsletters	As required	Environmental Officer
		Digital signage	As required	Environmental Officer
		Staff training	As required	Staff Development
		Staff induction	As required	Environmental Officer
		Roadshow/events	As required	
Student Union	Increasing costs of utilities Student expectations Good housekeeping practices/reporting/identification of opportunities – leading by example Improved reputation of University and SU	Attendance at Environmental Committee meetings	Quarterly	Student Union Staff Rep
		Induction to all new officers/briefing on environmental strategy	Annual	Environmental Officer
		Regular meetings with SU staff member with responsibility for environmental issues	Quarterly	Environmental Officer
Students (including First Years, Post Graduates)	Simple housekeeping tips Impact of increasing utility costs on rents/living costs Reducing environmental impact on campus = more investment into core activities	Freshers Fayre	Annual	Environmental Officer
		Environmental Intranet	As required	Environmental Officer
		SU website	To be developed	Environmental Officer/SU Ethical & Environmental Officer(?)
		Student Switch Off Campaign (those in Halls of Residence)	Ongoing	SSO manager/ Accommodation Environmental Champions
		Roadshows/events	As required	Environmental Officer

Distance Learning Students	Simple housekeeping tips Impact of increasing utility costs on rents/living costs	SU website	Managed by SU	Environmental Officer/SU Membership Engagement Manager
BCU People & Planet Group	University commitment to sustainability Improvements in environmental performance Simple housekeeping tips Impact of increasing utility costs on rents/living costs Reducing environmental impact on campus = more investment into core activities	Attendance at meetings	As required/requested	Environmental Officer Carbon and Energy Reduction Officer
Conference visitors	University commitment to sustainability Simple housekeeping tips	Posters Joining Instructions	Ongoing	Environmental Officer/ Hospitality Manager
Local Community	University commitment to sustainability Improvements in environmental performance	Press releases Updates to website	As necessary with developments Quarterly	Environmental Officer/ Marketing & Communication Environmental Strategy Group Rep Environmental Officer
Suppliers	University commitment to sustainability Improvements in environmental performance Environmental considerations/expectations in procurement	TBC	TBC	TBC
Higher Education Funding Council for England	University commitment to sustainability Improvements in environmental performance Carbon Management Plan	Estates Management Statistics submission Carbon Management Plan submission	Annual	Estates
Public Transport Organisations	University commitment to sustainability Willingness to work in partnership to improve services	Meetings	As required	Environmental Officer Carbon and Energy Reduction Officer
Birmingham City Council	University commitment to sustainability Willingness to work in partnership to achieve City aims for carbon reduction Achievement of planning requirements Leading by example	Attendance at relevant sustainability meetings Involvement of University in relevant sustainability events Press releases	As required As required As necessary with developments Quarterly	Environmental Officer Corporate Development Centre Environmental Officer/ Marketing & Communication Environmental Strategy Group Rep Environmental Officer/ Corporate Development Centre Environmental Strategy Group rep

<p>Advantage West Midlands</p>	<p>University commitment to sustainability Willingness to work in partnership to achieve regional aims for sustainable development Achievement of development requirements Leading by example</p>	<p>Attendance at relevant sustainability meetings Involvement of University in relevant sustainability events Press releases</p>	<p>As required As required As necessary with developments Quarterly</p>	<p>Environmental Officer Carbon and Energy Reduction Officer Corporate Development Centre Environmental Officer/ Marketing & Communication Environmental Officer/ Corporate Development Centre</p>
<p>Southern Universities Purchasing Consortium</p>	<p>University commitment to sustainability Willingness to work in partnership to develop sustainable procurement</p>	<p>Attendance at SUPC sustainability group meetings</p>	<p>Quarterly</p>	<p>Environmental Officer Contracts Manager Head of Procurement and Insurance</p>
<p>Other external stakeholders/interested parties</p>		<p>Press releases Updates to Green website</p>	<p>As necessary with developments Quarterly</p>	<p>Environmental Officer/ Marketing & Communication Environmental Officer/ Corporate Development Centre</p>

Appendix G: Proposed Policies

G.1 PROPOSED POLICY ON THE USE OF SPACE

Introduction

The start of the Carbon Reduction Commitment Energy Efficiency Scheme, in which allowances must be bought to cover CO₂ emissions, along with rising energy costs, have increased the pressure on Birmingham City University to reduce energy usage. The increasing importance to the University's reputation of effective environmental management has made it more important to achieve this objective, which has been made more challenging by the current financial climate of cuts in funding.

The use of space is a key variable in reducing the University's carbon emissions and must be optimised to ensure carbon reduction targets are hit.

Use of Space

It shall be the policy of Birmingham City University to commit each faculty and department to review its timetabled use of space on an annual basis. This shall include a review of the amount of hours for which space is in use. In addition, a coordinated review of the University's use of space as a whole shall be carried out with the purpose of assessing ways to maximise efficiency of space usage. For example, it will be investigated whether any out of hours activities can be grouped together into the same building to avoid operating more than one building out of hours at very low occupancy. The input of the Room Booking Manager will be essential.

G.2 PROPOSED POLICY – COMPUTING AND SMALL POWER ENERGY USE

Introduction

The start of the Carbon Reduction Commitment Energy Efficiency Scheme, in which allowances must be bought to cover CO₂ emissions, along with rising energy costs, have increased the pressure on Birmingham City University to reduce energy usage. The increasing importance to the University's reputation of effective environmental management has made it more important to achieve this objective, which has been made more challenging by the current financial climate of cuts in funding.

Minimising consumption of electricity is a critical element in the University's plan to reduce carbon emissions and a key area of electricity use in the University's buildings is small power and computing.

General Small Power Use

It shall be the policy of Birmingham City University to limit use of electricity wherever possible and to encourage all members to do likewise. This shall be achieved in part by training on energy efficient working (see separate policy), but also by energy efficient procurement where possible.

Computer Usage

It shall be the policy of Birmingham City University to make provision for reduction of energy use from computing. The most effective way (i.e. the method which gives the most energy savings without undue compromise to functionality) of achieving this shall be investigated and implemented in conjunction with the CICT department. The solution may need to be tailored to each individual building depending on the use profile. One possible method would be to install a patch on the system which shuts computers down at a specific time, proving a warning so that users do not lose data. Another would be to adjust and lock power down settings on each individual machine. The input of CICT will be essential to the success of this policy.

Proprietary Monitoring and Control Hardware Solution

A proprietary hardware system, designed to monitor and control small power use, shall be investigated and trialled in the University. The envisaged system shall be capable of being retro-fitted to existing electrical services installations without major works. It shall monitor and enable/disable the power to appliances or groups of appliances in an intelligent manner, powering down appliances when not in use. If this trial is successful then the system shall be extended to cover more of the University's estate.

G.3 PROPOSED POLICY ON THE USE OF PORTABLE HEATERS AND PORTABLE AIR CONDITIONING UNITS (refer to flowchart for required staff action)

Introduction

The start of the Carbon Reduction Commitment Energy Efficiency Scheme, in which allowances must be bought to cover CO₂ emissions, along with rising energy costs, have increased the pressure on Birmingham City University to reduce energy usage. The increasing importance to the University's reputation of effective environmental management has made it more important to achieve this objective, which has been made more challenging by the current financial climate of cuts in funding.

The first step towards reducing energy use is for all University members to review how their actions affect energy consumption, to ensure that we are all carrying out our work in as energy-efficient a manner as possible.

Portable Heaters and Air Conditioning Units

Taking account of the need to avoid unnecessary usage of energy, portable heaters and air conditioning units should not be used in any University premises unless specifically provided by the Estates Department under the circumstances outlined in the below flowchart. All portable heaters should be kept by the Estates Department and issued in emergency situations only.

Internal Environmental Conditions

Guidance publications for professional building services engineers and Building Regulations Approved Documents⁽¹⁾ provide industry-standard temperature criteria and have therefore been used as the basis for determining acceptable internal environmental conditions.

When heating is on during the day, staff in continuously occupied rooms should expect temperatures in the range of 18-21°C.

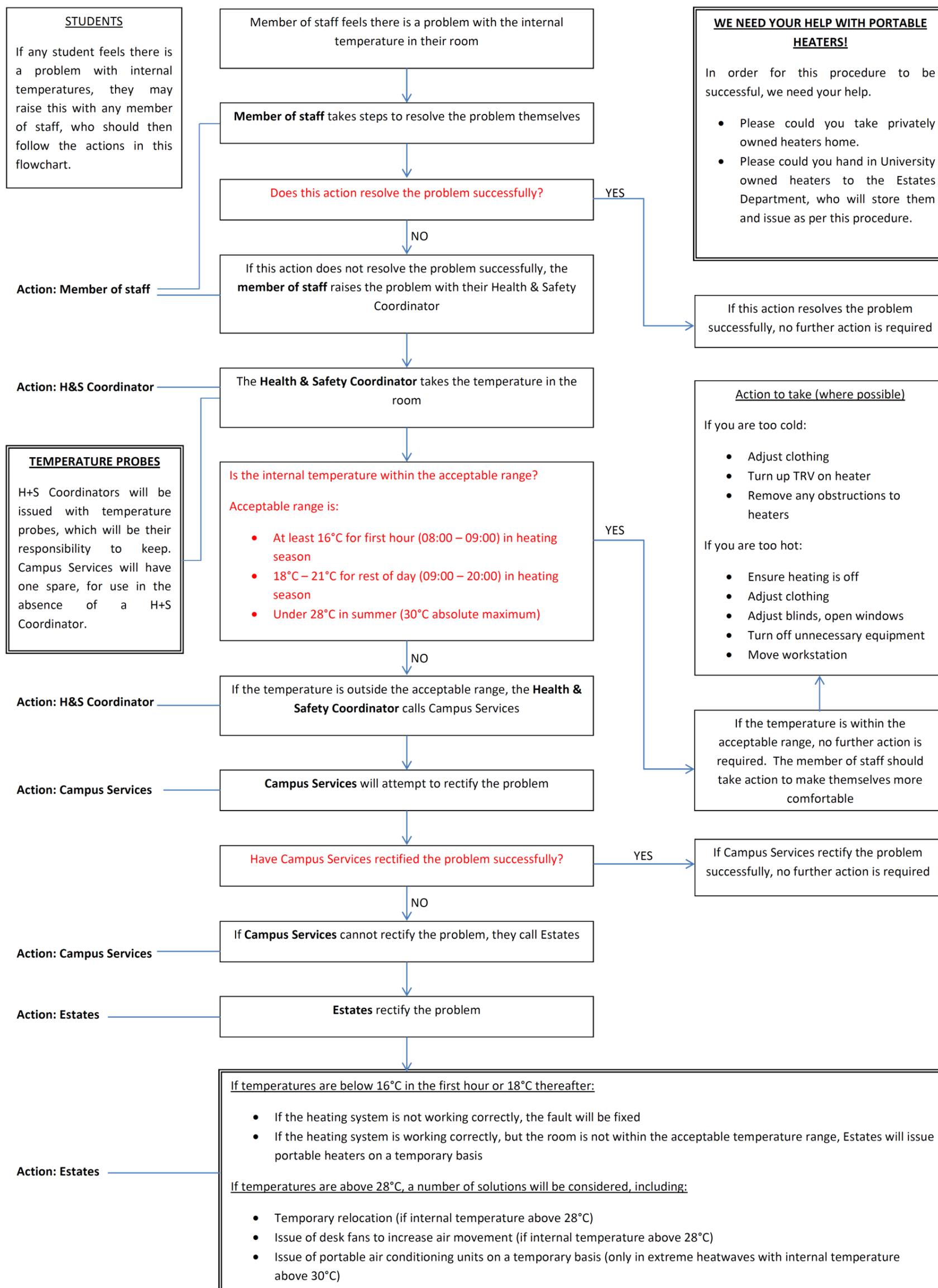
In summer, staff in continuously occupied rooms should expect temperatures under 28°C for 99% of the time. It is possible that during infrequent heat-waves the temperature may exceed this value for short periods of time. Temperatures should not exceed 30°C.

Unacceptable Internal Temperatures

If a member of staff feels that the temperature in their room is unacceptable then they should refer to the flow chart on the following page for the appropriate course of action. Emphasis is placed on taking reasonable action yourself before contacting your Health and Safety Coordinator. If necessary they can then escalate the issue to Campus Services and Estates. Remedial action will be taken if temperatures fall outside of acceptable ranges, as defined in the flowchart.

(1) CIBSE Guide A and Approved Document L2A

INTERNAL TEMPERATURE ACTION PLAN (NON-RESIDENTIAL) – WHAT TO DO IF YOU FEEL THERE IS A PROBLEM WITH THE INTERNAL TEMPERATURE IN YOUR ROOM



G.4 PROPOSED PROJECT – ENERGY EFFICIENCY & ENVIRONMENTAL AWARENESS TRAINING

SESSIONS

Introduction

The start of the Carbon Reduction Commitment Energy Efficiency Scheme, in which allowances must be bought to cover CO₂ emissions, along with rising energy costs, have increased the pressure on Birmingham City University to reduce energy usage. The increasing importance to the University's reputation of effective environmental management has made it more important to achieve this objective, which has been made more challenging by the current financial climate of cuts in funding.

The first step towards reducing energy use is for all University members to assess our own current ways of working to ensure that we are carrying out our work in as energy-efficient and sustainable a manner as possible.

Proposed Training Sessions

During the course of the next academic year (2010/11), the Estates Department shall provide a training course on energy efficiency and environmental awareness related to work. Features of the course shall be as follows:

- A member of the Estates Department (the trainer) shall deliver the course to small groups of staff at a time and in a location convenient to those staff (the trainees).
- The trainer shall present various methods of energy efficient and sustainable working, highlighting good/bad practice and seeking to encourage trainees to think about anything that they can do to help contribute towards the University's carbon reduction and environmental targets. Areas covered will include:
 - Reducing electricity usage
 - Operation of heating
 - Travel
 - Waste
 - Procurement
 - Water usage
- The trainer shall invite discussion from the trainees, including suggestions for ways to save energy.
- Attendance at one of the courses shall be compulsory.
- The course should last approximately one hour in total.

Induction for New Staff

In addition to the above training for existing staff, all new staff shall receive similar training on energy-efficient and sustainable working as part of their formal induction.

Information for Students

The Estates department shall produce an electronic leaflet to be sent to all students covering similar topics of energy-efficient and sustainable working. Students shall be invited to contribute ideas for improving the university's sustainability credentials. The aim of this will be to encourage the student body to buy-in to the University's effort to reduce carbon emissions, and to make carbon reduction part of everybody's role.

G.5 PROPOSED POLICY ON ELECTRICITY FROM RENEWABLE SOURCES

Introduction

The start of the Carbon Reduction Commitment Energy Efficiency Scheme, in which allowances must be bought to cover CO₂ emissions, along with rising energy costs, have increased the pressure on Birmingham City University to reduce energy usage. The increasing importance to the University's reputation of effective environmental management has made it more important to achieve this objective, which has been made more challenging by the current financial climate of cuts in funding.

Renewable Electricity

The majority of the University's carbon footprint is from the use of grid electricity, the vast majority (95%) of which comes from fossil fuel sources. Grid electricity is the most carbon-intensive fuel in general use. Renewable electricity is zero carbon. It shall be the policy of Birmingham City University to investigate and promote the use of renewable electricity.

Utility Supply

The potential for a "green tariff" shall be investigated. This would involve procurement of electricity from a supplier with a specified percentage to come from renewable sources. The carbon benefit of this under CRC and the HEFCE-required carbon management plan shall be investigated.

Small Scale Local Renewables

The potential for the installation of local small scale renewables shall be investigated. The carbon benefit of this under CRC and the HEFCE-required carbon management plan shall be investigated. Options to claim feed-in tariffs, transfer risk and transfer capital expenditure shall also be considered.

Appendix H: CRC Strategy

Introduction

Birmingham City University is actively seeking to become a more sustainable organisation. We recognise that there are a number of key drivers in place nationally to improve environmental performance and cut emissions of carbon dioxide and other greenhouse gases. We also recognise the moral imperative to operate in a more sustainable manner, and believe that it is right for the higher education sector to take the lead in this.

Legislation

In October 2008 the government created a new department, the Department of Energy & Climate Change, in recognition of the increasing importance of energy policy and climate change mitigation policy. In the same year the Climate Change Act was passed into law, setting legally binding targets for the reduction of carbon emissions: an 80% reduction by 2050 and a 34% reduction by 2020 against a 1990 baseline. A new Part L of the Building Regulations is coming into force in October 2010 to work towards implementing these targets.

In addition the Act gives the government powers to introduce domestic carbon emissions trading schemes through secondary legislation. The first such scheme which has been introduced is the CRC Energy Efficiency Scheme (formerly known as the Carbon Reduction Commitment; abbreviated to CRC).

CRC Energy Efficiency Scheme

The CRC is a mandatory carbon emissions trading scheme for large public and private sector organisations in the UK, which started in April 2010. The first phase of the scheme lasts for three years and is uncapped with subsequent capped phases lasting five years. The scheme is administered by the Environment Agency.

Each participating organisation purchases allowances from the government at the beginning of the scheme year (April) for their expected carbon emissions for that year. At the end of the year they must surrender allowances for the carbon they have emitted. If they do not have sufficient allowances they must purchase them on the secondary market. If they have allowances left over they may bank them for future use or sell them on the secondary market. In the first phase the number of allowances issued at the start of each year is uncapped. In subsequent phases the total number will be capped and auctioned, reducing year on year in order to drive energy use down across the scheme participants. The initial price of allowances is set as £12/tonne of CO₂.

The scheme is designed to be revenue-neutral, as all the money paid for allowances at the beginning of each year is paid back to scheme participants at the end of the year in performance-

related revenue recycling payments. There is therefore the potential to either make or lose money depending on an organisation's performance.

All scheme participants are ranked in a league table, which is published. It is hoped that the impact on organisations' reputations will encourage better performance. In addition, there are also significant fines for non-compliance with the requirements of the scheme.

HEFCE Policy

HEFCE have taken heed of the government's carbon reduction aims and produced their own targets for the Higher Education sector in line with national targets: a 34% reduction in CO₂ by 2020 and an 80% reduction by 2050, compared with 1990 baseline levels. HEFCE recognise that the HE sector has grown since 1990, and has issued its own targets based on its standard reporting year of 2005/06: 20% reduction by 2012, 35% by 2017, and 48% by 2020, all based on 2005/06 emissions levels.

HEFCE also require universities to set their own targets for 2020 for scope 1 and 2 emissions (mainly grid gas and electricity consumption) against a 2005 baseline.

HEFCE have also indicated that funding under their Capital Investment Framework will be linked to performance against carbon management plans.

The Birmingham City University Strategy

The introduction of CRC presents significant financial opportunities (high revenue recycling payments) and threats (low revenue recycling payments and fines). Birmingham City University therefore recognises the importance of developing a coherent strategy to manage participation in CRC. The strategy should have the support of the Board and Vice Chancellor and be effectively communicated to all staff and students.

Birmingham City University also recognises the importance of carbon reduction in general, particularly as this is incorporated in HEFCE policy. The CRC management strategy should assist progress towards the HEFCE carbon reduction targets.

In order to facilitate this, Birmingham City University have worked with the Carbon Trust's Higher Education Carbon Management Programme 2008/2009 to maintain our impetus on carbon management and recognise the strong strategy and policy links being advanced by HEFCE on behalf of the higher education sector.

Birmingham City University will manage the CRC Energy Efficiency Scheme introduction and future phases through to 2023 and propose the following:

- Birmingham City University will undertake a strategic review of the implications of CRC. We are working closely with Carbon Trust Carbon Consultants. This review will analyse our strengths, weaknesses, opportunities and threats, produce future financial and budgetary forecasts, legal requirements and provide a strategy and route map of activities that the

University should adopt to optimise our position, both financially and within the performance league tables.

- Birmingham City University will undertake a strategic review of our registration for the CRC, so that we can put forward the optimum registration before the required date of September 2010, and avoid financial penalties.
- Birmingham City University will put in place a checking system to provide quality assurance for all evidence collected and information submitted as part of CRC. It is likely that our submissions and evidence will be audited and there are significant financial penalties for incorrect reporting. A robust QA system will minimise the risk of incurring fines.
- CRC performance in the first year is measured by the Early Action Metric, which has two components: (a) Automatic Meter Reading and (b) Carbon Trust Certification.
 - Birmingham City University will assess the implications of the Early Action Metric and appraise the practical and financial costs and benefits of further progressing AMR to maximise the score under this metric.
 - Birmingham City University will review the AMR strategy, which is currently in place for several sites, to ensure information is reliably stored and presented.
 - Birmingham City University have recently achieved accreditation to the Carbon Trust Standard. We will review this accreditation and the scope of its coverage.
- Birmingham City University will review and update our Carbon Management Plan to continue to develop strategies for investment to reduce carbon emissions, as we recognise that this is the key component of our CRC strategy. The implementation of a good quality Carbon Management Plan will place the University in a strong position as the CRC moves into the capped phases, when it is likely that the cost of carbon will be significantly higher than the £12/tonne currently set. It will also be critical when HEFCE start linking Capital Investment Framework funding to carbon reduction performance. HEFCE require submissions in September therefore the Carbon Management Plan should have Board approval before this. The Carbon Management Plan will consider the implementation of a hierarchy of measures:
 - Measures to changes people's behaviour and reduce energy demand;
 - Measures to reduce energy used by small power (e.g. IT & domestic appliances) and lighting;
 - Measures to improve building services controls and energy management;
 - Measures to improve building fabric;
 - Measures to provide building services via more efficient means (e.g. CHP, high efficiency main plant);
 - Measures to provide building services by Low & Zero Carbon (LZC) means (e.g. solar hot water, heat pumps).
- Birmingham City University will review the budgetary implications of CRC. We will carry out budgetary projections. It is clear that CRC Energy Efficiency Scheme will have significant

implications on cash flow from March 2011 with the procurement of the first two years of carbon allowances. In addition, the revenue recycling mechanism will represent a significant financial opportunity and threat. Birmingham City University will aim to improve its league table position, with the objective that CRC should become an income generator. Birmingham City University will formulate an allowance buying strategy to ensure that any financial risks of CRC are minimised.

Birmingham City University recognise the importance of carbon reduction and our objective is to work towards the Government and HEFCE carbon reduction targets of a 34% reduction by 2020 and an 80% reduction in carbon by 2050.