working with

CENTRAL SCHOOL OF SPEECH & DRAMA

CARBON MANAGEMENT PROGRAMME

Carbon Management Plan (CMP)

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Contents

Foreword from the Project Sponsor

The Central School of Speech and Drama (Central) is committed to environmental sustainability. Placing students at the centre of its work, Central develops practitioners and researchers who shape the future of theatre and performance across the UK and beyond. Central's alumni have a notable impact on the world of British and sometimes international drama. It therefore follows that we have a responsibility to develop 'sustainable practitioners' to ensure that the theatre and performance are at the forefront of excellent environmental practice. Sustainability is embedded within Central's Corporate Plan. Specific objectives currently include:

- To build a culture of environmental awareness and agree a plan to secure demonstrable reduction in the environmental impact of the School's activities; and
- To minimise negative impact on the environment, with attendant costs.

The environment in which we operate presents many challenges and opportunities. Participation in the Carbon Management Programme has enabled Central to access a proven framework and expert advice in the identification of and implementation of projects to reduce our carbon emissions by 25% by August 2015 from the 2009/10 baseline. Governors, managers, staff and students all have an important role to play and can make a positive difference. The Central community has contributed ideas that will reduce our carbon footprint and we encourage members of the community to bring to management's attention any further opportunities for improvement.

I place on record my thanks to Robert MacDonald and Peter Bingham for leading the work in the formation of our Carbon Management Plan.

Debbie Scully

Project Sponsor

(Deputy Principal Corporate / Deputy CEO / Clerk to Governors)

Foreword from the Carbon Trust

Cutting carbon emissions as part of the fight against climate change should be a key priority for Universities and Colleges - it's all about getting your own house in order and leading by example. The UK government has identified the Higher Education sector as key to delivering carbon reduction across the UK in line with the Climate Change Act targets, and the HE Carbon Management programme is designed in response to this. It assists Higher Education institutions in saving money on energy and putting it to better use elsewhere, whilst making a positive contribution to the environment by lowering carbon emissions.

The Central School of Speech & Drama partnered with the Carbon Trust on this ambitious programme in 2010 in order to realise substantial carbon and cost savings. This Carbon Management Plan commits CSSD to a target of reducing CO_2 by 25% by 2015 and underpins potential financial savings to the institution of around £27,000 per year by that date.

There are those that can and those that do. Universities can contribute significantly to reducing CO_2 emissions. The Carbon Trust is very proud to support Central School of Speech & Drama in their ongoing implementation of carbon management.

Richard Rugg
Head of Public Sector, Carbon Trust

Management Summary

This Carbon Management Plan (CMP) is the product of Central School of Speech & Drama's participation in Phase VI of the Carbon Trust's Higher Education Carbon Management Programme. This plan is fully supported by Central's Board of Governors and the Executive Management Team and demonstrates a firm commitment to achieving an absolute reduction in carbon emissions. By implementing this CMP, Central will aim to reduce the CO_2 emissions from its buildings and activities by 25% compared to the 2009/10 baseline, by August 2015.

The case for action

Central has a number of drivers that make this CMP a key document to ensuring its future prosperity.

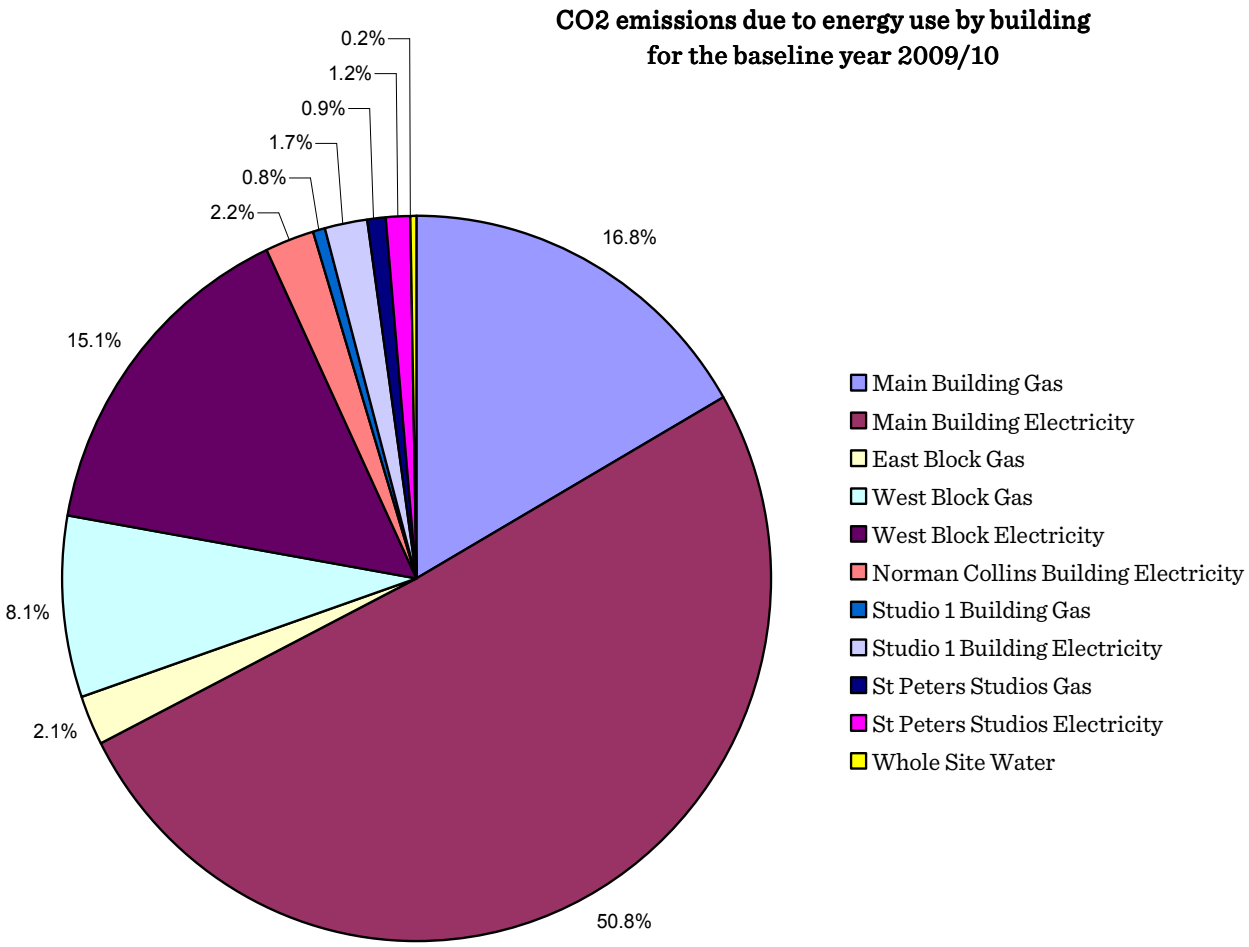
1. **Human induced climate change** – This is a moral imperative to take action to limit the effects that Central has on this global problem.
2. **Contain rising costs –** With a current spend of £150k annually on utilities that has continued to rise in recent years, a reduction in consumption and less dependence on volatile utility markets would place Central in a more secure position.
3. **Meet targets** – The HE sector has been issued with a target to cut carbon emissions by 34% against a 2005/6 baseline by 2020. In addition to this national target, HEFCE is now linking capital funding to individual institution's carbon reduction commitment and performance.
4. **Safeguard against legislation** – Central is captured by the Government's Carbon Reduction Commitment (CRC) Scheme by being a College of the University of London. This will mean in April 2012 Central will have to start paying a tax on each tCO_2 emitted by its activities.
5. **Enhance the reputation** – By demonstrating a firm commitment to carbon reduction Central aims to be an example of progress in the community and more attractive to prospective students.

In 2009/10 Central's carbon footprint resulting from electricity, gas and water consumption was **689 tonnes of CO_2** (tCO_2) with a financial cost of just over **£150k**.

By calculating this baseline the School has been able to forecast future emissions and their likely costs based upon demand and cost projections provided by the Department for Energy & Climate Change (DECC).

Central has set a CO_2 reduction target that acknowledges the HE Sector target set by HEFCE.

Central School of Speech & Drama will reduce its carbon emissions from energy consumption by 25% in absolute terms from the 2009/10 baseline by August 2015. Central has set an aspirational target of achieving a 40% reduction from the 2005/06 baseline, by 2020.



Important points to note about Central's site

- ❖ The Main Building gas meter includes supply to the Embassy Extension Building and lower 2 floors of the East Block.
- ❖ The Main Building electricity meter includes supply to the Embassy Extension Building.
- ❖ The East Block gas meter only includes supply to the top 3 floors.
- ❖ The Norman Collins Building does not have a gas supply. It is heated by local electric heaters.

The Costs of Non-implementation

If no action is taken to implement the projects within this plan and future projects that are identified then Central's energy consumption and costs will continue to rise. At current projections this will mean in 2015:

- The level of emissions will be 24 tCO_2 (3.5%) higher than the baseline year.
- The cost will be £17k (11.6%) higher than the baseline year.
- The total Value at Stake over the next 5 years between continuing business as usual and achieving the targets is calculated at **609 tCO_2** and **£140k.**

Objectives of the Plan

- To raise awareness to staff and students about carbon emissions and costs to the School and embed responsibility in everyone's' activities.
- To provide the information and implement the projects to achieve long term savings from managing carbon emissions.
- To ensure that all Central's buildings use technologies as efficiently as possible whilst meeting the needs of the users.

This plan has identified 19 projects that will achieve quantified emissions savings of 138 tCO_2 per year and an annual saving of £26,880 once all the projects have been implemented. The estimated total capital cost of the projects is £210,207, giving an average payback period of 8 years.

However £55,007 of this investment has already been spent on 3 projects completed during the formation of this plan that will provide emissions savings of 4 tCO_2 per year and an annual saving of £832. Alongside efficiency improvement, these projects had a specific brief of improving the working and teaching environment of these spaces as well as being essential compliance works to bring the electrical condition of the Studio 1 building up to current standards.

The remaining 16 projects yet to be implemented will achieve additional quantified emissions savings of 134 tCO_2 per year and an annual saving of £26,048 once all the projects have been implemented. The estimated total capital cost of the projects is £155,200, giving an average payback period of 6 years.

Funding and Ownership

With respect to funding Central, in common with all higher education institutions, is awaiting specific news regarding future funding to the sector. All areas of public spending are subject to review.

The summary below provides the financial costs and funding that has been allocated to implement the projects identified in this plan.

	2010/11	2011/12	2012/13	2013/14	2014/15
Annual costs:					
Total annual capital cost	**£77,907**	**£82,300**	**£50,000**	**£0**	**£0**
Total annual revenue cost	**£0**	**£1,000**	**-£3,500**	**-£3,500**	**-£3,500**
Total costs	**£77,907**	**£83,300**	**£46,500**	**-£3,500**	**-£3,500**
Committed funding:					
Committed annual capital	**£55,007**	**£45,200**	**£0**	**£0**	**£0**
Committed annual revenue	**£0**	**£1,000**	**£0**	**£0**	**£0**
Total funded	**£55,007**	**£46,200**	**£0**	**£0**	**£0**
Unallocated funding					
Unallocated annual capital	**£22,900**	**£37,100**	**£50,000**	**£0**	**£0**
Unallocated annual revenue	**£0**	**£0**	**-£3,500**	**-£3,500**	**-£3,500**
Total unfunded	**£22,900**	**£37,100**	**£46,500**	**-£3,500**	**-£3,500**

The great majority of the projects that have been identified will be funded from annual internal budgets. Whereas in previous years there has been an emphasis on the creation of new spaces and resources, the focus has been shifted to one of refurbishment and efficient management of current assets.

For the longer term projects, there is a commitment to fund these from either the HEFCE Capital Investment Framework 2 (CIF2) allocation or from recurrent funds. Central has been advised that its submission under CIF2 has been successful but we are still awaiting details on the level of allocation that will be awarded under this scheme. Central will also seek to take advantage of any scheme that advances the capital cost of projects against future savings arising from project implementation. Details of funding sources (CIF2 or internal) will be confirmed when HEFCE allocations are known.

This plan has been produced through the work of the Carbon Management Team (CMT) and signed off by the Governors Finance & Employment Committee of Central. The CMT will have the responsibility for implementing this plan and Central's environmental policy further in the future.

Membership of the CMT

Deputy Principal (Corporate) – Project Sponsor
Assistant to the Director of Finance & Estates – Project Leader
Head of Technical Support Department – Deputy Project Leader
Deputy Academic Registrar
Deputy Dean of Studies
Director of Finance
Head of HR
Head of IT Services
Senior Lecturer
Student Union Environments Officer
Student Union President

1 Introduction

Background & Purpose

This report is the product of 10 months of work completed in collaboration with the Carbon Trust under the 6th year of the Higher Education Carbon Management Programme. This is the first year to which smaller institutions such as Central have been invited on to the programme. This report forms a definitive plan for implementing carbon management at Central. The proposals outlined in this report provide details of the carbon reduction opportunities and financial savings associated with the investment in carbon management projects at Central.

The programme has followed the 5 step progression shown below to deliver this plan for the benefit of the School and wider community.

There has been an almost 3 fold increase in staff and student numbers at Central since 1990. This has created an increase in demand for space and resources that has inevitably increased the consumption of the School. With the introduction of the Climate Change Levy and the impact of rising utility costs Central has increased its commitments towards sustainable development. It is also likely that further mandatory schemes will be introduced in future years as the Government strives to achieve the target of cutting CO_2 emissions nationally by 80% by 2050. This report places Central in a strong position to overcome all of these challenges.

Timescale

The implementation plan has set a target reduction in CO_2 emissions of 25% over a five year period compared to the baseline year of 2009/10. Achieving this target will be a challenge but also a necessary precaution for the financial and environmental prosperity of the School.

Current Status

The current position of Carbon Management at Central is illustrated by the yellow highlighted areas in the carbon management matrix on the following page. The aspiration of the School is to achieve and maintain the green highlighted areas. These are mostly level 5 aspirations but we have had to limit our aspirations in some areas to recognise that

Central is a small, specialist institution. For example we do not have the resource for Carbon Management to be a full time responsibility of several people but we do have an aspiration to make all aware of their responsibilities and actions they can take to reduce our carbon footprint. This carbon management programme will act as the mechanism by which these aspirations will be achieved.

	POLICY	RESPONSIBILITY	DATA MANAGEMENT	COMM'CATION/ TRAINING	FINANCE & INVESTMENT	PROCUREMENT	MONITORING/ EVAL'ON
5 **Best**	• SMART Targets signed off • Action plan contains clear goals & regular progress reviews • Strategy launched internally & to community	• CM is **full**-time responsibility of a **few** people • CM integrated in responsibilities of **senior** managers • VC support • Part of **all** job descriptions	• **Quarterly** collation of CO_2 emissions for all sources • Data **externally** verified • M&T in place for: o Buildings o Waste	• All staff & students given formalised CM: o Induction o Training Plan o Communications • CM matters **regularly** communicated to: o External community o Key partners	• **Granular** & **effective** financing mechanisms for CM projects • **Finance representation on CM Team** • **Robust** task management mechanism • **Ring-fenced fund** for carbon reduction initiatives	• **Senior** purchasers consult & adhere to ICLEI's **Procura**+ manual & principles • Sustainability comprehensively integrated in **tendering** criteria • Whole life costing • Area-wide procurement	• Senior management review CM process • Core team regularly reviews CM progress • Published externally on website • Visible board level review
4	• SMART Targets **developed but not** implemented	• CM is **full**-time responsibility of an **individual** • CM integrated in to responsibilities of department **managers**, not all staff	• **Annual** collation of CO_2 emissions for: o Buildings o Transport o waste • Data **internally** reviewed	• All staff & students given CM: o **Induction** o Communications • CM communicated to: o External community o Key partners	• Regular financing for CM projects • **Some** external financing • **Sufficient** task management mechanism	• Environmental demands incorporated in tendering • Familiarity with **Procura**+ • **Joint procuring** between HEIs or with LAs.	• **Core** team **regularly** reviews CM progress: o Actions o Profile & Targets o New opportunities quantification
3	• **Draft** policy • Climate Change **reference**	• CM is **part**-time responsibility of a **few** people • CM responsibility of department champions	• **Collation** of CO_2 emissions for limited scope i.e. buildings only	• **Environmental / energy** group(s) give ad hoc: o Training o Communications	• **Ad hoc** financing for CM projects • Limited task management • No allocated resource	• **Whole life** costing occasionally employed • Some **pooling** of environmental expertise	• CM team review aspects including: o **Policies / Strategies** o Targets o Action Plans
2	• No policy • Climate Change **aspiration**	• CM is **part**-time responsibility of an **individual** • No departmental champions	• **No CO_2** emissions data compiled • Energy data compiled on a regular basis	• Regular poster/awareness campaigns • **Staff & students** given ad hoc CM: o Communications	• Ad hoc financing for CM **related** projects • Limited task coordination **resources**	• **Green** criteria occasionally considered • Products considered in **isolation**	• Ad hoc reviews of CM actions progress
1 **Worst**	• No policy • **No** Climate Change reference	• No CM responsibility designation	• Not compiled: o CO_2 emissions • Estimated billing	• No communication or training	• No internal financing or funding for CM related projects	• No Green consideration • No life cycle costing	• No CM monitoring

Table 1: Carbon Embedding Matrix

2 Carbon Management Strategy

2.1 Context and drivers for Carbon Management

The Carbon Management Programme has provided the tools and impetus for Central to develop this plan to put carbon management into context for staff and students. Adopting a procedure to reduce carbon emissions will provide Central with many environmental and financial benefits. This makes it of primary importance to the development and future operation of the School.

The vast increase in carbon dioxide and other gasses through man made activities around the world is seen as the major cause of global warming and climate change. It is believed that these phenomena will have a devastating effect on the planet environmentally, socially and economically. It has become imperative for all nations to take actions to minimise these contributions to the atmosphere.

On a national level, the UK Government signed the Climate Change Act in 2008 and committed to achieving a 34% reduction in carbon emissions by 2020 and an 80% reduction by 2050 against a 1990 baseline. This national ambition has been further strengthened by the Carbon Reduction Commitment Energy Efficiency Scheme that launched in April 2010, which is providing a further driver for organisations to take action to reduce emissions. This Scheme has placed a value on CO_2 emissions by mandating organisations to buy carbon credits each year per tonne of CO_2 emissions to cover their emissions for that year. Whilst this scheme is aimed at large organisations and Central's annual energy use is well below the qualification level, we have been mandated to participate in the scheme due to our status as a College of the University of London. It is a simple scheme whereby the lower the emissions of an institution the fewer credits will need to be purchased. For the first 3 years of the scheme this price of credits is to be fixed at £12 per tonne of CO_2 but after that it will be market dependent. This will make organisations with large and uncontrolled emissions vulnerable to a considerable expense that could spiral upwards year on year.

The ever increasing utility prices are a significant drain on the School's resources. Central has been prudent in securing long term fixed contracts on utilities through careful analysis of the markets but through carbon reduction this position can be further strengthened.

Central has a responsibility to use public funds efficiently and in the current global financial difficulties it is more important than ever to be achieving value for money in all undertakings. The reduction in carbon, brought about by reduced energy consumption, will allow Central to further maximise resources for the benefit of students and the local community.

The Higher Education Funding Council for England (HEFCE) has made it a requirement for institutions to take steps to measure and reduce their carbon footprints in order to receive capital funding in the CIF2 framework, for which the submission was made in October 2010. For the continued success of Central in delivering outstanding education to its students it is essential that this requirement is achieved to receive sufficient funding.

By setting and achieving carbon reduction targets, Central aims to enhance its reputation and become an example to be followed both locally and nationally.

2.2 Strategic themes

The achievement of carbon emissions savings will be a responsibility for all at Central. The key first step is to raise awareness of Central's current carbon status and in changing behaviours of those within our community. By improving housekeeping by all in all areas at Central a significant step to achieving the reduction targets can be made.

There is a requirement to improve the education and knowledge of our current practices and equipment to ensure our utility plant on site is optimised to become as efficient as possible. The functional areas of Central that will be targeted to achieve carbon savings is in changing the behaviour of all, by improving the mechanisms by which the Estate is heated and lit and by rationalising the use of IT equipment throughout the site.

Central has an aspiration through its Estates master plan of building and creating sustainable and efficient buildings that are fit for our specialist purpose. Any future developments will have the further aspiration to be carbon neutral projects.

2.3 Targets and objectives

Central School of Speech & Drama will achieve an absolute reduction of its CO_2 emissions from its activities by 40% from the 2005/06 baseline, by 2020. We have set an intermediate milestone to reduce emissions by 25% by August 2015 from the 2009/10 baseline.

3 Emissions Baseline and Projections

3.1 Scope

An organisation's emissions baseline is routinely split into several Scope categories to provide further information on the sources of these emissions. These categories are defined by the World Business Council for Sustainable Development (WBCSD) as:

Scope 1 – emissions produced through the use of fuels (e.g. natural gas and liquid fuels)

Scope 2 – emissions produced through the use of electricity

Scope 3 – emissions produced through the use of water, travel, waste and the supply chain

This Carbon Management Plan has considered the emissions produced through the use of utilities. Therefore it is largely scope 1 and 2 emissions that are the subject of this report with a small amount of Scope 3 consideration in terms of water usage.

It is likely that this will be revised in the coming years as data becomes available to include the other elements of scope 3, such as waste production, in Central's carbon reduction targets. For this plan it has not been possible to baseline Scope 3 emissions in their entirety so for now this is a carbon reduction plan for Central's utility consumption.

Central is unique as a School in the respect that it does not have a vehicle fleet or the provision of parking facilities. Central has continuously promoted the use of public transport to staff, students and visitors of the site as well as running a ride to work cycle scheme and providing new bike facilities on site. The level of emissions related to transport to and from Central by the community have been determined as negligible and so are not included in this plan.

3.2 Baseline

In order for this project to be successful it is essential that the current status of Central is measured. By setting a baseline year of CO_2 emissions it will be possible to measure performance in the coming years against the targets set.

The baseline year for this plan is the School's financial year 2009/10 (August 1st 2009 – 31st July 2010).

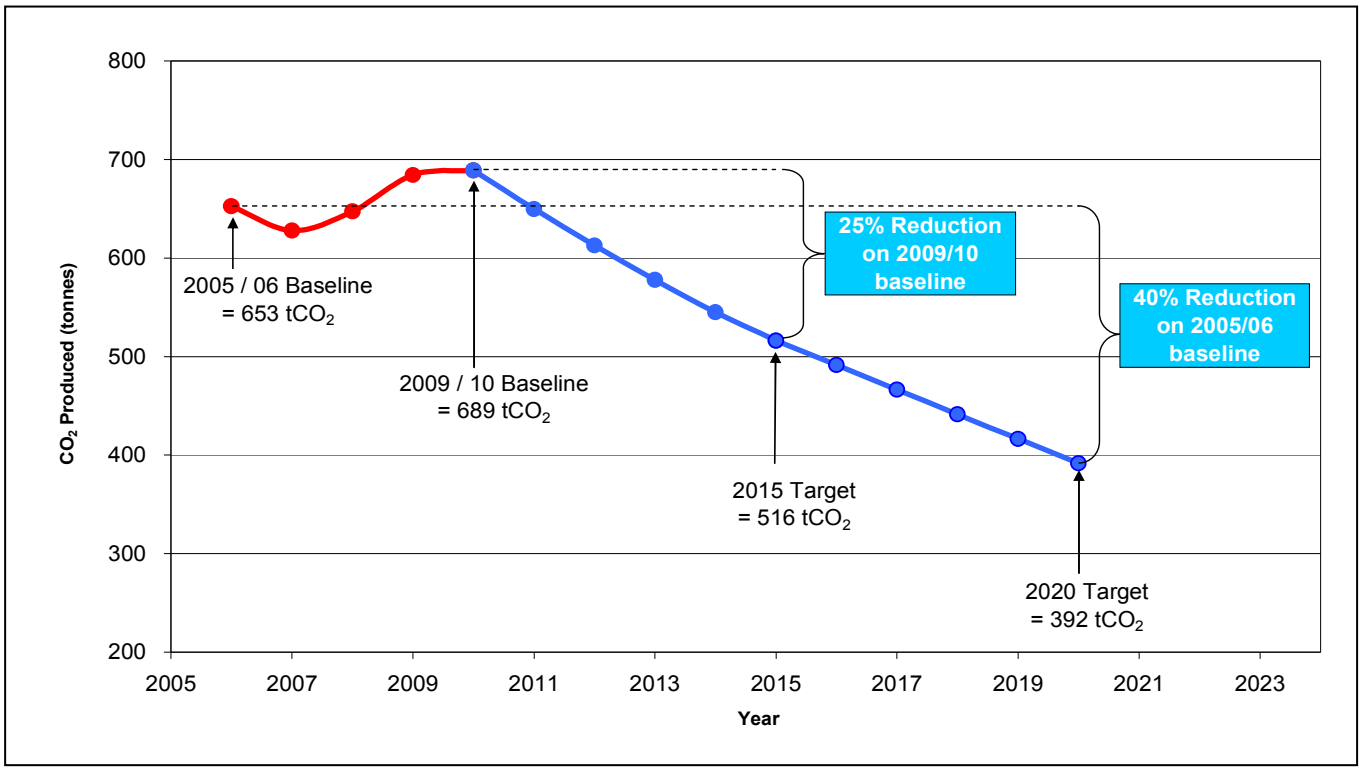
	Buildings	Transport	Water	Total
Baseline CO_2 emissions (tonnes)	687	0	2	689
Baseline Cost (£)	133,113	0	17,370	150,483

Table 2: Breakdown of baseline emissions & cost

The graph below shows the trend in CO_2 emissions at Central from 2005 to 2010. In this period emissions have risen by 36 tCO_2, a 6% increase. The graph then further depicts the progressions that are required to achieve our stated reduction targets.

- A 5 year target to reduce CO_2 emissions by 25% from the 2009/10 level, a 173 tCO_2/yr decrease. This is the objective set out in this plan.
- A 10 year target to reduce CO_2 emissions by 40% by 2020 from the 2005/6 level, a 261 tCO_2/yr decrease. This is the further target to meet the HE sector requirement.

For both these targets the reduction is an absolute reduction in the CO_2 emissions over the time periods. These targets are not set against numbers of student, level of income or any other comparator. The country as a whole is working to a fixed target that is not population dependent so at Central we are following suit with an absolute reduction target.



Graph 1: Trend of emissions from 2005/06 to 2009/10 showing future target progressions.

3.3 Projections and Value at Stake

There are many factors that could influence the future utility costs and carbon emissions from the School. Building developments, increase in demand for resources and fluctuating utility costs will all have a bearing. There is a significant financial benefit in decreasing utility consumption that has to be taken into consideration. This section contains the following projections:

- The Business as Usual model
- The Reduced Emissions Scenario
- The Value at Stake

Business as Usual Model

The first of these projections is known as the Business As Usual model (BAU). This projection is based on the 2009/10 utility spend and carbon baseline as a benchmark. The BAU scenario illustrates the predicted future emissions and costs if no energy management or carbon reduction projects are implemented. This is then projected forwards using estimates of a 0.7% increase in demand for utilities per year coupled with a 1.7% increase in utility prices per year for the next 5

years. These estimates are the most recent provided by the previous Department for Trade and Industry and the Department for Energy and Climate Change.

The BAU model is also assuming that the level of staff and students FTE will remain static and there will be no major Estate development over this 5 year period. The Estate at Central has been developed considerably in the past 5 years with the addition of the West Block and refurbishment of many areas however it is not expected that there will be a further development in the near future that will create further energy demand.

The data for the CO_2 emissions and costs associated with the BAU scenario is presented in the following table:

Year in Project	Base Year	1	2	3	4	5
Year	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
BAU – Carbon ($kgCO_2$)	**689,044**	**693,867**	**698,724**	**703,616**	**708,541**	**713,501**
BAU – Cost	**£150,171**	**£153,501**	**£156,909**	**£160,398**	**£163,968**	**£167,623**

Table 3: BAU Projections of emissions & cost

With the BAU scenario, by 2015, Central's carbon footprint will be 714 tCO_2 and cost £168k. Therefore in year 5 the annual CO_2 emissions will have increased by 24 tonnes (3.5% compared to the base year). This will be reflected by a £18k increase in utility costs (12% compared to the base year).

Reduced Emissions Scenario

The second projection is the Reduced Emissions Scenario (RES). This examines the impact that carbon management and the implementation of energy efficient measures could have on the School's energy consumption and associated costs, assuming that the target is achieved purely through a reduction in energy consumption. This is modelled on achieving the 25% reduction target in Year 5 of the project.

The data for the CO_2 emissions and costs associated with the RES is presented in the following table:

Year in Project	Base Year	1	2	3	4	5
Year	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
RES – Carbon ($kgCO_2$)	**689,044**	**650,557**	**614,220**	**579,913**	**547,522**	**516,940**
RES - Cost	**£150,171**	**£143,920**	**£137,933**	**£132,198**	**£126,706**	**£121,445**

Table 4: RES Projections of emissions & cost

Under the RES, by 2015, Central's carbon footprint will be 517 tCO_2 and cost £121k. Therefore in year 5 the annual CO_2 emissions will have decreased by 172 tonnes (25% compared to the base year). This improvement will be enhanced by a £29k decrease in utility costs (19% compared to the base year).

Value at Stake

The third projection shown in this section is the Value at Stake (VAS). This is the total 5 year cost difference, both in terms of carbon and financial costs, between continuing BAU and the RES. This is therefore the potential value to the School to be gained through adopting and implementing a carbon management plan. This information is summarised in the following table:

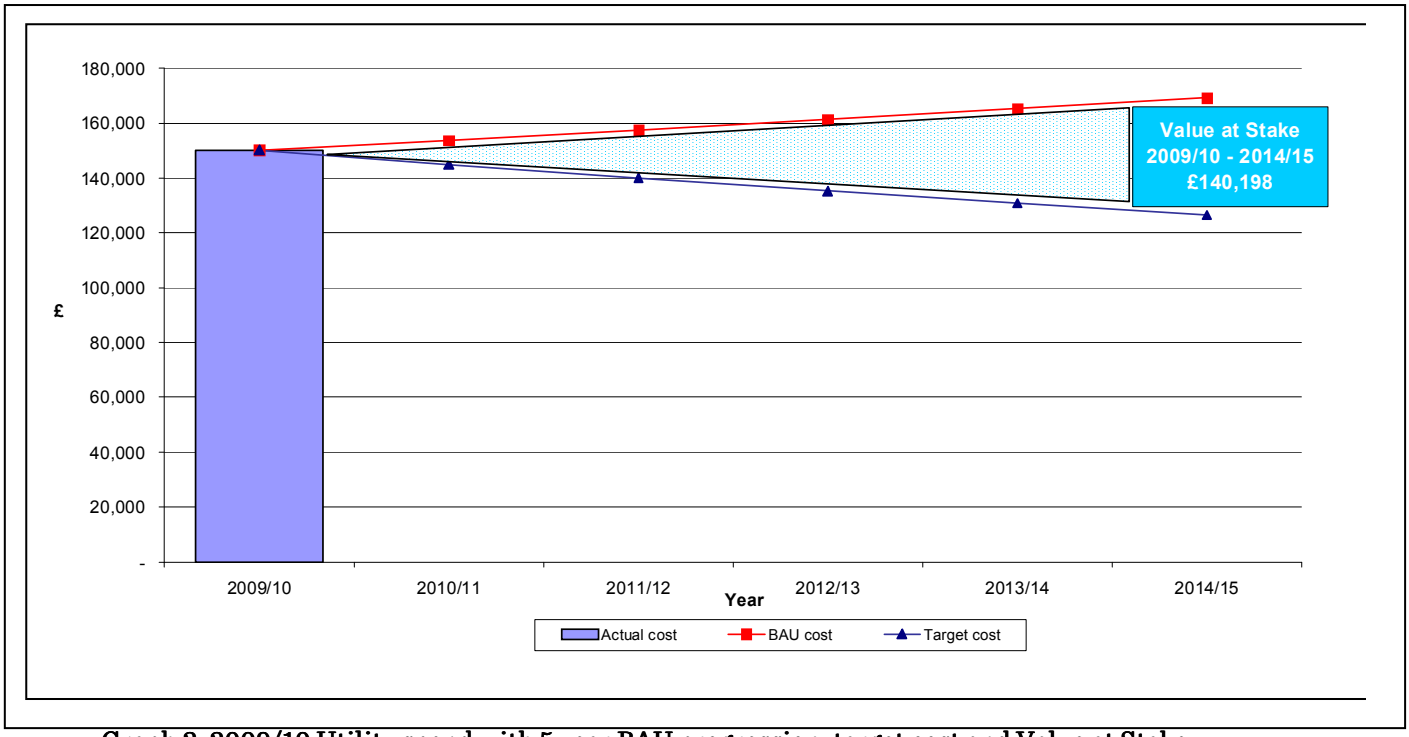
Year in Project	Base Year	1	2	3	4	5
Year	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Carbon difference between BAU and RES	-	**43,310**	**84,504**	**123,703**	**161,019**	**196,561**
Cost difference between BAU and RES	-	**£9,581**	**£18,977**	**£28,200**	**£37,262**	**£46,178**
Cumulative Carbon VAS	-	**43,310**	**127,814**	**251,517**	**412,535**	**609,096**
Cumulative Cost VAS	-	**£9,581**	**£28,558**	**£56,757**	**£94,020**	**£140,198**

Table 5: VAS Projections of emissions & cost

It is in analysing the carbon and financial VAS by 2015 where the real incentive for carbon reduction is found.

The total Cumulative Value at Stake over the next 5 years is calculated at 609 tCO_2 and £140k.

The following graph shows all of the above information encompassing all three projections that form the basis of this report.



Graph 2: 2009/10 Utility spend with 5 year BAU progression, target cost and Value at Stake

This illustrates the business case and clear financial benefits that are available to the School from supporting and implementing a robust carbon management programme.

4 Carbon Management Projects

4.1 Completed projects

Ref	Project	Lead	Cost		Annual Saving		Life	Pay back	Net Present Cost	% of Target*	Year
			Cap'l	Oper'al	Fin	tCO_2					
1	Studio 1 Lighting	Director of Finance & Estates	£19,000		£348	1.8	12.5	Does not payback	£15,639	1.04	2010
2	Studio 1 Windows	Director of Finance & Estates	£6,933		£52	0.3	25	Does not payback	£6,074	0.15	2010
3	Wardrobe Relighting	Director of Finance & Estates	£29,074		£432	2.2	12.5	Does not payback	£24,900	1.30	2010
Totals			**£55,007**		**£832**	**4.3**			**£46,613**	**2.49**	**n/a**

Table 6: Existing Carbon Management Projects

* The % of target column is being used as a percentage of Central's target reduction of 25% by 2015. E.g. Project 1 will save 1.8 tCO_2 and Central's target is to save 25% of a 689 tCO_2 baseline (173 tCO_2), so this project achieves 1.04% if the target.

These projects were all completed in August 2010 and had a specific brief of improving the working and teaching environment of these spaces as well as being essential compliance works to bring the electrical condition of the Studio 1 building up to current standards.

As with all projects in the Estate, they also had an aim to improve energy efficiency and reduce the carbon emissions of the area. In these 3 projects inefficient light fittings were replaced with efficient T5 tubes on sensors and single pane windows with rotten wooden frames were replaced with double glazed PVC panels. The Studio 1 building was the trial for new efficient fluorescent tube lights in dressing rooms to replace the traditional round the mirror individual bulbs. These have been well received by the student users of the space and will be implemented in the larger dressing rooms around the School as documented in section 4.2 below.

The assumptions that have been made on these projects are:

- Project 1 – a 15% annual saving on the electricity bill of the Studio 1 building.
- Project 2 – a 5% saving on the gas bill for the Studio 1 building.
- Project 3 – the old luminaire load of the area before refurbishment was 4516W, whereas the new lighting load is 2769W. The savings on this scheme have been calculated using the assumption that the lights are running 9 hours a day, 5 days a week, 45 weeks a year with an additional 10% saving on the new lights as they are fitted with motion sensors.

4.2 Planned / funded projects

Ref	Project	Lead	Cost		Annual Saving		Life	Pay back	NPC	% of Target	Year
			Cap'l	Oper'l	Fin	tCO_2					
4	Optimising & resetting boiler controls – Main Building	Estates Manager	£5,000		£2,264	11.6	5	2.2	-£5,220	6.72	2010
5	Optimising & resetting boiler controls – East Block	Estates Manager	£2,000		£288	1.5	5	Does not payback	£699	0.86	2010
6	Optimising & resetting boiler controls – West Block	Estates Manager	£2,000		£1,094	5.6	5	1.8	-£2,944	3.25	2010
7	Optimising & resetting boiler controls – Studio 1	Estates Manager	£500		£104	0.5	5	4.8	£29	0.31	2010
8	Awareness campaign	Head of HR	£5,000	£1,000	£4,720	24.4	5	1.3	-£11,796	14.16	2010
9	Removal of ancillary appliances	Assistant to DoF	£0		£944	4.9	5	0.0	-£4,262	2.83	2010
Totals			**£14,500**	**£1,000**	**£9,414**	**48.5**	**n/a**	**n/a**	**-£23,494**	**28.13**	**n/a**

Table 7: Planned Carbon Management Projects

The full project plans for these projects, the Near term projects (section 4.3) and the Long term projects (4.4) are attached at the end of this report in the Appendix.

Projects 4-7 all concern the optimising of boiler controls in the 5 boiler rooms in the Central estate. It is a concern of our Estates department that they do not know if the boilers are running as efficiently as the unit allows and how this can be achieved by altering the controls. Projects to replace the older boiler units will be considered amongst the longer term projects but it is first important to ensure the equipment that is in place is running as efficiently as possible. The projects have been given a lifetime of only 5 years as these units will be replaced and it is also unreasonable to expect control settings not to be changed after a period. A 10% gas saving on each boiler area's consumption has been assumed for optimising each set of controls.

Project 8 has assumed a 5% saving on electricity of the site through an awareness campaign. Gas consumption will not be affected but it is the behavioural change in terms of electricity saving that will be achieved through greater awareness to switch lights off when vacating an area and shutting down computers at the end of the day. This project has only a 5 year lifetime as it will need to be refreshed as a project consistently to ensure its effects are maintained. This refresher element has been given a cost of £1,000 per annum to keep the awareness campaign running effectively. The awareness campaign will include elements such as email communications, carbon saving top tips published to the School and screenings of climate change awareness movies. The Students Union will take a strong lead in promoting carbon saving awareness to the student body. This is a key project to embed carbon awareness throughout Central.

Project 9 is a project to tackle the growing number of ancillary appliances that have become a culture in offices at Central. High energy consuming fan heaters, fridges, kettles, radios and other

appliances have become common place. Once the heating systems have been optimised to bring heating of all areas of the buildings to the required levels, fan heaters will be removed from offices and there will be a directive that other appliances are no longer allowed in each individual office.

Fan heaters are of particular concern as they tend to be around 2.5kW appliances that can be run all through the day in many offices through the colder months. One appliance running all day therefore has the same consumption as the entire wardrobe area project specified in section 4.1. The continued use of these appliances has a significant detrimental effect on the positive improvements gained from other projects. It is estimated this project will save 1% on the annual electricity bill but the knock on effects in terms of culture both at Central and in the community could be vastly more significant.

4.3 Near term projects

Ref	Project	Lead	Cost		Annual Saving		Life	Pay back	NPV	% of Target	Year
			Cap'l	Oper'al	Fin	tCO_2					
10	Main Building reception and lobby lighting replacement	Estates Manager	£0		£961	5.0	12.5	0.0	-£9,289	2.88	2011
11	Server load reduction through virtualisation	Head of IT Services	£8,400		£1,773	9.2	10	4.7	-£6,343	5.32	2011
12	Embassy Extension dressing room lighting	Assistant to DoF	£3,000		£713	3.7	12.5	4.2	-£3,893	2.14	2011
13	IT switch off programme	Head of IT Services	£0		£2,103	10.9	10	0.0	-£17,488	6.31	2011
14	Boiler rooms insulation	Estates Manager	£3,400		£1,054	5.4	20	3.2	-£11,582	3.13	2011
15	Main Building boiler room variable speed drives	Estates Manager	£1,900		£125	0.6	20	15.2	£121	0.37	2011
16	Install enhanced lighting controls	Assistant to DoF	£14,000		£2,222	11.5	12.5	6.3	-£7,472	6.67	2011
Totals			**£30,700**	**n/a**	**£8,951**	**46.3**	**n/a**	**n/a**	**-£55,946**	**26.82**	**n/a**

Table 8: Near Term Carbon Management Projects

Projects 10 and 12-16 have all been identified by a Carbon Trust funded survey that took place in January 2011. These projects are all similar in the respect that they are improving the efficiency of existing installations rather than requiring entirely new structures or systems. The focus of these projects is limiting the waste from excessive and constant lighting, switching off unused computers and providing more efficient, better insulated boiler systems. The funding for these projects is relatively low with short payback times and high carbon rewards.

An iconic project for Central as a drama university is project 12 to replace the traditional individual bulbs around the mirrors in dressing rooms. Efficient fluorescent tubes have already been trialled in the 2 dressing rooms of the Studio 1 building and been well received by users of the

space. This project will install these fittings into the 4 dressing rooms in the Embassy Extension building.

Dressing room lighting to be replaced

New lighting trialled in Studio 1

Project 11 is assuming a 40% reduction on the electricity consumption of the servers and has the potential to be a great success project with low costs and high returns. It also has further knock on effects that fewer servers will mean less demand on the cooling plant in the server room, which will also reduce energy consumption.

4.4 Long term projects

Ref	Project	Lead	Cost		Annual Saving		Life	Pay back	NPV	% of Target	Year
			Cap'l	Oper'al	Fin	tCO_2					
17	Photovoltaic – West Block Roof	Estates Manager	£60,000	-£4,500	£1,518	7.8	25	10	-£39,182	4.55	2011
18	Replacement of old boiler plant – Main Building	Estates Manager	£43,000		£1,985	10.1	25	21.7	£10,279	5.89	2012
19	Local Space Heating	Estates Manager	£7,000		£4,180	21.4	10	1.7	-£27,760	12.41	2012
Totals			**£110,000**	**-£4,500**	**£7,683**	**39.3**	**n/a**	**n/a**	**-£56,663**	**22.85**	**n/a**

Table 9: Long Term Carbon Management Projects

These projects are very much aspirational projects at present with quotes and specifications to follow from suppliers and clear implementation plans and project teams to be assigned once these have been collected.

What has been assumed for Project 17 is that of the roof area on the West Block, 40% of the 135 metre squared area is a usable space for panels. This would allow for a 17kW peak system to be installed and a Feed in Tariff (FIT) payment of 31.4p per kWh to be paid for feeding energy into the grid. This FIT payment level is only guaranteed if the project is completed by April 2012 but if it is this will be the payment for the life of the project, it is not variable or market dependent. This therefore provides a project that not only delivers strong carbon savings but also a potential for income generation as well.

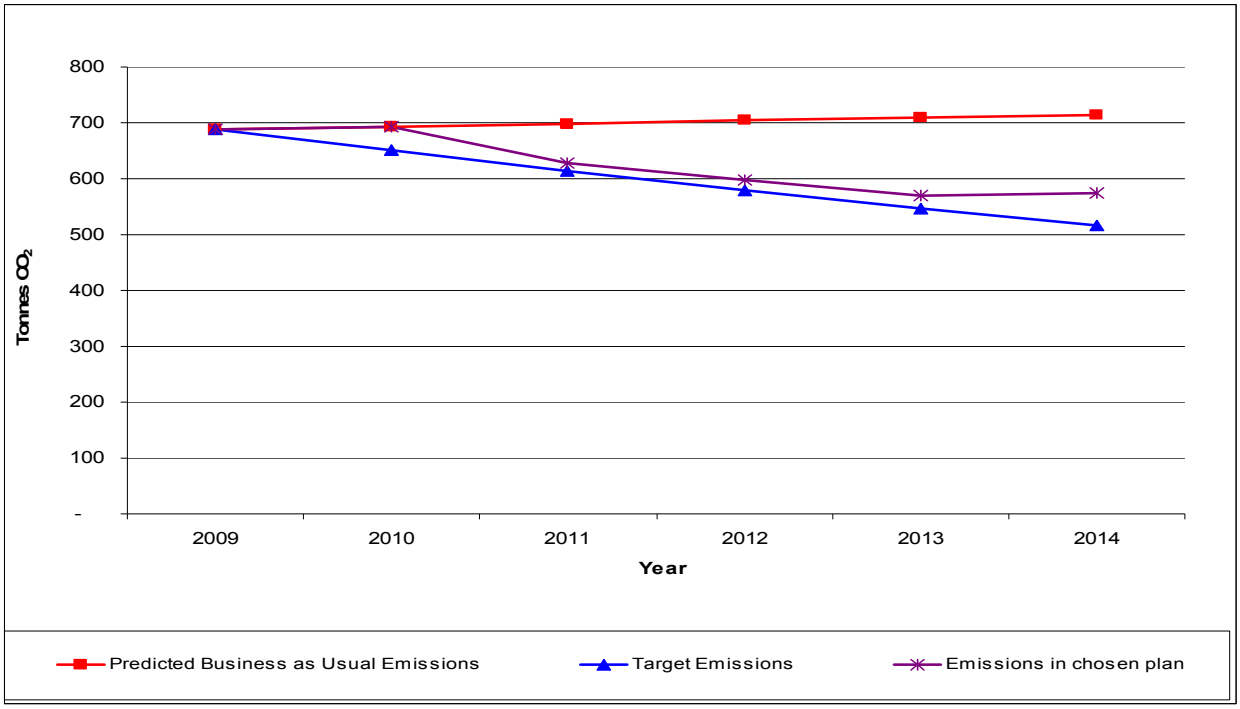
Project 18 is a project to replace the two boilers in the Main Building boiler room. The boilers are 25 years old and it is believed significant carbon and cost savings can be achieved by replacing these high demand units. They are currently operating at an average of 70-80% efficiency whereas a new system would improve upon this by approximately 15%. Given that these units are nearing the end of their operational life and require increasing levels of maintenance there is a good opportunity to make an investment to benefit Central for a long period.

Project 19 was identified in the carbon survey through discussions between the surveyor and the Estates department. There are often activities at Central in one or two key areas at evenings and weekends but because of the heating network the main plant has to be running to heat these areas meaning vast areas of the campus are heated when they are unoccupied. Setting an evening and weekend mode on the boiler systems rather than running to one time schedule would significantly reduce the amount of energy consumed by the plant. To ensure that the occupants of individual rooms are kept comfortable local heating can be installed at point of use in these spaces. This will then mean that evening and weekend activities will be booked into these spaces as a priority and when the site is largely occupied the main plant can be left on to feed demand.

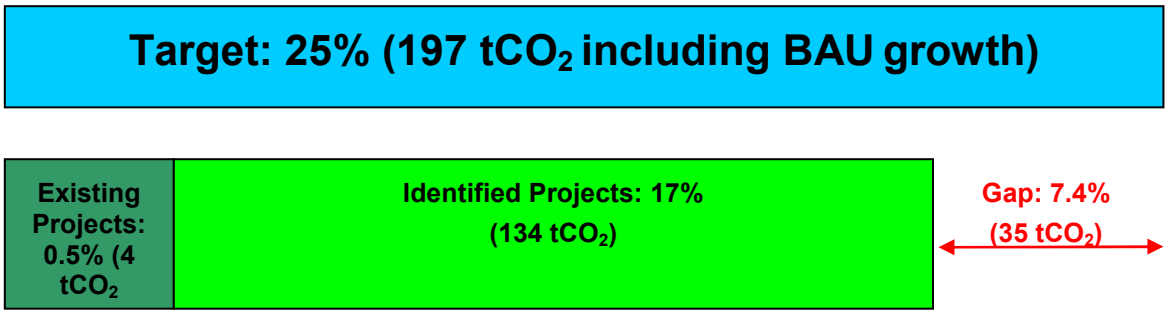
4.5 Projected achievement towards target

Shown below is a graph and chart showing Central's progress towards our target. As is shown, the projects that have been identified in the first year bring us almost to our target in the first 3 years of the project. However, over the course of the rest of the plan the target emissions move further from

the predicted emissions. It will therefore be essential to identify further projects over the next 3 years to fill this gap and achieve the progression to meet the 25% target.



Graph 3: Projected achievement towards 2014/15 reduction target



We have so far identified 19 projects that should deliver a 17% reduction in Central's carbon emissions by 2015 towards our target of 25%, taking into account the projected business as usual emission growth. This would achieve a carbon saving of 138 tCO_2 per year and an annual saving of £26,880 once all the projects have been implemented. To achieve our target fully, further projects will be identified and implemented over the course of the next 5 years. It is also likely that the existing projects will be developed further to achieve greater savings and the most successful projects will be expanded into other areas of the estate.

There are many projects that have been considered throughout this programme but which are not currently at the stage of quantification. These include but are not limited to:

- Review of procurement policy to ensure efficiency of products and services with an aim to creating a consortium of nearby similar organisations to take advantage of shared procurement benefits.

- Investment into sub-metering and automatic meter reading equipment to provide greater resolution of energy management on an individual building basis.
- Use of software tools to track and monitor energy data.
- Rationalising printer equipment on site and printer use.
- Procuring a thermo-graphic survey of the estate to highlight areas of energy loss to investigate greater levels of insulation.

To be able to establish energy consumption baseline for each building would then allow for the norm energy consumption to be calculated. This could be tracked once all the controls have been optimised to ensure that efficiency is being maintained and to highlight any anomalies of consumption, for instance if a building is consuming high levels of energy at a time when it is unoccupied. By pursuing and implementing these processes Central will be able to improve its efficiency of operations further and achieve greater reductions in energy consumption.

A deadline has been set to achieve the current "Gap" of 7% in our reduction target by July 2012.

5 Implementation

5.1 Financing

Central completed its Capital Investment Framework (CIF2) submission to HEFCE in October 2010. This document encapsulated the current status and future aspirations of the functional suitability, space efficiency, affordability, institutional sustainability and environmental performance of the institution. The funding that Central will receive from the funding council has yet to be confirmed. Despite the uncertainty of the current financial climate and its effects on the future planning of all higher education institutions, Central remains committed to funding the carbon saving initiatives set out in this plan. Where external funding is unavailable or insufficient to complete these projects, they shall be funded out of recurrent resources as part of our Estates Strategy.

Benefits / savings – quantified and un-quantified

	2009	2010	2011	2012	2013	2014
Annual cost saving	**£0**	**£0**	**£13,694**	**£20,715**	**£26,880**	**£26,880**
Annual CO_2 saving	**0.00**	**0.00**	**70.50**	**106.69**	**138.19**	**138.19**
% of target achieved	**0%**	**0%**	**41%**	**62%**	**80%**	**80%**

Table 10: Benefits / Savings of quantified and un-quantified projects

Unquantified benefits

There are considerable benefits of this plan beyond the main theme of reducing costs, energy consumption and therefore carbon emissions. This plan plays a key role in ensuring Central is compliant with the CIF2. This submission to HEFCE justifies Central's continued receipt of capital funding. A key requierment of this latest submission is to put in place a full, robust and publicly available carbon management plan. The capital funding is essential for Central to continue to provide high quality courses in facilities that are fit for purpose.

Central is a high profile institution nationally and locally and wants to maintain a respected reputation in all quarters. It is hoped that by putting in place this plan and showing a strong commitment to carbon reduction Central will improve it's reputation further and be more attractive to prospective students who rightly have an increasing awareness of the need to tackle carbon emissions.

Financial costs and sources of funding

	2010/11	2011/12	2012/13	2013/14	2014/15
Annual costs:					
Total annual capital cost	**£77,907**	**£82,300**	**£50,000**	**£0**	**£0**
Total annual revenue cost	**£0**	**£1,000**	**-£3,500**	**-£3,500**	**-£3,500**
Total costs	**£77,907**	**£83,300**	**£46,500**	**-£3,500**	**-£3,500**
Committed funding:					
Committed annual capital	**£55,007**	**£45,200**	**£0**	**£0**	**£0**
Committed annual revenue	**£0**	**£1,000**	**£0**	**£0**	**£0**
Total funded	**£55,007**	**£46,200**	**£0**	**£0**	**£0**
Unallocated funding					
Unallocated annual capital	**£22,900**	**£37,100**	**£50,000**	**£0**	**£0**
Unallocated annual revenue	**£0**	**£0**	**-£3,500**	**-£3,500**	**-£3,500**
Total unfunded	**£22,900**	**£37,100**	**£46,500**	**-£3,500**	**-£3,500**

Table 11: Summary of financial costs and allocated funding

The table above highlights the financial costs and funding that has been allocated to implement the projects identified in this plan. The completed projects have already been funded and this equates to the £55,007 committed annual capital for 2010/11.

All the Planned/funded and Near Term projects have been allocated funding from the annual departmental budgets of Estates, IT Services and HR who will drive the projects identified as documented in the appendix.

The Long term projects have not had funding allocated as these are projects that require a significant capital spend. These 3 projects have a total capital cost of £110,000 and are the reason for the unfunded figures for years 2011/12 and 2012/13.

For these longer term projects, there is a commitment to fund these from either the HEFCE Capital Investment Framework 2 (CIF2) allocation or from recurrent funds. Central, in common with all higher education institutions, is awaiting specific news regarding future funding to the sector. All areas of public spending are subject to review. Central has been advised that its submission under CIF2 has been successful but the details on the level of allocation that will be awarded under this scheme have yet to be announced. Central will also seek to take advantage of any scheme that advances the capital cost of projects against future savings arising from project implementation. Details of the exact funding sources (CIF2 or internal) for these longer term projects will be confirmed when HEFCE allocations are known.

The long term projects will need to have robust project plans developed allowing a clear business case for them to be constructed. They will then be passed to the Finance & Employment Committee for authorisation if Central's own funds are to be used or submitted to an external source for approval and funding.

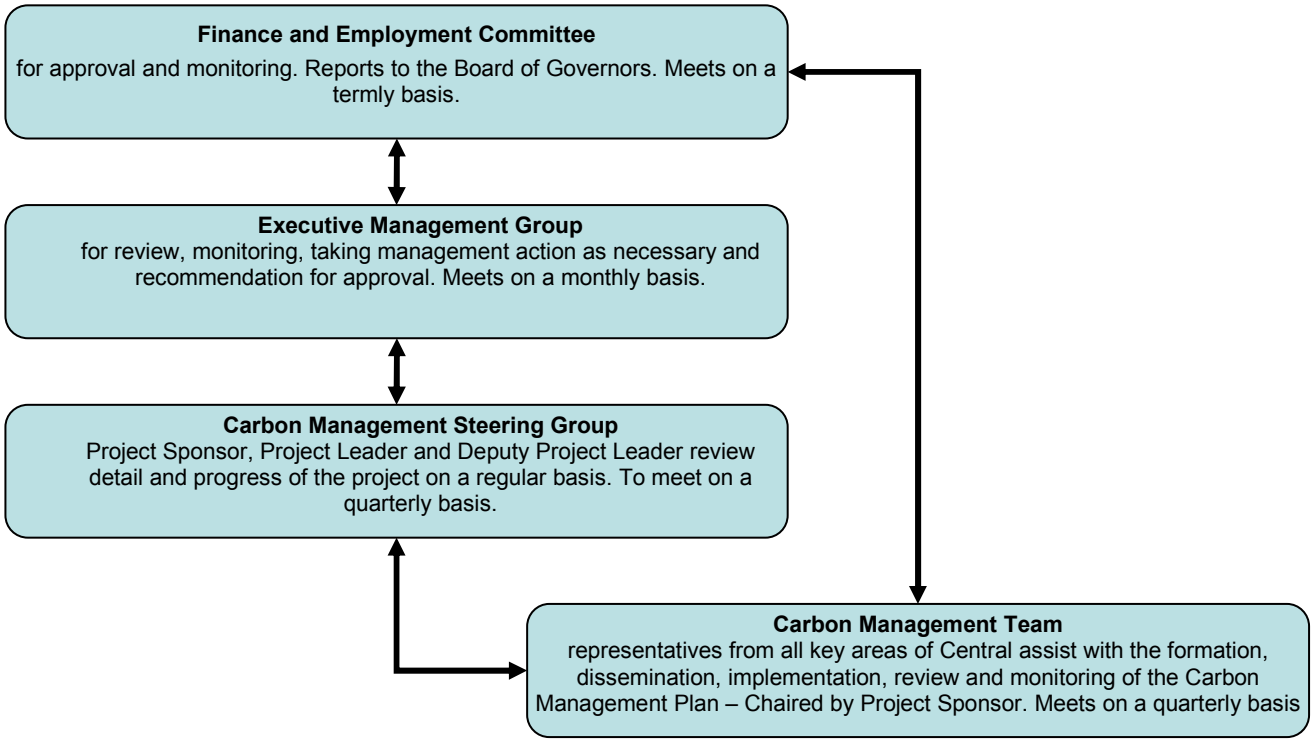
5.2 Governance for Implementation

Embedding Carbon Management

We are committed to embedding good practice and consideration of carbon emissions at an individual level throughout our organisation. As part of this programme, and to raise awareness and involvement amongst our community, an electronic carbon ideas box has been established. This is a system whereby staff and students can leave email ideas of carbon reducing projects that could be run at Central. These can be viewed by all members of the Carbon Management Team and are discussed at the team meetings to determine whether they can be implemented and the most effective way for this to be done.

Central is a small, tight knit community where everyone interacts in close proximity. Staff at all levels of seniority interact with the student body in shared spaces that give everyone the same sense of inclusion in the institution. The tools that will be used to embed good practice and awareness in carbon reduction will be through regular communications via email, publications on the School's website, through reporting to the School on an annual basis on the progress towards the targets as well as upon the completion of energy saving projects.

The governance structure whereby Central will work towards achieving the targets of this plan is set out in the flow chart below:



Data Management – measuring the difference, measuring the benefit

In the Carbon Embedding Matrix at the start of this plan it was highlighted that Central is currently at level 3 where there is "Collation of CO_2 emissions for limited scope i.e. buildings only". The aspiration is to achieve a level 4 with an "Annual collation of CO_2 emissions for buildings, transport and waste and for this data to be internally reviewed." This plan has only dealt with the energy related emissions (Scope 1 and 2 emissions) from buildings but in future there will be a collation of the levels of waste at Central and to target reduction projects in this area. As has previously been mentioned in this plan Central is in a unique situation where it has no vehicle fleet and none of its staff or students travel by private vehicle to site. However with the increasing need to recruit students, network fundraising opportunities and promote the institution from overseas there is likely to be an increase in the amount of staff travel on work related trips. It is therefore important this information is also collected, analysed and where possible the carbon emissions kept to a minimum.

The software tools provided by involvement in this programme will continue to play a key role in collating the current data and tracking the progress that is being made.

This collection of data can be used to monitor existing carbon saving projects and target future projects in areas where a reduction can be achieved. On an annual basis the collated information will be disseminated to all staff and students to raise their awareness of where the energy is being consumed at Central.

5.3 Resource commitment

Implementing the Initiatives

The ability of all higher education Institutions to commit resources to projects is uncertain at this time whilst we await the announcement of future funding methodologies and capital funding from HEFCE. Central's CIF2 application had a strong focus on achieving carbon savings. Despite the uncertain financial future the Board of Governors is committed to sustainability and will allocate appropriate budgets for the Estate plans in accordance with this.

The risk is that in the current economic climate the CIF2 funding will not be forthcoming or significantly limited, which may have an impact on the pace of implementation of the projects; particularly those with a higher capital spend.

Maintaining quality over time

To ensure that Central continues to work towards and achieve the targets that have been set there will be a constant series of reviews and evaluations of progress. This will be done through the structures indicated by the graphic above, which will embed carbon management responsibility throughout the School ensuring it is a matter that everyone is involved in.

The Carbon Management Group and Steering Group will review the progress of projects at quarterly meetings focussing on achievement to date, costs, carbon savings and next steps of the project. Projects from this plan will be assessed on a RAG (Red, Amber, Green) scale to highlight their progress. Projects status will also be reported to the Finance & Employment Committee on a termly basis in a summary report of totals achieved to date, ongoing projects and steps ahead. Where further funding requests are needed they will also be sent to this committee for approval.

The Carbon Management Team – delivering the projects

The responsibility for leading on projects has been specified in section 4. For each project a project team will be appointed taking into account the lead department so it is not one individual working on a project. It is also likely that the projects will be clustered together to be delivered by these project teams as they are in key core areas of the School.

Succession planning for key roles

Central has longer notice periods for staff relative to many other institutions. Notice periods are a minimum of 2 months and for senior staff it can be significantly longer. Therefore in the event that an individual in a key role in this programme is replaced there is sufficient time to identify the best replacement and for the outgoing member of staff to train the incoming individual during an induction period for their role. At a senior level an interim manager can be found to take on the responsibilities as necessary.

Furthermore, the School's progress through this process is not dependent on one person, it is embedded as a responsibility for all and the required knowledge to run the projects is within all layers of the organisation's structure.

5.4 Implementation Plan

The implementation of this Carbon Management Plan has already begun. Projects have been identified and some have already been completed. Achieving carbon savings through refurbishment works, optimising current equipment and rationalising current processes is now at the fore of the School's activities.

There are further projects to be identified and assigned to the correct departments. There is then a process of tendering for and executing of projects. These will then be monitored and reviewed closely through the working mechanisms of the School. The Carbon Steering Group will remain in place to act as the driver for all works.

The progress of carbon reduction and future targets will be at the fore of the Corporate Plan each year and will be presented to the Board as an audit of current status and progress towards targets.

Appendix: Definition of Projects

Project: **Reference:**	**Optimising boiler controls** CSSD – 4-7
Owner	Tony O'Dowd (Estates Manager)
Department	Estates
Description	It is a concern of the Estates department that they are unsure whether the boilers are running as efficiently as the unit allows and how to achieve this by altering the controls. By bringing in outside expertise to set the controls appropriately the boilers will be optimised for the remainder of their years of operation. A 10% gas saving per boiler area consumption has been assumed for optimising each set of controls.
Benefits	• Energy savings: 104,178 kWh • Financial savings: £3,750 • Payback period: 3 years average • CO_2 Emissions reduction: 19.2 tonnes of CO_2 • 11.14 % of target
Funding	• Project cost estimated at £9,500 (MB - £5,000, EB - £2,000, WB £2,000, S1 - £500) • Operational costs at zero but lifetime only set as 5 years as some boilers are due to be replaced within 5 years and it is unlikely that controls will be able to be maintained for longer than that without alteration. • Source of funding: the maintenance budget
Resources	• Current resources used to obtain quotes and develop project plan.
Ensuring Success	• Allocating sufficient time and resources to optimise the controls systematically and fully. • Principal risks: insufficient time, funding or expertise to set the controls fully.
Measuring Success	• Audit of controls at monthly intervals after setting to ensure they are at the allocated levels.
Timing	• start date: 15/03/2011- to start sourcing suppliers with expertise to implement optimisation package. • completion date (when it will deliver savings): 01/09/2011 – to be in place for the autumn term 2011.
Notes	Carbon Trust guidance on quantification of project costs and likely savings.

Project: **Reference:**	**Awareness Campaign** CSSD - 8
Owner	Carbon Management Team (CMT) with Heather Francis as lead (Head of HR)
Department	HR
Description	Raising the awareness of Central's involvement in this programme and the impact and responsibilities of each individual on total energy consumption is a key project to achieving success through this process. The awareness campaign has already included: • Launching Central's involvement in the programme to the School • Raising awareness at Staff Training Day in Oct 2010 with a presentation • Launching a carbon ideas email address to offer all the chance to provide savings ideas • Arranging screenings of Climate Change movies for staff and students • Adding carbon saving to all course committees to discuss these matters in the student body Items to follow: • Publishing a "Top Tips" document on energy saving techniques • Setting a School wide screensaver and desktop of the Top Tips • Installing energy advice notices in key areas and stickers by light switches
Benefits	• Energy savings: 44,782 kWh • Financial savings: £4,720 • Payback period: 1.3 years • CO_2 Emissions reduction: 24.4 tonnes of CO_2 • 14.16% of target
Funding	• Project cost estimated at £5,000 • Operational costs estimated at £1,000 • Source of funding: internal and various budgets dependent on activity.
Resources	• Staff and students within the CMT are responsible for raising awareness ideas and implementing projects to achieve savings.
Ensuring Success	• Enthusiasm from the CMT in creating and developing projects and packages to raise awareness. • Principal risks: apathy from the CMT and community in their responsibilities on carbon saving.
Measuring Success	• Audit of committees and staff and student activities to see the mindset and actions of each group will see whether the awareness campaign is having an effect.
Timing	• start date: June 2010 • completion date (when it will deliver savings): Already delivering savings, project will continue indefinitely to improve savings further. • interim deliverable / decision points
Notes	Carbon Trust guidance on quantification of project costs and likely savings.

Project: **Reference:**	**Removal of ancillary appliances** CSSD - 9
Owner	Robert MacDonald (Assistant to the Director of Finance & Estates)
Department	Central Services
Description	In recent years there has been a growing prevalence of high energy consuming fridges, kettles, radios and especially fan heaters. This is a heavy consumer of energy at Central. For instance one typical office fan heater consumes the same amount of energy per hour as the entirety of the new lighting system that has been installed in the wardrobe area in the completed projects section Once the heating has been optimised there will be a request for all fan heaters to be removed from offices and a communication send out of the new policy.
Benefits	• Energy savings: 8,956 kWh • Financial savings: £944 • Payback period: 0 years • CO_2 Emissions reduction: 4.9 tonnes of CO_2 • 2.83% of target
Funding	• Project cost as zero as the project involves no new equipment or purchases. • Operational costs as zero. • Source of funding: no funding required
Resources	• Communications and actions will be provided by current staff and mostly the maintenance team.
Ensuring Success	• Spot checks, buy in from all staff as to their responsibilities. • Principal risks: lack of buy in from staff, apathy from staff, infrastructure heating systems not optimised and providing sufficient service to negate the need for ancillary equipment.
Measuring Success	• Spot checks revealing lack of heaters and fans in office spaces.
Timing	• start date: TBC once boilers have been optimised and shown to be providing sufficient heating. • completion date (when it will deliver savings): TBC
Notes	Carbon Trust guidance on quantification of project costs and likely savings.

Project: **Reference:**	**Reception & Lobby Lighting Replacement** CSSD - 10
Owner	Tony O' Dowd (Estates Manager)
Department	Estates
Description	The main building reception area and the lobby adjacent to it is illuminated by a combination of chandelier mounted incandescent lamps (40W units) and ceiling recessed halogen spot lights (50W units). These lamps are inefficient and will be replaced as they fail by more energy efficient alternatives. In most cases the chandelier lamps can be replaced directly by a compact fluorescent alternative (7W units) providing a saving of over 80%. The existing spot lamps can be directly replaced by 30W units which should not result in any reduction in performance.
Benefits	• Energy Savings: 9,120 kWh • Financial savings: £961 • Payback period: 0 years • CO_2 Emissions reduction: 5.0 tonnes of CO_2 • 2.88% of target
Funding	• Project cost = zero cost, lamps can be replaced on failure. • Operational costs of replacement bulbs will be funded from the routine maintenance budget.
Resources	• This project will be delivered using current resources. • The maintenance team will purchase new lamps after investigation to identify value for money and implement this opportunity immediately.
Ensuring Success	• Engagement with the Estates team and commitment to complete the project. • Principal risks: Estates team replacing bulbs on failure with traditional stock.
Measuring Success	• Bulbs are replaced with new stock until all lighting in the area is the new efficient bulbs.
Timing	• start date: 15/03/2011 • completion date (when it will deliver savings): unconfirmed due to replacement on failure.
Notes	Source of quantification – Carbon Trust Survey by Environ UK Ltd conducted January 2011.

Project: **Reference:**	**Server Virtualisation** CSSD - 11
Owner	Binta Adesida (Head of IT Services)
Department	IT Services
Description	A current IT project to virtualise the servers at Central to reduce the energy consumption. The IT department has spent significant time collecting data of all the IT equipment on site, its use and consumption and are looking for further opportunities to make all equipment more efficiently used.
Benefits	• Energy savings: 16,819 kWh • Financial savings: £1,773 • Payback period: 4.7 years • CO_2 Emissions reduction: 9.2 tonnes of CO_2 • 5.32% of target
Funding	• Project cost estimated at £8,400. • Operational costs as zero. • Source of funding: through the IT equipment annual budget
Resources	• Communications and actions will be provided by current staff and mostly the IT department.
Ensuring Success	• Spot checks, buy in from all staff as to their responsibilities. • Principal risks: lack of progress with project or suitability for our needs, costs higher than anticipated and insufficient budget stalls the process.
Measuring Success	• The full virtualisation of Central servers.
Timing	• start date: already begun, ongoing project. • completion date (when it will deliver savings): TBC
Notes	Carbon Trust guidance on quantification of project costs and likely savings.

Project: **Reference:**	**Embassy Extension Dressing Room Lighting** CSSD - 12
Owner	Robert MacDonald (Assistant to the Director of Finance)
Department	Central Services
Description	The dressing room mirrors are currently illuminated by GLS tungsten lamps. In total there are 75 of these 40W units operating for long periods each day. These lamps are inefficient and will be replaced. These lights will be replaced with the fluorescent tubes trialled successfully in the Studio 1 dressing room project (CSSD – 01). These will require new fittings but will provide 80% savings in the area and also remove the health and safety hazard of burns or fires caused by the bare lamps.
Benefits	• Energy savings: 6,768 kWh • Financial savings: £713 • Payback period: 4.2 years • CO_2 Emissions reduction: 3.7 tonnes of CO_2 • 2.14% of target
Funding	• Project cost estimated at £3,000 to replace fittings and install new lamps. • Zero Operational costs • Project will be funded from the Central Services New Building Work Budget • Deputy Principal (Corporate) will make the decision on funding when sufficient quotes have been collected and approved for the work. Likely the work will take place in the summer of 2011 once the term has finished.
Resources	• Time resource needed from current employees to source and meet contractors to obtain quotes for the project.
Ensuring Success	• Efficiency in sourcing quotes and booking the spaces for maintenance work. • Principal risks: cost of project is greater than anticipated and funding is insufficient.
Measuring Success	• New lighting in place for the start of the autumn term 2011.
Timing	• start date: 15/03/2011 to source quotes with work start date estimated at 1/08/2011. • completion date estimated at 01/09/2011
Notes	Source of quantification – Carbon Trust Survey by Environ UK Ltd conducted January 2011.

Project: **Reference:**	**IT Switch Off** CSSD – 13
Owner	Binta Adesida (Head of IT Services)
Department	IT Services
Description	Central has a number of areas in which computers and IT equipment are concentrated. These include; • Library quiet room – 20 PCs plus monitors • Embassy Extension computer room – 17 PCs plus monitors • East Block computer room – 20 PCs plus monitors During the survey it was found that almost all of these units had been left switched on while not being used. These units are effectively switched on 24/7. There is an opportunity to raise awareness amongst students and staff that all PCs and monitors should be switched off when not being used. The heat generated by the equipment also results in excessive operation of the comfort cooling plant in a number of the IT areas. This represents additional waste.
Benefits	• Energy savings: 19,950 kWh • Financial savings: £2,103 • Payback period: 10.9 years • CO_2 Emissions reduction: 10.9 tonnes of CO_2 • 6.31% of target
Funding	• Project has a zero cost • Operational costs are zero but may rise if a software programme is provided to conduct the service opposed to a manual switch off. • Source of funding: IT budget will provide funding for software purchase if applicable. Central Services New Building work budget will provide the funding if changes to the infrastructure of the estate are needed.
Resources	• Time from the IT department and possibly formation of a working group to put this project into operation. Discuss maintenance switch off of equipment on lock up, automatic shutdown, scheduling system uploads etc.
Ensuring Success	• Buy in from the IT department and others to proceed with this project. • Principal risks: lack of willingness to engage with the project.
Measuring Success	• Conducting spot checks at the end of the project to ensure equipment unused is shutdown. • Achieving buy in from the students' union to publicise to students and start a culture of shutdown.
Timing	• start date: 15/03/2011 • completion date (when it will deliver savings): unknown at present but hopeful to see an immediate saving and completion by the summer 2011.
Notes	Source of quantification – Carbon Trust Survey by Environ UK Ltd conducted January 2011.

Project: **Reference:**	**Boiler Room Insulation** CSSD - 14
Owner	Tony O'Dowd (Estates Manager)
Department	Estates
Description	The survey identified relatively extensive areas of hot uninsulated valves, pipes and joints in the plant areas around the site. These elements spend a significant part of the heating season at temperatures of up to 80C, effectively leaking heat from the heating and hot water distribution systems. The following is a guide to the areas requiring insulation; East block boiler room - 7 x 2in joints, 2m x 2in pipe work Embassy exit boiler room - 10 x 2in valves, 4 x 2in joints Main building boiler room - 16 x 4in valves, 25 x 4in joints, 2m x 4in pipe work, 8m x 2in pipe work, 0.5m x 6in pipe work
Benefits	• Energy savings: 29,281 kWh • Financial savings: £1,054 • Payback period: 3.2 years • CO_2 Emissions reduction: 5.4 tonnes of CO_2 • 3.13% of target
Funding	• Project cost is estimated at £3,400 for the equipment and service to insulate these areas. • Operational costs are zero so long as the areas are insulated professionally and with long lasting material. • Source of funding will be the Central Services New Building work budget.
Resources	• Current resources will be used to source the work but external contractors will conduct the work.
Ensuring Success	• The maintenance team will need to arrange the surveys and meetings to obtain the quotes. • Principal risks: there are no risks as long as work is conducted safely.
Measuring Success	• Evidence of project work over the summer 2011 to insulate the identified areas. • New insulation to be in place before the autumn term 2011 and the high boiler demand levels return.
Timing	• start date: 15/03/2011 • completion date (when it will deliver savings): 01/09/2011
Notes	Source of quantification – Carbon Trust Survey by Environ UK Ltd conducted January 2011.

Project: **Reference:**	**Main Building Boiler Room VSD** CSSD – 15
Owner	Tony O'Dowd (Estates Manager)
Department	Estates
Description	The main building heating water pumps are currently fixed speed (2.2 kW primary and three 1.3kW secondary units). A constant volume of water is being circulated around the building irrespective of the demand for heating. The hot water demand will vary according to the space heating requirements at a particular time. However the existing pumps will not be able to adjust to this variation as they are fixed speed. Variable speed drives added to these pumps will enable the flow rate to be reduced, according to demand. This will enable the pumps to operate at speeds to match demand, hence to operate more efficiently and to save energy.
Benefits	• Energy savings: 3,477 kWh • Financial savings: £125 • Payback period: 15.2 years • CO_2 Emissions reduction: 0.6 tonnes of CO_2 • 0.37% of target
Funding	• Project cost is estimated at £1,900 for installation of the new equipment. • Operational costs for annual maintenance will be captured within the current scheduling of maintenance. • Source of funding: the Central Services New Building works budget • This will be approved once sufficient quotations are obtained.
Resources	• The maintenance team will take the responsibility for arranging quotations and scheduling the works from external contactors.
Ensuring Success	• Maintenance taking the time to collect the quotes. • There are no significant risks with this project except increases in predicted spend and therefore a longer payback period.
Measuring Success	• Full installation by the specified completion date.
Timing	• start date: 15/03/2011 to begin to obtain quotes. • completion date (when it will deliver savings): 01/09/2011 to be installed before the autumn term 2011 to meet the increased demand on the boiler system.
Notes	Source of quantification – Carbon Trust Survey by Environ UK Ltd conducted January 2011.

Project: **Reference:**	**Enhanced Lighting Controls** CSSD - 16
Owner	Robert MacDonald (Assistant to the Director of Finance & Estates)
Department	Central Services
Description	Throughout the school there are areas of opportunity for enhanced lighting controls. Due to long opening hours and a tendency to leave lights on occupancy detectors in areas and photocell detectors in areas of high natural light provide a good opportunity for saving. Detectors have been trialled successfully in areas and other areas that would benefit have been identified: • East Block stairwell • Embassy Extension stairwell • Main Building basement by music practice rooms • Toilet areas • Board Room and Staff Room • Rooms A & B • Design Studio • Embassy Extension Corridors • West Block Corridors
Benefits	• Energy savings: 21,082 • Financial savings: £2,222 • Payback period: 6.3 years • CO_2 Emissions reduction: 11.5 tonnes of CO_2 • 6.67% of target
Funding	• Project cost estimated at £14,000 • Operational costs are zero once the equipment is installed. • Source of funding will be the Central Services new building projects budget.
Resources	• Current staff will source external contractors to take on the project work.
Ensuring Success	• Preparation of quotes and planning of when the work can take place as the areas are spread throughout the School. • Principal risks: disruption to School activities during installation need to be carefully managed. Communications of the principles of lighting control need to be communicated to the building users to avoid confusion and irritation.
Measuring Success	• Gradual role out of works throughout summer period 2011 and increased user understanding and confidence in the building set up.
Timing	• start date: 15/03/2011 to start collecting quotes • completion date (when it will deliver savings): 01/09/2011 some areas will be completed with further areas to be completed and likely that other areas will have been identified.
Notes	Source of quantification – Carbon Trust Survey by Environ UK Ltd conducted January 2011.

Project: **Reference:**	**Photovoltaic Installation West Block** CSSD - 17
Owner	Robert MacDonald (Assistant to the Director of Finance & Estates)
Department	Central Services
Description	The West Block is a 5 storey building with direct sunlight falling on the roof throughout the day with no obstructions. The roof space is currently clear, the space was left for an air conditioning unit if required in future but this is not planned. The assumptions made about this project are: • 40% of the 135m2 area could be used for panels. • This would create a 17kW peak system. • Feed in Tariff (FIT) payments of 31.4p guaranteed for the life of the project if installation in place by April 2012.
Benefits	• Financial savings: £1,518 • Payback period: 10 years • CO_2 Emissions reduction: 7.8 tonnes of CO_2 • 4.55 % of target
Funding	• Project cost is estimated at £60,000 • Operational costs are estimated at £4,500. • Source of funding: TBC once the project has been further quantified and costs outlined. Any internal funding would have to be approved at the highest level by the Board due to the size of the outlay. External funding through interest free loans via Green Funds is an avenue to be explored. • A decision on funding will be made once quotations and a project plan are finalised. Likely to take place in the autumn of 2011.
Resources	• Current resources will undertake responsibility for obtaining quotes and project timescales as well as investigating the external funding route.
Ensuring Success	• Dedicating staff time to research the potential for this project. • Principal risks: disruption to School activities, project is more expensive than estimation and funding is unavailable or system does not produce as much energy, the April 2012 deadline is missed.
Measuring Success	• This remains an aspiration as a project and any installation of renewable energy sources at Central would be a significant step forwards.
Timing	• start date: 15/03/2011 to start to prepare a project plan • completion date (when it will deliver savings): 01/04/2012 – to qualify for FIT payments at current levels. A decision on whether to proceed with this project likely in the autumn of 2011.
Notes	Carbon Trust guidance on quantification of project costs and likely savings.

Project: **Reference:**	Replacement of Boiler Plant CSSD - 18
Owner	Tony O'Dowd (Estates Manager)
Department	Estates
Description	The existing 2 De Dietrich (215 kW) boiler units were installed in 1985. These units have been problematic in recent years and are approaching the end of their operational life and will need to be replaced in the next 5 years. This provides an opportunity to install more efficient systems. The typical seasonal efficiencies of these boilers are between 70-80%. A new system would expect to see an increase in efficiency of around 15%.
Benefits	• Energy savings: 55,148 kWh • Financial savings: £1,985 • Payback period: 21.7 years • CO_2 Emissions reduction: 21.4 tonnes of CO_2 • 5.89% of target
Funding	• Project cost is estimated at £43,000 • Operational costs are zero as the maintenance will fit into the existing maintenance schedule., • Source of funding: TBC once the project has been further quantified and costs outlined. Any internal funding would have to be approved at the highest level by the Board due to the size of the outlay. External funding through interest free loans via Green Funds is an avenue to be explored.
Resources	• Current resources will undertake responsibility for obtaining quotes and project timescales as well as investigating the external funding route.
Ensuring Success	• Obtaining quotes to ensure value for money and a high quality service. Developing an appropriate timescale to • Principal risks: disruption to the School's activities or heating supply during installation, project cost is higher than anticipated and funding is unavailable, new boilers do not achieve the estimated savings.
Measuring Success	• Upon installation the boilers being confirmed as more efficient than the old plant and optimised accordingly.
Timing	• start date: TBC, this is a long term project but there is a need to deal with the ageing equipment. • completion date (when it will deliver savings): as above but estimated to be completed in 2013.
Notes	Source of quantification – Carbon Trust Survey by Environ UK Ltd conducted January 2011.

Project: **Reference:**	**Local Space Heating** CSSD - 19
Owner	Tony O'Dowd (Estates Manager)
Department	Estates
Description	The main building boiler plant feeds 3 areas: • Main building • Lower 2 floors of East Block • Embassy Theatre The whole system is controlled by 1 time schedule. Therefore the 3 zones are being heated every evening and Saturdays when frequently only key areas such as Board room, Studios are being used. There are 2 opportunities to save energy. 1. develop a robust system of knowing which areas will be occupied when so the heating can be set to turn off when no areas are occupied. 2. provide local space heating for the areas to be used frequently and book activities into these spaces so main boiler can be turned off.
Benefits	• Energy savings: 116,100 kWh • Financial savings: £4,180 • Payback period: 1.7 years • CO_2 Emissions reduction: 21.4 tonnes of CO_2 • 12.41% of target
Funding	• Project cost estimated at £7,000 • Operational costs as zero as maintenance will fit into usual schedule. • Internally funded by the new building work budget.
Resources	• Current resources will be used to obtain quotes from known suppliers and develop a project plan.
Ensuring Success	• Buy in from staff to use local heaters appropriately to there need in times of low occupancy. Developing a robust plan and resetting controls to operate alongside new systems. • Principal risks: lack of buy in, additional heating not tightly controlled resulting in increased waste, lack of heating availability in times of unexpectedly high occupancy due to boiler plant switch off.
Measuring Success	• If the boiler plant can be rescheduled so it regularly is off in evenings and at weekends without disruption or complaints from users of spaces this will be seen as significant success.
Timing	• start date: TBC once the project has been fully planned. • completion date (when it will deliver savings): estimated to be in 2013 to coincide with new boiler plant and resetting of systems.
Notes	Source of quantification – Carbon Trust Survey by Environ UK Ltd conducted January 2011.