GOLDSMITHS
University of London

HIGHER EDUCATION CARBON MANAGEMENT PROGRAMME - STRATEGY AND IMPLEMENTATION PLAN

Introduction

The Strategy and Implementation Plan (SIP) (executive summary attached) is a formal deliverable to the Carbon Trust under the Higher Education Carbon Management (HECM) programme and will be assessed by the Carbon Trust to determine how successfully the HEI has engaged with the programme. Of particular importance are the following:

(i) the quantification of emissions reduction opportunities and projects, in terms of cost, financial benefit, and carbon saved.

(ii) the balancing of projects with measurable emissions reductions alongside complementary actions that embed carbon management effectively in the HEI.

(iii) the scheduling of chosen projects and actions into a realistic, achievable plan that fits with HEI priorities and resourcing.

(iv) the coordination of the plan with existing plans, policies, strategies, commitments, decision making cycles, financial cycles etc.

(v) the definition of ownership and governance in the plan – defining and communicating the roles and responsibilities of individuals at all levels to ensure that the plan will be delivered and reviewed, and benefits measured.

The SIP defines the steps that Goldsmiths, University of London will take to achieve these outcomes and the final approved plan was delivered to the Carbon Trust by 29 February 2008.

It is envisaged that the implementation of the action plan will commence June 2008.

Background

Goldsmiths, University of London is taking part in the Higher Education Carbon Management Programme to help it achieve a reduction in its own consumption and contribute to government targets and to minimise overall energy costs. The programme will support current initiatives that will include an Energy Management Policy and a short/medium and long term action plan for 2008 – 2010.

The purpose of this Strategic Implementation Plan is to describe the carbon emission reducing projects to be implemented towards the goal of the overall programme, to support the College with the reduction of Carbon Emission by 15% over the next 3 years. The plan identifies the high and low level carbon reduction opportunities following an Opportunities Assessment – and provides a prioritised list of potential energy saving projects that created the methodology to assess the economic case for individual carbon management projects.

Total Estimated Capital Expenditure		***£289,350***		
Total Annual Cost Savings				
	06/07 savings	*07/08 savings*	*08/09 savings*	*09/10 savings*
Annual savings (£)	***-***	***980***	***165,710***	***71,700***
Total Annual Carbon Reductions				
	06/07 savings	*07/08 savings*	*08/09 savings*	*09/10 savings*
Carbon Reduction (tonnes)	***-***	***8***	***1,372***	***570***

Dependencies

Identified dependencies:

i) the financial year is 1 August to 31 July, therefore any specific budgetary requirements related to the implementation plan will be reviewed and agreed in advance of each financial period.

(ii) Goldsmiths is to undertake a major Master Planning Exercise over the next 4/5 months and any recommendations and or developments could impact on the numbers of buildings, their uses and opening hours, affecting the baseline data.

Estates has key areas of control, such as the briefing of consultancies on new build or refurbishment projects, therefore it is imperative that the department generates agreed standards to achieve and maintain a long term carbon strategy.

Patsy Carter
Acting Head of Estates and Facilities
May 2008

Higher Education Carbon Management Programme

Goldsmiths, University of London
Strategy and Implementation Plan (SIP)

Date:	**February 2008**
Version number:	**Five**
Owner:	**Patsy Carter - Acting Head of Estates and Facilities**
Sponsors:	**Barry Douglas – Director of Finance** **Kay Stables – Professor of Design Education**
Approval:	**Senior Management Team (SMT)**

Foreword from the Carbon Trust

Cutting CO_2 emissions as part of the fight against climate change should be a key priority for universities – it's all about getting your own house in order and leading by example. The Higher Education Carbon Management programme has been designed to assist universities like Goldsmiths, University of London in saving money on energy and putting it to good use in other areas, whilst making a positive contribution to the environment by lowering their CO_2 emissions.

Goldsmiths, University of London was selected in 2007, amidst strong competition, to take part in this ambitious programme. As one of the most proactive HEIs in the UK in responding to the risks that climate change presents, Goldsmiths, University of London has joined the 48 universities across the UK who have to date partnered with the Carbon Trust on this programme in order to realise vast carbon and cost savings.

This Carbon Management Strategy and Implementation Plan commits Goldsmiths, University of London to a target of 15% reduction in CO_2 by 2010 and underpins potential financial savings of more than £**238,390** over 3 years. The Carbon Trust is very proud to support Goldsmiths, University of London in their ongoing implementation of this Plan.

Richard Rugg
Head of Public Sector, The Carbon Trust

Forword from the Warden – Professor Geoffrey Crossick

In my view, the challenge of climate change is a crucial moral driver for us all. For Goldsmiths, engaging with the Carbon Trust's Higher Education Carbon Management Programme is of the utmost importance, not only for the reputation of the institution and its financial well-being, but also because it engages with the commitment and concerns of our staff and students.

The environmental agenda is very important to us. As a university institution, we can show our support in many ways, including the research we undertake that connects in important ways with understanding environmental issues; the teaching we deliver, by developing courses that make students think about these issues and by developing critical, analytical, and engaged graduates who care about the world in which we live; and by the way we run ourselves as an organisation.

We have identified an urgent need to understand our carbon impact and the impact of all our activities as an organisation. Already we are reviewing our buildings – the old and the new, our waste management, and the character of the travel we encourage and require. And with the help of the Carbon Trust we are increasing our understanding more and more each day.

Our Students' Union is a good motivator for us. They are ahead of us on much of their activities, hence their national and local awards. We're working closely with them to develop this strategy and implementation plan for the whole College, which in turn will support the Trust's Higher Education Carbon Management Programme.

But above all we are committed to the programme because it is an imperative for us all, a social and moral obligation.

Professor Geoffrey Crossick
Warden

Executive Summary

The purpose of this plan is to strategically direct operations both within the Estates and Facilities Department and other Departments institution wide for a three year carbon reduction process. The plan describes the overall aims and actions that Goldsmith will untaken to embed Carbon Emission reduction activities across all of its functions

Goldsmiths have worked in conjunction with the Carbon Trust to identify carbon saving opportunities that will be implemented over the next 3 years and have identified a target carbon saving of 15% to be achieved over this period.

Goldsmiths has faced increased energy bills due to both rising energy prices and increasing consumption due to staff expectations for greater warmth in the winter and cooling in the summer**.**

Emissions Baseline

CO_2 Emissions arising from the use of energy and water in Goldsmith College's buildings in Financial Year 2006-2007 are summarised below:

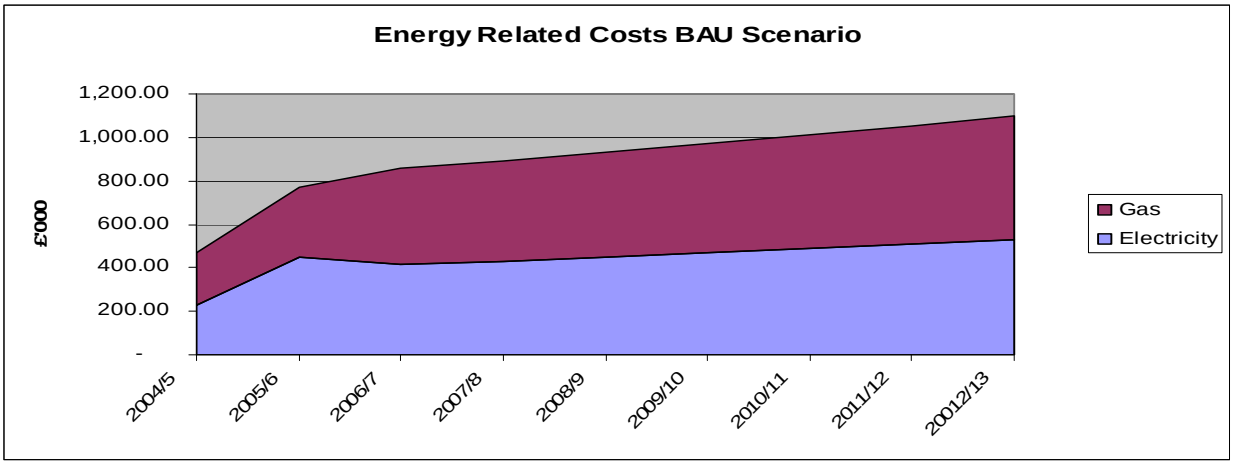
Buildings	**Utility**	**CO_2 Emissions (Tonnes)**	**Total Cost (£)**
Non Residential	Water	7	£54,811
Non Residential	Electricity	2,332	£356,601
Non Residential	Gas	2,392	£330,552
Residential	Water	11	£93,651
Residential	Electricity	580	£79,865
Residential	Gas	937	£139,548
Total		**6,259**	**£1,055,028**

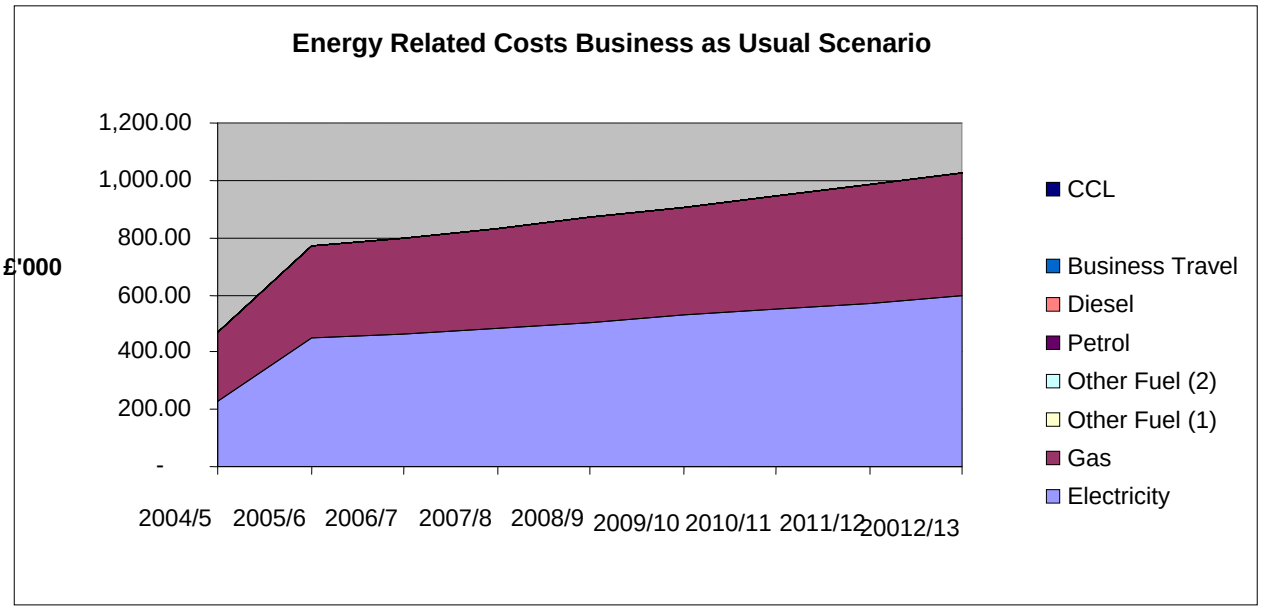
Emissions arising from staff business travel, travel to work by staff and students and Goldsmith's procurement of goods and services are yet to be ascertained. A transport survey will be undertaken in summer 2008 with the assistance of Transport for London (TfL). It is hoped that this will permit an estimate to be made of carbon emissions from transport.

Emissions Forecast 2008 – 2010

Goldsmiths will be looking to reduce its current CO_2 emissions of 6,597 tonnes by 5% in the first year following the implementation of the plan.

Figure 1: Energy related costs (£): BAU Scenario

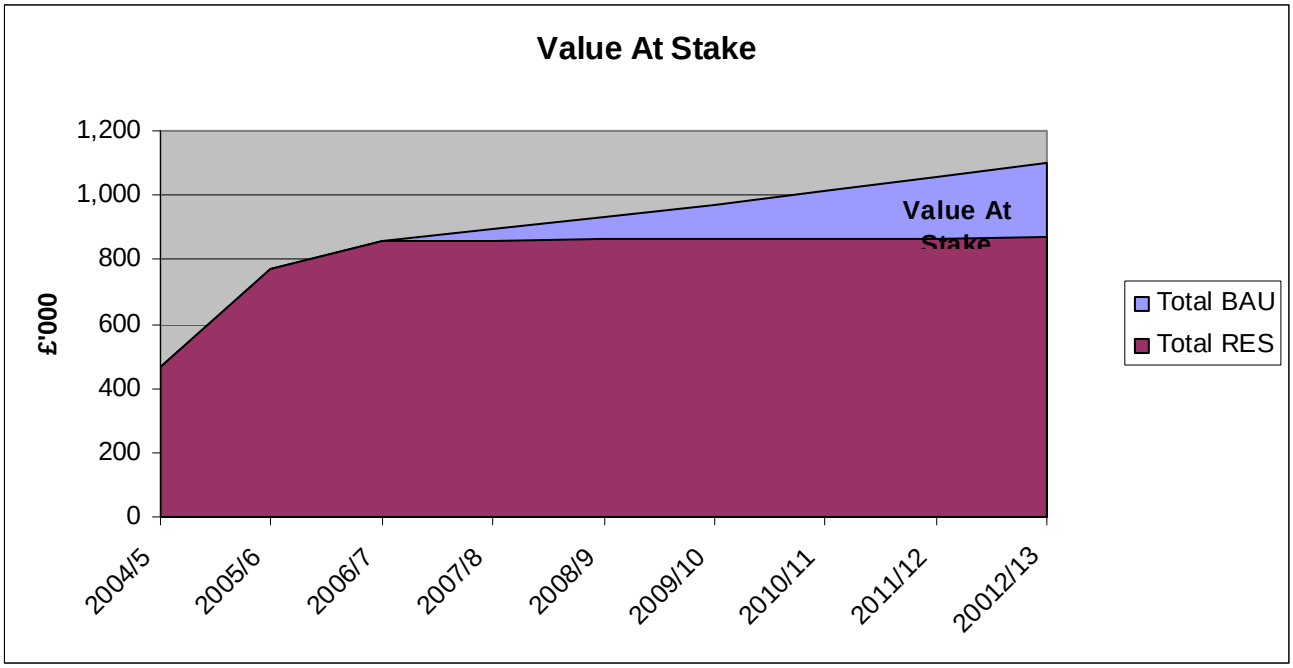


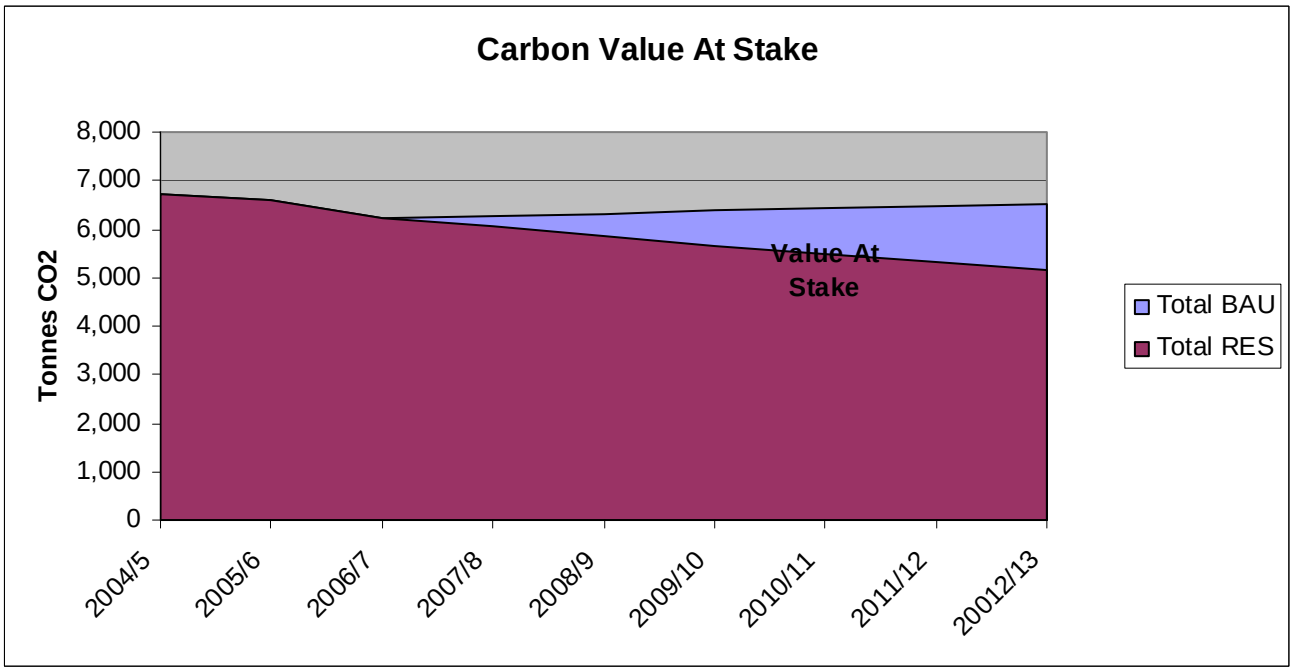


The Business As Usual Scenario above assumes a 5% pa increase in energy consumption

The CO_2 baseline emissions include both residential and non-residential buildings. The baseline data was taken from academic year 2006/2007 and includes electricity, gas and water. A baseline CO_2 emissions data of 6,259 Tonnes was calculated. The overall cost of utilities for this period was £ 1,055,028.

The potential savings from a reduced emissions scenario are shown below.


Value At Stake
1,200
1,000
800
600
400
200
0
£'000
2004/5
2005/6
2006/7
2007/8
2008/9
2009/10
2010/11
2011/12
20012/13
Value At Stake
Total BAU
Total RES


Carbon Value At Stake
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Tonnes CO2
2004/5
2005/6
2006/7
2007/8
2008/9
2009/10
2010/11
2011/12
20012/13
Value At Stake
Total BAU
Total RES

Summary of predicted costs and carbon savings

Total Estimated Capital Expenditure		*£289,350*		
Total Annual Cost Savings			***£238,390***	
	06/07 savings	***07/08 savings***	***08/09 savings***	***09/10 savings***
Annual savings (£)	*-*	*980*	*165,710*	*71,700*
Total Annual Carbon Reductions			***1,950 Tonnes***	
	06/07 savings	***07/08 savings***	***08/09 savings***	***09/10 savings***
Carbon Reduction (tonnes)	*-*	*8*	*1,372*	*570*

Carbon Management Implementation Plan Summary

The projects planned in this SIP are designed to set in place the policy and organisational structure for good carbon management at Goldsmiths. The following is a summary of the recommended carbon reduction measures that have been identified as critical to achieving the three year target. These measures are categorised as either management opportunities, energy saving opportunities or general sustainability initiatives. Projects requiring a feasibility study are highlighted accordingly.

More detail on these projects is given in Appendix A.

MANAGEMENT OPPORTUNITIES					
	Estimated annual savings			**ESTIMATED COST (£)**	**Payback period (years)**
	(£)	**CO_2 (tonnes)**	**(kWh)**		
Adopt an energy policy and strategy with short-term, medium-term and long-term targets	Savings resulting from carbon awareness campaign below. (Effective awareness campaigns can give up to 10% savings in user-controlled consumption).				
Appoint Carbon Champion for each Department	Savings resulting from carbon awareness campaign below. (Carbon champions would be expected to promote awareness: savings in this area would contribute to the overall 10% possible savings described above.				
Adoption of a procurement policy promoting low-carbon goods only	Further study required to identify potential savings. Relatively small reductions in carbon emissions (up to 5%) are feasible				
Quantification of carbon emissions from transport, and introduction of a green transport plan	Further study required to identify potential savings, but substantial reductions in carbon emissions (up to 20%) are possible with a number of low-cost 'quick wins'.				

Improve space management and room booking systems	Further study required to identify potential savings. Substantial savings are expected from a system that could combine room bookings with the operation of a site building management system as described in Table 4.1.1.2 below. Savings of up 7.5% in gas use may be expected.
Use of inter-departmental league tables to promote energy savings	Further study required to identify potential savings. Relatively small reductions in carbon emission are anticipated from this measure (up to 1% of overall emissions).

ENERGY SAVING OPPORTUNITIES

	Estimated annual savings			ESTIMATED COST (£)	Payback period (years)
	(£)	CO_2 (tonnes)	(kWh)		
Develop an energy awareness campaign - residential	8,170	66	125,760	0	0.0
Develop an energy awareness campaign – non-residential	13,820	115	220,060	0	0.0
Review Heating Control Time Settings - residential	3,910	29	139,780	0	0.0
Review Heating Control Time Settings (+reduced schedules in vacations)	17,350	130	629,350	0	0.0
Control of Heating and Cooling Systems in the Media Research Building	980	8	25,600	0	0.0
Reduce excessive electricity use in Ben Pimlott building	22,520	249	475,200	0	0.0
Adopt heating setpoint temperature of 19 ^{0}C – non-residential (17 ^{0}C for circulation areas)	13,540	101	490,900	0	0.0
Adopt summer cooling setpoint temperature of 23 ^{0}C	6,540	54	102,760	0	0.0
Actions to ensure simultaneous heating and cooling avoided	Further study required to identify scale of problem.				
Replacement of Tungsten Lamps – residential	330	3	5,130	150	0.5
Replacement of Tungsten Reflector Lamps – non-residential	750	6	11,930	500	0.7
Use of 'Intelliplugs/ Intellipanels' for IT systems in offices	2,730	22	42,000	2,500	0.9
Use of automated meter reading system	40,900	329	1,161,380	54,500	1.3
Use of Valve Insulation Jackets – residential	1,220	9	43,720	2,500	2.0
Use of Valve Insulation Jackets – non-residential	1,830	14	66,210	3,700	2.0
Use of 'Save-it-easy' frequency converters for fluorescent fittings	9,670	78	148,780	20,000	2.1

Use of tamperproof thermostatic radiator valves – non-residential	18,960	142	687,500	40,000	2.1
Pipe work Insulation to Local Boiler Systems – residential	3,470	25	123,770	7,500	2.2
Use of Voltage Optimisation System – non-residential	24,110	201	383,930	60,000	2.5
Development of College-Wide Building Management System	39,070	302	1,050,500	75,000	1.9
Use of tamperproof thermostatic radiator valves – residential	3,080	23	110,000	8,000	2.6
Use of Voltage Optimisation System – residential	5,440	44	83,690	15,000	2.8
Totals	**238,390**	**1,950**	**6,127,950**	**289,350**	**1.2**

SUSTAINABILITY OPPORTUNITIES					
	Estimated annual savings			ESTIMATED COST (£)	Payback period (years)
	(£)	CO_2 (tonnes)	(kWh)		
Ensure that wherever possible all new builds and any future refurbishments schemes use environmentally friendly materials, renewable energy sources, rainwater harvesting etc.	Further study required to identify potential savings.				
Maximise opportunities for recycling in College premises.	Further study required to identify potential savings.				
Incorporation of sustainability in learning and teaching.	Further study required to identify potential savings.				
Identification of opportunities to reduce papers printed and circulated.	Further study required to identify potential savings.				