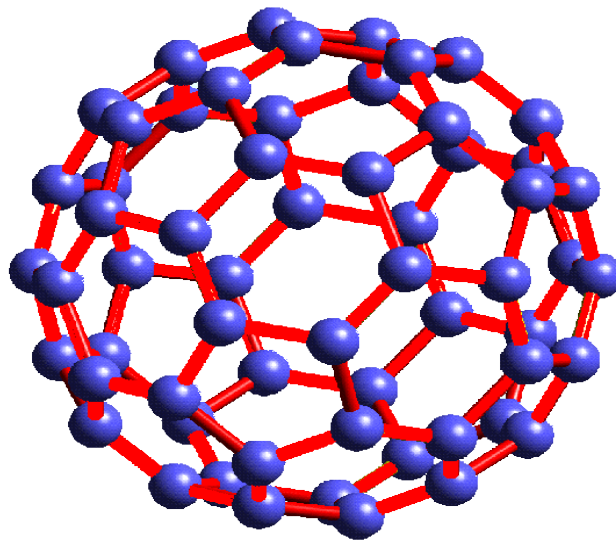


THE GLASGOW SCHOOL OF ART

Estates Carbon Management Plan



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Foreword from Seona Reid

The Glasgow School of Art aims to be a world class sustainable environment for learning, teaching, working and living and through our education and research, to be a positive force in the fight against the impacts of climate change. This Carbon Management Plan is a key element of our Sustainability Strategy and is a first step in promoting, delivering and maintaining environmentally sustainable solutions for our campus. There will be many others over the coming years.

Foreword from the Carbon Trust

Cutting carbon emissions as part of the fight against climate change must be a key priority for the education sector - it's all about getting your own house in order and leading by example.

The UK government has identified the education sector as key to delivering carbon reduction across the UK in line with its national and international commitments. The Public Sector Carbon Management Programme is designed as a systematic and whole organisational approach to develop a robust strategy that delivers against carbon reduction targets. It assists organisations save money on energy helping to protect their core front line services, respond to evolving regulatory framework and most importantly reduce their carbon footprint.

Glasgow School of Art was selected in 2009, amidst strong competition, to take part in this ambitious programme. This Carbon Management Plan commits Glasgow School of Art to a target of reducing CO₂ by 15% by 2015 and underpins potential cumulative financial savings to the organisation of around £439,000. Taking into account the future growth of the organisation these savings represent an absolute reduction of almost 2147 tonnes against a carbon emissions baseline year of 2008/9.

The can contribute significantly to reducing CO₂ emissions and demonstrate proactive public sector leadership. This plan that the School has written represents the start of an ongoing process of Carbon Management. The Carbon Trust is proud to support Glasgow School of Art in their commitment to carbon reduction and public sector leadership.

A handwritten signature in black ink, appearing to read "Richard Rugg".

Richard Rugg

Head of Public Sector, Carbon Trust



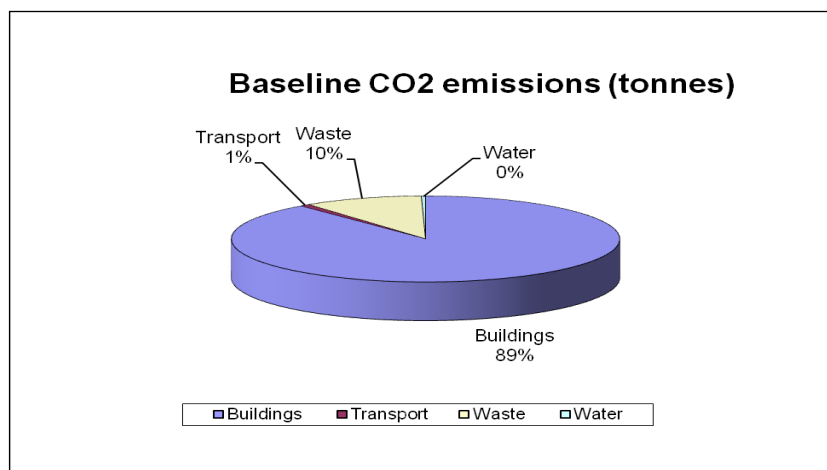
Management Summary

Glasgow School of Art Estates department has prepared this Carbon Management Plan as part of its obligations under the Universities and Colleges Climate Commitment for Scotland agreement. This agreement is coordinating the higher and further education sector's response to the Scottish Government's Climate Change (Scotland) Act which sets carbon reduction targets of 42% and 80% by 2020 and 2050 respectively. GSA is committed to environmental protection and improvement and recognises that as a progressive organisation wherever possible we must act as leaders in the community in addressing a range of issues relating to climate change and the preservation of scarce resources. The Estates Carbon Management Plan forms part of GSA's Sustainability Strategy, which was approved by the Board of Governors in May 2010. In creating this plan GSA Estates has taken into account that it has leased, listed and other property restrictions and has set a **15% reduction target from 2009 levels by the end of 2015**.

This carbon management plan describes the action that has been taken to quantify the carbon emissions arising from our operations and the measures planned to reduce the use of energy, water, fuel and the generation of waste.

GSA's baseline carbon footprint is 3,528 tonnes CO₂e for 2009. The graph below details how this is broken down across energy from buildings, through travel, waste disposal and water usage.

89% of GSA's CO₂ emissions are generated from energy consumption, with 10% coming from waste, 1% from travel and >1% from water. With thirteen buildings, GSA has a large estate with a full time staff of over 300 and up to 2000 students.



Currently the School spends a total of £630,000 on utilities and the projects contained in this plan aim to reduce the risk of anticipated ongoing increases in energy, water and waste disposal costs. Targeting energy reduction through new technologies, replacing old inefficient systems and raising awareness throughout the school will drive this usage down and help us achieve our 15% target.

In addition, in recognition that to meet ambitious national targets all new buildings should be designed and operate as low carbon premises our building replacement programme incorporates a range of Key Performance Indicators relating to environmental sustainability and reduced energy use.

This document contributes to the wider Glasgow School of Art Sustainability Strategy by detailing how carbon emissions are managed on a day to day basis and sets out timescales, quantification and responsibility for planned reduction projects.

It is estimated that to carry out all the projects identified in the Carbon Management Plan investment of over £550,000 will be required which includes the new build estate related project costs. Currently the new build project funds have been secured and £22,000 from Salix has been approved. Over the 5

years of the plan ongoing presentation of the strong business case for energy saving measures will aim to secure additional funding.

1. Introduction

This Carbon Management Plan explains how our carbon footprint has been calculated, the financial cost of each carbon source, and the programme of actions which will achieve our reduction target of 15% over five years.

Glasgow School of Art has long recognised the importance of environmental management and has carried out a variety of projects in the past. In 2009 it held a Sustainability day for all staff and following this, the school formed a Sustainability Working Group with a remit to develop a 5-year sustainability strategy. Whilst taking cognisance of the need to take a holistic view of the working of the GSA, a number of areas of activity that would need to be addressed were identified.

Management – corporate responsibility and governance, financial planning, decision making structures
Physical Estate - buildings, plant, heating and lighting systems, etc.

School Systems - central resources, IT, Library, Finance Registry, Marketing, etc.

Education - academic programmes, research and consultancy, student learning, knowledge exchange, employability, etc.

Other – related initiatives

This was completed in March 2010 and adopted by the Executive and Board of Governors. The strategy identifies a series of preparatory actions (Year 0) followed by the Year 1 – 5 aims and objectives, and is included in the appendix.

The fundamental principles are to gather information with which to raise **awareness**; to **change attitudes** at all levels; and from this to **change our behavior** as an institution.

Knowledge is the key to this process. We need to understand what the problems are in order to know how to address them and we need to know how we are performing against our goals. The emphasis at early stages is therefore on the generation of knowledge and understanding, without which we operate in ignorance, and this Carbon Management Plan is a major contribution to this aim.

Clearly major responsibilities lie with the physical estate and several projects have already been undertaken. These include the installation of voltage optimisation equipment to the Bourdon building this is anticipated to create savings in the region of £9k per year. A trial of waterless urinals has also been carried out. Refurbishment of restroom facilities included sensor operated taps that include an automatic shut off. All lighting replacement and installations are now utilising the most energy efficient lighting types. Landfill waste is being reduced by the introduction of new and improved recycling waste streams including batteries and ink cartridges with more improvements planned going forward. We also plan to re-invigorate our awareness campaign by introducing regular email communicated hints and tips on energy, water, recycling and waste reductions.

It is appreciated that more work is required and this plan sets out in a logical and systematic basis how further improvements will be planned and managed, and contribute to the sustainability goals. To ensure accountability the individuals who will be responsible for the delivery of the carbon reduction projects are identified and detailed timescales established where practical.

In recognition of the importance of student and staff behaviour with regards the use of energy, fuel, water and generation of waste in the management of our estate one of the projects contained in this plan aims to reduce the level through an awareness campaign. This will be an ongoing project which

will over time seek to involve students and staff out-with the estates department in developing and maintaining the programme.

It has been estimated that we could potentially cut our emissions and associated costs by up to 10% though a range of low or no cost measures. To achieve such savings will require buy-in from everyone in the organisation. This will be a significant challenge but will be an effective response to the current funding and the current economic climate.

Glasgow School of Art is committed to delivering the stated outcomes of this plan and working with the Carbon Trust and others to reduce carbon emissions and protect the environment.

Glasgow School of Art will reduce CO₂ emissions from our operation by 15% by 2015 from 2008/09 levels.

2. Carbon Management Strategy

2.1 Context and drivers for Carbon Management

Current use of resources and development patterns are threatening the basic life support systems upon which we all depend and the most clearly visible, and widely reported, of these is climate change. The earth's climate has been relatively stable for the last 10,000 years, but we are now experiencing quite dramatic changes. These are being caused by the blanket of gases that keeps the surface of the earth warm and able to sustain life becoming thicker, trapping in more heat and contributing to global warming.

It is now accepted by the majority of the scientific community that the changes we are now experiencing cannot solely be the result of natural climatic variation. It is also widely agreed that these rises in temperature on earth are being caused by increased atmospheric levels of carbon dioxide (CO₂), methane (CH₄) and other greenhouse gases. The most important of these gases is CO₂, with 80% of the increased carbon in the atmosphere due to burning fossil fuels.

The Climate Change (Scotland) Act has set the most ambitious targets in the world of cutting emissions by 42% by 2020 and 80% by 2050 and the Scottish Government has made it clear that both the private and public sector will all have to take serious measures to assist the country meeting these reductions levels.

Glasgow School of Art will play its part in helping to achieve these targets and working with other partners wherever possible to reduce both our direct and indirect emissions.

In 2010 Scotland's universities and colleges publicly declared their intention to address the challenges of climate change and reduce their carbon footprints by signing the Universities and Colleges Climate Commitment for Scotland (UCCCfS).

In 2009, the Director of Glasgow School of Art, Seona Reid, signed this commitment on behalf of the School and to date 54 institutions have signed the Commitment, constituting 86% of universities and colleges in Scotland. Signatories are committed to producing and publishing a 5-year Climate Change Action Plan (CCAP) which will include measurable targets and timescales to achieve a significant reduction in emissions from all business operations and activities.

- Energy consumption and source
- Waste reduction, recycling and responsible disposal
- Sustainable estate development
- Sustainable travel planning
- Responsible procurement of goods and services

Glasgow School of Art, like other institutions, will incorporate work on climate change into established improvement processes and will publish annual results on progress, detailing outcomes achieved and further actions required.

GSA as an institution understands the influence that it has in relation to climate change through, teaching, research, the local community and our Estate Operations. The sustainability of our environment can be affected and influenced by GSA in good practice procedures in managing our Estate which will enhance our standing academically and with the community.

2.2 Our low carbon vision

The School's low carbon vision is to seek continuing improvement in our environmental sustainability.

2.3 Strategic themes

1. **Energy consumption** –A programme to reduce energy consumption, implemented in parallel with our ongoing awareness raising initiatives. A survey of current power saving opportunities and quick wins are being investigated in association with the Carbon Trust. In addition we will be looking at within the new build project to maximise efficiencies and reduce consumption as well as onsite generation and use of combined heat and power.
2. **Waste reduction, recycling and responsible disposal** – We are in the process of changing our waste management company to a more sustainably orientated provider and will be working with them to reduce our landfill waste by improving recycling and where possible reduce the volume of waste produced on site.
3. **Building and Services** - Ensuring projects use responsible means of disposal of waste, recycling and sustainable purchasing of goods and materials and provide a sustainable carbon effective building post contract.
4. **Responsible procurement of goods and services** – Engagement with suppliers & service providers to source and use sustainable products in order to reduce the impact of carbon footprint on the items we purchase.
5. **Sustainable Travel** – We are developing a Corporate Travel Plan and local Travel Plans for GSA. The aim is to promote more sustainable travel choices to staff and students. Another target is to improve the data we have available for monitoring travel patterns.
6. **Energy Awareness Campaign** - Communication, promotion and encouragement of energy savings initiatives and ideas to and from staff and students.

The carbon reduction and financial benefits of the Carbon Management Plan are made evident in the Value-at-Stake graphs shown in the Projection & Value at Stake section 3.3.

The graphs demonstrate that by saving carbon emissions considerable financial savings are possible.

2.4 Targets and objectives

Glasgow School of Art will aim to reduce CO2 emissions from our operation by **15% by 2015** from 2008/09 levels. It has been calculated that based on current utility and waste management costs this will save the School approximately £140,000 in 2015.

When we look at the business as usual anticipated rises in emission levels and cost of utilities and landfill charges, however, meeting our 15% reduction target will save our organisation approximately £439,000 over the five years of the plan on a cumulative basis.

To ensure the success of the Estates Carbon management Plan it is essential that our key objective of gaining buy in from all staff and the involvement of students in the carbon management process is achieved over the short and medium term.

3. Emissions Baseline and Projections

3.1 Scope

The scope of this carbon management plan is the estates management aspects of the Schools operations below, it is intended to widen this scope over time as the Schools Sustainability Strategy is fully developed and initiates further projects which will have an influence on carbon emissions.

Energy- Carry out an in depth study and develop continual monitoring of our energy usage. To provide greater analysis and understanding of where, and how our energy is used, in order to allow us to target specific areas for reduction and development.

Water - Instigate a program of installation of water saving devices within rest rooms.

Waste - Carry out an analysis of the waste types produced onsite and adjust our collection system to best maximise the segregation of recyclable waste types. Investigate and introduce battery and ink cartridge recycling systems. Communicate and promote with staff and students ideas for waste reduction re-use and recycling. Ensure ethical, environmentally sound and fully legislatively complicate disposal methods are used at all times.

Internal communications- Develop an ongoing program of communication to all staff and students highlighting the current levels of energy usage and Carbon production. Educate on the often simple steps that can be taken to assist the School in its Carbon reduction programme and seek feedback to develop it further.

Estates / Buildings maintenance- Look at opportunities when replacing and developing current system within our estate to include more efficient, sustainable and environmentally friendly options.

Fleet management - Carry out a travel survey of all staff and students and adjust or travel policy accordingly to make best use of available modes of transport. Ensure that future vehicles are as efficient as possible and maintained to a high standard to keep emissions to a minimum.

IT services- Promote the use on thin clients wherever possible, consolidate and maximise server use. Ensure users are aware of power saving options and that these are set up as standard on all new systems. Install power bars that automatically switch of peripherals when main unit is switched off.

New build - The School plans to procure its proposed new building in line with current best practice and with reference to the guidelines and recommendations of the Scottish Funding Council's Sustainable Development Guidance for Estate Management (2008). Total energy consumption in use of 100 kWh/m² floor area to be the design target, with lower values explored. Carbon emissions in use of 40 kgCO₂/m² to be a benchmark value (roughly corresponding with 100 kWh/m² based on continued reliance on carbon emitting energy sources averaging 0.4 kWh/kg delivered).

Purchasing - All suppliers have been vetted and approved by the Scottish government via the *Advanced Procurement for Universities and Colleges (APUC)*.

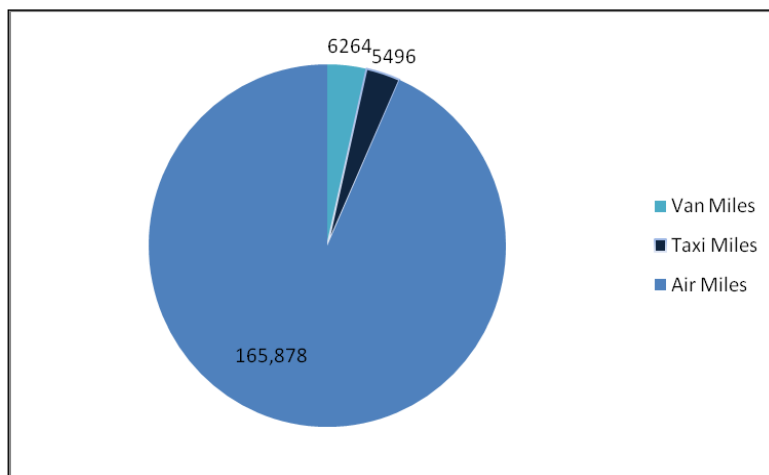
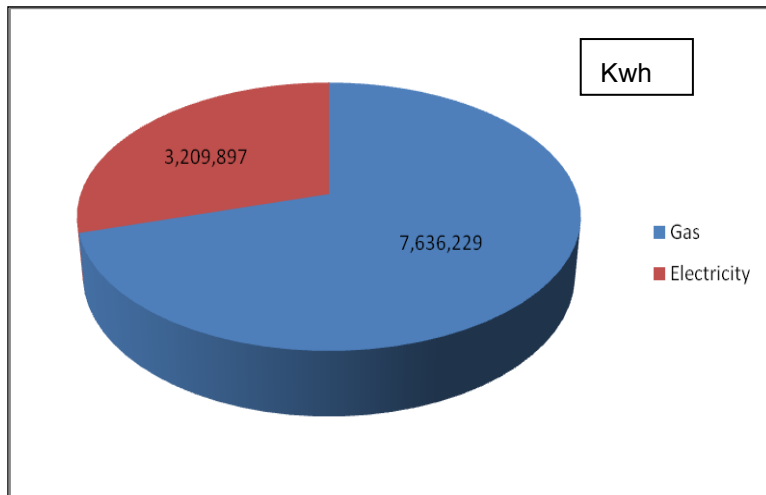
Estates purchasing takes into account-

- Where environmentally preferable goods and services are viable on cost and quality grounds and are both affordable and readily available, they will usually be specified to the exclusion of others.
- electrical goods purchasing takes into account energy ratings and efficiencies,
- when awarding contracts, give preference to suppliers who demonstrate that the goods and services they offer are environmentally preferable
- where it is practical and economically viable to do so, the Estates department intends to specify the use of renewable or recycled materials in its contracts
- whole life costs will be taken into account in the award of contracts

3.2 Baseline

Emission Source	Units	Total used	Emissions (Co2 Tonnes)
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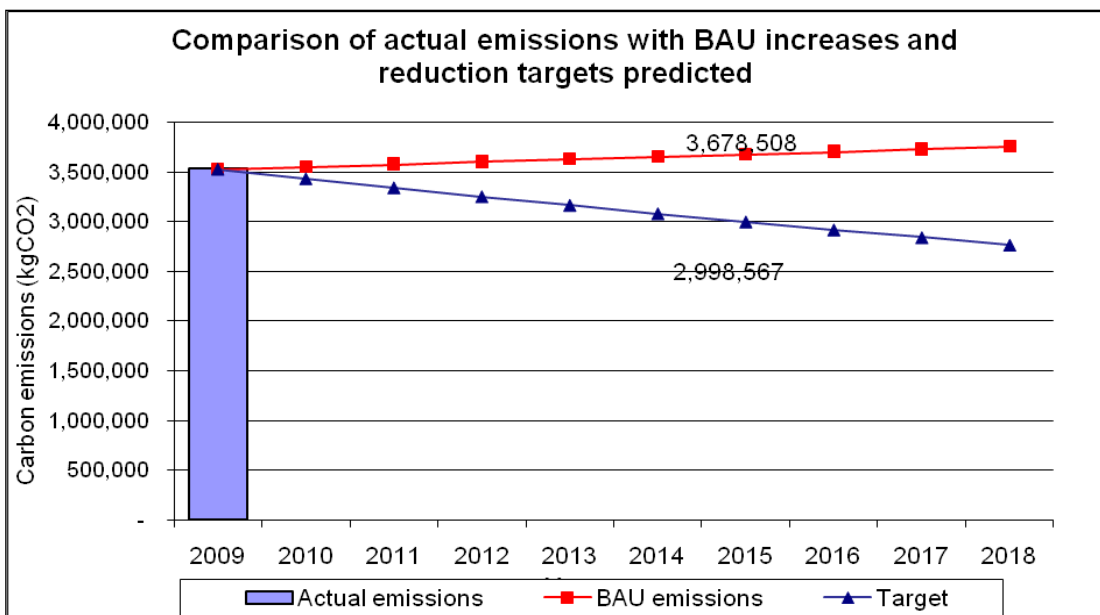
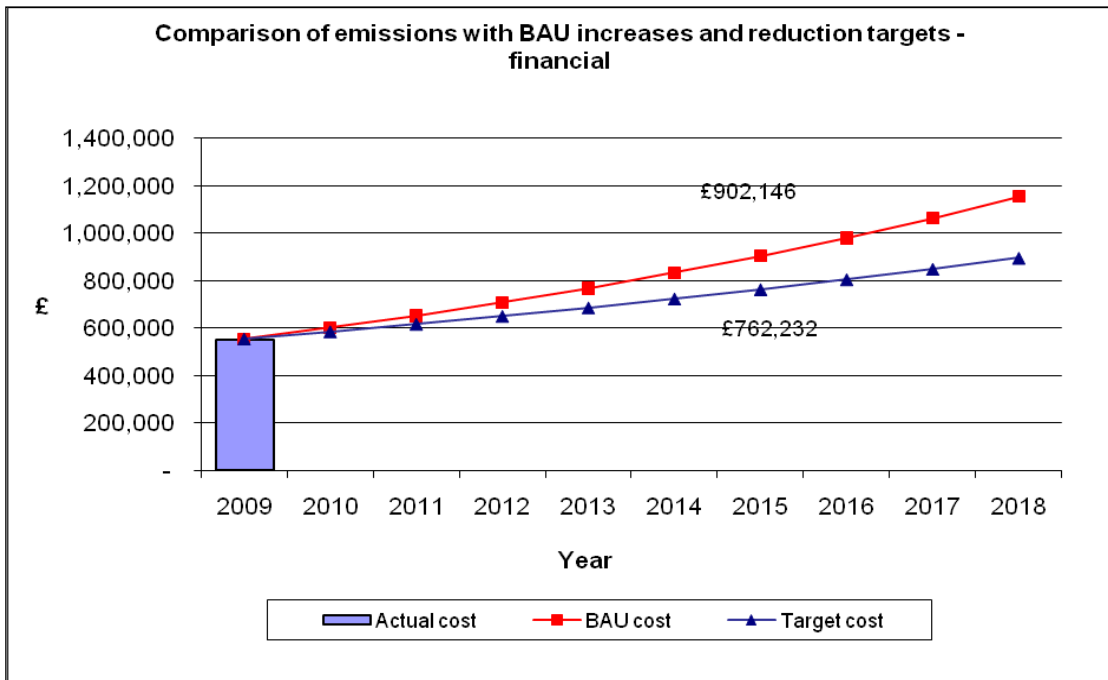
Direct Emissions			
Gas	<i>KWh</i>	7,636,229	1412.473
Electricity	<i>KWh</i>	3,209,897	1723.715
Owned Transport			
Van Diesel	<i>Miles / KWh</i>	6264 / 10965	2.759
Business travel			
Taxi	<i>Miles / KWh</i>	5496 / 9129	2.282
Air	<i>Miles / KWh</i>	165,878 / 96431.	23.757
Other Emissions			
Waste	<i>Tonnes</i>	789	350.314
Water	<i>M3</i>	30793	12.426



3.3 Projections and Value at Stake

The graph below illustrates the potential consequence of not taking the action detailed in the Carbon Management Plan i.e. if a 'Business as Usual'(BAU) approach were taken. If we meet our carbon reduction targets then although costs will rise due to increasing utility charges this increase will be minor in comparison to the alternative 'Business as Usual' scenario where financial costs will rise by nearly 40%.

The gap between the red and blue lines below indicates the 'Value at Stake' between meeting our targets and taking no action to reduce emissions.



4. Carbon Management Projects

4.1 Projects

Ref	Project	Lead	Cost Capital	Annual Saving		Pay back	% of Target	Year
				Fin	CO ₂			
Bour/v/1	Voltage Optimisation to Bourdon building	M. Kelly	22k	£4k	51 Tonne	5 yrs	9%	Aug 2010
New/Fou/As/1	Rebuild project of Foulis ,Newberry and Assembly	D Millar	£500k	£200k	338 Tonne	150yrs	69%	2011-2014
Mack/v/1	Voltage Optimisation to Mackintosh building	B Stewart	£21k	5k	28 tonnes	43 month	5%	2011/12
CCTV/1	Refinement of CCTV system equipment	B Stewart	£6k	£3k	6 tonnes	24 month	3%	2010
BMS/1	Fine Tuning of BMS system	M Kelly	£1k	£7k	42 tonnes	2 month	8%	2010
Lightc/1	Improvements to lighting controls	B. Stewart / M. Kelly	£5k	£4k	20 tonnes	15 month	3%	2010/11
Aware/1	Awareness campaign	B. Stewart	£0	£17k	98 tonnes	na	16%	2010/11
Waste/1	Waste segregation	B. Stewart	£0	£5k	50 tonne	na	9%	2010/11
ICT/1	Review of IT and printers	C. Watson	£0	£117	<1 tonne	na	<1%	2010/11
			Totals		714 tonnes		124%	

The main reduction in carbon emissions will be created by the construction of the new carbon efficient building to replace then Assembly, Newberry and Foulis buildings, including a low carbon district heating system that will also serve the Mackintosh and Bourdon buildings.

Voltage optimisation in the Bourdon is planned for August 2010 and future plans for the Mackintosh building will provide another 14% of the reduction target.

A vigorous Awareness raising campaign will highlight simple quick wins and instil energy conscious ethos within staff and students alike.

Improvements to electrical and lighting efficiencies and installation of localised sensor control units as well as installation of timer units will provide further reductions to electricity usage.

I.T. department have previously consolidated server capacity in a previous project and is restricted in its abilities to reduce PC capabilities. This is due to the high specification of equipment necessary to run the large memory capacity graphic and video programs involved required by the departments within the school.

Fine tuning of the BMS system has already been carried out and is planned to be carried out every six months to ensure maximum efficiency is maintained.

GSA's waste contractor is in the process of changing and this will ensure that the amount of landfill waste is reduced and recyclable materials are segregated at source to facilitate easy of segregation. Recycle streams to be targeted initially are wood, paper & cardboard, plastic bottles and metal/cans.

5. Implementation

The GSA Estates Carbon Management Programme estimates the GSA New Build Estate related Projects are estimated to cost in the region of £500,000. This will provide a new and highly efficient 11,250sqm purpose built buildings systems incorporating the latest building materials and technologies to ensure the school provides a sustainable and green future for our students and staff. Our target is to have the new build operate at less than 100Kwh/m² and 40kgCO₂/m².

Other planned projects will cost in the region of £125k to instigate the projects detailed over the next few years. £22k of funding for the Bourdon voltage optimisation has been approved by the Salix funding scheme and is in its final stages of completion. All other funding will be from existing budgets or proposed capital bids internal to the school. If all projects deliver the expected savings GSA will benefit from an estimated £40k annually in energy savings.

The Sustainability Strategy also provides a central fund of £60k for staff and student to bid for projects that help to achieve the aims set out in the GSA Sustainability Strategy. This will be introduced in September 2010.

There are also several unquantifiable savings from the consolidation of IT equipment as well as planned reductions in landfill waste from waste reuse, reduction and recycling improvements.

5.1 Financing

- Bourdon Voltage Optimisation - Salix funding approved
- Mackintosh Voltage Optimisation - To be confirmed - possibly future Salix application
- All others will be funded from future capital funding or ongoing maintenance budgets

ii. Benefits / savings – quantified and un-quantified

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Annual cost saving	£17k	£35k	£57k	£81k	£109k	£140k
Annual CO₂ saving	119	235	349	462	572	680
% of target achieved	20%	33%	53%	66%	87%	100%

Unquantified benefits:

Additional benefits may also be accrued. For example, the improvements to GSA's infrastructure and facilities should mean higher recruitment and retention rates of staff and students. The new build project will be an exemplar for sustainability. It will create a more attractive and energy efficient building that will continue to develop improvements to controls as it matures.

The carbon management plan will also allow GSA to build on the variety of corporate and social responsibility activities currently underway across the organisation.

5.2 Governance for Implementation

GSA Estates has an established structure for environment management this consists of the following staff:

Barrie Stewart	Facilities Manager
Michael Kelly	Maintenance Manager
Michael Quigley	Estates Manager

Embedding Carbon Management

To ensure the effective cascade of responsibilities and actions Estates will monitor energy usage and waste production, monitor ongoing progress to targets and advise on additional opportunities. The GSA Sustainability Action Group will develop other carbon reduction measures and drive change through steering groups and workshops as well as creating Awareness Campaigns and highlighting other possible opportunities. The SAG has representation from staff and students across all areas of the GSA who can communicate plans and identify responsibilities for environmental management in each department.

The Estates Carbon Management Plan is owned by the Facilities Manager. The Estates Manager will monitor the overall carbon footprint and progress against initiatives.

As this Carbon Management Plan is a major component of GSA's overall Sustainability Strategy. The carbon reduction targets will be included in GSA's Strategic Business Plan and environmental criteria have been added to the business case pro-forma for assessing capital expenditure.

ii. Data Management – measuring the difference, measuring the benefit

The majority of the data used is accurate and provides an reasonably accurate measure of GSA's current carbon footprint. It is recognised that some of the data is not as accurate as it could be. There are unknown quantities relating to travel and waste data, The table below provides a summary of the current weaknesses in the data and remedial actions to improve data quality.

Category	Description	Remedial action
Travel	Milage was surmised from average taxi/ air fare costs to milage and hence cabon emmissions.	Investigate possibility of tracking milages of each journey to better ascertain each journeys carbon footprint.
Waste	Waste was calculated from estimated uplift tonnages from volume conversion figures.	New waste management company to commence in 2010 and will provide detailed tonnages and waste type information as well as improve segregation.

5.3 Resource commitment

i. Implementing the Initiatives

Progress of the Carbon Management Plan will be monitored as follows:

- Progress report against projects – Monthly to Estates Manager
- Overall progress report – termly to Sustainability Action Group
- Annual Report (including carbon footprint) - Executive Management Team and the GSA Board.

All staff will have a role to play in its implementation but key staff will be those in the Estates Group and Sustainability Action Group, Health and Safety Group, Information Systems Group, Finance and Human Resources.

ii. Maintaining quality over time

GSA will produce a carbon footprint each year and update the carbon management plan as required to ensure improvements continue to be made. The process of updating the plan will be based on GSA's Sustainability Strategy and will involve consultation with key staff and the revision, where necessary, of the carbon management plan.

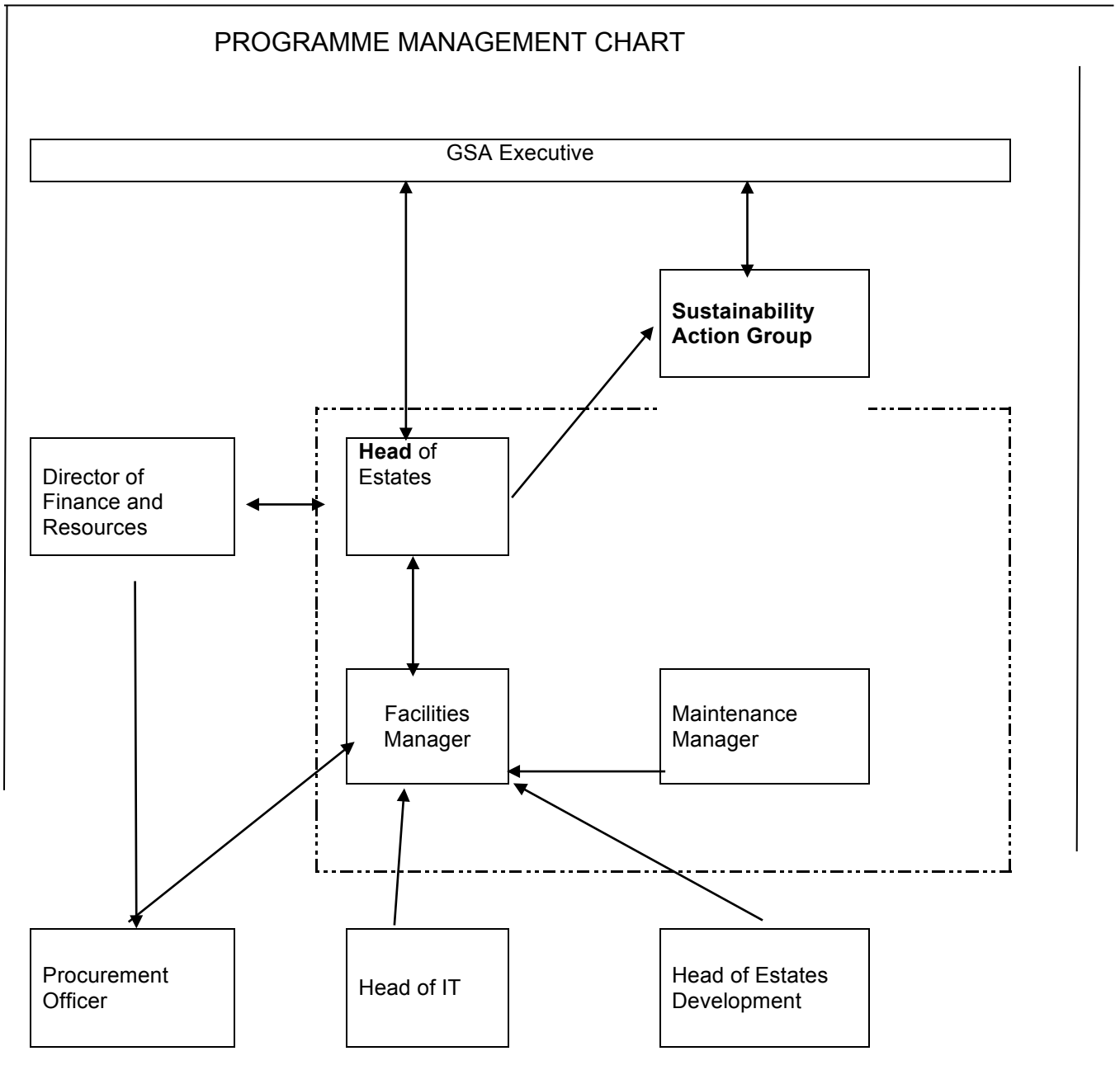
iii. Programme Management of the CM Programme

The Estates Carbon Management Plan will be managed by the Facilities Manager, supported by the members of the Sustainability Action Group.

Any issues in delivering the projects will be raised with the Estates Manager and either escalated to the Executive Management Team or delegated to the departments to respond.

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iii. The Carbon Management Team – delivering the projects



iiii Succession planning for key roles

- | | |
|--------------------|-------------------------------------|
| 3. Project Sponsor | – Director of Finance and Resources |
| 4. Lead Individual | – Facilities Manager |
| 5. Support | – Maintenance Manager |
| 6. Facilitator | – Head of Estates |

Role	Name and position in the organisation	Contact details
Project Leader	Barrie Stewart <i>Facilities Manager</i>	0141 566 1430 b.stewart@gsa.ac.uk
Support Facilitator	Michael Kelly <i>Maintenance Manager</i> Mike Quigley <i>Head of Estates</i>	0141 566 1427 m.kelly@gsa.ac.uk 0141 566 1426 m.quigley@gsa.ac.uk
Finance Director	Elliot Leviten <i>Director of Finance</i>	0141 353 4519 e.levitan@gsa.ac.uk
Sustainability	Tim Sharpe <i>Chair - Sustainability Action Group</i>	0141 353 4658 t.sharpe@gsa.ac.uk
Service Representatives	Colin Watson <i>Head of IT</i>	0141 566 1444 c.watson@gsa.ac.uk
	<i>tbc</i> <i>Procurement Officer</i>	<i>phone tbc</i> <i>email tbc</i>
Estates Development	David Miller <i>Director of Estates Development</i>	0141 566 1431 d.miller@gsa.ac.uk