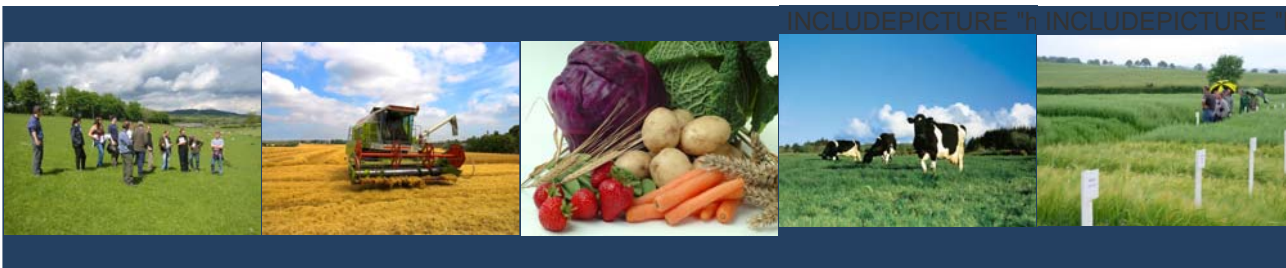


Scottish Agricultural College Carbon Management Plan



Date: *30 June 2010*

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Owner: *Janet Swadling, Director Finance & Corporate Affairs*

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Contents

FOREWORD FROM PROFESSOR BILL McKELVEY	3
FORWORD FROM THE CARBON TRUST	4
Management Summary	5
1 Introduction	7
2. Carbon Management Strategy	9
2.1 Context and drivers for Carbon Management	9
2.2 Our low carbon vision	10
2.3 Targets and objectives	10
2.4 Strategic themes	10
3. Emissions Baseline and Projections	12
3.1 Scope	12
3.2 Baseline	12
3.3 Projections and Value at Stake	14
4. Carbon Management Projects	16
4.1 Existing/Completed Projects Projects	16
4.2 Planned / Funded Projects	17
4.3 Near Term Projects	17
4.4 Projected achievement towards target	18
5. Implementation	20
5.1 Financing	20
5.1.1 Benefits / savings – quantified and un-quantified	20
5.1.2 Financial costs and sources of funding	21
5.2 Governance for Implementation	22
5.2.1 Embedding Carbon Management	22
5.2.2 Data Management – measuring the difference, measuring the benefit	22
5.3 Resource commitment	24
5.3.1 Implementing the Initiatives	24
5.3.2 Maintaining quality over time	24
5.3.3 Programme Management of the CM Programme	24
5.3.4 The Carbon Management Team – delivering the projects	24
5.3.5 Succession planning for key roles	24
Appendix A: Medium to long term projects	25
Appendix B: SAC Sites Included as part of Carbon Footprint	26
Appendix C: Project Descriptions	28

FOREWORD FROM PROFESSOR BILL McKELVEY

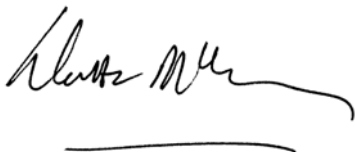
SAC is committed to managing our own environmental footprint as part of our responsibility to local communities and in support of Scottish and UK Government aspirations. Our carbon management goal is to reduce CO₂e emissions by 20% by 2015/16, against the 2008/09 baseline year. In taking this forward SAC's vision is to become recognised as a leader for the land based sector in carbon management.

We are already making progress in reducing energy consumption. Improvements to the quality and efficiency of our operating environment are ongoing, particularly around planned developments on the Craigie Campus in Ayr with the West of Scotland University and at the Easter Bush Research Centre in Edinburgh.

SAC Research staff are national leaders in investigating the interactions of land use with climate change and are members of a number of international consortia of researchers in this important field. They have the potential to make a very significant contribution to assisting the land-based sector adapt to a changing climate and also understand and mitigate against the drivers of climate change.

Our Learning staff provide a number of undergraduate and postgraduate courses on Green Energy, Environmental Protection and Land Management which will prepare tomorrow's land managers to effectively deal with these challenges.

SAC staff are well-informed about climate change issues and understand the importance of a collective effort to reduce carbon emissions. I look forward to working with our staff, the Carbon Trust, the Environmental Association of Universities and Colleges and our funders, in implementing this plan.

A handwritten signature in black ink, appearing to read 'Bill McKelvey', with a horizontal line underneath.

Bill McKelvey
Chief Executive and Principal

FORWARD FROM THE CARBON TRUST

Cutting carbon emissions as part of the fight against climate change should be a key priority for Further and Higher Education sector - it's all about getting your own house in order and leading by example. The UK government has identified the public sector as key to delivering carbon reduction across the UK in line with its Kyoto commitments and the Further & Higher Education Carbon Management programme is designed in response to this. It assists organisations 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 carbon emissions.

The Scottish Agricultural College (SAC) was selected in 2009, amidst strong competition, to take part in this ambitious programme. SAC partnered with the Carbon Trust on this programme in order to realise vast carbon and cost savings. This Carbon Management Plan commits the organisation to a target of reducing CO₂ by 20% by 2015/16 and underpins potential financial savings to the organisation of around £484,000.

There are those that can and those that do. The Further and Higher Education sector can contribute significantly to reducing CO₂ emissions. The Carbon Trust is very proud to support SAC in their ongoing implementation of carbon management.

A handwritten signature in blue ink, appearing to read 'Richard Rugg'.

Richard Rugg
Head of Public Sector, Carbon Trust

Management Summary

SAC 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. In developing this plan SAC has set a **20% reduction target from 2008/09 levels by the end of the financial year 2015/16.**

Our vision is **to be a leader in carbon management for the land-based sector.**

SAC is in a unique position to both manage our own carbon emissions and influence others. Our role in supporting the land-based sector means we have the opportunity to make a real difference to carbon emissions from land-based industries and we are already working with the Scottish Government, Defra and the EU to achieve this.

Staff at SAC are extremely knowledgeable about environmental issues, including climate change. Responses to surveys, awareness campaigns and local initiatives have been very positive and there is genuine enthusiasm to take action.

SAC's baseline carbon footprint is 7,373 tonnes CO₂e for the financial year 2008/09¹. Figure 1, below, shows how this is broken down across energy from buildings, travel, waste and water. 89% of SAC's CO₂e emissions arise from energy consumption, with only 7% coming from travel, 3% from waste and 1% from water. With three campuses, 27 offices and 8 disease surveillance centres, SAC has a large, diverse estate with a full time staff of 850 FTEs and 900 students.

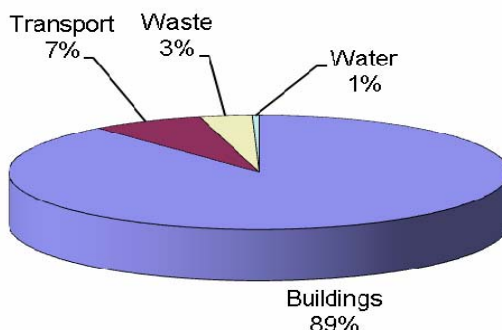


Figure 1 Summary of tonnes CO₂e emissions for baseline year 2008/09

SAC's Estates Strategy sets out the priorities for investment to develop and improve the estate. One of the aims of the strategy is to improve the efficiency of buildings, and this has resulted in a focus on energy management over the past few years. Since 2007 SAC has implemented a number of energy efficiency projects including clarifying and establishing energy management contracts to ensure that our data is robust. There has also been a concerted effort to raise energy awareness across the organisation and two previous environmental awareness campaigns have focused exclusively on energy.

Investments in video and tele-conferencing facilities throughout the network of campuses, and offices are beginning to bring benefits, primarily a reduction in travel between campuses and other SAC sites.

¹ Non inclusive of SAC Farms

The strategy to reduce carbon emissions has six distinct themes:

1. **Energy consumption and source** – we will be continuing a programme of investment to reduce energy consumption which will be implemented in parallel with ongoing awareness raising initiatives. In addition we will be looking at opportunities to diversify our energy supply, assessing options to generate energy and to source energy from more sustainable suppliers.
2. **Water Consumption** – although a minor part of our current footprint we will be monitoring water consumption and seeking ways to reduce what we use.
3. **Sustainable Estate Development** – Any significant changes to our estate will be done to achieve either an excellent or very good BREEAM rating.
4. **Sustainable Travel** – We will be developing a Corporate Travel Plan and local Travel Plans for our main centres of operation (the campuses at Edinburgh, Ayr, Aberdeen and Bush Estate). The aim will be to promote more sustainable travel choices to staff and students by embedding the travel hierarchy into decision-making for travelling to work and business travel. Another key focus is to improve the data we have available for monitoring travel patterns.
5. **Waste reduction, recycling and responsible disposal** – We will be seeking to maximise recycling opportunities across the SAC estate and where possible minimise the volume of waste produced.
6. **Responsible procurement of goods and services** – Existing policies will be improved to ensure that the environmental credentials of our suppliers meet our own aspirations and that they can support our drive to reduce carbon emissions.

The carbon reduction and financial benefits of a robust Carbon Management Plan are made evident in the Value-at-Stake graphs shown in Figures 2 & 3. The graphs demonstrate that by saving carbon emissions considerable financial savings may be possible.

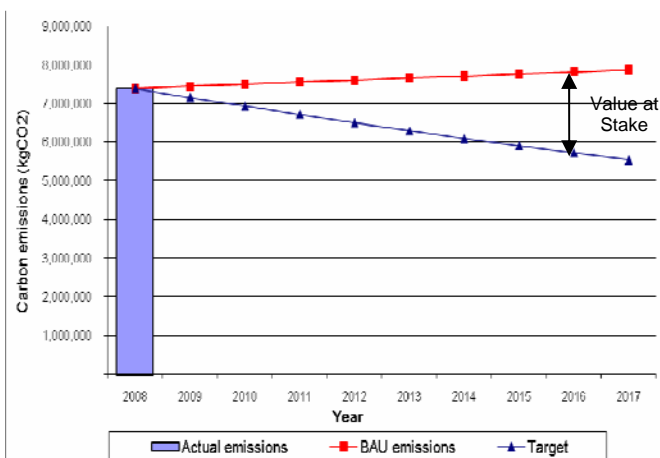


Figure 2: Comparison of Actual Emissions with Business as Usual (BAU) increases and reduction targets predicted

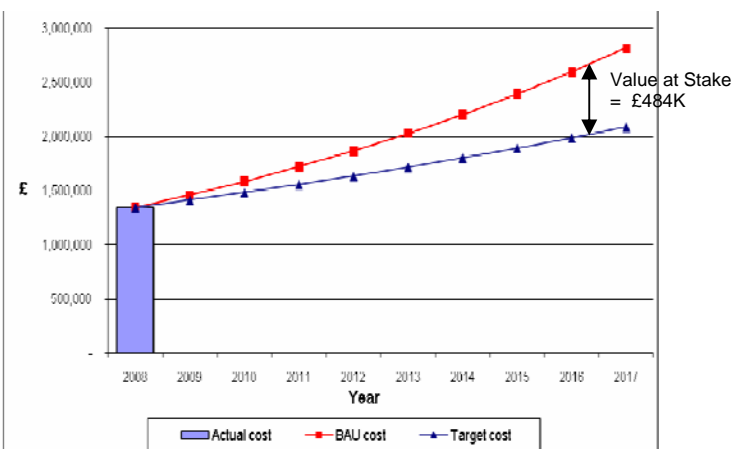


Figure 3: Comparison of emissions with BAU increases and reduction targets - financial

In addition to core activities, SAC operates five research farms plus a poultry unit and pig unit. Although these activities are outside the scope of this carbon management plan their carbon emissions are being measured and recommendations to manage the carbon footprint of the farms is being incorporated into farm management plans. The emissions attributed to the farming operations is 9,031 tonnes CO₂e per annum.

1 Introduction

SAC's Carbon Management Plan has been developed as part of the Carbon Trust's Carbon Management Programme to enable the proactive management of carbon emissions across the organisation. The plan covers a five-year period and is based on SAC's carbon emission data from 2008/09. It aims to deliver a 20% reduction by the end of the financial year 2015/16. The scope of SAC's carbon footprint is explained in Section 3.

The UK Government has placed an emphasis on organisations setting a leading example on Climate Change. Action by organisations will be critical to the achievement of the Government's climate change objectives, such as the long term goal in the Scottish Climate Change Act (2009) to reduce CO₂e emissions by 80% by 2050.

SAC is committed to reducing its own environmental footprint. The Universities and Colleges Climate Commitment for Scotland (UCCCfS) agreement recognises the education sector's influence on carbon, not just in terms of emissions but also its role in providing graduates with the skill set to contribute to a low carbon economy and developing solutions aimed at reducing emissions and adapting to a changing climate. SAC was one of the first organisations to sign the agreement in January 2009.

SAC's primary focus is on the agriculture, land use and forestry (ALUF) sector. This sector is responsible for a significant proportion of the UK's Greenhouse gas (GHG) emissions. These emissions - mainly methane from livestock and nitrous oxide from fertiliser – are increasingly recognised for their potential to help meet UK commitments on greenhouse gas reductions.

To facilitate work on climate change SAC has formed a Climate Change Group to deliver policy relevant research on responding to climate change in the UK. This includes an improved understanding of climate forecasts using data from the UK Climate Change Impact Program, improving potential adaptation to warming, and understanding the science of greenhouse gas mitigation from the sector. We are undertaking a diverse range of projects for key funders including Defra, RERAD, The Committee on Climate Change and SNIFFER.

Through our research programmes, education activities and knowledge exchange capabilities SAC can make a significant contribution to meeting the Scottish and UK Governments' ambitious targets.

There are five steps as part of the carbon management planning and implementation process. These are:

- i. The preparation of a Project Plan to define the key stages of the process and resources required to deliver the Carbon Management Plan;
- ii. The quantification of SAC's carbon baseline, forecasting of future emissions, and the setting of targets for improvement;
- iii. The identification and quantification of projects needed to achieve the target of 20% reduction in CO₂e emissions;
- iv. The production of a Carbon Management Plan which sets the framework of SAC's carbon management and reduction strategy;
- v. The implementation of the Carbon Management Plan including delivery of the carbon saving projects identified in the plan.

For the past five years SAC has focused on reducing energy consumption across the organisation. With three campuses, research facilities, five farms, 28 offices and eight veterinary laboratories SAC's potential to consume energy is considerable. In 2008 an Energy Manager was employed and since then significant investments have been made to reduce energy consumption. This includes clarifying energy use data across SAC's many sites, the



working with



installation of a Building Management System covering properties at Bush, Kings Buildings and Craibstone, consolidation of building occupancy and annual energy awareness campaigns. Approved and proposed projects aimed at reducing carbon emissions are listed in Section 4 and in Appendix A.

2. Carbon Management Strategy

SAC's Strategic Business Plan sets the objective to “**improve our long-term financial and environmental performance**”. Managing our carbon footprint is a key component of our environmental performance.

2.1 Context and drivers for Carbon Management

As the predictions from scientists across the world begin to bear out climate change is becoming a significant threat to our society. We are already adapting to the changes in climate brought about by carbon dioxide and other greenhouse gas emissions, such as an increasing number of severe climatic events and a generally warmer, wetter environment.

In response to these challenges the UK and Scottish Governments have introduced a raft of policies and legislation to change the way that we think about and behave toward the environment. These policies are aimed at both adapting to climate change and mitigating against the effects of greenhouse gas emissions.

For SAC there are five key drivers:

- The Energy Performance of Buildings Directive – SAC has ten buildings with Energy Performance Certificates, and this will increase as properties are sold, tenants change and thresholds for inclusion reduce.
- The Climate Change Bill and the Carbon Reduction Commitment² – although this does not effect SAC at present it may become a factor over the next few years.
- Universities and Colleges Climate Commitment for Scotland (UCCCfS) – SAC was in the initial cohort of further and higher education organisations who signed the agreement, recognising the crucial role that the sector plays in current and future emissions. This is a firm commitment from SAC's Board and Executive Management Team to manage our carbon emissions and to consider carbon in the design and delivery of our courses and research programmes. This carbon management plan is being developed to meet the specific requirements of the UCCCfS agreement.
- Energy prices – although oil prices are low at present due to the economic downturn, demand and therefore cost is likely to increase. During 2008 oil prices exceeded \$100 per barrel – a price not previously thought possible by industry analysts. There is also likely to be increased costs due to the rise in green energy and its relative cost of production. SAC receives approximately 50% of its income from government sources and with an energy bill in excess of £1M, energy management represents an area where SAC can demonstrate effective use of public funds.
- Reputation – A strategic objective for SAC is “*to improve the financial and environmental performance of our customers*”. SAC exists to support the land-based industries; delivering large scale national contracts and specialist environmental research and consultancy for the Scottish Government, Defra, the EU and others. Our syllabus and the advice and guidance we provide to the land-based sector is underpinned and enhanced by SAC's own environmental research and the research of partner organisations. To maintain credibility SAC aims to ensure that our own environmental performance is properly managed and is demonstrably positive.

² The CRC Energy Efficiency Scheme (formerly known as the Carbon Reduction Commitment) is the UK's mandatory climate change and energy saving scheme. The scheme started in April 2010 and is administered by the Environment Agency

2.2 Our low carbon vision

To be a leader in carbon management for the land-based sector

Specifically, we will aim to:

- *Establish a reputation for carbon efficient education provision, embracing new ideas, technologies and working practices in the delivery of education programmes*
- *Be a global leader in research and consultancy on low carbon land management practices, informing policy and providing land managers with the tools and skills they need to make a difference*
- *Create a “carbon aware” working environment where decision-making and the development and redesign of business practices are based on sound carbon management principles.*

2.3 Targets and objectives

SAC is committed, through the Carbon Management Lite programme and in partnership with the Carbon Trust and the EAUC **to reduce our carbon footprint by 20% by the end of the 2015/16 financial year from 2008/09 levels.**

2.4 Strategic themes

To achieve the target SAC's carbon reduction strategy has 6 themes. They are:

i. Energy Consumption & Source

Energy Management – Led by the Property and Estates Group and Environment, Health and Safety Group this encompasses energy awareness and improvements to energy efficiency of buildings, and informs long-term strategic investments with regard to building standards.

ii. Water Consumption

The process of treating water to drinking water standards creates greenhouse gases and the abstraction of water can be to the detriment of local aquatic habitats. SAC will monitor its consumption of water and make capital investments to improve the infrastructure, with the aim of reducing the volume of water used.

iii. Sustainable Estate Development

Led by the Property and Estates Group the Estates Strategy details the proposed changes in SAC's estate over the next 10 years. Major milestones include the move from Auchincruive to shared facilities on the Craigie Campus in Ayr and the move to the Easter Bush Research Centre alongside Edinburgh University and Roslin Institute staff.

iv. Sustainable travel

Led by the Environment, Health and Safety Group with support from Divisional Committees, travel plans will be developed for the main SAC sites to reduce inter-site travel, maximise use of video conferencing facilities and reduce travel costs and impacts overall. The plans will also focus on reducing travel to work although this is not included within the scope of the carbon footprint.

v. Waste Reduction, Recycling & Responsible Disposal

Waste management – Coordinated by the Environment, Health and Safety Group this will focus on reducing the volume of material consumed and minimising the amount going to landfill through re-use and recycling. Engagement of staff is critical to making improvements in waste management, and the links between estates staff and local campus groups will be pivotal.

vi. Sustainable Procurement

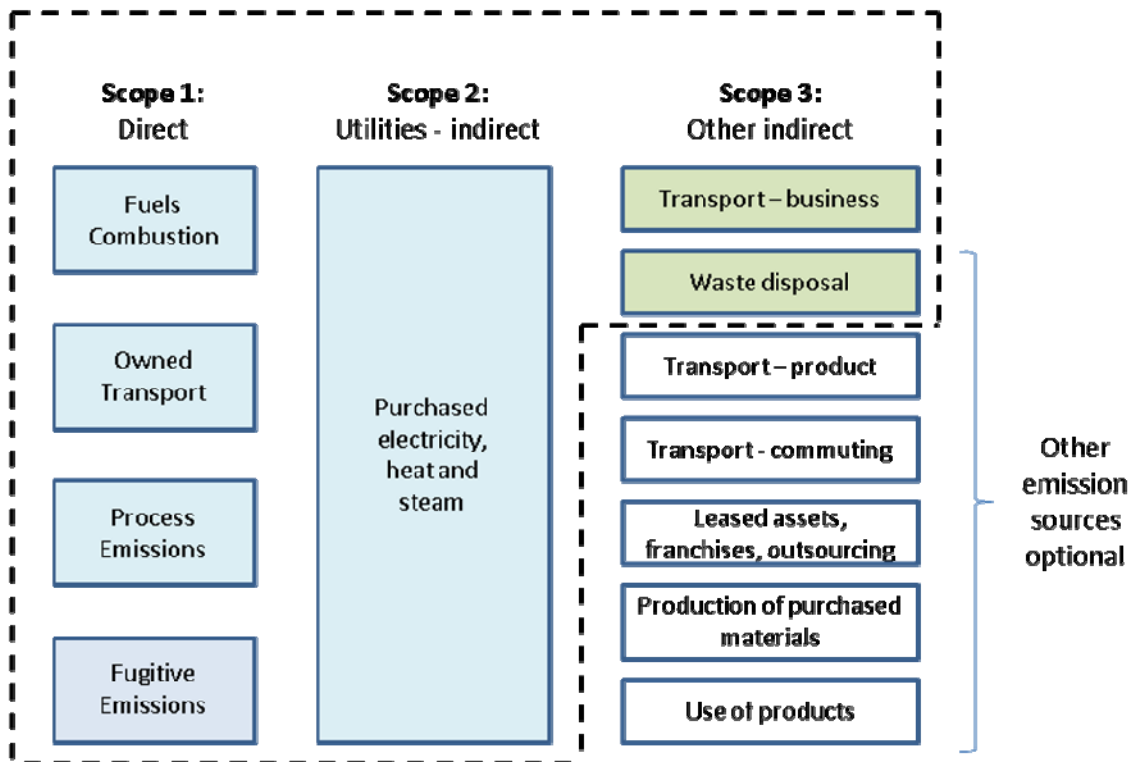
This will focus on ensuring that we use suppliers with a track record in managing their own environmental footprint and providing assistance to support carbon footprinting activities, for example by providing good quality data, and providing more sustainable purchasing options.

3. Emissions Baseline and Projections

3.1 Scope

Figure 3.1 below shows all the categories required for a full carbon footprint assessment. SAC is only required to report Scope 1 and Scope 2. The dashed line shows the actual scope of SAC’s carbon baseline for 2008/09.

Figure 3.1: Scope of SAC’s Baseline Carbon Footprint



3.2 Baseline

The baseline year is the financial year 2008/09. This year has been chosen to tie in with SAC’s financial year and stock management cycle. Table 3.1 and Figure 3.2, below, show the breakdown of carbon emissions across energy from buildings, transport, waste and water.

	Total	Buildings	Transport	Waste	Water
Baseline CO₂ emissions (tonnes)	7,373	6,552	539	250	32
Baseline Cost (£)		1,026,803	103,282	18,480	157,137

Table 3.1 – Summary of emissions for baseline year 2008/09

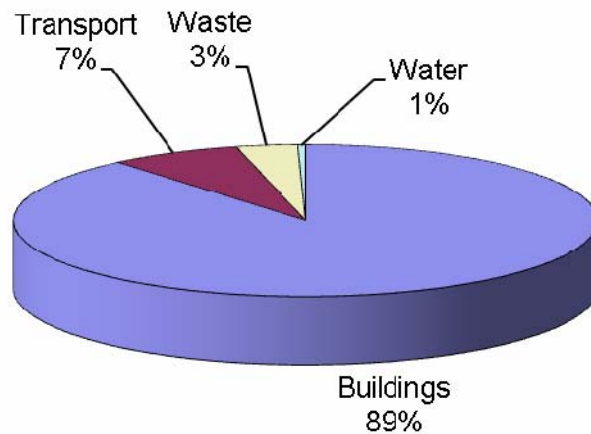


Figure 3.2 Summary of emissions for baseline year 2008/09

The data has been gathered from the following sources:

Energy

- Team Bureau³.

Travel

- Arnold Clark – hire cars
- Purchase Orders raised for flights, rail and ferry journeys
- Itemised list of journeys booked with Munro Travel
- Travel expense claims (sample months)
- Credit card receipts (sample months)
- SAC owned vehicle logs (accurate)

Waste

- Estimates based on size of bins going to landfill pro rata across all SAC offices

Water

- Based on water charges

Further information:

Energy costs have been calculated for all sites where SAC pays the utility bill – a list of sites is shown in Appendix B.

SAC owned sites that are rented to other organisations are not included (carbon emissions will be calculated through their carbon emissions calculations)

“Travel to work” emissions are not included – this may be included after 2015/16

Approximately 15% of air and car travel emissions are estimated

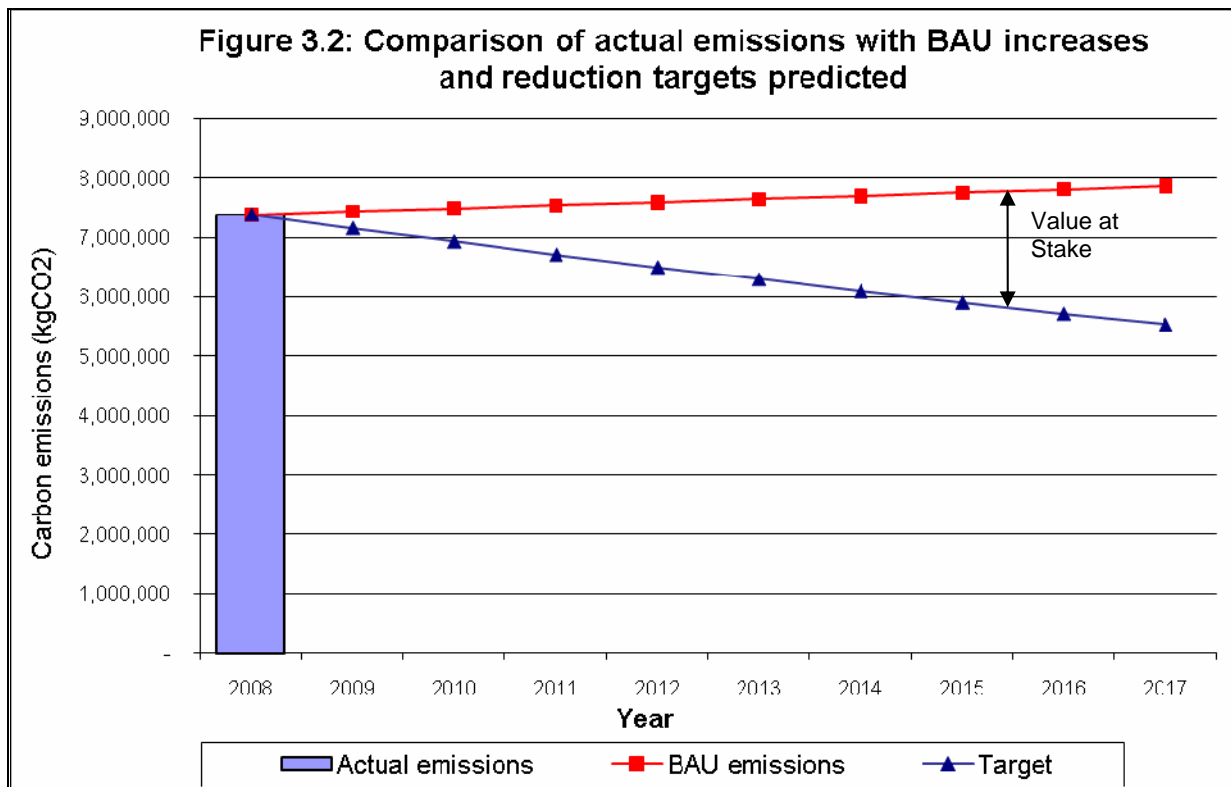
Waste volumes are estimates – this will become more accurate for campus waste as new systems are established

³ Consultants that supply energy reports, check accuracy of invoices and raise queries with utility companies.

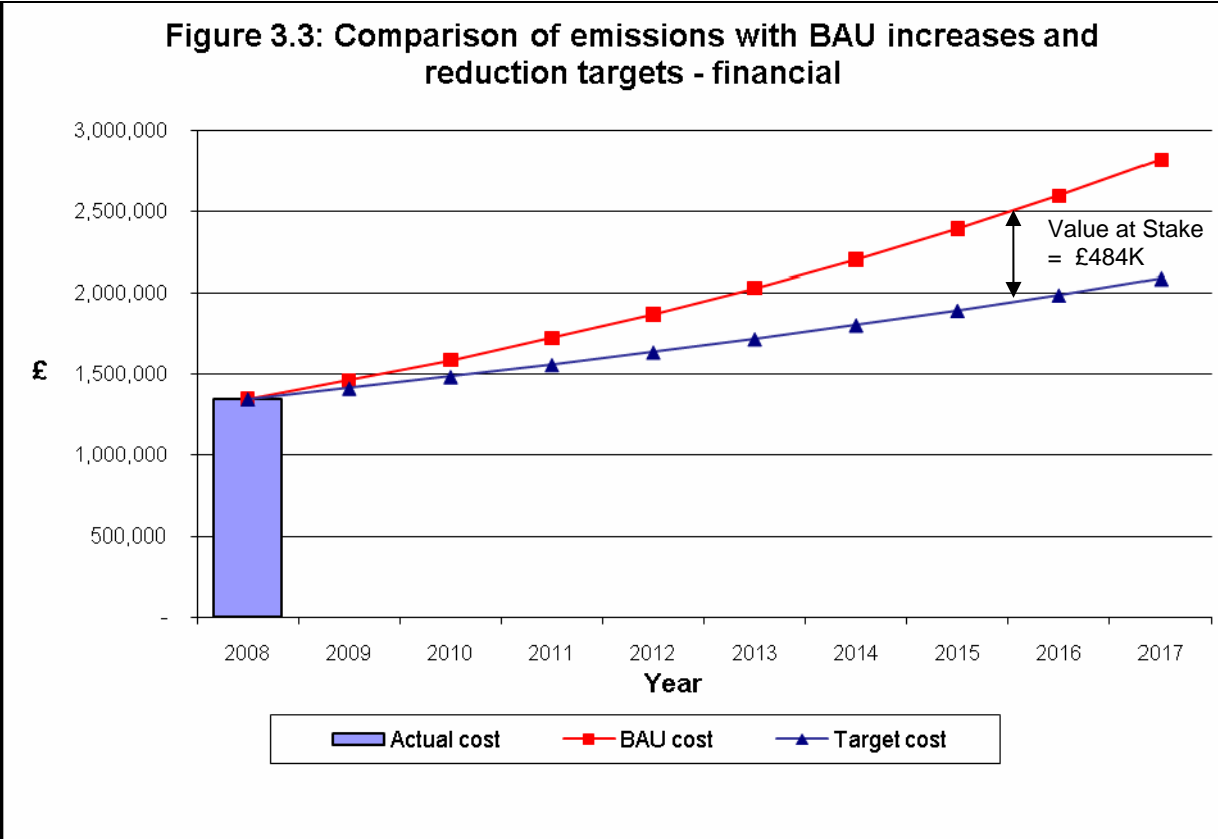
3.3 Projections and Value at Stake

Business as Usual projections have been calculated on an assumption that emissions will increase by 0.7% each year⁴. This is based on a scenario of limited maintenance to buildings, vehicles and equipment and no efforts to raise awareness of carbon management or improve management of waste and water.

The Value at Stake is defined as the difference in carbon emissions and costs between the Business-as-Usual scenario and the reduced emissions scenario. Figure 3.2 and Figure 3.3 show the Value at Stake graphs for carbon emissions and costs for SAC. These graphs are based on the achievement of a 20% reduction in carbon emissions by 2015. The gap between the Business as Usual scenario and the reduced emissions scenario is the cost in carbon emissions (Figure 3.2) and cost (Figure 3.3) of not doing the programme.



⁴ Source: DTI / DBERREP68



4. Carbon Management Projects

SAC is committed to undertaking a number of carbon reduction projects, some of which are already being implemented. Section 4.1 outlines a number of projects started during or after the baseline year. These have either been completed or are ongoing. Sections 4.2, and 4.3 show proposed projects that will be further developed. Appendix A shows a list of projects that could be further developed in the medium to longer term. SAC's CO₂e emissions are dominated by energy consumption of buildings which accounts for 89% of the carbon footprint. The projects listed in Sections 4.1, 4.2 and 4.3 below, cover the entire scope of SAC's carbon footprint but with greater emphasis being given to reducing energy consumption.

From the projects identified in Sections 4.1 to 4.3, it is estimated that 89.5% of the 20% target will be achieved.

4.1 Existing/Completed Projects Projects

Existing/Completed Projects are those projects that have either been completed or are ongoing since the baseline year.

Ref	Project	Lead	Cost			Annual Saving		Pay back	% of Target	Year
			Cap'l	Rev'ue	Res'ce	Fin	CO ₂ *			
001	John Hannah Building – Gas boiler replaced with modern efficient gas boiler.	PEG	18,263	1,180		6,525	52.05	2.80	3.5	09/10
002	Alan Watt Building – Oil boiler replaced by modern efficient oil boiler.	PEG	8,000	520		18,220	79.25	0.44	5.3	09/10
003	Alan Watt Building – Replacement Calorifier	PEG	7,101	461		2,902	19.44	2.45	1.3	09/10
004	KB library – replacement Valves for VT circuit to improve heating control.	PEG	654	42		274	2.35	2.387	0.16	09/10
005	Doig Scott Building – Fuel Change & Boiler Replacement, linked to BMS system.	PEG	19,000	500		13,000	16.85	2.31	1.1	09/10
006	Replacement boiler to Elgin office	PEG	1,800	200		211	1.5	8	3	2009
007	Hunter Hall – TRVs with locks	PEG	500	32.5		149	1.32	3.35	0.01	2010
008	Auchincruive – maintenance of heating controls.	PEG	2,000	130		1,000	5.38	2.0	0.36	2010
	TOTAL		57,318	3,065.5		42,281	178.14		14.73	

*CO₂ is shown in Tonnes

4.2 Planned / Funded Projects

Planned/Funded Projects are projects that are definitely planned to take place and have funding allocated. These have defined business cases and, therefore, the quantification of costs and savings is fairly robust.

Ref	Project	Lead	Cost			Annual Saving		Pay back	% of Target	Year
			Cap'l	Rev'ue	Res'ce	Fin	CO ₂ *			
009	FBS Inverness – loft insulation	PEG, SAC	1,700			548	2.77	3.1	0.186	2010
010	KB Library – replacement boiler	PEG, SAC	8,000	520		1,700	10.2	4.7	0.7	2010
011	FBS Oban – Heating, lighting and insulation	PEG, SAC	14,000	910		TBC	TBC		TBC	2010
012	Peter Wilson Building - Replacement Calorifier	PEG, SAC	25,000			TBC	TBC		TBC	2010
	Sub Total		48,700			TBC	TBC			
013	Craigie Campus	PEG	9M	N/A		84,681	728.4	N/A	50	2011
014	Easter Bush Research Centre	PEG	5M	N/A		59,020	141.3	N/A	9.5	2011
015	Alan Watt Building	PEG, SAC	1,200			780	6.9	1.5	0.47	2010
016	Cronin Building Boiler	PEG, SAC				26,000	129	TBC	8.6	2010
017	Ferguson Building – Feasibility Study to insulate roof space	PEG, SAC	TBC			TBC				2010
	Total						TBC		TBC	

*CO₂ is shown in Tonnes

4.3 Near Term Projects

Near term projects are those that are planned to take place but are NOT yet funded. These are well defined and, therefore, the quantification of costs and savings is fairly robust.

Ref	Project	Lead	Cost			Annual Saving		Pay back	% of Target	Year
			Cap'l	Rev'ue	Res'ce	Fin	CO ₂ *			
018	Peter Wilson Building – replace Seminar room boiler	PEG, SAC	8,000	520		1,700	10.2	4.7	0.7	2011
019	Peter Wilson Building – connect the temperature controls to the BEMS system.	PEG, SAC	1,500	100		400	2.4	3.75	0.16	2011
020	Lighting Controls – Ferguson Building	PEG, SAC	17,000	1,105		4,500	23	3.8	1.5	2010
021	Campus Travel Plans	EHS	3,000	500	10 days	1000	2.5	3.0	0.17	2010
022	Replacement DTV's At Craibstone Halls	PEG	12,000	780		237	1.2	N/A	0.08	2010
	Total		41,500	3,005		7,837	39.3	5.3	2.61	

*CO₂ is shown in Tonnes

NB: N/A = Not Applicable. In this sense the payback period cannot be described purely in carbon related cost savings.

4.4 Projected achievement towards target

Figure 4.1 presents the actual savings resulting from the projects completed above against the Business as Usual scenario and the Target projections based on a 20% reduction by 2015/16. This will allow the Environment Committee to track the impact of completed projects on SAC's carbon costs.

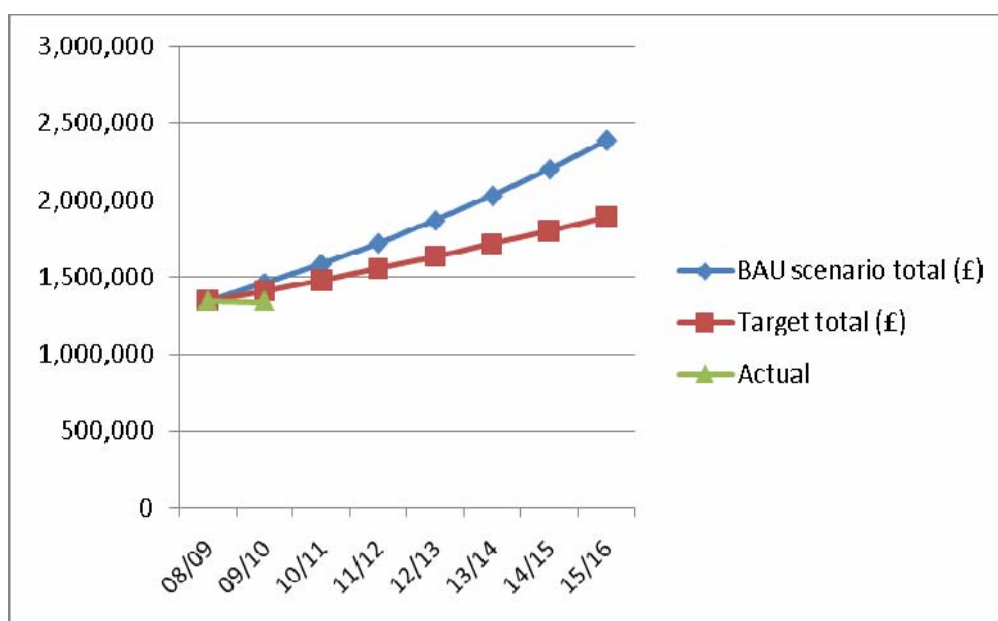


Figure 4.1: Actual carbon-Related Costs against the Business as Usual scenario and the projected Target

Table 4.1, below, provides the data for the above graph and includes the target and predicted carbon savings.

	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16
BAU scenario total (£)	1,345,125	1,460,232	1,585,202	1,720,880	1,868,187	2,028,119	2,201,761	2,390,290
Target total (£)	1,345,125	1,412,368	1,482,971	1,557,104	1,634,943	1,716,673	1,802,489	1,892,595
Total value at stake projection (£)	-	46,524	99,369	159,196	226,727	302,752	388,137	483,827
Tonnes CO₂e saved (cum)	-	178	1,082	1,085	1,183	1,281	1,380	1,478
Projects £'s saved (cum)	-	42,281	204,931	213,018	-	-	-	--
Actual Total (£)	1,345,125	1,417,951	-	-	-	-	-	-

Table 4.1: Projected Business as Usual and Target Carbon-Related Costs with Actual Carbon-Related Costs and Tonnes CO₂e saved

Key



working with



	£'s
	Tonnes CO₂e

5. Implementation

The projects identified as part of SAC's commitment to reducing carbon emissions are funded primarily from either SAC or RERAD capital. Two projects dominate – the Easter Bush Research Centre in Midlothian and the Craigie Campus in Ayr. These projects are part of SAC's long-term capital expenditure programme and amount to investments of £5M and £9M respectively.

Since the baseline year SAC has invested £176,000 in energy reduction initiatives, and an additional £41,500 is planned for the forthcoming financial year. In the longer-term projects amounting to £57,500 are proposed but not yet approved.

5.1 Financing

The following key assumptions have been made in calculating the benefits/savings:

- Utility prices⁵ have been assumed as:
 - Gas – 2.57p/kWh including Climate Change Levy but excluding VAT
 - Electricity – 7.74p/kWh including Climate Change Levy but excluding VAT
 - Gas Oil – 6.42p/kWh excluding VAT
 - Burning Oil – 6.42p/kWh excluding VAT
 - LPG – 1.5p/kWh excluding VAT
- Timely implementation of SACs Estates Strategy
- Annual rate of inflation:

The cost of energy will have the most significant influence on potential financial savings. Some protection, however, is afforded through long-term contracts negotiated via Advanced Procurement for Universities and Colleges Limited and Procurement Scotland.

The biggest influences on SAC's potential to reduce carbon emissions are the proposed moves to Craigie Campus and EBRC.

5.1.1 Benefits / savings – quantified and un-quantified

In the first year (2010/11) SAC has allocated approximately £43,300 of capital and revenue funding to implement initiatives identified through the carbon management plan. In addition significant capital investment is occurring at the SAC sites in Ayr and Bush Estate. These projects form part of a longer term investment strategy to improve the SAC estate.

The primary quantifiable benefit is the projected cost savings of £484,827 over the five-year period of the plan. Table 5.1, below, provides a forecast summary of the potential savings.

	09/10	10/11	11/12	12/13	13/14	14/15	15/16
Cum. cost saving (£)	46,524	99,369	159,196	226,727	302,752	388,137	483,827
Cum. CO₂e saving (tonnes)	282	558	828	1,091	1,347	1,598	1,843
% of target achieved	12	73	74	80	87	93	100

Table 5.1: Cumulative Carbon and Carbon Related Cost Savings

⁵ Utility prices based on expected rates and known rates averaged over the next twelve months

Unquantified benefits:

Additional benefits, less easy to quantify, may also be accrued. For example, the improvements to SACs infrastructure and facilities should mean higher recruitment and retention rates of staff and students. For example the replacement of old televisions in the halls of residence will create a more attractive environment for students and investments in video conferencing facilities should create more opportunities for international collaboration.

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

5.1.2 Financial costs and sources of funding

	2009/10	2010/11	2011/12	2012/13	2013/14
Annual costs:					
Total annual capital cost	57,318	41,500	39,500	-	-
Total annual revenue cost	3,065	2,700	2,870	-	-
Total costs	60,383	44,200	42,370	-	-
Committed funding:					
Committed annual capital	57,318	23,000	9,500	-	-
Committed annual revenue	3,065	1,495	620	-	-
Total funded	60,383	24,495	10,120	-	-
Unallocated funding					
Unallocated annual capital	0	18,500	30,000	-	-
Unallocated annual revenue	0	1,205	2,250	-	-
Total unfunded	0	19,705	32,250		

NB: figures shown in £ 1000's

The above table shows the proposed capital and revenue costs associated with the Carbon Management Plan with the exception of the Craigie Campus and EBRC projects. SAC has committed a total of £14M to these projects over the financial years 2010/11 and 2011/12. These funds are confirmed.

At the time of writing this plan capex funding is still being approved.

5.2 Governance for Implementation

SAC has an established structure for environment management. The structure is based around a Corporate Environment Committee made up of senior managers from each Division. This committee takes overall responsibility for the Carbon Management Plan.

The Environment Committee consists of the following staff:

Janet Swadling	Director of Finance & Corporate Affairs and Project Sponsor
Alan Renwick	Land Economy & Environment Group Manager, Research
Graham Kerr	Environment & Design Group Manager, Consulting
Bruce Philp	Environmental Sciences Interim Group Manager, Learning
Clive Richardson	Property & Estates Group Manager
Andy Drysdale	Environment Manager
Joan Chalmers	Energy Manager
David Collins	Environment, Health & Safety Manager

5.2.1 Embedding Carbon Management

To ensure the effective cascade of responsibilities and actions each Division has its own Environment Management committee. These committees are chaired by the senior managers who sit on the Environment Committee and are made up of staff with a key role to play in environmental management in each Division. The Divisional Committees report to their Divisional Management Teams and appraise the Environment Committee of their progress. The priorities for each Division are determined by corporate priorities (e.g. carbon management) and specific operational requirements. Figure 5.2 provides an overview of the Environment Management structure at SAC.

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

This Carbon Management Plan will be a major component of SAC's overall environment management strategy. The carbon reduction targets will be included in SAC's Strategic Business Plan and environmental criteria have been added to the business case pro-forma for assessing capital expenditure.

5.2.2 Data Management – measuring the difference, measuring the benefit

The majority of the data used is robust and provides a good measure of SAC's carbon footprint. It is recognised that a small proportion of the data is not as robust as it could be. There are specific issues with travel and waste data. Table 5.1, below, provides a summary of the current weaknesses in the data and remedial actions to improve data quality.

Category	Description of issue	Remedial action
Air and Rail	Tickets are purchased in a variety of ways including company credit cards, travel agent, own credit cards, purchase orders raised.	Investigate centralising air and rail travel bookings.
Own car and leased car.	Mileage is recorded on a paper system and it is therefore difficult to extract and analyse data.	Develop SAC's new Core Business System to record vehicle types and distances travelled in an electronic format.
Pool Vehicles	Lack of vehicle log books	Issue new log books for all vehicles with guidance for use. Spot check log books

		during the year.
Waste	Arrangements for waste management are different at each site.	Catalogue waste management practices at each site. Establish data collection methodologies and assign responsibilities.

Table 5.1 Data Management Improvements

This data will support reporting against Key Environmental Performance Indicators on a quarterly basis and will be included in SAC’s Environment Annual Report.

Where appropriate, data will be cascaded down through the Divisional Environment Committees and incorporated into the Core Brief for all staff.

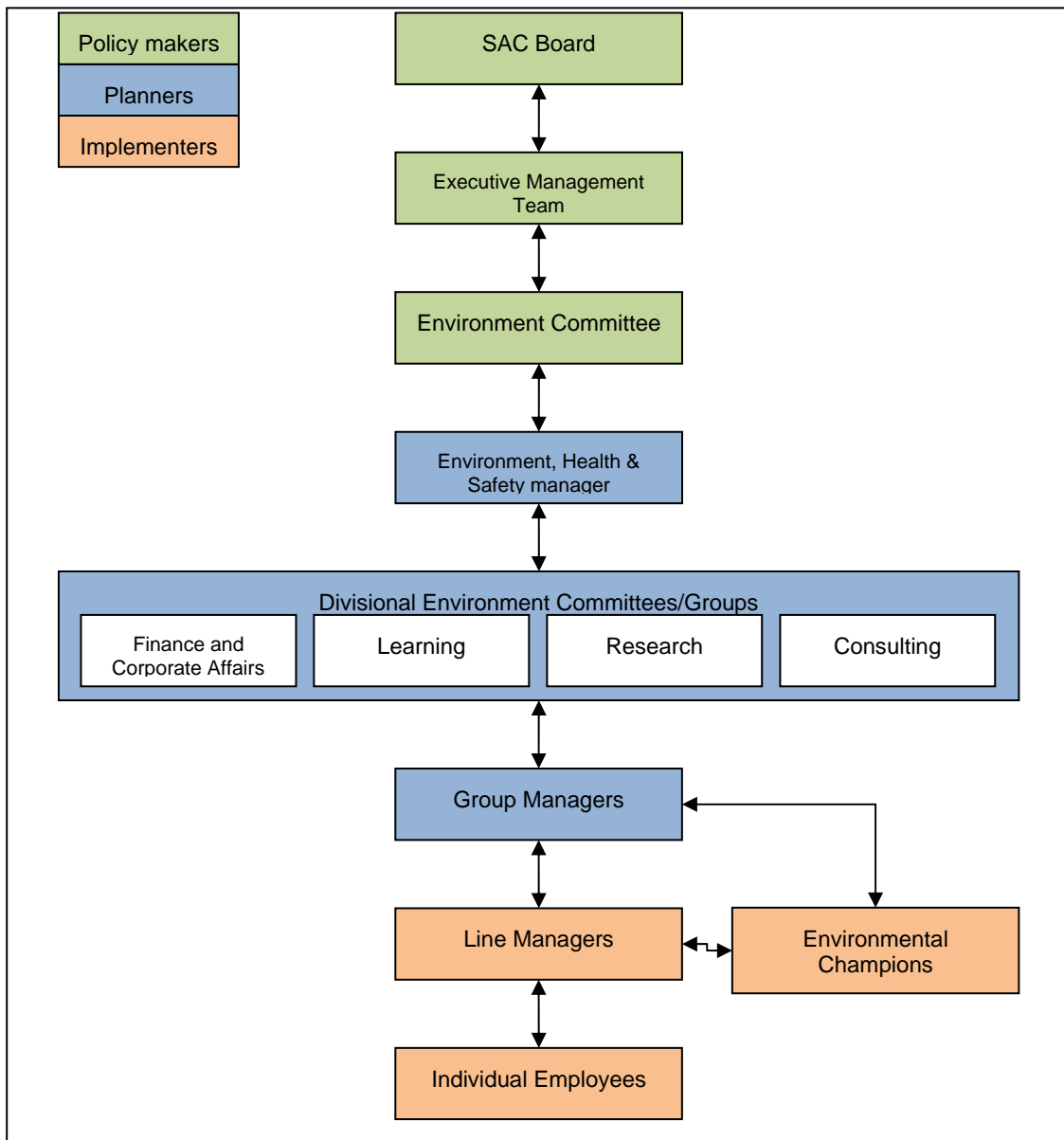


Figure 5.2 Environment Management Structure Overview

5.3 Resource commitment

5.3.1 Implementing the Initiatives

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

- Progress report against projects – monthly to the Environment Committee
- Key Environmental Performance Indicators – quarterly to the Environment Committee and Executive Management Team
- Annual Environment Report (including carbon footprint) - Environment Committee, Executive Management Team and the SAC Board.

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

5.3.2 Maintaining quality over time

SAC will produce a carbon footprint each year and update the carbon management plan until the end of the current plan period – 2015/16. The process of updating the plan will be based on SAC’s strategic planning framework and will involve consultation with key staff and the revision, where necessary, of the carbon management strategy. After 2015/16 a new carbon management plan will be published with targets for 2020.

5.3.3 Programme Management of the CM Programme

The Carbon Management Plan will be managed by the Environment Manager, supported by the members of the Environment Committee.

Any issues in delivering the projects will be raised with the Environment Committee and either escalated to the Executive Management Team or delegated to the Divisions to respond.

5.3.4 The Carbon Management Team – delivering the projects

The Carbon Management Team operates in support of the Environment Committee and consists of representatives from key areas across SAC. Their primary role is to identify and quantify new projects, monitor progress and report to the Environment Committee. Representatives are as follows:

- Andy Drysdale, Environment Manager (Chair)
- Joan Chalmers, Energy Manager
- Ian Donald, Property Manager
- David Snoddy, Management Accountant
- Belinda Haig, IS Project Lead

The Team will meet informally on an as-needs basis to develop proposals and make recommendations.

5.3.5 Succession planning for key roles

The table below defines the successors for the Project Lead and Project Sponsor roles.

Project Lead	Successor
Environment Manager	Energy Manager
Project Sponsor	Successor
Director Finance & Corporate Affairs	Chief Executive

Appendix A: Medium to long term projects

The following table lists possible projects that could contribute to SAC’s Carbon Management Plan but are not yet planned in detail. These projects may be subject to feasibility studies or further work and therefore the quantification of costs and savings will be added at a later date.

Ref	Project	Lead	Cost			Annual Saving		Pay back	% of Target	Year
			Cap'l	Rev'ue	Res'ce	Fin	CO ₂			
001	CHP project – Peter Wilson Building, Edinburgh	PEG								
002	CHP – consider for other SAC buildings.	PEG								
003	Biomass – consider for SAC buildings.	EHS								
004	Replacement boilers - various sites where feasible.	PEG & EHS								
005	Lighting – consider replacement lighting to most efficient system available.	PEG & EHS								
006	New and Renewables – investigate new and renewable technologies for implementation – all sites.	EHS								
007	AMR metering for electricity.	EHS	1,500	1,500		7,220	38.7			
008	AMR Metering – gas and water meters (TBC. No cost for 'bronze' gas service under new supply contract)	PEG, SAC								
009	Sub-metering									
010	Inverness VSC lighting									
011	Efficient Server Programme	IS								
012	Boiler Replacement At Hunter Hall, Craibstone									
007	All Campus lighting to be linked to BEMS system.	PEG, SAC	18,000	1000						

Appendix B: SAC Sites Included as part of Carbon Footprint

No.	Site	Location
1	Craibstone - Ferguson Building I & II - own supply	Craibstone
2	Craibstone - Maitland	Craibstone
3	Craibstone - Goughburn	Craibstone
4	Craibstone - Goughburn Building Cambridge Laboratory	Craibstone
5	Craibstone - Goughburn Field Laboratory	Craibstone
6	Craibstone - Goughburn Pumping Station	Craibstone
7	Craibstone - Cruikshank	Craibstone
8	Craibstone - Doig Scott	Craibstone
9	Craibstone - Mill of Craibstone	Craibstone
10	Craibstone - Horticultural Unit	Craibstone
11	Craibstone - Sutton Hall	Craibstone
12	Craibstone - Mackie Hall	Craibstone
13	Craibstone - Hunter Hall	Craibstone
14	Mill of Craibstone House	Craibstone
15	Craibstone - Houses	Craibstone
16	Auchincruive Estate Various Building	Auchincruive
17	Auchincruive - Horticultural CRU	Auchincruive
18	Auchincruive - Metabolism Unit	Auchincruive
19	Auchincruive - Diamond-field	Auchincruive
20	Auchincruive - 1 Diamond Cottage	Auchincruive
21	Auchincruive - 2 Diamond Cottage	Auchincruive
22	Auchincruive - 4 Diamond Cottage	Auchincruive
23	Auchincruive - 5 Diamond Cottage	Auchincruive
24	Auchincruive - Tea House	Auchincruive
25	Auchincruive - Houses and Chicken Shed	Auchincruive
26	Auchincruive - Sewerage Pumping Station	Auchincruive
27	FBS Dumfries	FBS
28	FBS Edinburgh	FBS
29	FBS Lanark	FBS
30	FBS Oban	FBS
31	FBS Campbeltown	FBS
32	FBS Inverness	FBS
33	FBS St Boswells	FBS
34	FBS St Boswells	FBS
35	FBS Perth	FBS
36	FBS Thurso	FBS
37	FBS Lerwick	FBS
38	FBS Kirkwall	FBS
39	FBS Stornoway	FBS
40	FBS Balvanich	FBS
41	FBS Portree	FBS
42	FBS Elgin	FBS
43	FBS Turriff	FBS
44	FBS Turriff	FBS
45	FBS Cupar	FBS
46	FBS Stirling	FBS
47	FBS Thainstone	FBS
48	FBS Stonehaven	FBS
49	FBS Forfar	FBS
50	FBS Stranraer	FBS
No.	Site	Location

51	Vets Craibstone	DSC
52	Vets Ayr	DSC
53	Vets Dumfries	DSC
54	Vets Bush Estate	DSC
55	Vets Inverness	DSC
56	Vets St Boswells	DSC
57	Vets Perth	DSC
58	Vets Thurso	DSC
59	<i>Auchincruive West Lodge - various buildings</i>	Auchincruive
60	CE Unit Bush Estate	Bush
61	Craibstone - Ashtown Embryo Unit	Craibstone
62	Craibstone - Land Resources Glasshouse Unit (1)	Craibstone
63	Craibstone - Land Resources Glasshouse Unit (2)	Craibstone
64	Craibstone - Mackie Kitchen	Craibstone
65	Craibstone Electricity - various sites	Craibstone
66	Craibstone - Walled Garden	Craibstone
67	Edinburgh - 27 Roslin	Bush
68	FBS Isle of Benbecula	FBS
69	FBS Roslin	FBS
70	Auchincruive Diamond Glasshouse - Engineers Diamond Shed	Auchincruive
71	Auchincruive - Glasshouse Unit	Auchincruive
72	Horticultural Department - Roslin	Bush
73	Bush Estate - House O'Muir Cattle	Bush
74	Auchincruive - Main Substation Heating/Lighting	Auchincruive
75	Craibstone - Office Block Agronomy	Craibstone
76	Edinburgh - West Mains Road	Kings Buildings
77	Auchincruive buildings - 303703	Auchincruive
78	Auchincruive buildings - 303905	Auchincruive
79	Craibstone Gas - Various Sites	Craibstone
80	Dairyman's Cottage - Glencaple Road	
81	Mill of Craibstone House	Craibstone
82	West Mains Road - Library	Kings Building
83	West Mains Road - Teaching Block	Kings Building
84	West Mains Road - Marketing Cottage	Kings Building
85	West Mains Road - Greenhouses	Kings Building
86	27 Bush	Bush
87	Woodlea Cottage - Auchincruive	Auchincruive
88	Craig Rossie - Coylton road - Auchincruive	Auchincruive
89	Mansfield Unit - Auchincruive	Auchincruive
90	FBS Bush	FBS
91	Sir Stephen Watson Building	Bush
92	Craibstone - Mackie Hall Dwelling House	Craibstone
93	Edinburgh 27 Roslin	Bush

Appendix C: Project Descriptions

Project:	<i>Insulations works for various SAC buildings</i>
Reference:	SAC 009
Owner (person)	<i>Joan Chalmers</i>
Department	<i>Finance & Corporate Affairs, Properties & Estates</i>
Description	<i>Insulation measures for various SAC sites, including loft insulation, wall insulation, draught-proofing and floor insulation. Energy Savings will be achieved from reduced heat loss through the building fabric.</i>
Benefits	<p>Financial savings: £4,750 Payback period: 3.16 years CO₂ Emissions reduction: 28.5 tonnes of CO₂ This project will provide 1.9% of the SAC target CO₂ emissions reductions.</p>
Funding	<p>Estimated cost of implementation: £15,000. Operational costs are negligible for insulation measures. Potential Sources of funding include: SAC Energy Capital budget and Salix Finance. The criteria for assessing the benefits are set out in a standard SAC Business Case template, produced for all capital projects. Following completion of Business Cases, individual projects will have to be approved by SAC Group Managers and Heads of Divisions before projects can be implemented. Approval for each project will be based on the standard Business Case requirements.</p>
Resources	SAC Properties & Estates staff will be required to enable delivery of projects.
Ensuring Success	<p>The project will succeed if it is successful in reducing energy consumption and CO₂ emissions for each building. The risk of insulation projects not achieving energy savings is low. Technically the main risk is poor installation of the insulation materials. This is a greater risk for cavity wall insulation than for insulation measures that remain visible. Financial risk should be minimised by ensuring costs are agreed prior to insulation. It should also be ensured that insulation materials installed are of the required quality.</p>
Measuring Success	<p>Year on Year monthly energy consumption in kWh and CO₂ emissions will be measured for displaying performance and achievements. Energy Consumption levels will be measured on a monthly basis to assess actual energy savings are being achieved. Consumption levels within one year of project completion will be compared with the previous year. In addition, consultation with site staff will take place to ascertain comfort levels within the building and ensure adequate room temperatures are being achieved.</p>
Timing	<p><i>Milestones / key dates</i></p> <ul style="list-style-type: none"> • <i>start date: 01/09/2010</i> • <i>completion date (when it will deliver savings): 31/03/2011</i> • <i>interim deliverable / decision points: 31/01/2011</i>
Notes	<i>Projects completion will depend on improved information regarding status of sites.</i>

Project:	<i>Replacement Boiler for Peter Wilson Building Library</i>
Reference:	<i>SAC-010</i>
Owner (person)	<i>Ian Donald and Alan Leitch</i>
Department	<i>Finance & Corporate Affairs, Properties & Estates</i>
Description	<i>Replace old inefficient gas boiler with new modern more efficient and reliable boiler. Energy savings will be achieved through improvement in boiler efficiency.</i>
Benefits	Financial savings: £ 1,700 Payback period: 4.7 years CO ₂ Emissions reduction: 10.2 tonnes of CO ₂ This project will provide 0.7% of the SAC target CO ₂ emissions reductions.
Funding	The initial estimate cost of the project is £8,000. Estimated operational costs are £520 per annum. Source of funding: SAC Energy Capital budget and Salix Finance will be considered for this project. There is a standard SAC Business Case template and criteria for assessing the benefits of each project. Following completion of Business Cases, individual projects will have to be approved by SAC Group Managers and Heads of Divisions before projects can be implemented. Approval for each project will be based on the standard Business Case requirements.
Resources	SAC Properties & Estates staff will be required to enable delivery of projects. The project will be delivered within current resources.
Ensuring Success	The project will need to be approved by SAC and funding will have to be made available for implementation. Suitably qualified professionals will be required for the installation of the new boiler. The most efficient and appropriately sized boiler will have to be selected to achieve maximum savings. Principal risks include selecting a boiler that will not provide maximum benefits. Financial risks can be reduced through appropriate tendering procedures and evaluation. This project will be a priority for implementation. The existing boiler is very old, unreliable and inefficient.
Measuring Success	Year on Year monthly energy consumption in kWh and CO ₂ emissions will be measured for displaying performance and achievements. Energy Consumption levels will be measured on a monthly basis to assess actual energy savings are being achieved. Consumption levels within one year of project completion will be compared with the previous year. In addition, consultation with site staff will take place to ascertain comfort levels within the building and ensure adequate room temperatures are being achieved.
Timing	<i>Milestones / key dates</i> <ul style="list-style-type: none"> • <i>start date: 01/07/2010</i> • <i>completion date (when it will deliver savings): 31/08/2010</i> • <i>interim deliverable / decision points: 31/07/2010</i>
Notes	

Project:	<i>Lighting Controls, Ferguson Building</i>
Reference:	<i>SAC-011</i>
Owner (person)	<i>Ian Donald and Tom Corall</i>
Department	<i>Finance & Corporate Affairs, Properties & Estates</i>
Description	<i>Lighting controls are to be installed to reduce electricity consumption. Energy savings will be achieved by reducing hours run for lighting throughout the building.</i>
Benefits	<p>Financial savings: £ 4,500 Payback period: 3.8 years CO₂ Emissions reduction: 23 tonnes of CO₂ This project will provide 1.5% of the SAC target CO₂ emissions reductions.</p>
Funding	<p>The initial cost of implementing the project is £17,000. Estimated Operational costs are £1,105. Source of funding: SAC Energy Capital budget and Salix Finance will be considered for this project. There is a standard SAC Business Case template and criteria for assessing the benefits of each project. Following completion of Business Cases, individual projects will have to be approved by SAC Group Managers and Heads of Divisions before projects can be implemented. Approval for each project will be based on the standard Business Case requirements.</p>
Resources	SAC Properties & Estates staff will be required to enable delivery of projects. The project will be delivered within current resources.
Ensuring Success	<p>Selection of appropriate controls will be required to ensure success of this project. It will have to be ensured that the proposed installation is compatible with the existing system and can be installed without difficulties. Technical risks include incompatibility of equipment with the existing lighting system, inappropriate selection of controls in relation to requirements and safe installation of controls. There may be a financial risk in that after starting the project implementation, it could become apparent that additional work is required for successful completion of the project that may have a significant impact on project costs.</p>
Measuring Success	<p>Year on Year monthly energy consumption in kWh and CO₂ emissions will be measured for displaying performance and achievements. Energy Consumption levels will be measured on a monthly basis to assess actual energy savings are being achieved. Consumption levels within one year of project completion will be compared with the previous year. Occupants of the building will be consulted regarding the lighting controls to ensure there are no problems. Adjustments to the control sensitivity may be required after installation to ensure they are operating as required.</p>
Timing	<p><i>Milestones / key dates e.g.</i></p> <ul style="list-style-type: none"> • <i>start date: 01/09/2010</i> • <i>completion date (when it will deliver savings): 31/03/2011</i> • <i>interim deliverable / decision points: 31/01/2011</i>
Notes	<i>This project may not be completed in full. Rationalisation may occur and controls may only be installed in areas where significant benefit will be achieved.</i>

Project:	<i>Outstation for Greenhouse at Peter Wilson Building</i>
Reference:	<i>SAC-012</i>
Owner (person)	<i>John Curry</i>
Department	<i>Finance & Corporate Affairs, Properties & Estates</i>
Description	<i>The outstation already located in the greenhouse will be linked to the Building Management System to allow remote access to controls and desktop monitoring.</i>
Benefits	<p>Financial savings: £ 200</p> <p>Payback period: 7.5 years</p> <p>CO₂ Emissions reduction: 1.3 tonnes of CO₂</p> <p>This project will provide 0.085% of the SAC target CO₂ emissions reductions.</p>
Funding	<p>The initial estimated cost of implementing the project is £1,500.</p> <p>Operational costs are estimated to be £100 per annum.</p> <p>Source of funding: SAC Energy Capital budget and Salix Finance will be considered for this project. There is a standard SAC Business Case template and criteria for assessing the benefits of each project. Following completion of Business Cases, individual projects will have to be approved by SAC Group Managers and Heads of Divisions before projects can be implemented. Approval for each project will be based on the standard Business Case requirements.</p>
Resources	SAC Properties & Estates staff will be required to enable delivery of projects. The project will be delivered within current resources.
Ensuring Success	<p>Technical details will need to be collated to complete this project.</p> <p>Technically, the principal risk is that the wrong information is provided for the project, leading to unforeseen problems.</p> <p>Financial risks relate to technical risks and occur in relation to the project being technically wrong.</p>
Measuring Success	<p>Year on Year monthly energy consumption in kWh and CO₂ emissions will be measured for displaying performance and achievements.</p> <p>Energy Consumption levels will be measured on a monthly basis to assess actual energy savings are being achieved. Consumption levels within one year of project completion will be compared with the previous year.</p>
Timing	<p><i>Milestones / key dates e.g.</i></p> <ul style="list-style-type: none"> • <i>start date: 01/06/2010</i> • <i>completion date (when it will deliver savings): 31/07/2010</i> • <i>interim deliverable / decision points: 01/07/2010</i>
Notes	<i>Currently awaiting further information to enable an assessment for a quotation.</i>

Project:	<i>Craigie Campus</i>
Reference:	<i>SAC-013</i>
Owner (person)	<i>Clive Richardson</i>
Department	<i>Property & Estates Group</i>
Description	<i>Relocation of teaching staff from Auchincruive Campus to the newly constructed Craigie Campus in Ayr.</i>
Benefits	<p>Financial savings: To be confirmed</p> <p>Payback period: To be confirmed</p> <p>CO₂ Emissions reduction: 728.4 tonnes of CO₂e</p> <p>% of target – 50%</p>
Funding	<p>Project cost: ca. £9M</p> <p>Source of funding: internal, Scottish Government (administered by the Funding Council).</p> <p>All funding has been approved</p>
Resources	This project is being delivered in partnership with the University of West of Scotland. All funding has been approved.
Ensuring Success	Teaching operations successfully transferred to the new campus by September 2011.
Measuring Success	Energy consumption
Timing	<p><i>Milestones / key dates e.g.</i></p> <ul style="list-style-type: none"> • <i>start date: 31 August 2009</i> • <i>completion date (when it will deliver savings): May 2011</i> • <i>occupancy date: September 2011</i>
Notes	

Project:	<i>Easter Bush Research Centre</i>
Reference:	<i>SAC-014</i>
Owner (person)	<i>Clive Richardson</i>
Department	<i>Property & Estates Group</i>
Description	<i>Relocation of research staff from Sir Stephen Watson Building to the newly constructed EBRC at the Bush Estate.</i>
Benefits	Financial savings: To be confirmed Payback period: To be confirmed CO ₂ Emissions reduction: 141.3 tonnes of CO ₂ e % of target – 9.5%
Funding	SAC's investment into the Easter Bush Research Centre is £5M. Funding sources are SAC Internal - £2.5M and Scottish Government £2.5M. Internal funds have been confirmed. Final approval from the Scottish Government is due.
Resources	This project is being delivered in partnership with the University of Edinburgh, Roslin Institute, Moredun and the Royal (Dick) School of Veterinary Studies. The capital cost of the development is £55M. Thereafter running costs will be accounted for through SAC's revenue budget.
Ensuring Success	Key milestones include: <ul style="list-style-type: none"> • Building works project milestones • Timetable for occupancy
Measuring Success	Energy consumption statistics
Timing	<i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> • <i>start date: 9 February 2009</i> • <i>completion date: 3 December 2010</i> • <i>occupancy date: March 2011</i>
Notes	

Project:	Replacement Boiler, Seminar Room, Peter Wilson Building
Reference:	SAC-015
Owner (person)	<i>Ian Donald and Alan Leitch</i>
Department	<i>Finance & Corporate Affairs, Properties & Estates</i>
Description	<i>Replace old inefficient gas boiler with new modern more efficient and reliable boiler. Energy savings will be achieved through improvement in boiler efficiency.</i>
Benefits	Financial savings: £ 1,700 Payback period: 4.7 years CO ₂ Emissions reduction: 10.2 tonnes of CO ₂ This project will provide 0.7% of the SAC target CO ₂ emissions reductions.
Funding	The initial estimate cost of the project is £8,000. Estimated operational costs are £520 per annum. Source of funding: SAC Energy Capital budget and Salix Finance will be considered for this project. There is a standard SAC Business Case template and criteria for assessing the benefits of each project. Following completion of Business Cases, individual projects will have to be approved by SAC Group Managers and Heads of Divisions before projects can be implemented. Approval for each project will be based on the standard Business Case requirements.
Resources	SAC Properties & Estates staff will be required to enable delivery of projects. The project will be delivered within current resources.
Ensuring Success	The project will need to be approved by SAC and funding will have to be made available for implementation. Suitably qualified professionals will be required for the installation of the new boiler. The most efficient and appropriately sized boiler will have to be selected to achieve maximum savings. Principal risks include selecting a boiler that will not provide maximum benefits. Financial risks can be reduced through receipt of quotations. This project will be a priority for implementation. The existing boiler is very old, unreliable and inefficient.
Measuring Success	Year on Year monthly energy consumption in kWh and CO ₂ emissions will be measured for displaying performance and achievements. Energy Consumption levels will be measured on a monthly basis to assess actual energy savings are being achieved. Consumption levels within one year of project completion will be compared with the previous year. In addition, consultation with site staff will take place to ascertain comfort levels within the building and ensure adequate room temperatures are being achieved.
Timing	<i>Milestones / key dates</i> <ul style="list-style-type: none"> • <i>start date: 01/07/2010</i> • <i>completion date (when it will deliver savings): 31/08/2010</i> • <i>interim deliverable / decision points: 31/07/2010</i>
Notes	

Project:	<i>Peter Wilson Buildings, Seminar Room temperature controls.</i>
Reference:	<i>SAC-016</i>
Owner (person)	<i>Ian Donald and Alan Leitch</i>
Department	<i>Finance & Corporate Affairs, Properties & Estates</i>
Description	<i>Link temperature controls for Seminar Room area to BEMS control. Currently, only time control is possible.</i>
Benefits	<p>Financial savings: £ 400</p> <p>Payback period: 3.75 years</p> <p>CO₂ Emissions reduction: 2.4 tonnes of CO₂</p> <p>This project will provide 0.16% of the SAC target CO₂ emissions reductions.</p>
Funding	<p>The initial estimate cost of the project is £1,500.</p> <p>Estimated operational costs are £100 per annum.</p> <p>Source of funding: SAC Energy Capital budget and Salix Finance will be considered for this project. There is a standard SAC Business Case template and criteria for assessing the benefits of each project. Following completion of Business Cases, individual projects will have to be approved by SAC Group Managers and Heads of Divisions before projects can be implemented. Approval for each project will be based on the standard Business Case requirements.</p>
Resources	SAC Properties & Estates staff will be required to enable delivery of projects. The project will be delivered within current resources.
Ensuring Success	<p>The temperature control will need to be linked to the existing BEMS system. Suitably qualified professionals will be required for the installation of the controls.</p> <p>Principles risks of not completing the project are increased energy consumption levels.</p>
Measuring Success	<p>Year on Year monthly energy consumption in kWh and CO₂ emissions will be measured for displaying performance and achievements.</p> <p>Energy Consumption levels will be measured on a monthly basis to assess actual energy savings are being achieved. Consumption levels within one year of project completion will be compared with the previous year. In addition, consultation with site staff will take place to ascertain comfort levels within the building and ensure adequate room temperatures are being achieved.</p>
Timing	<p><i>Milestones / key dates e.g.</i></p> <ul style="list-style-type: none"> • <i>start date: 01/07/2010</i> • <i>completion date (when it will deliver savings): 31/08/2010</i> • <i>interim deliverable / decision points: 31/07/2010</i>
Notes	

Project:	Replacement DTVs At Craibstone Halls
Reference:	SAC-019
Owner (person)	<i>Ian Donald</i>
Department	<i>Finance & Corporate Affairs, Properties & Estates</i>
Description	<p>80 bedrooms at Craibstone student halls have analogue televisions provided for both student and external client use. On 1st September 2010, Aberdeen City switches off the analogue television transmitter. As a result the analogue televisions will become redundant.</p> <p>At present the annual cost for television licences is included within student annual fees and room charges for external clients.</p>
Benefits	<p>Financial savings: £ 237 Payback period: n/a years CO₂ Emissions reduction: 1.2 tonnes of CO₂ This project will provide 0.08% of the SAC target CO₂ emissions reductions. The key benefits are outlined as follows:</p> <ul style="list-style-type: none"> - Maintain the standard of the accommodation currently provided at Craibstone, positively received by students and their parents and external clients; - To continue to qualify for our 2 star rating awarded by Visit Scotland; - To appeal to the same number and type of clients as served at present; - Maintain the same level of charge to external clients during Summer & Easter recesses; and - Reduce television energy consumption by 10 - 30% as the new televisions sets are more energy efficient (actual consumption saving depends on television manufacturer).
Funding	<p>Project cost, e.g. the initial cost of implementing the project - £12,000 Operational costs, e.g. annual maintenance or running costs - £780</p>
Resources	SAC Properties & Estates staff will be required to enable delivery of projects. The project will be delivered within current resources.
Ensuring Success	In terms of energy efficiency, the most efficient televisions, with facilities to reduce energy consumption will need to be selected.
Measuring Success	<p>Year on Year monthly energy consumption in kWh and CO₂ emissions will be measured for displaying performance and achievements.</p> <p>Energy Consumption levels will be measured on a monthly basis to assess actual energy savings are being achieved. Consumption levels within one year of project completion will be compared with the previous year.</p>
Timing	<p><i>Milestones / key dates e.g.</i></p> <ul style="list-style-type: none"> • <i>start date: 01/06/2010</i> • <i>completion date (when it will deliver savings): 31/07/2010</i> • <i>interim deliverable / decision points: 01/07/2010</i>
Notes	

Project:	<i>Travel Planning</i>
Reference:	<i>SAC-018</i>
Owner (person)	<i>Andy Drysdale</i>
Department	<i>Environment, Health & Safety</i>
Description	<i>Development of a Corporate Travel Strategy and Travel Plans for the Bush, Ayr, Aberdeen and Edinburgh Campuses. The plans will aim to reduce CO₂e emissions from business travel, utilising the travel hierarchy.</i>
Benefits	<p>Financial savings: £ 1,000</p> <p>Payback period: 3 years</p> <p>CO₂ Emissions reduction: 2.5 tonnes of CO₂</p> <p>% of target – 0.17</p>
Funding	<p>Funding has been provided by the Energy Savings Trust. Additional anticipated costs will be staff time.</p> <p>Approval has been given to proceed with the Corporate Travel Strategy and Campus Travel Plans</p>
Resources	The remainder of this project will be delivered from existing resources. The main component is staff time to assist in formulating the strategy and campus plans.
Ensuring Success	<p>Key success factors:</p> <ul style="list-style-type: none"> • Establishing the Corporate Travel Strategy group • Improving systems to collect reliable data <p>Principal risks:</p> <ul style="list-style-type: none"> • Lack of accurate data • Travel plans not utilised at a campus level
Measuring Success	Overall reduction in carbon emissions arising from business travel (assuming that there is no change in the scope and nature of SAC business)
Timing	<p><i>Milestones / key dates e.g.</i></p> <ul style="list-style-type: none"> • <i>start date: 31 July 2010</i> • <i>31 March 2012</i> • <i>Quarterly review of progress</i>
Notes	