E2 ENERGY MANAGEMENT

Carbon Management Plan

Prepared for

Royal Agricultural College

By

E2 Services Ltd

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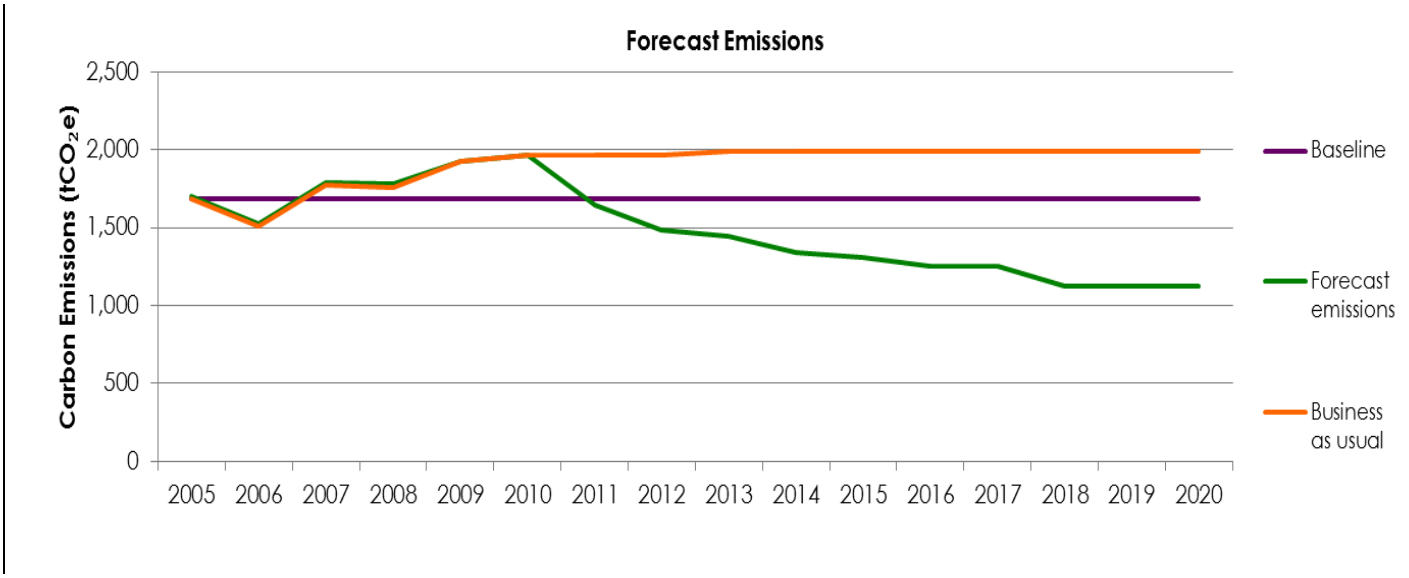
Executive Summary

Tackling climate change is a growing international priority. There is a rapidly increasing number of drivers for the Royal Agricultural College to make carbon reduction a priority. One of which is a requirement from the Higher Education Funding Council for England for Higher Education Institutions to create and show progress against a Carbon Management Plan, so that progress against the sector target of 43% reduction in scope 1 and 2 carbon emissions by 2020 against a 2005 baseline can be measured.

This document sets out the College's strategy for reducing carbon emissions by a target of 34% by 2020. An Implementation Plan is included, which gives details of energy saving projects that will be undertaken to reduce energy consumption. Taking into account the planned level of growth, carrying out the Implementation Plan will result in carbon emissions going forward as shown in Graph 1 below. This represents an absolute reduction of approximately 41% from 2009/10 and the Implementation Plan details gross savings of over 50% against the 2005/06 carbon emissions levels.



Graph 1 – Graph of planned reduction in carbon emissions

The average project payback is 5.0 years, based on an average price of 10p/kWh for electric and 4p/kWh for gas. This is likely to increase towards 2020, which will reduce the payback on the later projects. By 2020 the College will be saving nearly £125,000 on annual energy costs due to energy savings, even assuming no increase in unit energy prices.

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Year	Project Costs (£)	Project Savings			Payback (yrs)	% of total CO_2 target
		(kWh)	(£)	(tCO_2e)		
2010/11	£63,000 (plus floods)	364,230	£36,380	200.6	1.73	26.2%
2011/12	£80,500	586,490	£27,865	171.3	2.9	22.4%
2012/13	£35,000	352,930	£11,170	64.1	3.1	8.4%
2013/14	£95,000	193,440	£19,350	105.5	4.9	13.8%
2014/15	£241,000	57,750	£23,900	31.5	13.8	4.1%
2015/16	£93,000	121,330	£11,980	65.3	7.8	8.5%
2016/17	£15,000	11,000	£2,750	6.0	5.5	0.8%
2017/18	-	-	-	120	-	15.7%
2018/19						
2019/20						
2020/21						
Total	**£622,500**	**1,687,170**	**£123,950**	**764.3**	**5.0**	**100%**

Table 1 – Table showing the costs and savings of the planned projects

Progress against the plan will be reported publically every year. Measurement and review of savings will be carried out and communicated internally every six months in the form of an update that will be circulated to relevant stakeholders and put onto the sustainability section of the website. The estates team will review these and the findings presented to the Environmental Sustainability Strategy Group, in order for action to be taken in the case of actual savings falling below estimate. Milestone targets of 12% and 26% in 2012/13 and 2017/2018 respectively (against a 2005 baseline) have been set in order to measure progress.

The Carbon Management Plan will sit beneath the Sustainability Policy and fits within the overall strategic priorities of the College. The Director of Estates will be accountable to the Board of Governors for performing to the plan and ultimately delivering the 34% reduction target.

The Royal Agricultural College (RAC) places sustainability at the centre of its operations. Although there are limitations when it comes to carbon reduction due to the significance of the buildings and surrounding area, there are also a lot of great opportunities at the College for decreasing emissions. It is believed that by planning energy saving projects totalling 52% of the total carbon emissions of 2005/06 (including the biomass system that went in during Winter 2010 and as such is not listed as a future project within the plan) the College has set a real challenge for the future.

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1 – Introduction

The Royal Agricultural College (RAC) is an international leader in research, teaching and consultancy within agriculture and the rural environment. Nearly one thousand students attend the historic campus right in the heart of the Cotswolds, which was established in the 19th century and was the first Agricultural College in the English speaking world.

The RAC is committed to delivering teaching in sustainable development relating to the field of agriculture and also entrenching sustainable development within the running of the College. The Institution has an environmental policy, of which an objective is to develop a carbon and energy management plan.

This Carbon Management Plan will lay out the College's strategy for scope 1 and 2 carbon emissions reduction through decreasing energy use, set a target for emissions reduction and set up an Implementation Plan in order to achieve this reduction. Progress will be monitored through specified metrics to be recorded within the Environmental Management System.

The plan extends to 2020 with an ultimate emissions reduction target to ensure that carbon management is embedded into the long term strategy of the College, and to enable the Higher Education Funding Council for England (HEFCE) to monitor progress against the sector target of 43% emissions reduction by 2020 against a 2005 baseline.

Since 2005 the RAC has experienced growth in student and staff numbers, net internal area through construction of new buildings and facilities and an increase in the courses and services that are offered. This has led to a net increase in carbon emissions from 2005/06 to 2009/10, despite having undertaken a number of energy saving and renewable projects. There is some further expansion of the campus underway, which means that an acceleration in carbon saving will have to take place in order to ensure an absolute reduction in emissions through to 2020.

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2 - Carbon Management Strategy

2.1 – Context

The United Nations' Panel on Climate Change has concluded that the global increase in temperature is indisputable and that human activities are making a substantial contribution. Reports have forecasted huge consequences of unabated climate change in terms of both human and economic cost.

The UK Climate Change Act 2008 set legally binding targets for a reduction in greenhouse gas emissions of 80% by 2050 and at least 34% by 2020 against a 1990 baseline. Higher Education needs to play its part in meeting these targets. In their statement of policy for carbon reduction, the Higher Education Funding Council for England (HEFCE) has set out a target for the sector of 34% by 2020 against a 1990 baseline. Owing to the high level of growth in the sector from 1990, this is in line with a target of 43% reduction against a 2005 baseline. Milestones to measure progress have been set at 12% reduction by 2012 and 29% reduction by 2017 against a 2005 baseline. These will be reviewed in 2012.

Other HEFCE commitments include:

- to begin setting targets for scope 3 emissions by December 2013
- to seek further funding for green projects
- clarifying how carbon offsetting may be used to compensate for unavoidable emissions
- a requirement for institutions to set their own targets for 2020 for scope 1 and 2 emissions against a 2005 baseline, and for capital funding to be dependent on the provision of a Carbon Management Plan.

Legislation has been brought in to drive carbon emissions reduction across the UK in order to meet the targets set by the Climate Change Act 2008, a number of which apply to the Royal Agricultural College.

DECs – Display Energy Certificates are required for all public buildings with a footprint larger than 1000m². These provide information to building users of energy consumption within the building and provide an Operational Rating, showing the energy efficiency of the building on a graded scale, against a typical value. DECs are accompanied by an Advisory Report, which is designed to help building occupiers increase their energy efficiency and so improve their rating.

Cotswold District Local Plan and Local Development Frameworks – Sustainability is the starting point for planning in the Cotswolds and all rural areas, and any planning application needs to demonstrate a high commitment to sustainability and low carbon emissions, potentially including travel plans, energy use strategy etc. Building regulations also now stipulate factors that contribute to lower energy use. If the Royal Agricultural College were to consider developing the campus further in the future, then these drivers would mean that only efficient, well thought out designs would be considered. This would mean that emissions increases due to energy use from new builds and facilities would be kept to a minimum. The College's vision for development has been outlined in an Estates Master Plan, and on this basis has been worked into the forecast carbon emissions of the RAC up to 2020.

As well as legislative drivers, environmental performance has become increasingly important in other respects. The Royal Agricultural College is a leader in teaching and research in the field of agriculture and the rural environment and as such, sustainability is a growing part of the College's

focus in taught courses and practice. It is important that this is reflected within the campus environment and the day to day running of the estate in order to build best practice and good reputation.

Many commentators believe that energy prices are likely to increase up to 2020. As such, the Royal Agricultural College will, as will many other organisations, experience the financial benefits of improving energy efficiency and reducing carbon emissions. From 2011, the funding that Higher Education Institutions (HEIs) receive from HEFCE will be linked to their progress against the Institution's Carbon Management Plan.

Climate change is set to dictate the direction of legislation, science, technological development, and the socio-economic climate over the next ten years. It is therefore of huge importance that the Royal Agricultural College makes real progress against its Carbon Management Plan, or it will risk financial and reputational losses, and will hold back progress against its overarching Environmental and Sustainability Policy.

2.2 – Existing Policy

'The Royal Agricultural College regards environmental sustainability as a key element underpinning the delivery of social and economic sustainability and, as such, is committed, as an integral part of good institutional practice, to conducting its operations and activities with due consideration for the environment.'

- *Royal Agricultural College Environmental and Sustainability Policy*

The Royal Agricultural College's Environmental and Sustainability Policy has recently been updated to commit the College to develop an Environmental Management System, including the development of separate strategies for:

- Energy and Carbon Management
- Water Management
- Waste Management
- Purchasing and Procurement
- Built Environment
- Biodiversity
- Academic Curriculum
- Knowledge Exchange, Consultancy and Research
- Awareness and Communication

The aim of the Environmental Management System (EMS) will then be to systematically monitor and review the delivery of each of the sustainability policies above, and so the progress being made against the overarching Environmental and Sustainability Policy.

The Carbon Management Plan sits beneath the overarching Environmental and Sustainability Policy as one of nine sub-categories for which strategies are in the process of being developed.

The Environmental Sustainability Policy has the support of Senior Management at the College, and two Governors sit on the RAC's Environmental Sustainability Strategy Group (ESSG), which is chaired by the Vice Chair of Governors.

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2.3 – Strategy and Targets

In order to achieve the College's mission, the RAC's work will focus on strategic aims up to 2014. These include the provision of challenging programmes, the development of consultancy capacity, the management of profitable commercial activities and the development of the College in an environmentally friendly and sustainable manner.

An Estates Master Plan for the College outlines a vision for the development of the College in order for it to meet the other objectives within the RAC's strategy. It planned for further student accommodation to enable the College to meet its aim to house all first year, postgraduate and overseas students on campus. This included the Vic Hughes Halls of residence and the rebuild of West Lodge to include extra rooms. It also plans for a possibility for a new sports hall to improve facilities.

The goals of the Carbon Management Plan are to:

- Set a carbon emissions reduction target for 2020 against a 2005 baseline.
- Lay out planned carbon saving measures within a timeline to 2020.
- Set up performance criteria so that the carbon savings can be measured.
- Establish a system to regularly review progress against the projects within the Implementation Plan and also the associated carbon savings once the projects are underway or completed.
- Require updates to be made to the plan if projects do not meet their expected carbon emissions reduction.
- Publically report progress against the carbon reduction target annually.
- Look for ways to monitor and reduce more of the College's scope 3 emissions.

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3 – Emissions Base-lining and Forecasting

3.1 – Scope

This plan includes Scope 1 and 2 emissions, which are defined by the Department for Environment, Food and Rural Affairs (DEFRA) as follows:

Scope 1 refers to direct emissions that occur from sources that are owned or controlled by the organisation, for example emissions from combustion in owned or controlled boilers, furnaces or vehicles.

Scope 2 accounts for emissions from the generation of purchased electricity consumed by the organisation.

Scope 3 is all other indirect emissions that are a consequence of the activities of the company, but occur from sources not owned or controlled by the organisation – for example, commuting and procurement.

The Royal Agricultural College's baseline and carbon reduction targets will cover all Scope 1 and 2 emissions. However, also integrated into the plan will be objectives for Scope 3 emissions, a number of which will be covered within the other sustainable policies though the targets for these will be set individually and progress may not be measured in tCO_2e until data collection and recording procedures have been set up.

The College is made up of a main campus with teaching, catering, support and accommodation facilities. Local farms make up some of the teaching environment for the College, but are managed separately. The scope of the carbon footprint includes all of the buildings that are included within the College's EMS total area.

3.2 – Baseline

SQW Consulting was commissioned by HEFCE to calculate estimated carbon baselines for all HE institutions. For the majority of institutions, 2005-06 data have been taken from the Estate Management Statistics (EMS) that Universities are required to return annually. Total sector emissions for Scopes 1 and 2 for 2005 were found to be $2.046MtCO_2$, a 15% increase on the 1990 baseline.

SQW based the carbon footprint on the gas and electric consumption as supplied in the EMS return and then estimating owned vehicle fuel consumption as a proportion of the total energy usage. However, the Royal Agricultural College did not return EMS figures on energy consumption for the 2005/06 academic year, so base year data from 2006/07 was used. As such the baseline data for 2005 for this plan and to be used going forward is based on consumption from energy invoices, records taken of oil distribution and assuming 1% of total scope 1 and 2 emissions on vehicle emissions. This is actually lower than that used by SQW consulting in their report, so a reduction of 5.5% based on these published figures has already occurred.

The ultimate target for 2020 put forward by the RAC is an equivalent of a reduction of 44.3% against the SQW baseline figures.

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The carbon conversion factors are based on those used by SQW Consulting, which are taken from DEFRA's 2010 guidance. These are consistent for gas and combustible fuels, and change year on year for electric, depending on the blend of electricity generation at that time. Electric carbon conversion for academic years is taken as the average of the two calendar years.

Year	Gas (tCO_2)	Electric (tCO_2)	Gas Oil (tCO_2)	Burning Oil (tCO_2)	Coal (tCO_2)	Owned Vehicles (tCO_2)	Total emissions (tCO_2)
2005	**61.1**	**1122.2**	**409.1**	**87.8**	**3.2**	**16.8**	**1,700.3**
2006	96.8	1057.8	279.5	70.2	3.7	15.1	1,523.0
2007	168.0	1118.7	388.4	91.1	5.8	17.7	1,789.6
2008	174.3	1150.7	338.1	94.6	3.0	17.6	1,778.2
2009	174.4	1077.9	522.3	107.0	3.3	3.7	1,888.6

Table 3.21 – Actual Carbon Emissions for Royal Agricultural College since 2005

The 2005 baseline against which future performance will be compared is a 1,700.3tCO_2 carbon footprint.

At this point the College is including Scope 1 and 2 emissions only within the footprint. Whilst the base year data for vehicle emissions was based on 1% of total Scope 1 and 2, the mileage is now recorded for the College owned vehicles. Also, a system is in place for measuring emissions through water use and the amount of waste that goes to landfill. This will soon be included within the annual footprint of the College through the Environment Management System records. The process to start recording other Scope 3, such as other travel emissions and emissions from procurement will be set up soon.

From 2005/06 to 2009/10 there has been a net overall increase of over 13% in scope 1 and 2 emissions due to the high level of growth experienced by the College.

3.3 – Carbon Emissions Metrics

The Royal Agricultural College became a Higher Education Institution (HEI) through HEFCE in 2001. Since then it has grown a great deal, both in terms of student and staff numbers and building space. Since 2005 there has been a 6% decrease in the carbon emissions per person at the College, along with an increased proportion living on campus.

Year	Student Numbers	Staff Numbers	Total emissions (tCO_2)	Emissions/ person
2005	**790**	**184**	1700.3	**1.75**
2006	861	192	1510.4	1.44
2007	831	188	1789.6	1.76
2008	891	211	1778.2	1.61
2009	947	219	1,888.6	1.62

Table 3.31 – Table showing growth of student and staff numbers against carbon emissions

The sustainability report for the Royal Agricultural College gave the optimum student numbers for the College as 1,000-1,200. If 1,100 students are reached by 2020, then the carbon emissions per person would have come down a further 50%.

3.4 – Past Actions

The College has always reviewed energy efficiency within the facilities and estates department. A positive move has been made over the last couple of years to bring energy reduction further into the strategy of the College to ensure that new projects receive support from all elements of the Royal Agricultural College, and that projects that are carried out are communicated to the rest of the College and the further community.

The College has already undertaken a number of energy saving projects that will have reduced scope 1 and 2 emissions, including the following:

- Students are encouraged to take responsibility from their own energy use, through individual metering of electricity use in their rooms on campus
- The new teaching facilities incorporate a range of energy efficiency measures including movement sensitive low energy lighting and passive solar design.
- New virtualised IT servers have recently been installed, which have reduced the electricity requirement for the College servers from 35 amps to around 7 amps
- Installed a biomass district heating system to replace the oil-fired boilers that were previously used to heat the Mechanisation wing, Garner block, Library, Parkinson Lecture Theatre and support services/sports building.
- Installed an air source heat pump to provide heating and hot water to the sports pavilion. Heat pumps are also used to heat the new food centre and Atrium computer suite.

Since 2005, the Royal Agricultural College has also been through a lot of changes to the estate. A new food centre with a training kitchen, the inclusion of a number of buildings as residential property and expansion of the main campus including the rural skills centre, Atrium and link cafe means that there are now new meters and more energy consumption included within the RAC footprint.

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3.5 – Current Energy Performance - Benchmarks

Energy performance indicators give a measure of activity based energy use, which can be compared with equivalent for different buildings, taking into account occupancy, activities, and location benchmarks. Energy consumption benchmarks are published in Good Practice Guides and weather. For universities and colleges more information can be found in the Carbon Trust publication ECG054 'Energy Efficiency in Further and Higher Education'.

ECG054 recommends calculating building performance figures by dividing the annual energy consumption by floor area. The results can then be compared against the standard performance figures for each building type (accommodation, library, offices etc.). This can give an indication of how much room for improvement in energy management there is. This process has been carried out and the results shown in the tables below.

Figures for the fossil fuel energy per metre^2 were based on the rating of the boilers that supply heating to each area, and the total fuel used over the site. The benchmark for each area was then based on the percentage of the building that is used for different purposes, from information provided by the College, using the Carbon Trust yardstick. In some cases this may be slightly out due to varying usage – e.g. the Tithe Barn is grouped with catering, which will give a higher benchmark than it should achieve. This generally balances out, but may explain some variation within results. The College is beneath the Carbon Trust's benchmarks for every building, which means that it consistently uses less heating energy than other buildings of its class. However, the benchmarks are not completely up to date, and when compared to other HEIs in the SQW baseline, the RAC emissions per person are quite high. When lowered to the figures from invoices rather than the EMS, the figure of 2.091tCO_2e per person is quite average for a campus based university with high levels of accommodation.

Building	Actual fossil fuel energy/floor area (kWh/m2)	Fossil Fuel Carbon Trust Benchmark (kWh/m2)
Main Building	293	542
Labs	77	143
Boutflour Hall	77	95
Cedar and West Lodge	149	168
Library	163	255
Library extension	70	150
Farm Mechanisation	49	245
Garner teaching	64	305
Garden House	194	240
Old House	227	240

Table 1 – Royal Agricultural College fossil fuel use, compared to the Carbon Trust Benchmark.

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Building	Actual electrical energy/floor area (kWh/m2)	Electrical Carbon Trust Benchmark (kWh/m2)
Main Building	152	341
Labs	55	62
Boutflour Hall	36	36
Cedar and West Lodge	59	61
Library	46	74
Library extension	48	50
Farm Mechanisation	68	75
Garner teaching	83	87
Electric Accommodation	171	300
Garden House	81	85
Old House	83	85

Table 2 – Royal Agricultural College electrical use, compared to the Carbon Trust Benchmark.

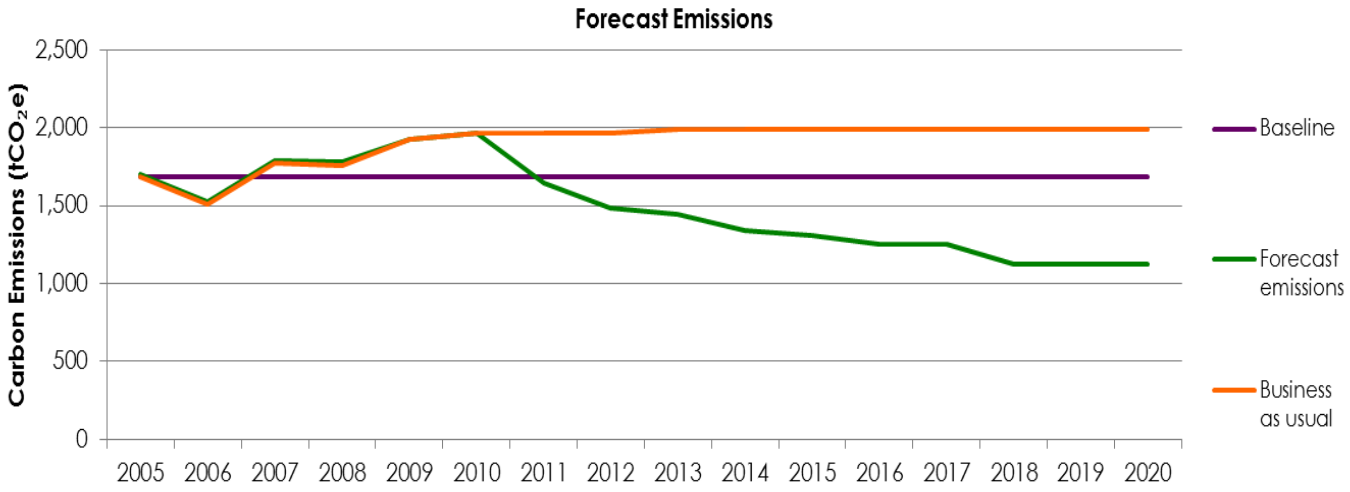
Figures for the electrical use per m^2 were taken from the annual electrical billing for the whole site. An estimated weighting was assigned to each building depending on size and use to give an approximate value for electrical consumption. The Carbon Trust Benchmark was found for each building, and the two values are compared in Table 2. Although the data for definite energy use/floor area for individual buildings is unlikely to be accurate enough to enable meaningful analysis and reduction, the data for the entire site is accurate, and shows that the College as a whole exceeds the Carbon Trust targets.

3.6 – Projections

As set out in its Corporate Report, the College planned to expand its programme portfolios. To support this planned growth, an Estates Master Plan was set out to detail the areas of expansion that would be needed. A number of these have already taken place in the last couple of years, such as the building of the link café, the Vic Hughes Halls of residence and the modernisation of the Mechanisation Wing. According to the sustainability study for the RAC, student numbers are currently almost at the optimum level, and so the College is not planning for a large further increase in student numbers. As such the present rebuild of the West Lodge accommodation will probably be the last additional residential property.

This Carbon Management Plan has weighed up both reductions and increases in carbon emissions owing to various factors going forward. The carbon reduction targets were then reached based on these, to ensure that they strike the correct balance between the College's sustainability ambitions yet remain targets that are realistic and achievable.

The following graph 3.51 and table 3.52 show the estimated carbon levels going forward against the implementation of the planned projects.



Graph 3.51 – Graph showing the forecast emissions based on carrying out the actions in the Implementation Plan

Year	Planned carbon emissions	Planned Events
2005/06	1700.3	
2006/07	1523.0	Consumption anomaly against EMS data – but not a significant year in terms of targets.
2007/08	1789.5	Increase due to new meters – training kitchen, Fossehill cottage, steadings etc.
2008/09	1778.2	Actual decrease due to energy savings
2009/10	1,888.6	
2010/11	1,968.6	Projects – Biomass boiler system aM&T, Flood lighting, Energy Awareness and VO. Energy savings to be felt next year.
2011/12	1,719.4	Estimated decrease from energy savings carried out this year (2010/11). Projects – LTHW, server cooling
2012/13	1,483.9	Projects – DHW in main building,
2013/14	1,447.3	(Factored in increase due to possible new sports facilities) Projects - Lighting
2014/15	1,341.8	Projects – PV cells
2015/16	1,310.3	Projects – Residential DHW from renewable sources, catering improvements

2016/17	1,255.0	Projects – Turbine to generate for sports pitch
2017/18	1,249.0	
2018/19	1,124.0	Plan for renewables project to be developed following feasibility study
2019/20	1,124.0	
2020/21	1,124.0	

Table 3.52 – Table of forecast emissions based on carrying out the actions in the Implementation Plan

4 – Emissions Reduction Targets

The Royal Agricultural College has set an absolute target of 34% reduction in scope 1 and 2 carbon emissions by 2020 against a 2005 baseline.

This is the equivalent of an approximately 41% reduction against the 2009/10 year, and the Implementation Plan includes gross savings of 50% against the 2005/06 carbon emissions levels.

This target has been based on carrying out all actions in the Implementation Plan, which are challenging yet achievable with the College's resources. There are some limitations to improving energy efficiency at the Royal Agricultural College such as the restrictions on the listed buildings in the main campus and because it is in an Area of Outstanding Natural Beauty (AONB).

These savings are widely broken down as follows:

- A net carbon emissions increase of 12% since 2005/06
- A planned increase of a further 2% due to the construction of new facilities
- The gross 50.3% energy savings has been identified through the existing plant and services, decreasing consumption through energy awareness initiatives and generating energy from renewable sources.[1]

This will be achieved through following the Implementation Plan, which sets out projects along a timeline to 2020.

4.1 - Milestones

In order to make measuring progress against the 2020 target easier, milestones have been created along the timeline in order to check progress. These are not necessarily evenly spread, but are based on projects that will have been completed by these stages based on the Implementation Plan.

The summary of the milestones is as follows:

Year	HEFCE's Milestone Targets (% reduction)	RAC's Milestone Targets (% reduction)	RAC's Planned Gross reduction (% reduction)	Milestone Annual Carbon emissions (tCO_2e)
2005/06	0%	0%	0%	1,700
2009/10		-12%	-12%	1,888
2012/13	12%	12%	28%	1,483
2017/18	29%	26%	43%	1,249
2020/21	43%	34%	50%	1,124

Table 4.11 – Royal Agricultural College's Carbon Reduction Target Milestones

[1] These recommended projects were taken from College plans and an Energy Survey

5 – Implementation Plan

The Implementation Plan contains details of projects that will be carried out in order to achieve the 34% target reduction in carbon emissions. Savings estimates are based on consultants' experience of similar projects, and where a range of results is possible, the most conservative has been given.

In preparation for the development of the Carbon Management Plan, an Energy Reduction Survey was carried out to recommend projects that could be carried out to save energy. The current energy use was analysed with benchmarking against typical university buildings and an energy map of the split of energy use. Projects were looked at in detail in order to put accurate costs and energy and associated carbon reductions against them. The projects were examined and the most appropriate were added to the Implementation Plan. Also on-going is a Feasibility Study looking at the options for renewable generation.

The project start and completion dates given are when the projects have been placed in the savings timeline. However, the plan will not be compromised if these dates are moved around within the academic year to fit best within other College and Estates activities. Energy prices have been set at 10p/kWh for electric and 4p/kWh for gas. It is very likely that these will increase significantly before 2020. Costs for later projects are currently estimates.

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Project	Year	Project Costs (£)	Annual Project Savings			Payback	% of total CO_2 target
			(kWh)	(£)	tCO_2e		
EN1 – Implement an aM&T system to building level on campus and on main plant	2010/11	£20,000	182,000	£18,200	99.2	1.1	13.0%
EN2 – Develop an advanced energy awareness campaign	2010/11	£3,000	43,400	£4,300	23.7	0.7	3.1%
EN3 – Install voltage optimisation equipment	2010/11	£40,000	138,830	£13,880	75.7	2.9	9.9%
EN4 – Replace sports flood lighting	2010/11				2		0.3%
EN5 – Include West Lodge onto Biomass District Heating system	2011/12	Within construction budget	45,400	£2,550	11.5		1.5%
EN6 – Reduce cooling in server room	2011/12	£5,500	9,150	£920	5.0	6.0	0.7%
EN7 – Improve provision of LTHW generation within Main Building	2011/12	£75,000	531,940	£24,400	154.8	3.1	20.3%
EN8 – Improve DHW system in Main Building	2012/13	£35,000	352,930	£11,170	64.1	3.1	8.4%
EN9 – Improve type of lighting	2011/12/13	£95,000	193,440	£19,350	105.5	4.9	13.8%
EN10 – Install PV cells on campus roofing	2014/15	£200,000	57,750	£14,450*	31.5	13.8	4.1%
EN11 – Improve energy efficiency within catering facility	2015/16	£3,000	11,330	£980	5.3	3.1	0.7%
EN12 – Source DHW for accommodation blocks from renewable sources	2015/16	£90,000	110,000	£11,000	60	8.2	7.9%
EN13 – Sports pitch wind turbine	2016/17	£15,000	11,000	£2,750**	6.0	10.9	0.8%

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electric generation							
EN14 – Renewables project – details TBC following feasibility study					120		15.7%
EN15 – Set up a procedure for recording scope 3 emissions through employee business travel, commuting, and student travel	2014/15	£1,000					0%
Total		**622,500**	**1,687,170**	**£123,950**	**764.3**		**100%**

Table 5.1 – Summary Table of the projects within the Implementation Plan

*Assuming FiT of 25p/kWh in 2014/15
**Assuming FiT of 15p/kWh in 2016/17

E2 ENERGY MANAGEMENT

EN1 – Implement an aM&T system to building level on campus and on main plant			
Project Start Date	June 2011	**Project Completion Date**	October 2011
Owner	Director of Estates	**Support**	Project Manager
Cost	£20,000	**Funding stream**	RAC – AM&T budget
Annual Savings	182,000kWh	£18,200	99.2tCO_2e

Details

Installing an Automatic Monitoring and Targeting (aM&T) system would provide half hourly data (HHD), with next day availability via the web. Meters will be installed onto individual buildings and onto key departments and plant. This would provide enough detail to be able to use the data to identify areas and causes of high usage, either due to plant issues or opportunities for behavioural improvement. This would be the basis for constant energy monitoring, allowing improved management both of centralised plant and services, together with improved feedback on areas like energy awareness campaigns.

Risks

The aM&T system itself would not save energy, but it would allow energy saving opportunities to be identified, and after implementation, measured through the collection of energy data.

The only risk to this project is that the equipment would be installed and not used by the College's staff. In order to avoid this, it is recommended that the system is kept as simple and intuitive as possible.

Next Steps

Undertake a detailed survey of all fiscal meter points and relevant sub-meter points. Design system & obtain quotations for installation.

EN2 – Develop an advanced energy awareness campaign			
Project Start Date	May 2011	**Project Completion Date**	On-going
Owner	Director of Estates	**Support**	
Cost	£3,000	**Funding stream**	RAC
Annual Savings	43,400kWh	£4,300	23.7tCO_2e

Details

The Royal Agricultural College has previously undertaken energy awareness campaigns at the College, which have been well received by both staff and students. Unfortunately, as the College does not have an aM&T system, it has not been possible to quantify the success of these past campaigns.

It is recommended that, following the implementation of the aM&T system, a renewed emphasis is placed on developing a visual energy awareness campaign for the College. This should be launched formally with buy in from senior management.

Feedback should be captured from the aM&T system, so that staff and students can see the implication of their actions. Once the initial scheme is up and running, it should be reviewed periodically, to provide an on-going focused campaign.

Further guidance on building successful awareness campaigns is available free of charge from www.carbontrust.co.uk

Risks

The main risk to this project is if the awareness campaign is not fully supported in terms of both senior management buy-in and resources. It is therefore crucial that these aspects are in place, before the Implementation Plan is started.

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EN3 – Install voltage optimisation equipment			
Project Start Date	July 2011	**Project Completion Date**	Sept 2011
Owner	Director of Estates	**Support**	Project Manager
Cost	£40,000	**Funding stream**	RAC VO budget
Annual Savings	138,830kWh	£13,883	75.7tCO_2e

Project Details

The College is planning to install voltage optimisation capability onto the main supply, either through an ultra-low loss transformer replacement or through installing an additional low voltage optimisation unit. After energy mapping of the current electric load within the buildings, the savings have been conservatively estimated at 8% of the current electric usage, resulting in a saving of over £36,300/annum. This will not affect the day to day running of the College.

Risks

From the initial site surveys, no equipment was observed which could not be optimised. In addition, the voltage drops across the buildings appeared to be within regulation. It is recommended that both of these areas are checked in more detail, prior to moving to the design stage of this project.

EN4 – Replace flood lighting with energy efficient alternatives			
Project Start Date	July 2011	**Project Completion Date**	Sept 2011
Owner	Director of Estates	**Support**	
Cost		**Funding stream**	RAC
Annual Savings			

Details

The current floodlighting for the sports pitch is ----, with a total load of ---. This is being replaced with ----, which will save approximately ---.

Risks

There is no significant risk associated with this project.

EN5 – Connect new accommodation block into Biomass district heating system			
Project Start Date		**Project Completion Date**	
Owner	Director of Estates	**Support**	Project Manager
Cost	-	**Funding stream**	Construction budget
Annual Savings	45,400	£2,550	11.5

Details

West Lodge is being rebuilt to increase room numbers by an extra 20. Whilst the rise in the number of rooms will increase energy use through small power and lighting, the improved quality of the building structure will mean that heating demand will be decreased. It is also planned to connect the heating to the biomass system, replacing the current oil boilers. The estimated net decrease in energy represents 3.3tCO_2.

Risks

There is a risk that including West Lodge onto the Biomass district circuit will bring the peak demand beyond the capability of the Biomass boiler. However, it has an oil-fired backup to provide the necessary heat, but at a carbon cost.

EN6 – Reduce cooling in server room			
Project Start Date	Dec 2011	**Project Completion Date**	Feb 2012
Owner	Director of Estates	**Support**	Project Manager
Cost	£5,500	**Funding stream**	RAC
Annual Savings	9,150kWh	£920	5tCO2

Details
A virtualisation project has recently been carried out that reduced server energy use by 80%. This has reduced the cooling demand significantly. The majority of the cooling can be provided by mechanical ventilation, which will bring the server room down to ambient temperature. The existing DX unit can be used to provide cooling when the temperature rises beyond a higher set point.

Risks

Server equipment cannot be allowed to overheat, although generally according to manufacturers' guidance the maximum appropriate temperature is around 28°C.

EN7 – Improve provision of LTHW generation within Main Building			
Project Start Date	April 2012	**Project Completion Date**	June 2012
Owner	Director of Estates	**Support**	Project Manager
Cost	£75,000	**Funding stream**	RAC
Annual Savings	531,940kWh	£24,400	154.8tCO_2e

Details

Replace the 2 oil-fired boilers with gas-fired equivalents and replace current controller with a new heating management system.

Risks
As long as the heating controller is set up correctly there is no risk – gas boilers will directly replace the current oil-fired boilers.

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EN8 – Improve DHW system in Main Building			
Project Start Date	Sept 2012	**Project Completion Date**	Nov 2012
Owner	Head of Estates Services	**Support**	Project Manager
Cost	£35,000	**Funding stream**	RAC
Annual Savings	352,930kWh	£11,170	64.1tCO_2e

Details

The existing Domestic Hot Water (DHW) system for the Main Building has oversized calorifiers and a very high level of losses due to the long transportation distances, poor insulation and low demand.

Risks

Installation will also need to be planned to allow no disruption or very little disruption to the DHW services, in order not to disturb the day to day operation of the College.

E2 ENERGY MANAGEMENT

EN9 – Improve type of lighting			
Project Start Date	Oct 2011	**Project Completion Date**	Oct 2013
Owner	Director of Estates	**Support**	Project Manager
Cost	£95,000	**Funding stream**	RAC
Annual Savings	193,440kWh	£19,350	105.5tCO_2e

Details

Replace current lighting with LED technology. This would go ahead in two stages:

- R38s and LV spots can be swapped out for LED equivalents
- Other lighting can be replaced with LED lamps

Risks

Planned lighting replacements will be trialled before replacements are rolled out across the College to ensure that lighting levels and colour rendition are acceptable. Also daylight controls should only be installed in areas with high enough levels of natural daylight, to ensure the savings are achieved.

EN10 – Install PV cells on campus roofing			
Project Start Date	Dec 2014	**Project Completion Date**	April 2015
Owner	Director of Estates	**Support**	Project Manager
Cost	£240,000	**Funding stream**	RAC
Annual Savings	57,750kWh	£23,900	31.5tCO_2e

Details

A number of the buildings on campus have roofs facing within 20 degrees of south, with 30 degree angle surfaces and without planning restrictions. Installing PV cells onto the appropriate roofing will give a total 70kWp capacity of power generation.

Risks
The annual savings are based on both energy savings and also payments from FiTs – these are under review and may change by 2014/2015.

EN11 – Improve energy efficiency within catering facility			
Project Start Date	Oct 2015	**Project Completion Date**	Dec 2015
Owner	Head of Estates Services	**Support**	Project Manager
Cost	£3,000	**Funding stream**	RAC
Annual Savings	11,330kWh	£980	5.3tCO_2e

Project Details

Savings will be made in the kitchens through:

- Focussing specific energy awareness messages
- Fitting intelligent sensor controls to refrigerator units
- Feed in hot water to the dish washers

Risks
The main risk to this project is if the awareness campaign is not fully supported in terms of both senior management buy-in and resources. It is therefore crucial that these aspects are in place, before the Implementation Plan is started.

EN12 – Source DHW for accommodation blocks from renewable sources			
Project Start Date	April 2015	**Project Completion Date**	July 2015
Owner	Director of Estates	**Support**	Project Manager
Cost	£95,000	**Funding stream**	RAC
Annual Savings	91,850kWh	£9,200	50tCO2

Details

The existing emersion heaters used in the accommodation blocks will be replaced with solar hot water or heat pump systems.

Risks
Solar or heat pump systems alone will not be able to supply hot water with the same response as the current system, so a dual system may need to be considered.

EN13 – Sports pitch wind turbine electric generation			
Project Start Date	Sept 2016	**Project Completion Date**	July 2017
Owner	Director of Estates	**Support**	Project Manager
Cost	£15,000	**Funding stream**	
Annual Savings	11,000	£2,750	6tCO_2

Details
A small (≈3kW) wind turbine to be installed near the sports pitch in order to supply power to the facilities and connect to the sports pitch power supply as a generator.

Risks
There is a risk that there will be issues with noise/appearance.

Within the near future the Royal Agricultural College will need to start recording Scope 3 carbon emissions. The following project will not reduce the carbon emissions of the RAC, but will ensure that a robust system for recording these emissions is in place. HEFCE recognise the difficulties in this process and that most institutions do not have any records for scope 3 against which to measure improvement. However, one of the HEFCE commitments is to include targets for scope 3 reductions in the future.

EN15 – Set up a procedure for recording scope 3 emissions through employee business travel, commuting, and student travel			
Project Start Date	Sept 2015	**Project Completion Date**	Dec 2015
Owner		**Support**	
Cost	£1,000	**Funding stream**	RAC
Annual Savings	0kWh	£0	0tCO_2e

Project Details

The Royal Agricultural College has an increasing number of overseas students who do a lot of international travel, and as the campus is in a rural area, a large proportion of people at the university have cars. The level of scope 3 emissions from travel is likely to be quite high, and as such a main target for recording.

A system will be set up for recording the details of travelling carried out by staff and students. A database will be set up and populated through information gained from extending expenses claim forms, staff and student surveys on commuting and student returns on their international travel.

Risks

Scope 3 emissions are difficult to record completely accurately, so there is a risk that there will be variation in the recorded information. The recording structure will be designed to minimise this as much as is practical.

5.1 – Financing

Year	Project Costs (£)	Project Savings			Payback (yrs)	% of total CO_2 target
		(kWh)	(£)	(tCO_2e)		
2010/11	£63,000 (plus flood lighting)	364,230	£36,380	200.6	1.73	26.2%
2011/12	£80,500	586,490	£27,865	171.3	2.9	22.4%
2012/13	£35,000	352,930	£11,170	64.1	3.1	8.4%
2013/14	£95,000	193,440	£19,350	105.5	4.9	13.8%
2014/15	£241,000	57,750	£23,900	31.5	13.8	4.1%
2015/16	£93,000	121,330	£11,980	65.3	7.8	8.5%
2016/17	£15,000	11,000	£2,750	6.0	5.5	0.8%
2017/18	-	-	-	120	-	15.7%
2018/19						
2019/20						
2020/21						
Total	**£622,500**	**1,687,170**	**£123,950**	**764.3**	**5.0**	**100%**

Table 5.11 – Table showing project costs and savings over the duration of the Carbon Management Plan

The largest cost is for the PV cell project. These only fulfil 4.1% of the planned carbon reductions, so this project may be reviewed if funding is not available and an alternative added. Otherwise the separate roof installations could be undertaken one at a time and spread through the following years.

5.2 – Sources of Financing

The RAC currently has a budget in place for the voltage optimisation and metering projects. Each year budgets will be put in place for upcoming projects from the RAC's Estate's management budget. For renewables projects, funding may be available through grant schemes or interest free funding.

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6 – Carbon Stakeholder Engagement

6.1 – Strategic Process

HEFCE recommend that the Carbon Hierarchy approach is used to reduce emissions in a socially responsible and cost effective way. This is made up of Reduce (energy/fuel demand), followed by Efficiency (of equipment and energy sources), Decarbonise (energy supplies), Befriend (local connections to increase capacity to carry out other actions) and Neutralise (energy supplies), whilst Monitoring results. The Befriend heading includes building partnerships both within the College and outside it in order to share knowledge, best practice and resources.

The College is committed to effective communication with stakeholders on all aspects of sustainability practices and progress against targets. The communication plan is outlined in section 6.2 and 6.3.

At a later stage of the plan, as and when scope 3 emissions are being recorded and included within the reduction targets, the College will provide more resources in order to build productive ties with local organisations and groups. At this current stage of the plan, where the reduction of scope 1 and 2 emissions is the main goal, making links outside the College will provide a limited contribution to this, and so is not a priority within the current Carbon Management Plan although potential measures to be taken are detailed.

6.2 – Identifying Stakeholders

Key stakeholders are identified in the table below.

Name/Position	Interest	Specific Indicators	Method of communication
Board of Governors	• Reputation of Institution	• Progress against targets/CMP	• Progress Summary submitted to Board meetings
Env Sustainability Strategy Group ("ESSG")	• General Carbon Management • Progress of current projects • Factors that might affect the Plan • Updating the Plan • Compliance with legislation and HEFCE requirements	• Progress against targets/CMP Detailed progress against project timelines	• Progress Summary submitted to meetings through Director of Estates and other members
Estates Committee	• Progress of current projects • Planning of upcoming projects • Resource allocation	• Detailed progress against project timelines • Updated Implementation Plan from CMP	• Project timelines and notes • Amendments list
Director of Estates	• Progress of current projects • Planning of upcoming projects • Reputation of Institution • Compliance with legislation and HEFCE requirements	• Detailed project progress against project timelines • Progress against targets/CMP • Legislative updates • Updated CMP	• Project timelines and notes • Progress Summary emailed to relevant Stakeholders • Amendments list
Sustainability Action	• General Carbon Management	• Detailed project progress against project timelines	• Project timelines and notes • Progress Summary emailed to

Group	• Progress of current projects • Planning of upcoming projects	• Progress against targets/CMP • Updated CMP	relevant Stakeholders • Amendments list
Facilities & Maintenance Manager	• Continual and efficient operation of site	• Reporting on opportunities to make site operate more efficiently	• Daily communication with Head of Estates
University Staff	• Working practices and environment • Awareness of promoted actions/practices • General Carbon Management	• Progress against targets • Awareness actions	• Campaigning materials • Permanent notices of specific actions/practices
Environmental Enthusiasts	• Detail of how the RAC are progressing	• Opt into being included in mailing list for progress against targets/CMP	• Progress Summary emailed to relevant Stakeholders
Cleaning, Catering Security and out of hours staff,	• Working practices and environment • Awareness of promoted actions/practices • General Carbon Management	• Progress against targets • Awareness actions	• Campaigning materials • Permanent notices of specific actions/practices
Student Body	• Awareness of promoted actions/practices • General Carbon Management	• Progress against targets • Awareness actions	• Campaigning materials • Permanent notices of specific actions/practices

Suppliers and Contractors	• Awareness of carbon policy • Specific Institution requirements	• Signposting to CMP/Sustainability Policy	• Publically available
Prospective students/staff	• Reputation of Institution • Attitude/commitment to carbon management	• Signposting to CMP/Sustainability Policy	• Publically available on the (soon to be completed) Sustainability webpages. Also within College policies.

Table 6.21 – Table showing identified stakeholders and their interest in the Carbon Management Plan

Also important is the ability for stakeholders to feedback information.

Currently there are limited channels to volunteer information and ideas on carbon management. However, the College is addressing this and, as part of the CMP, will implement a quarterly sustainability newsletter by email. All stakeholders will be encouraged to send information and ideas back to the same email address. This will be monitored by the estates department and a register of ideas maintained. The Estates Director will report this register to the Environmental Sustainability Strategy Group for discussion at every meeting.

6.3 – Internal Communication

Issues relating to sustainability are currently communicated to staff and students of the College in the following ways:

- The Sustainability Policy is made publically available on the College's website via a whole sustainability section.
- The sustainability commitments outlined in the College Policy are communicated to all new students and staff via a summary document, with information on how to get involved in achieving the sustainability targets and a route for suggestions and ideas.
- The new quarterly e-newsletter will contain a link to the Sustainability Policy to ensure it receives continual promotion.
- On-campus awareness of sustainability and energy efficiency is promoted via visibility of issues, mainly through point of use information and reminder posters/stickers.

To ensure that all stakeholders remain updated on the College's Carbon Management Plan and associated projects, the following key communication channels will be used. Where possible these are electronic or permanent, to reduce unnecessary waste associated with flyering or hard copy memos.

Specific Indicators	Communication Method	Responsibility	Frequency
Progress against targets/CMP	Electronic Summary sheet – included within papers for meetings of the Board of Governors and emailed to relevant Stakeholders as part of the new quarterly newsletter. Also included onto webpage as a real time progress report.	Estates Director	Quarterly
Project progress against project timelines	Notes against original timeline and project information. These will be emailed to relevant stakeholders.	Estates Director	Quarterly
Updates and amendments to CMP	When the CMP is reviewed and amended, a list of amendments will go out electronically to the relevant Stakeholders, and the new issue of the CMP will be made available to relevant stakeholders	ESSG	Annually
Awareness of actions	Campaigning material will vary – energy awareness material is more effective when methods/messages are regularly refreshed.	Estates Director	Varying

Table 6.3 – Table summary of planned communications relating to the CMP

6.4 – Influence and Outreach

One of the objectives of the Sustainability Policy is to "encourage, through internal and external communication, all members of the College community to adopt environmental values and a sustainably-sound approach to their work and disseminate College policy to sub-contractors, customer / clients and the local community."

As agriculture becomes an increasingly globalised industry it is likely that the focus on economies of scale and operational efficiencies taught at the College will lead to improved sustainability and energy efficient practices by graduates as they leave the College and go on to careers in the UK and internationally. Accordingly, the College believes that its cutting edge teaching practices provide a strong foundation for influence and outreach going forwards.

As stewards of large areas of land around the campus, the College has for years

been at the heart of the local community and continues to develop these ties with regard to sustainable practices within the area. The College runs a Rural Professional Network, South West Rural Update, which provides a networking opportunity for professionals in the South West. The College hosts seminars and other events to encourage sharing of best practice and other skills. The College also has a Rural skills centre, which provides short courses all through the year to all levels on relevant skills.

Other events held at the College are also open to the Cirencester community in order to spread the sustainability message. Fairtrade February included hosted events, charity fun days are regular occasions and the RAC takes part in local markets and other events.

The College also takes a large delegation to UK farming shows each summer, where they display elements of their progress and research in various areas, including sustainable agriculture.

The College has a Green Travel Plan, which it is being upgraded and implemented as part of commitment within the Sustainability Policy. This and other projects are detailed in the current Sustainability Plan and the benefit of these would be in the reduction of scope 3 carbon emissions and emissions of other organisations. They are therefore not included within this Carbon Management Plan, as their benefit cannot currently be measured as a reduction of the Royal Agricultural College scope 1 and 2 emissions.

Despite the initiatives outlined above, as part of a sustainable future, it is essential that more environmentally positive relationships are built in both the local community and the farming community. As the College goes forward, opportunities may arrive to work with others in the community in order to directly reduce the carbon impact of the College and other groups or organisations within the community. Until then, outreach projects will continue to go ahead, but under the umbrella of the general Sustainability Plan.

6.5 – Future-proofing

The Carbon Management Plan has been based around the strategies and plans that the College has for the future. Whilst this has made the Plan as robust as possible, it will need to react to changes. The ultimate goal of the Plan is to achieve a 34% reduction in scope 1 and 2 carbon emissions through conducting energy saving projects and entrenching low carbon practice within the College's routine. If any aspect of the College's policy or plans change, then it is vital that this goal can still be achieved.

For each project, a specific KPI will be set up as a method of measuring success. One of the first actions within the Implementation Plan is to put into operation an Automated Monitoring and Targeting (aM&T) system. This will make it possible to confirm the level of energy reduction, and will make compiling a scope 1 and 2 footprint for the College much easier. It may be necessary that the scope of one of the projects changes, or that upon completion it is found that the savings are not as high as estimated. The savings will be reviewed bi-annually by the ESSG alongside the progress of the other parts of the sustainability umbrella and in this

event action will be taken to identify another opportunity for carbon reduction to be taken the following year, a budget requested and a project owner nominated.

7 – Programme Management

7.1 – Governance

The Carbon Management Plan document will be kept updated and re-issued annually. The document will be reviewed by the Environment Sustainability Strategy Group and any amendments to general policy or responsibility added. Notice of the new issue will be circulated to the key Stakeholders.

Existing project management procedure at the Royal Agricultural College entails the project manager reporting to the Estates Committee quarterly to pick up any problems on progress. Progress will also be reported every term to the Environmental Sustainability Strategy Group Meetings and fed onto any other relevant stakeholders via the meeting minutes.

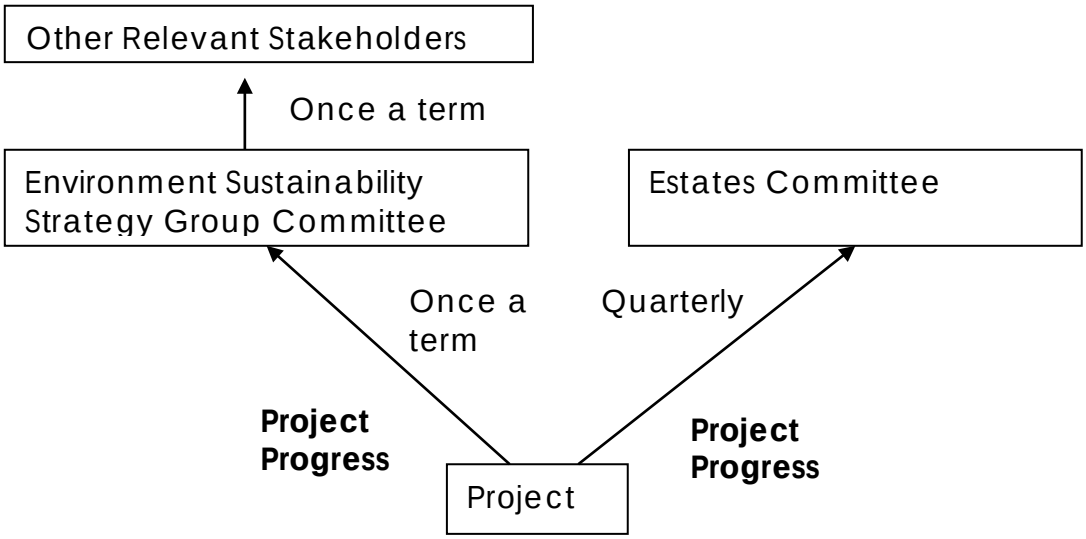

Diagram 7.11 –Diagram showing the reporting of project progress

Any project documentation created by the project owner will be signposted from the action plan as a record of when improvements were commissioned, for measuring purposes.

Overall progress against targets will then be reported quarterly and included within a newsletter that will be circulated to stakeholders and put onto the coming sustainability pages of the RAC website. This will be in the form of a summary of the current projects and the progress against the carbon emissions milestones laid out in section 4.0. If any of the projects are not on track to achieve the estimated savings, then action will be taken to identify other opportunities for reducing carbon emissions and further budget can be requested and allocated for the following year.

Feedback of any kind from staff/students at the Institution will be directed to the Estates Department, who will present it at meetings of the Environmental and Sustainability Strategy Committee and appropriate action assigned.

7.2 – Accountability

Accountability for progress against the Carbon Management Plan lies with the Director of Estates.

7.3 – Ownership

Ownership of individual projects has been assigned. It is the owner's responsibility to progress the project as far as possible. To ensure that projects achieve the estimated savings, project owners should create and report the following (see section 6.4) in line with the College's current project management practice:

- Project timeline against the start and completion date in the Implementation Plan (open to change as the projects are planned)
- Record any changes to projected timeframe/costs/project details.
- Termly progress updates to the Environmental Sustainability Strategy Group (ESSG) meetings and other relevant stakeholders.
- Ensure that a measurement indicator is set up so that savings can be accurately and easily reported going forward.

7.5 – Risks

The key risks identified are as follows:

- **Changes to the Estates Master Plan due to changes in strategy from 2014 onwards**. The Estates Master Plan is a strategic document and the details of when and how plans for new facilities go ahead are not covered in any detail. The Carbon Management Plan has made some assumptions on when and to what extent energy consumption will change due to construction of new facilities. If the scope of the development were to change dramatically, then this information could be fed into the Carbon Management Plan when it is reviewed.
- **Project delays**. Each project will be managed separately and risks to project completion will be mitigated as part of this where appropriate. The risk to the Carbon Management Plan is that delays to projects will postpone the reductions in carbon emissions. Estimated savings from projects have not been included in forecast emissions levels until the year after they are implemented. This means that within the Milestone targets there is some flexibility for projects to run late within the same academic year without impact.
- **Carbon emissions reduction from a project is lower than forecast.** Where the measured savings from a project are lower than estimated, this will be reported. Whilst savings against estimates are bound to vary slightly, if at the end of the year, overall savings are lower than estimated, then action will then be taken to identify an opportunity for saving elsewhere, which will be added to the Implementation Plan and a budget requested.

8 - Conclusion

The Royal Agricultural College seeks to build upon its reputation as a leader in sustainable rural practices with a Carbon Management Plan that will ensure low carbon impact facilities are available for years to come.

Once implemented, the actions within the plan will result in a reduction of 34% against the 2005/06 carbon baseline. Because the College has undergone a high level of student, staff and facilities growth over the last few years the current level of carbon emissions (09/10) are 13% higher than they were in 2005. Therefore the actions going forward will achieve estimated savings of 52%, but this is balanced by this past increase and construction work that is currently planned and underway. Of equal importance are the on-going reporting and defined structures with regard to accountability, which provide the foundations for on-going success in terms of lowering carbon emissions at RAC.

Overall, the College is actively expanding its Environmental and Sustainability Policy to include detailed plans covering all aspects of sustainability. The College will continue to recognise the importance of sustainability, and in its future strategies, the Institution is looking forward to promoting a lower carbon future both on campus and beyond.