

The University of Kent

Carbon Management Plan

November 2010

The UK Government is committed to cutting carbon emissions and to this end has enacted legislation in the Climate Change Act 2008 to improve carbon management and help the transition to a low carbon economy in the UK. The Government has set the world's first legally binding national target to reduce greenhouse gas emissions by 34% by 2020 and 80% by 2050 against a 1990 baseline.

The Higher Education Funding Council for England (HEFCE) has published a statement of policy which mirrors Government reduction targets for carbon emissions. To encourage higher education institutions to reduce their emissions it is proposed to link the HEFCE Capital Investment Framework to carbon performance. HE Sector baseline data for 1990 is not widely available; carbon dioxide emissions for universities will therefore be reported against a 2005 baseline with a target reduction for the sector as a whole of 43% by 2020 and 83% by 2050. These are intended to be *absolute* reductions.

Between academic years 2005/6 and 2008/9 the University of Kent increased its student and staff numbers by 15.7% and its income by 41%. During the same period, the University's emissions of CO₂ also increased, but only by 4.4%. In *relative* terms, the University's consumption of CO₂ reduced by 9.8% per student/staff FTE and by 25.8% per £ of income between 2005/6 and 2008/9.

By 2020, the University plans to reduce its emissions of CO₂ by 23% in *absolute* terms, against a 2005 baseline, by:

1. reducing the University's demand for energy;
2. investing in schemes that improve energy efficiency throughout the University's residential and non-residential estate, especially through refurbishment schemes;
3. requiring all new buildings to achieve a BREEAM¹ rating of at least "very good";
4. introducing energy systems based on renewable sources;
5. promoting awareness of the need to effect behavioural change in the consumption of energy.

Approved by the Council of the University of Kent on: 26 November 2010



Valerie Marshall
Chair of Council



Professor Dame Julia Goodfellow
Vice-Chancellor

¹ Building Research Establishment Environmental Assessment Method

Summary of abbreviations

BREEAM	Building Research Establishment Environmental Assessment Method
CCA	Climate Change Act 2008
DEC	Display Energy Certificate
DECC	Department of Energy and Climate Change
Defra	Department for the Environment, Food and Rural Affairs
EMS	Estate Management Statistics
EPC	Energy Performance Certificate
EUETS	European Union Emissions Trading Scheme
GHG	Greenhouse gas
HEFCE	Higher Education Funding Council for England
ISP	HEFCE Salix Institutional Small Projects Fund
kWh	kilowatt-hour
LTM	Long Term Maintenance
MWh	Megawatt-hour
RFG	HEFCE Salix Revolving Green Fund
SQW	SQW Consultants / Energy appointed by HEFCE
tCO ₂	tonnes of carbon dioxide

Version	Reason for change	Date
1.0	Council-approved plan to be published	November 2010

Carbon Management Plan 2010 to 2020

1 Summary

The University of Kent's Carbon Management Plan sets out the University's vision to reduce carbon emissions, and the actions that follow from that vision.

The University's Estates Strategy Framework (2009) highlights the importance of developing sustainable campuses at Canterbury and Medway as the key to the long term viability of the Institution. This to be achieved by: reducing the University's carbon footprint, thereby mitigating the impact of current and future carbon taxes; reducing dependence on diminishing operational resources such as fossil fuels; conserving water; reducing the environmental footprint; and progressively replacing business critical infrastructure systems that are reaching the end of their operational life.

The University's Environment Policy (2009) states the University's commitment to: managing and reducing the impacts arising from the use of energy and water; emissions and discharges; waste and car travel for commuting and business use.

The University recognises the carbon hierarchy provides a framework for a systematic and structured approach to managing energy and reducing carbon emissions. Lower emissions will be achieved by reducing energy demand, improving energy efficiency, investing in renewable energy sources and promoting environmental awareness. The UK Government's programme to decarbonise grid electricity supplies will have a significant impact as electricity purchased currently represents 56 % of the University's annual carbon emissions.

The 2005-06 carbon emissions for the University were 17,907 tCO₂ including an estimated 124 tCO₂ in respect of University owned transport. The reduction targets for the period 2010 to 2020 are:

Decarbonised energy source	5,929 tCO ₂
Energy efficiency improvements	595 tCO ₂
Reduce energy demand	440 tCO ₂
Promote environmental awareness	86 tCO ₂

This represents an absolute reduction of 23% against the 2005-06 baseline.

Purchase of carbon offsets is considered an option of last resort once all other avenues to reduce emissions have been exhausted.

The Vice-Chancellor has delegated responsibility for the Carbon Management Plan to the Deputy Vice-Chancellor (Planning & Resources) who reports on progress to the Executive Group and Council. The Director of Estates manages the Plan and advises on the future direction and development of carbon reduction measures. The Assistant Director of Estates implements the Plan and monitors progress towards the achievement of carbon reduction targets.

2 Carbon Management at the University of Kent

The purpose of the Carbon Management Plan is to inform and direct the University's actions in assessing carbon dioxide emissions arising from its business activities and implementing carbon reduction measures to ensure a sustainable future. Ideally, reducing carbon emissions will translate into financial savings, though in the short term the pay back on investment in some cases may exceed 10 years.

The University has for many years embedded energy efficiency measures into long term maintenance and capital refurbishment projects. The cyclical refurbishment of student houses for example includes the installation of double glazed windows, replacement of inefficient boilers and provision of energy efficient lighting. Other early initiatives include retrofitting a networked energy management system to all major buildings commencing in 1987 and installation of a combined heat and power unit serving the science laboratories and sports centre in 1991.

The University has also promoted energy efficiency and sought to have its achievements recognised externally. The University is also one of 20 English universities selected to participate in the first phase of the Degrees Cooler Programme, which assists both staff and student communities in realising behavioural changes leading to greener lifestyles. The staff project, known as *Green Impact*, has proved popular with 16 staff teams from academic schools and non-academic departments participating in the first year. These teams will progress to the second year of the project and be joined by new teams. *Going Greener* is the student-led, campus-based, environmental campaign that empowers students to develop local greening projects and solutions. The local People & Planet group is also a key driver in delivering behavioural change in the student community. In January 2009 the University achieved the Carbon Trust Standard for the Canterbury and Medway campuses. This award recognises the University's achievements in carbon saving.

3 The legislative context

Legislation over the past decade has raised awareness of environmental issues particularly the adverse effect of fossil fuel emissions on the global climate.

EU Emissions Trading Scheme: EU Directive 2003/87/EC led to The Greenhouse Gas Emissions Trading Scheme Regulations 2005 being enacted in the UK. The University of Kent participated in Phase 1 of the Scheme in 2005, 2006 and 2007. During this period credits amounting to 25,929 tCO₂ were received and saving of 2,368 tCO₂ achieved. The University opted out of Phase 2 under the small emitter initiative. Participation in Phase 1 the Scheme was a useful exercise in focussing efforts on reducing energy use to achieve carbon reductions.

Energy Performance of Buildings Directive: Directive 2002/91/EC of the European Parliament became statute with The Energy Performance of Buildings (Certificates & Inspections) (England & Wales) Regulations 2007. In compliance with the legislative requirement that existing public buildings over 1,000m² have a Display Energy Certificate, based on actual energy use, the University had a total of 27 buildings assessed and certificates issued and displayed. Advisory reports were obtained for the poorest performing buildings and corrective action was taken where necessary. At the annual review in September 2009 the performance of seven buildings had improved.

The legislation also requires new buildings to have an Energy Performance Certificate (EPC) based on calculated energy use. Three new buildings have EPC ratings:

Woolf Academic	B ₂₆₋₅₀ (44) ²
New Sports Pavilion	B ₂₆₋₅₀ (36)
Jarman Building	B ₂₆₋₅₀ (49)

A+ is the highest performance band and G the lowest.

UK Climate Change Act 2008: This legislation committed the UK Government to meeting legally binding targets for reductions in greenhouse gas emissions against a 1990 baseline. The targets are (after modification in the 2009 budget): 34% reduction by 2020, and 80% reduction by 2050.

Carbon Reduction Commitment: The UK Climate Change Act 2008 paved the way for the Carbon Reduction Commitment Energy Efficiency Scheme which commenced on 1 April 2010. Participation is mandatory for those organisations that used more than 6,000 MWh of half hourly metered electricity during the qualification period (the calendar year 2008). The University used 18,786 MWh during this period so is required to participate in the Scheme. The first year of Phase 1 from 1 April 2010 to 31 March 2011 is a reporting year when participants are required to measure and report their carbon footprint. In the second and third years carbon credits are purchased from the UK Government at a fixed price of £12 per tCO₂. In Phase 2 and beyond carbon is bought and sold at the prevailing market rate. Revenue generated by the Scheme, which is estimated to total £1billion a year by 2014-15, will be used to support public finances. A Performance League Table of participants will be published as the main reputational driver within the Scheme. Initially there are two early action metrics that have an influence on an organisation's position in the League Table: voluntary automatic meter reading, and Carbon Trust Standard certification.

² A building with EPC rating between 26 and 50 falls within Band B

4 The University's approach to carbon management

The University is mindful of its impact on the local environment and is committed to reducing carbon dioxide emissions through a process of forward planning, targeted investment, relevant education and raising environmental awareness among staff and students.

The key elements of the University's Carbon Management Plan are: reduce the demand for energy; be efficient in the use of energy; decarbonise energy sources; and promote environmental awareness. These elements will be tackled in the following ways.

Carbon emissions will be reduced as follows.

- Avoiding the unnecessary heating and cooling of buildings.
- Reducing heat losses by improving the thermal insulation and draught proofing of buildings.
- Ensuring refurbishment works contribute to enhanced thermal performance and reduced electrical demand.
- Monitoring energy and water use, benchmarking performance and targeting remedial measures where demand is excessive.
- Encouraging staff and students to play an active role in reducing energy and water use in their daily lives.
- Promoting the use of public transport, cycling and walking as an alternative to private cars.
- Ensuring video conferencing is used as an alternative to business travel and where travel is essential the most environmentally friendly option is chosen.

Efficient use of resources will be achieved as follows.

- Optimising the performance of heating and cooling systems by fine tuning controls.
- Investing in low energy heating and lighting systems and efficient water controls.
- Purchasing goods and services on the basis of their environmental performance rather than cost alone.
- Replacing fleet vehicles with those that maximise fuel efficiency and minimise emissions consistent with their intended use.
- Recycling waste to minimise the quantity shipped to landfill while facilitating the reprocessing of waste materials.

Decarbonising will be achieved as follows.

- Investing in reliable biomass heating plant utilising locally sourced fuel.
- Introducing renewable energy systems such as photovoltaic arrays to generate electricity and solar thermal panels to produce hot water.
- Developing large scale wind turbine generation of electricity.

Environmental awareness will be raised as follows.

- Encouraging academic schools and non-academic departments to establish staff teams to promote green practices in their workplaces.
- Employing established links with Kent Union to jointly foster greener lifestyles among the student community.
- Making environmental performance a regular feature in KENT, the University magazine.
- Publishing information on carbon emissions, sustainable travel and waste recycling and water use.

Student and staff travel is also recognised as a significant factor in the University's carbon footprint. Promotion of cycling, use of public transport and car sharing play a significant part in reducing congestion and emissions and improving quality of life.

The University of Kent's carbon reduction programme is integrated with its rolling programme of maintenance and refurbishment works.

The University has two Long Term Maintenance (LTM) programmes for the General Estate (£900k approved budget in 2009/10) and Colleges & Residences (£872k). Some maintenance projects undertaken as part of the annual LTM programmes contribute directly to energy savings and corresponding reductions in CO₂ emissions. Such projects include the replacement of old and inefficient boilers and new flat roof coverings where insulation thickness can be increased.

In addition a loan from the HEFCE Salix Revolving Green Fund finances certain projects that meet the strict Salix compliance criteria and capital budgets are allocated to specific renewable energy projects. The Salix project compliance criteria impose very strict rules on the simple payback period and investment per tonne of carbon saved:

Maximum 5 year payback £100 / tCO₂

Maximum 7.5 year payback £50 / tCO₂

The University has negotiated utility contracts with very competitive unit prices for the supply of gas and electricity. Potential Salix projects in colleges and residences in particular often fail to meet the compliance criteria because the lower rate of VAT applies to energy supplies making the simple payment period excessive.

Renewable energy schemes and other larger projects beyond the scope of Long Term Maintenance are funded from Capital budgets (Indicated indicatively in Appendix 3).

The following carbon reductions are expected.

Estimated Reduction in Scope 1 & 2 Emissions – Fossil Fuels

Funding	Emission Reduction	Units
HEFCE Salix RGF	388	tCO ₂
Long Term Maintenance	200	tCO ₂
Capital & Miscellaneous Projects	5,014	tCO ₂
Total (i)	5,602	tCO ₂

Estimated Reduction in Scope 1 & 2 Emissions - Building Closures

Building	Emission Reduction	Units
Beverley Farm Huts	54	tCO ₂
The Oaks	20	tCO ₂
Eliot Extension Annex	6	tCO ₂
Total (ii)	80	tCO ₂

Expected Growth in Scope 1 & 2 Emissions – New Buildings

Project	Emission Growth	Units
Colyer-Fergusson Building	79	tCO ₂
New Academic Building	41	tCO ₂
New Science Building	138	tCO ₂
Conference Centre	241	tCO ₂
New Student Residence	1,244	tCO ₂
Law School Extension	27	tCO ₂
New Day Nursery	28	tCO ₂
Mandela Extension	9	tCO ₂
New Flexible Exhibition Space	298	tCO ₂
Total (iii)	2,105	tCO ₂

Grid Electricity Decarbonisation 1,372 tCO₂ (iv)

Net Carbon Reduction Scope 1 & 2 Emissions

Estimated Reduction	7,054 tCO ₂ (from i, ii and iv above)
Expected Growth	2,105 tCO ₂ (from iii above)
Net Carbon Reduction	4,949 tCO₂

Carbon Footprint Scope 1 & 2 Emissions (baseline data)

1990-91	17,519 tCO ₂
2005-06	17,907 tCO ₂
2008-09	18,700 tCO ₂
2019-20	13,751 tCO ₂

More detail is given in Appendix 1 and Appendix 2.

In summary, the Scope 1 & 2 Reduction against 2005-06 Baseline at 2019-20 is 4,156 tCO₂ pa (23.21 %).

Against a 1990-1 baseline, this would represent a reduction of 21.5%. If the University's student and staff numbers remained constant at their 2008-9 levels through to 2019-20, the University's student and staff numbers would have increased by 190% during the same period – a reduction of 63% per student/staff FTE.

5 Emission Reduction beyond 2020

The HE Sector target beyond 2020 is an 83% reduction by 2050 measured against the 2005-06 baseline. Having achieved its first goal of a 23% reduction by 2020 the University's challenge is to realise a further 60% reduction in carbon dioxide emissions by 2050.

It is not possible to go into the detail of how these savings might be achieved but in general terms:

- The University's electricity consumption has grown significantly so the UK's programme to decarbonise Grid electricity, local generation and use of energy efficient equipment are key elements in reducing emissions.
- Due to their age many University buildings are inherently wasteful of energy despite investment in energy efficiency measures. To reduce their carbon footprint significantly these buildings must be replaced with low or zero carbon buildings.
- Some University buildings combine residential, academic, recreational and administrative functions so cannot be optimised to deliver high levels of energy efficiency. Replacement of these by new buildings designed for their specific function will realise real carbon savings.
- New technologies have emerged that will mature and become economically viable as fuel and carbon costs increase.

6 Communications and reporting

Key to the success of the Carbon Management Plan is effective communication with stakeholders and timely reporting of performance against targets.

To achieve this objective:

- The Carbon Management Plan will be publicly available on the University website.
- An annual Carbon Management Report will record progress against carbon reduction targets.
- Staff and students will be engaged through participation in a rolling Green Programme.

KCM/NHS/17.11.2010

Appendix 1: Emission baselines

The University of Kent began reporting annual energy consumption data on a voluntary basis in 1980-81 to the University of Cambridge who at that time compiled the UK Universities Energy Consumption Survey. Collation of data later transferred to the University of Hull who undertook the analysis and issued an annual report for benchmarking purposes on behalf of the Association of University Directors of Estates. In more recent years the annual return, known as the Estate Management Statistics, is made to HEFCE. The statistics have historically been regarded as confidential for benchmarking purposes but a recent ruling by the Information Commissioner means it will in future be in the public domain. From 2010-11 the statistics will be reported to HESA.

Scope 1 & 2 Emissions

Reporting Year 1990-91	Annual Consumption	Units	Emission Factor	Emission tCO ₂	Proportion %
Oil	1,945,163	Litres	2.54210	4,945	28.2243
Gas	729,832	Therms	5.42860	3,962	22.6144
Electricity	11,006,237	KWh	0.77146	8,491	48.4649
Vehicles ³				122	0.6964

Reporting Year 2005-06	Annual Consumption	Units	Emission Factor	Emission tCO ₂	Proportion %
Oil	229,164	KWh	0.24683	57	0.3159
Gas	47,274,773	KWh	0.18523	8,757	48.9030
Electricity	16,637,277	KWh	0.53909	8,969	50.0886
Vehicles				124	0.6925

Reporting Year 2008-09	Annual Consumption	Units	Emission Factor	Emission tCO ₂	Proportion %
Oil	243,747	KWh	0.24683	60	0.3217
Gas	43,533,166	KWh	0.18524	8,064	43.1221
Electricity	19,287,196	KWh	0.54522	10,516	56.2353
Vehicles				60	0.3209

Data shown in the tables above for 1990-91 and 2005-06 corresponds with that produced by SQW Energy on behalf of HEFCE and incorporated into the Carbon Baselines for Individual Higher Education Institutions in England published in August 2010. Emission factors are based on gross calorific value.

³ Emissions from University owned vehicles estimated for 1990-1 and 2005-6 by SQW Energy

Absolute Emissions

Absolute Scope 1 and 2 CO₂ emissions measured against the 1990-91 baseline have increased.

Year	Emission tCO ₂	Increase %
1990-91	17,519	0.00
2005-06	17,907	2.21
2008-09	18,700	6.74

Relative Emissions

From 1990-91 to 2008-09 the number of students has grown significantly while the relative Scope 1 and 2 emissions per student fte have decreased.

Year	Emission tCO ₂	Student FTE	Emission tCO ₂ /FTE	Decrease %
1990-91	17,519	5,065	3.46	0.00
2005-06	17,907	12,955	1.38	60.12
2008-09	18,700	14,916	1.25	63.87

Note: Student numbers taken from University of Kent data

So in 2005-06 the emission per student fte was 39.88% of the 1990-91 value and in 2008-09 it was 36.13% of the 1990-91 figure.

Scope 3 Emissions

The University is working to quantify the full extent of its Scope 3 emissions.

The emission factors used in the tables below are taken from the 2009 Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting.

Water Supply

Year	Consumption	Units	Emission Factor kgCO ₂ /m ³	Emission tCO ₂
2008-09	218,047	m ³	0.2760	60

Waste Water Treatment

Year	Discharge	Units	Emission Factor kgCO ₂ /m ³	Emission tCO ₂
2008-09	207,145	m ³	0.6930	144

Waste to Landfill

Year	Weight	Units	Emission Factor kgCO ₂ /tonne	Emission tCO ₂
2008-09	670	tonnes	81	54

Business Travel (Private Car)

Year	Distance	Units	Emission Factor gCO ₂ /km	Emission tCO ₂
2008-09	680,361	km	202.8	138

The University is committed to establishing emissions arising from

- Business Travel (Car Hire)
- Business Travel (Public Transport)
- Business Travel (Air)
- Student Travel (Air)
- Staff Commuting
- Student Commuting

This information is not currently available.

Appendix 2: Energy performance of buildings

Currently 27 University buildings with a floor area of 1000 m² or more have a Display Energy Certificate. The energy performance of each building is reviewed annually and a new certificate issued. The performance of these building in 2008-09 is summarised in the tables below.

Non Residential Buildings

Building	Band	Rating	Heating KWh/m ² /year	Electrical KWh/m ² /year
Cornwallis Complex	E ₁₀₁₋₁₂₅	116	136	148
Estates / Maintenance	C ₅₁₋₇₅	73	134	55
Gillingham Building	C ₅₁₋₇₅	71	41	106
Grimond Building	D ₇₆₋₁₀₀	77	175	69
Ingram Building	G ₁₅₀₊	161	189	235
Jennison Building	F ₁₂₆₋₁₅₀	133	150	197
Kent Business School	D ₇₆₋₁₀₀	77	173	69
KRDC	C ₅₁₋₇₅	69	177	54
Marlowe Building	C ₅₁₋₇₅	65	131	65
Medway Building	C ₅₁₋₇₅	70	84	89
Registry Building	E ₁₀₁₋₁₂₅	112	176	95
Registry Extension	E ₁₀₁₋₁₂₅	110	168	95
Sports Centre	E ₁₀₁₋₁₂₅	107	261	141
Stacey Building	E ₁₀₁₋₁₂₅	123	296	129
Templeman Library	E ₁₀₁₋₁₂₅	112	220	84

Colleges & Residences

Building	Band	Rating	Heating KWh/m ² /year	Electrical KWh/m ² /year
Becket Court	D ₇₆₋₁₀₀	78	241	49
Bossenden Court	C ₅₁₋₇₅	64	164	52
Darwin College	E ₁₀₁₋₁₂₅	101	217	95
Eliot College	D ₇₆₋₁₀₀	79	212	60
Kemsdale Court	C ₅₁₋₇₅	60	164	45
Keynes College	D ₇₆₋₁₀₀	98	237	84
Nickle Court	D ₇₆₋₁₀₀	85	164	89
Rutherford College	D ₇₆₋₁₀₀	90	225	73
Stock Court	C ₅₁₋₇₅	52	164	31
Tyler Court A	D ₇₆₋₁₀₀	100	197	102
Tyler Court B	C ₅₁₋₇₅	68	161	61
Tyler Court C	C ₅₁₋₇₅	52	158	34

Notes: i) A numerical rating of 100 is typical for the type of building.

ii) A numerical rating lower than 100 indicates an above average performance.

Appendix 3: Capital projects funded from Long Term Maintenance, HEFCE Salix Funding, and other sources

The following projects have been identified.

Long Term Maintenance Funded Projects

Parkwood and other residential accommodation	Install High efficiency boilers and BMS controls
Kent Business School	Install high efficiency boilers
Ingram II	Replace roof covering
Mandela	Install BMS controls
Marlowe	Ventilation system balance

HEFCE Salix ISP Funded Projects

Templeman Library	Lighting upgrade
Student Houses	Top-up loft insulation
Parkwood Houses	Cavity wall insulation
Various	Pipe insulation (Phase 1)
General Buildings	Top-up loft insulation
Various	Pipe insulation (Phase 2)
Ingram II	Lighting upgrade
Keynes College	Lighting Upgrade
Biosciences	Lighting upgrade
Cornwallis	Lighting upgrade
Rutherford College	Lighting upgrade
Eliot College	Lighting upgrade
Ingram I	Lighting upgrade

Capital & Miscellaneous Funded Projects

Behaviour Change	Degrees Cooler programme
Behaviour Change	Rolling Green Awareness programme
District Heating	Replace district heating mains
Registry Building	Replace windows and heat emitters
Campus	AMR / M&T upgrade
District Heating	Install 3 MW biomass boiler
Campus	Install 1.5 MW wind turbine
Cornwallis West, South and Templeman Library	Photovoltaic array
Various Parkwood Courts	Solar thermal

Further details follow.

Long Term Maintenance Funded Projects																				
No	Location	Project Description	Total Cost	Energy Saving KWh/yr	Emission Reduction tCO ₂ -pa	Planned Implementation Year														
						2009 2010	2010 2011	2011 2012	2012 2013	2013 2014	2014 2015	2015 2016	2016 2017	2017 2018	2018 2019	2019 2020				
1	Parkwood Houses	High efficiency boilers (2 No Courts)	£ 54,174	42,392	B	C														
2	Parkwood Houses	Install BMS controls (2 No Courts)	£ 85,068	40,272	7	C														
3	Kent Business School	Install high efficiency boilers	£ 36,492	37,849	7	C														
4	Parkwood Admin	Install high efficiency boilers	£ 12,865	23,274	4	C														
5	Inglan II	Replace roof covering	£ 76,000	56,643	10	C														
6	Parkwood Houses	High efficiency boilers (2 No Courts)	£ 52,358	39,434	7	C														
7	Parkwood Houses	Install BMS controls (2 No Courts)	£ 81,178	74,925	14	C														
8	Stanwin Houses	High efficiency boilers (35 No Houses)	£ 72,145	46,114	9	C														
9	Vanbus	Install 3 No high efficiency boilers	£ 34,500	38,133	11	C														
10	Mandela	Install BMS controls	£ 4,154	5,485	1	C														
11	Vanbus	Install high efficiency motors	£ 56,852	46,862	26	A														
12	Mandela	Ventilation system balance	£ 10,063	79,644	15	A														
13	Parkwood Houses	High efficiency boilers (2 No Courts)	£ 54,976	39,434	7	A														
14	Parkwood Houses	Install BMS controls (2 No Courts)	£ 93,355	74,525	14	A														
15	Tyler Court A	Install high efficiency boilers	£ 72,804	78,434	15	B														
16	Parkwood Houses	High efficiency boilers (2 No Courts)	£ 57,725	39,434	7	B														
17	Parkwood Houses	Install BMS controls (2 No Courts)	£ 58,022	74,925	14	B														
18	Keynet Extension	Install high efficiency boilers	£ 12,487	16,831	3	B														
19	Parkwood Houses	High efficiency boilers (2 No Courts)	£ 60,611	39,434	7	B														
20	Parkwood Houses	Install BMS controls (2 No Courts)	£ 102,923	74,925	14	B														
			£1,128,742		200															
A Denotes Incomplete budget/overrun																				
B Denotes budget required																				
C Denotes project complete																				
11.11.10																				

HEFCE Salix ISP Funded Projects																				
No	Location	Project Description	Total Cost	Energy Saving KWh/pa	Emission Reduction tCO ₂ pa	Planned Implementation Year														
						2008	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020			
1	Templeman Library	Lighting upgrade	£ 65,721	127,808	70	C														
2	Student Houses	Top-up loft insulation	£ 54,450	280,099	52	C														
3	Parkwood Houses	Cavity wall insulation	£ 37,224	713,522	132	C														
4	Various	Pipe insulation (Phase 1)	£ 8,580	58,878	11	C														
5	General Buildings	Top-up loft insulation	£ 6,250	94,718	12	C														
6	Various	Pipe insulation (Phase 2)	£ 9,438	47,701	9	C														
7	Ingram II	Lighting upgrade	£ 4,605	10,109	6	A														
8	Keynes College	Lighting Upgrade	£ 9,600	30,512	17	A														
9	Biosciences	Lighting upgrade	£ 4,400	8,394	5	A														
10	Cornwallis	Lighting upgrade	£ 4,800	8,798	5	A														
11	Rutherford College	Lighting upgrade	£ 27,170	50,308	27	A														
12	Elliot College	Lighting upgrade	£ 25,910	50,781	28	B														
13	Ingram I	Lighting upgrade	£ 12,282	25,272	14	B														
			£ 270,510		388															
		A Denotes indicative budget identified																		
		B Denotes budget required																		
		C Denotes project completed																		
11.11.10																				

Capital & Miscellaneous Funded Projects		Location		Project Description		Total Cost		Energy kWh/tpa		Emission Reduction tCO ₂ pa		Planned Implementation Year												
												2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	Behaviour Change	Degrees Cooler programme	£ 11,000	157,860	58																			
2	Behaviour Change	Rolling Green Awareness programme	£ 25,000	76,630	28																			
3	District Heating	Replace district heating mains	£ 2,000,000	1,100,000	204																			
4	Registry Building	Replace windows	£ 350,000	21,638	4				A															
5	Registry Building	Replace heat emitters	£ 230,000	32,454	8				A															
6	Campus	AMP, MGT upgrade	£ 150,000	1,272,865	238				A															
7	District Heating	Install 3 MW biomass boiler	£ 2,000,000	12,492,392	2,374																			
8	Campus	Install 1.5 MW wind turbine	£ 2,430,000	3,800,000	2,072																			
9	Camwallis West	Photovoltaic array	£ 65,000	12,372	7																			
10	Camwallis South	Photovoltaic array	£ 105,000	21,242	12																			
11	Templeman Library	Photovoltaic array	£ 324,000	71,743	39							A												
12	Stock Court	Solar thermal	£ 32,000	14,647	3							A												
13	Kensdale Court	Solar thermal	£ 113,000	45,635	8							A												
14	Becket Court	Solar thermal	£ 133,000	52,231	10							A												
15	Nicke Court	Solar thermal	£ 107,000	45,869	8								A											
16	Bossenden Court	Solar thermal	£ 60,000	25,328	5																		B	
			£ 8,150,000	5,014																				
		None: Energy figures in bold italics represent renewable energy output rather than energy saved.																						
A		Denotes indicative budget identified																						
B		Denotes budget required																						
C		Denotes project completed																						
11.11.10																								