



# Isle of Wight Council Carbon Management Programme

## Carbon Management Plan (CMP) 2010-2015

## Glossary of Acronyms

AR	Advisory Report	Accompanies DEC's and contains recommendations for improving the energy performance of buildings
ASHP	Air Source Heat Pump	High efficiency form of heating produced by extracting heat from the outside air
BAU	Business As Usual	Scenario where no energy efficiency measures undertaken
BMS	Building Management Systems	Computer based control system able to control and optimise mechanical and electrical equipment such as heating
CHP	Combined Heat and Power	Engine producing both heat and electricity in the same process, ordinarily powered by Gas.
CMPR		Tool provided by the Carbon Trust to help identify and manage energy efficiency projects
CO2	Carbon Dioxide	Greenhouse gas produced primarily through combustion of fossil fuels
CRC	Carbon Reduction Commitment	Mandatory emissions trading scheme designed to improve energy efficiency in large public and private sector organisations
OC	Degrees Celsius	Unit of measure for temperature
DEC	Display Energy Certificate	Mandatory certificate to raise public awareness of energy use in buildings
DECC	Department for Energy & Climate Change	Government department created in October 2008 to lead in tackling the challenges of Climate Change
DH	District Heating	Heating multiple buildings/sites from a centralised heat source.
ESCO	Energy Service Company	Commercial business able to supply 'heat' to organisations through various solutions, reducing the associated risks of many renewable energy solutions
F-GAS	Fluorinated gases	Man made gas commonly used as a refrigerant.
FIT	Feed In Tariff	Financial incentive for the generation of Electricity by renewable means
kWh	Kilowatt hours	Unit of measure for energy
LED	Light Emitting Diode	Recently introduced as a low maintenance and high efficiency form of lighting
PC	Personal Computer	Computer designed for an individual user
PFI	Private Finance Initiative	Method of creating public/private partnerships through private capital investment
PIR	Passive Infrared Sensor	Electronic device detecting motion between two objects of different temperatures such as a person entering a room.
PV	Photovoltaic	Method of creating electrical power from the sun
RHI	Renewable Heat Incentive	Payment system for the generation of heat offered as an incentive for the installation of renewable heating solutions within the non-domestic sector.
tCO2	Tonnes Carbon dioxide	1000kg Carbon dioxide

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## Foreword

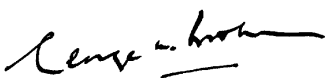
Isle of Wight Council is working with its public and private sector partners to deliver Eco Island, our vision for sustainable development on the Island. Cutting carbon emissions as part of the fight against climate change is a key priority for the council and the Carbon Management Plan illustrates how the council plans to meet this challenge over the next four years through reducing its own emissions.

The current financial constraints faced by local authorities make the drive for energy efficiency even more important, since it reduces our running costs and helps us deliver more efficient services for local residents. We will continue to invest to reduce our energy consumption and we encourage all colleagues to contribute to our challenging targets for reduced carbon emissions.

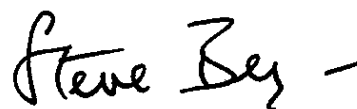
The Carbon Management Plan helps to fulfil our commitments under the Nottingham Declaration on Climate Change which the council signed in 2007. We are happy to lead by example and hope that many other Island organisations and businesses will put in place similar plans for carbon reduction.



Cllr Edward Giles  
Cabinet Member for  
Highways, Transport  
and Waste



Cllr George Brown  
Deputy Leader  
Cabinet member for  
Economy and Environment



Steve Beynon,  
Chief Executive

## Foreword from the Carbon Trust

Cutting carbon emissions as part of the fight against climate change should be a key priority for all public sector organisations. Carbon management is about realising efficiency savings, transparency, accountability and leading by example. The UK government has identified the public sector as key to delivering carbon reduction across the UK in line with its Climate Change Act commitments and the Local Authority Carbon Management Programme is designed in response to this. It helps organisations to save money on wasted energy and put it to better use in other areas, while making a positive contribution to the environment by lowering carbon emissions.

Isle of Wight Council partnered with the Carbon Trust on this programme in 2010 to realise the substantial carbon and cost savings. This Carbon Management Plan commits the Isle of Wight Council to a target of reducing CO<sub>2</sub> by 30% by 2015 and underpins potential financial savings and cost avoidance to the organisation of around £5 million by that date.

Public sector organisations can contribute significantly to reducing CO<sub>2</sub> emissions and improving efficiency. The Carbon Trust is therefore very proud to support Isle of Wight Council in its on-going implementation of carbon management.

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

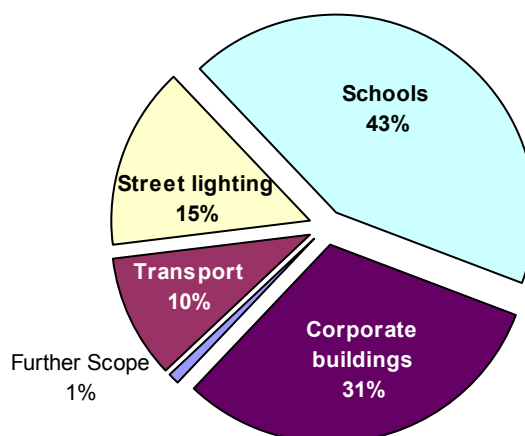
Richard Rugg  
Head of Public Sector, Carbon Trust

## Management Summary

This Carbon Management Plan replaces the Carbon Management Strategy and Implementation Plan published in 2007. Since then, changes in the organisation and operation of the council and its functions have led to the development of a revised approach to the delivery of the Carbon Management Plan. An Energy & Carbon Manager has now been appointed to lead the identification and implementation of carbon reduction projects.

The Carbon Management Plan shows how the council will reduce the carbon emissions from its buildings and operations. It fulfils the commitment in the Nottingham Declaration on Climate Change which the council signed in May 2007 and demonstrates positive action by the council to implement Eco Island, the Sustainable Community Strategy. Carbon reduction measures also reduce energy costs which will help the council deliver more efficient services to local residents.

The council's carbon emissions during 2009/10 were estimated to be 20,558 tonnes CO<sub>2</sub>, with the associated energy cost amounting to some £5.5 million.



## Data for baseline year 2009/10

	CO <sub>2</sub> (tonnes)	%	Cost (£)
<b>Buildings and street lights</b>	18,356	89%	£ 3,280,265
<b>Transport</b>	2,012	10%	£ 1,692,515
<b>Further scope</b>	190	1%	£ 567,017
	<b>20,558</b>	<b>100%</b>	<b>£5,539,797</b>

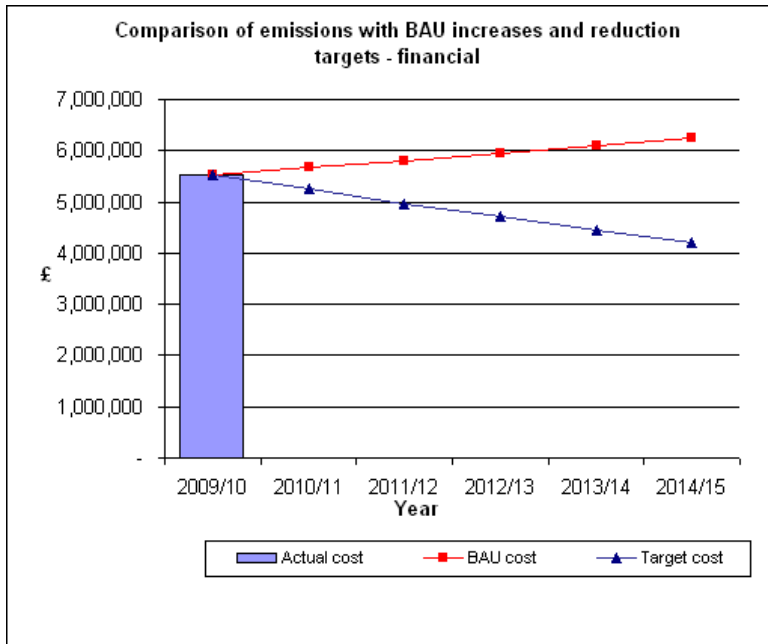
The majority of emissions are from buildings, with school buildings contributing 43% of total council emissions. Of the 53 council buildings that require Display Energy Certificates (DECs), 77% fall into Band D or below, which shows considerable scope for improvements in energy efficiency.

Rating	Number of DECs
A	0
B	3
C	9
D	18
E	15
F	4
G	2

Total 51

Average DEC score 96.1

## Financial 'business as usual' (BAU)

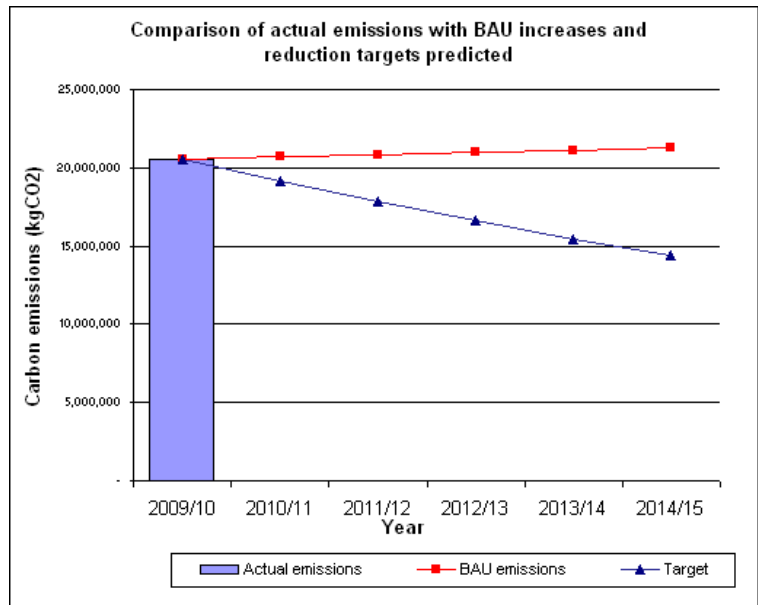


Without taking action, and maintaining current staff levels and existing buildings, energy costs are expected to increase to £6.2 million in 2014/15. The actions in this plan, combined with council re-organisation, building rationalisation and the Highways PFI project, should reduce this to £4.2 million, and provide accumulative financial savings of up to £3.1 million over the five year period. It should be noted that the accumulative

'value at stake' is an estimate of the total potential savings or cost avoidance that could accrue to the council if it meets its carbon reduction target.

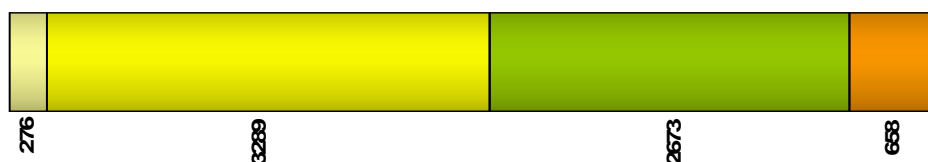
## Emissions 'business as usual' (BAU)

The council's aim is to reduce its carbon emissions by 30% by April 2015, compared to a 2009/10 baseline, amounting to 6,896 tonnes CO<sub>2</sub>. Projects implemented during 2010/11 provide 256 tCO<sub>2</sub> and identified projects over the full period of the Plan provide a further 5,961 tCO<sub>2</sub>. This leaves a gap of 658 tCO<sub>2</sub> (3.2%) which will be filled by new projects identified over the next 2-3 years. While a 30% reduction would only represent 6,167tCO<sub>2</sub>, it is necessary to account for the assumed



business as usual (BAU) scenario. This forecasts increased energy demand as a result of both degradation of existing boilers, pumps, computers etc, as well as an increased dependence on items such as computers within modern offices/schools.

**Target: 30%  
(6,896tCO<sub>2</sub>)**



Figures in thousand tCO<sub>2</sub>

Existing projects      Identified projects  
Reorganization      Gap

We have identified projects which will deliver 27% reduction in our emissions. To achieve our target, further projects will be identified and implemented over the course of the next 5 years

The total cost of implementing the Carbon Management Plan has been calculated at £1.8m. A substantial proportion - £542,803 - of this will be funded by service areas across the council whose projects deliver carbon savings as well as other objectives. A sum of £558,268 will need to be invested directly through the Energy Management services to provide additional carbon and energy savings. Investment in the education sector requires a further £724,919 of investment through devolved school budgets, and whilst further negotiation with schools is required, only those projects which are likely to be attractive to schools have been included.

figures in £ 1000's	2010/11	2011/12	2012/13	2013/14	2014/15
<b>Annual costs:</b>	<b>221,695</b>	<b>280,611</b>	<b>555,453</b>	<b>675,158</b>	<b>93,073</b>
<b>Committed funding:</b>	<b>221,695</b>	<b>256,976</b>	<b>418,954</b>	<b>77,195</b>	<b>77,195</b>
<b>Unallocated funding</b>	<b>0</b>	<b>23,635</b>	<b>136,499</b>	<b>594,963</b>	<b>15,878</b>

The unallocated funding in majority relates to school projects, where funding has not yet been agreed. It is anticipated that many of them will be implemented as they provide a good return on investment and will be discussed with the Schools Forum during 2011/12, at which stage the number and structure of school buildings will be understood.

Near term 'corporate' energy saving projects have funding allocated to them, however, funding for projects outlined from 2012/13 onwards will require 'spend to save' bids for additional capital funding.

The plan will be delivered by the Carbon Management Team, chaired by the Energy & Carbon Manager and including officers across the council with a role in implementing carbon reduction projects and monitoring performance. Progress will be reported annually through directors and cabinet and reports will be made available to scrutiny panel. Crucially, as part of the Communications Plan, all staff across the council will be made aware of progress since their enthusiasm for the aims of the Plan and co-operation in putting it into practice are essential to its success.



## 1 Introduction

The Isle of Wight Council is committed to playing its role in mitigating the impacts of climate change by reducing the greenhouse gas emissions from its operations. In doing so it hopes to set an example which the rest of the community will follow, so that the Island can move towards becoming a low carbon community. Since greenhouse gas emissions are largely a result of energy consumption, an additional benefit will be a reduction in energy costs to the council.

The council produced a Carbon Management Strategy & Implementation Plan in 2007 which was its first attempt at understanding and quantifying its carbon emissions. Since then, changes in the organisation and operation of the council and its functions have impacted on the originally planned carbon reduction measures and a decision was taken to revise the Carbon Management Plan with a specific emphasis on the council's Strategic Projects. This plan details how the council will:

- identify and monitor its existing carbon footprint
- set targets to reduce its carbon footprint
- identify and implement carbon reduction measures
- substantially reduce its energy costs

In researching and preparing this plan the council has been supported by the Carbon Trust through its Local Authority Carbon Management Programme (LACM) and has followed the process outlined below:



A number of tools provided by the Carbon Trust have been very helpful in forecasting emissions, setting targets and helping to identify opportunities for energy saving projects across the council. The most recent version of their CMPR Plus tool will enable progress against all projects to be monitored and help identify any issues which may hinder project implementation. This will enable greater accuracy for future updates of this plan with regards to project identification, implementation and ownership.

This Carbon Management Plan outlines a strategy to reduce greenhouse gas emissions on an ongoing basis and includes details of projects which will make a significant impact in the first 5 years. However, the plan is expected to be updated on an annual basis as more information becomes known, more projects are identified and new technologies are introduced. Carbon management will, during the first 3 years, become embedded in the council's ethos and practice.

## Carbon Management Strategy

**The council's vision for carbon management is to minimise the Isle of Wight council's contribution to global climate change and inspire the Island community to reduce its carbon emissions.**

**This will be achieved within the council through a reduction in greenhouse gas emissions of 6% per annum on an ongoing basis, leading to a 30% reduction achieved in a maximum of 5 years.**

### Context and drivers for Carbon Management

The Stern Review (2006) and International Panel on Climate Change 4<sup>th</sup> Report (2007) highlight the devastating economic and environmental impacts of climate change and that man's actions are causing, or accelerating, an increase in global temperatures. It is also generally accepted that every organisation, business and individual must take urgent action to reduce greenhouse gas emissions if we are to reduce the impacts of climate change. Stern also demonstrated that it is substantially cheaper to tackle the causes of climate change rather than deal with the impacts. This is particularly relevant in times of severe budgetary pressures where reduced energy consumption will lead to financial savings.

In preparing this Carbon Management Plan, the council wishes to play its part. There are, however, a number of external and internal drivers which magnify the case for action. These are:

#### **(a) External Drivers**

##### **Local Government White Paper (Climate Change)**

The Local Government White paper (2006) states that local authority leadership is essential to take the political decisions necessary to deal with the causes and effects of climate change. New overview and scrutiny arrangements allow local communities to hold local government to account for its action, or inaction.

##### **National Indicator 185**

This national indicator was reported on during 2008-10 and included all emissions as a result of all council operations. Although this was not required during 2010/11 due to central government's scrapping of national indicators, recent announcements from the Department for Energy & Climate Change (DECC) suggest that a similar indicator will be

required to be reported on from 2011/12 onwards. This will open the council to public and central government scrutiny over its emissions.

### **Climate Change & Sustainable Energy Act 2006**

The Secretary of State is required to produce an annual 'energy measures report' which outlines local authority actions to improve energy efficiency, increase the production of heat and power from low-emission sources, reduce emissions of greenhouse gases and reduce the number of households in fuel poverty. Every local authority must, in exercising their functions, have regard to the most recently published energy measures report.

### **Climate Change Act 2008**

This act places a legal obligation on the UK government to reduce greenhouse gas emissions by 80% by 2050 (from a 1990 baseline). Carbon budgets set interim targets of 22% by 2012, 28% by 2017 and 34% by 2022. All sectors, including local authorities, will need to contribute.

### **Carbon Reduction Commitment (CRC) Energy Efficiency Scheme**

The CRC Energy Efficiency Scheme is a mandatory emissions trading scheme, estimated to affect around 20,000 large public and private sector organizations, including the Isle of Wight council. Through this scheme, participants must purchase allowances to offset the carbon that they have produced each year. The first sale of allowances is expected to take place between April - July 2012 at a cost of £12 per tonne of carbon. It is estimated that this will cost the council (including schools) £200,000 per year at current levels of emissions.

### **EU Energy Performance of Buildings Directive**

This directive requires any public building frequented by members of the public and with a floor area greater than 1,000m<sup>2</sup> to have a Display Energy Certificate (DEC) and Advisory Report (AR). DEC's must be displayed in a prominent position and make the energy performance of council buildings more open to public scrutiny.

## **(b) Internal Drivers**

### **Nottingham Declaration on Climate Change**

As a signatory to the Nottingham Declaration on Climate Change the council is required to have in place a plan for reducing the carbon emissions from its activities and to publicise this plan.

### **Rising Energy Costs**

Fossil fuel prices have been rising dramatically during recent years, a trend that is not expected to change in the future. The council's gas and electricity supply contracts show an increase in cost of some 80% during the period 2006-10. The council spends some £4 million per year on energy in buildings (including schools) and these rising prices strengthen the business case for energy efficiency and for the generation of heat and power from renewable sources.

### **Strategic Asset Management Plan**

The council's desire to become a high-performing, cost-effective council has led it to review its building portfolio with a view to disposing of those buildings which are no longer required. This will result in the disposal of a number of energy inefficient buildings, reducing emissions from the council stock. There is a desire to make new flagship buildings, such as Cowes Secondary School, exemplary low carbon buildings.

### **Sustainable Development Strategy**

The Island's Strategy for Sustainable Development, published in 2000 after widespread public consultation, requires the council to show leadership in environmental management. The growing emphasis on climate change suggests that this should concentrate initially on carbon reductions and, through this Carbon Management Plan, the council will set challenging targets for carbon reduction which it hopes will inspire the rest of the public sector as well as the wider Island community.

## Targets and objectives

**The Isle of Wight council will reduce the CO<sub>2</sub> emissions from its activities by 30% from the 2009 / 10 baseline, by March 2015.  
This represents savings of 6% per year**

The targets for the strategy are:

- To reduce carbon emissions by 4,601 tonnes over a 3 year period, which represents a reduction of 20% and by 6,896 tonnes over a 5 year period, which represents a reduction of 30%\*.
- To continue to reduce carbon emissions at a rate of at least 6% per year and to review progress against this target annually.

The Carbon Management Plan will provide the basis for a Carbon Trading Strategy which will allow the council to accurately predict the purchase of allowances under the mandatory CRC Energy Efficiency Scheme.

Progress against these targets will be reviewed every six months, reported on an annual basis and incorporated into future revisions of this plan.

### Strategic themes

This plan has been developed around seven strategic themes which will reduce the financial burden of energy consumption and help the council become a leader in climate change mitigation:

- To drive for continuous improvement in the **efficient use** of energy, water and materials in council buildings and operations;
- To deliver long term **cost savings** from managing carbon emissions;
- To **raise awareness** and understanding throughout the council of the impact of our own operations on carbon emissions and climate change;
- To **lead the community** and general public to understand and act to protect their environment by raising awareness of the wide range of cost-effective carbon reduction initiatives;
- To work closely with **schools** to help them establish their carbon baseline and implement measures to reduce it, including providing technical advice and support;
- To develop clear and effective **monitoring systems** for carbon emissions across those activities which have the greatest impact;
- To **align** the Carbon Management Plan with other policies and initiatives, notably the council's strategic projects.

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\* includes 0.7% demand increase year on year as a result of degradation factors and increased dependency on electrical equipment within modern offices/schools.

Taking the principal sources of carbon emissions, the council's broad strategy is outlined below:

## Buildings

During the course of this plan there will be considerable rationalisation of council buildings to account for fewer staff and the desire for more flexible working. Existing buildings which have a long-term future will be upgraded to improve their energy efficiency. Users will be educated and encouraged to minimise energy use by turning off lights and appliances and operating heating and cooling systems efficiently. New buildings will be subject to sustainability appraisals to identify low carbon solutions, drawing on the latest technologies. A low energy flagship building will be constructed at Cowes High School. In addition the council will:

- ❖ Include renewable energy systems in all new buildings and as retrofits in existing buildings where a business case can be proven
- ❖ Replace ageing boilers with high efficiency/condensing boilers or renewable energy systems
- ❖ Insulate walls, lofts, tanks and pipes
- ❖ Upgrade heating controls and Building Management Systems (BMS) to provide comfort and prevent overheating
- ❖ Introduce PIR lighting controls and high efficiency tubes and switchgear

With a growing emphasis on the need for sophisticated energy management, the council will introduce smart meters across its stock allowing for the close monitoring of energy consumption on a half-hourly basis.

There are three specific projects which will have a major impact on energy consumption and which will deliver a number of carbon reduction measures described elsewhere in this report.

Leisure Needs Analysis – has identified the need for significant investment in leisure centres – The Heights, Medina, Westridge and Waterside Pool. Subsequently, Waterside pool has been identified for transfer or closure and a provisional sum of £6.8m has been allocated for investment in the remaining sites. This is likely to include major improvements to heating and ventilation systems, fabric insulation, heating controls, efficient lighting, combined heat & power (CHP) (The Heights), backwash water recovery (Heights and Medina) and passive ventilation where possible.

Schools reorganisation – the transformation of the Island's education system, with the removal of middle schools during 2011/12, will result in fewer sites and the remodelling of the majority of primary and secondary schools to accommodate additional year groups. This provides opportunities for energy efficiency improvements, within a restricted capital budget.

County Hall refurbishment – this is the main administrative base for the council and will be refurbished during 2011/12 to accommodate staff from other buildings and provide the infrastructure for flexible working. Again, there are opportunities for energy efficiency improvements, such as improved lighting and the removal of air conditioning as a result of improved natural ventilation in open plan offices.

### **Street lighting**

Existing street lighting provides a good balance between energy efficient performance and low maintenance costs using proven technologies. The Highways Maintenance PFI, which begins in 2013, will provide an opportunity to radically improve the energy performance of street lighting and it is anticipated that LED street lighting will be introduced across the Island within the first three years. This will be introduced in conjunction with controls to enable both dimming of lights and switching of individual lights (on/off). LED street lighting has many additional benefits over existing technologies, the most notable of which (in addition to reduction in energy consumption) is the greatly increased lamp life which should reduce maintenance costs considerably.

### **Business Travel**

A Workplace Travel Plan will be produced to highlight ways of reducing business travel by car. Early actions will include the extension of pool vehicles. In future, the provision of staff showers and changing facilities will encourage greater use of bicycles. Work is also underway to provide flexible working arrangements for staff to reduce the need to commute long distances to work.

### **Waste**

Recycling schemes for office paper have been introduced into some council buildings and will be further promoted through future waste disposal contracts.

### **Procurement**

Sustainable procurement policies offer the opportunity to purchase environmentally-friendly products and to influence the council's suppliers. Essential to sustainable procurement is whole-life costings whereby the running and disposal costs of the product are considered alongside the purchase price. This will put a greater emphasis on energy efficient equipment – laptops, duplex printers etc – and fuel efficient fleet vehicles.

## Fleet Vehicles

During 2010/11, there has been a substantial movement towards the outsourcing of transport services that were previously provided by the council. This includes most of the school lift and all of the adult day care services. A small number of vehicles have been removed from the fleet and there has been a delayed replacement of others. A total of 10 fuel efficient (A-rated) pool cars have been purchased since 2009 and there are plans to purchase a further 14 vehicles over the next three years. The fuel consumption of these vehicles will be recorded through fleet management, with the saving associated with business travel. Future options for carbon reduction in this area include the use of fuel additives, driver training, a positive vehicle replacement programme to replace the least efficient vehicles and the replacement of the Cowes chain ferry in 2013/14. However, these have not been included in the Carbon Management Plan at this stage until plans have been confirmed in respect of the fleet.

## Water

Work has been undertaken during 2010/11 to improve the accuracy and monitoring of water consumption through bills. This has taken the council forward to a point where by it can begin to identify excessive water consumption in sites. Projects including ensuring water meter sizes are appropriate to each site and also the removal of redundant meters has generated financial savings during 2010/11. Identification of projects to reduce water consumption will be quantified in future revisions of this plan.

## Refrigerant Gases

These gasses can be particularly harmful to the environment and monitoring is mandatory in many cases through the F-Gas regulations. Following the completion of air conditioning inspections undertaken in January 2011, a program of removals and upgrades will be undertaken during 2011/12 and 2012/13 across corporate buildings.

### Emissions Baseline and Projections

#### Scope

**In 2009/10, the council was responsible for the emission of 20,558 tonnes of CO<sub>2</sub> from energy use which cost the organisation £5.5 million**

The council's carbon footprint is comprised of carbon emissions relating to:

- ✓ Buildings



- ✓ Streetlighting
- ✓ Business travel
- ✓ Fleet vehicles
- ✓ Refrigerant gases
- ✓ Water consumption
- ✓ Office Waste

It does not include commuting as the process of collecting and verifying commuting data is considered to be too complex. It also does not include emissions resulting from the disposal of municipal waste which were included in the original Carbon Management Plan published in October 2007.

In future, emissions from significant services which are outsourced will be collected and included in the council's carbon footprint. This relates to any services which were provided directly by the council during 2009/10 (the baseline year) but which are subsequently outsourced and delivered under contract to the council. This will ensure that reported figures demonstrate realistic progress in carbon reduction. Outsourcing itself will not, therefore, be seen as a carbon reduction strategy, although contractors will be encouraged to provide services more efficiently in terms of energy use.

Those activities which are measured for the carbon management analysis are:

**Energy consumption in buildings** – this includes the entire council stock ranging in size from county hall to public conveniences. Schools are included and are shown to consume some 58% of the council's entire energy use in buildings.

**Waste disposal** – this includes waste generated by council buildings. Only that proportion of the waste which was eventually sent to landfill was assumed to contribute to carbon emissions.

**Council fleet vehicles** – this includes mileage accrued by the entire council fleet, including buses, fire and rescue vehicles, mobile libraries, vans and 4x4s. It also includes fuel used by the Cowes Chain Ferry and increasing number of pool cars. The fuel used is primarily diesel with small amounts of petrol and LPG (7 vehicles).

**Business mileage** – includes the total miles claimed by council staff using private vehicles. Although an accurate carbon footprint should also include business travel by public transport, this is deemed impossible to measure accurately and so an estimate has been made based on expenses claimed.

**Street lighting & signage** – this includes the electrical consumption of all streetlights, signs, traffic lights, bollards and ticket machines. None of this consumption is metered; it is estimated from the number and type of luminaires and fittings. Responsibility for street lighting will fall under the forthcoming Highways PFI, but emissions relating to street lighting will continue to be included in the Council's footprint.

**Refrigerant Gases** – emissions from the recharging of air conditioning units will be included. Annual figures will be received from the contractor responsible for maintenance of the units.

**Water consumption** – the energy used in the supply of water to all buildings (including schools) will be included, based on annual water consumption.

Those activities which are not included are:

**Staff commuting** – some information on mode and distance of travel was collected in 2003 through a large staff survey (some 1,200 responses). Whilst a baseline figure could therefore be calculated, it is considered impractical to repeat the survey on a regular basis in order to monitor progress.

**Housing** – the council's entire housing stock was transferred to Housing Associations in 1990.

**Municipal waste disposal** – the disposal of black bag household waste and street cleanings will not be included in the council's carbon footprint. Significant action has been taken in this area with the majority of waste either being recycled or turned to energy through a gasification plant.

### 3.2 Baseline

The baseline year for the Carbon Management Plan is the financial year 2009/10, the carbon emissions and cost of energy used during the baseline year are shown below:

#### Data for baseline year 2009/10

	CO <sub>2</sub> (tonnes)	%	Cost (£)
<b>Buildings and street lights</b>	18,356	89%	£ 3,280,265
<b>Transport</b>	2,012	10%	£ 1,692,515
<b>Further scope</b>	190	1%	£ 567,017
	<b>20,558</b>	<b>100%</b>	<b>£5,539,797</b>

Table 3.1 – Summary table of emissions for baseline year 2009/10.

This is a high level overview of the three key elements within the scope of this plan and illustrates the significant contribution from buildings and street lighting which stands at 89% of the footprint.

A more detailed breakdown of carbon emissions is shown below:

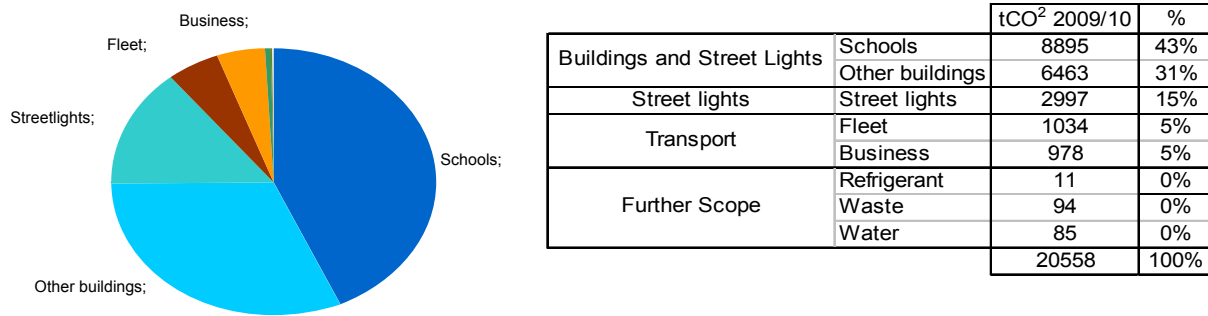


Figure 3.2 Detailed summary of emissions for baseline year 2009/10

The baseline data highlights the impact of school buildings which account for 43% of all council carbon emissions and 58% of emissions from buildings. One of the challenges of the CMP within the council will be to find constructive ways of working with schools to reduce their carbon emissions at a time when the reorganisation of education (from three- to two-tier) is resulting in the re-modelling of most school sites.

Although a great deal of effort has been made to ensure the accuracy of this data, many utility bills were reliant on estimated readings. In some cases, due to difficulties with suppliers, it was necessary to assume an average consumption over 2-3 years. Every effort will be made to ensure that estimations such as average car emissions for all business travel will be replicated year on year to ensure that like for like comparisons are made.

### 3.3 Comparing baselines of the two Carbon Management Plans

As mentioned previously, this Carbon Management Plan (CMP2) replaces the Carbon Management Strategy and Implementation Plan (CMP1) published in 2007. The scope of the council's carbon footprint has been redefined with the principal changes being:

- The new CMP (2) does not include carbon emissions associated with the disposal of municipal (household) waste.
- The new CMP (2) includes carbon emissions associated with refrigerant gases which were not included in the original Plan.
- The new CMP (2) includes carbon emissions associated with water supply which was not included in the original Plan.

The most significant of these is the removal of municipal waste which accounted for some 8,694 tonnes CO<sub>2</sub> emissions in 2005/06. This change was made due to the significant contribution municipal waste made to the carbon footprint while remaining comparably uncontrolled compared to other emissions within scope. This decision was compounded by the emissions reporting for waste being undertaken during October each year, thus requiring estimates in order for it to

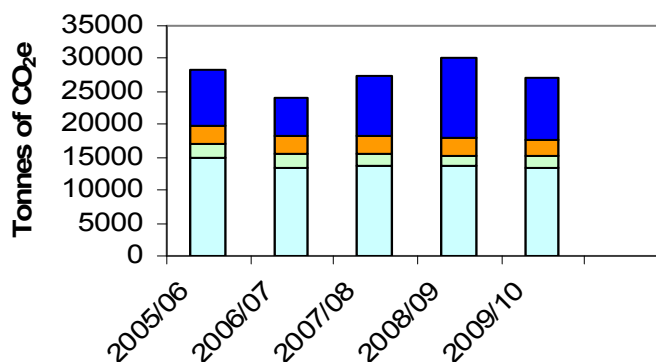
be included within these annual reports which are done by financial year (1<sup>st</sup> April-31<sup>st</sup> March)

The table and graph below show progress made during CMP1 from a 2005/06 baseline and using the original scope. The trend was a sharp fall in emissions during 2006/07, followed by increases through to 2008/09 and then another significant fall in 2009/10 which can be attributed to a number of small projects including voltage optimisation, variable speed drives, awareness campaigns and higher efficiency lighting. Over the whole period the reduction in carbon emissions amounted to 1,550 tCO<sub>2</sub> – an average reduction of 388 tCO<sub>2</sub> per year or 1.4% per year, against a target of 4% annual reductions.

	CMP1 – tCO <sub>2</sub>	% change from baseline
2005/06	28,414	BASELINE
2006/07	24,065	- 15%
2007/08	27,183	- 4.3%
2008/09	30,187	+ 6.24%
2009/10	26,864	- 5.45%

Figure 3.3 Table showing percentage change from baseline achieved during the first Carbon Management Plan

### Total CO<sub>2</sub> Emissions



BUILDINGS/TRANSPORT/STREET LIGHTING/WASTE

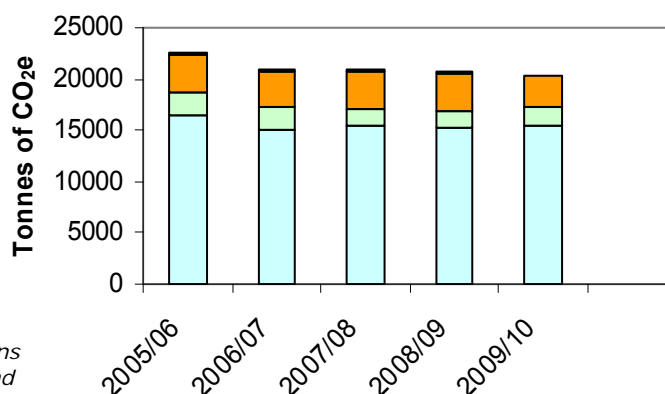
Figure 3.4 Graph showing breakdown of emissions by sector during the first Carbon Management Plan

By way of comparison, the table and graph below show what would have happened if the CMP2 scope had been used during the previous Carbon Management Plan i.e. municipal waste is removed and refrigerant gases and water are added:

	CMP1 as CMP2 equivalent (i.e. remove domestic waste)	Cumulative % change from baseline
2005/06	22,514	N/A
2006/07	20,990	-6.8%
2007/08	20,896	-7.2%
2008/09	20,739	-7.9%
2009/10	20,558	-8.7%

Figure 3.5 Table showing changes in carbon emissions during first Carbon Management Plan if the scope had been the same as for the second Carbon Management Plan

### Total CO<sub>2</sub> Emissions



BUILDINGS/TRANSPORT/STREET LIGHTING/OFFICE WASTE, REFRIGERANT, WATER

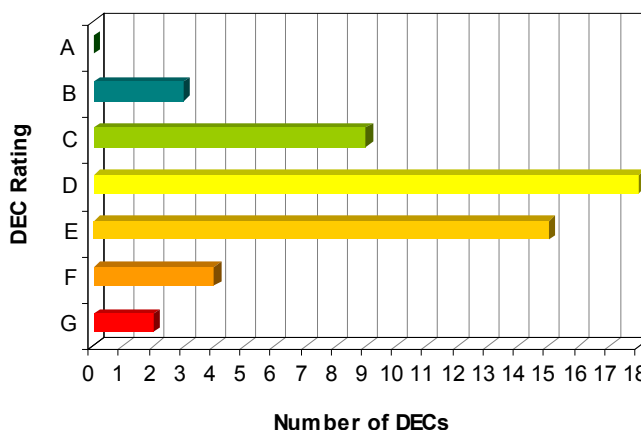
Figure 3.6 Indicative summary of the first Carbon Management plan when updated with emissions factors and scope from the existing plan.

The graph shows very modest decreases in carbon emissions from all sectors with an average reduction of 489tCO<sub>2</sub> per year or 2.2% per year.

Since the appointment of the council's Energy & Carbon Manager in 2009, the quality of data management has improved significantly and a significant volume of emissions not previously recorded is now part of the carbon footprint. In the main these relate to building energy use so, whilst the reduction in building emissions appears modest, greater progress may have been demonstrated if the accuracy of measuring carbon emissions was as good as is now achieved. The reduction in street lighting emissions shown in 2009/10 is the result of improvements over a number of years which only reflected in reduced energy use when a new supply contract was signed.

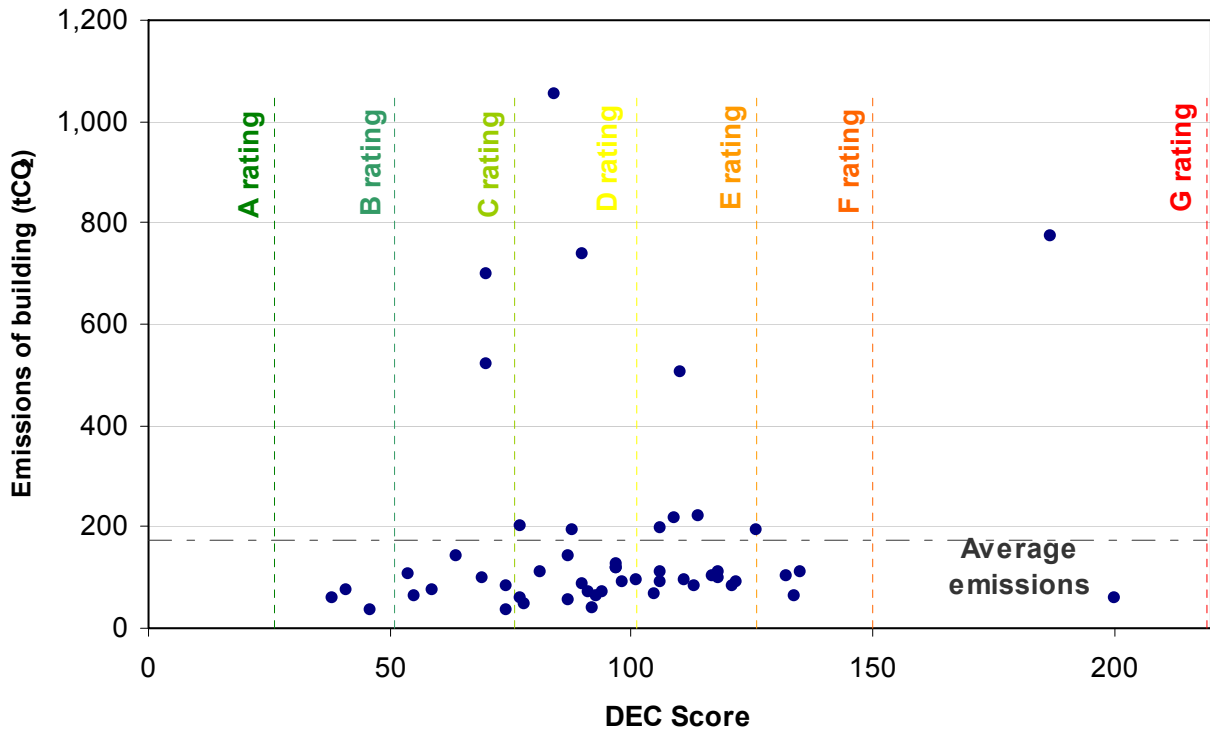
### 3.4 Display Energy Certificates

Since 2008, the council has been required to produce Display Energy Certificates (DECs) for buildings with a floor area greater than 1,000m<sup>2</sup>. The DEC illustrates the level of energy efficiency in the building, with those rated in the A band the most energy efficient and those in the G band the least energy efficient. 51 council buildings currently require DECs and the results for these are shown in the table to the right:



Of particular concern are those buildings with DEC ratings of 'D' and below and the larger buildings with very significant CO<sub>2</sub> emissions (see graph below), none of which are rated higher than 'C'.

### Distribution of DEC score VS tCO<sub>2</sub>



From 2013 it is anticipated that as a result of amendments to the Energy Performance of Buildings Directive, DEC's will be extended to buildings with a floor area greater than 500m<sup>2</sup>.

### 3.5 Projections and Value at Stake

Not taking action could cost the council up to an accumulative £3.1 million by 2015 as well as producing 21,500 tCO<sub>2</sub>. Implementing projects outlined in this plan will save up to an accumulative £785,000 in addition to other strategic projects underway.

This section describes the results of doing nothing. It considers a Business As Usual (BAU) scenario where the council continues on its present path and compares this with the results of implementing the Carbon Management Plan described in this document.

The BAU scenario assumes an annual increase in demand for energy of 0.7% which reflects the national average for office environments. The carbon emissions and costs associated with energy use are shown in the table on the following page:

	Cost per unit	Kg CO2 per unit
<b>Electricity</b> (kWh)	10 pence	.54667
<b>Gas</b> (kWh)	3 pence	.18396
<b>Oil</b> (kWh)	4 pence	.24674
<b>Water</b> (Litres)	0.26 pence	0.0004
<b>Business travel</b> (km)	20 pence	.1046
<b>Petrol/Diesel</b> (km)	26 pence	2.3307/2.6694

The conversion factors (kgCO2 / unit) are provided by DEFRA and the energy costs reflect those currently paid by the Council.

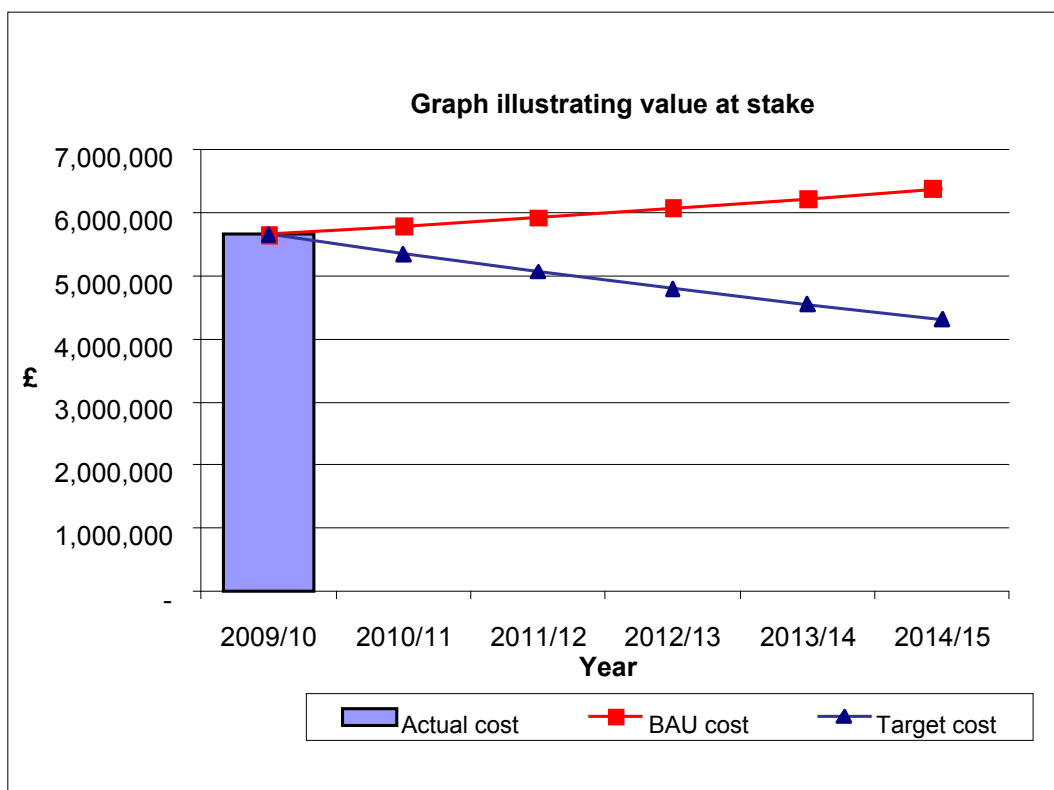
Year	BAU
2010/11	20,701
2011/12	20,846
2012/13	20,992
2013/14	21,139
2014/15	21,287

In considering this BAU scenario, it is generally acknowledged that these fuel prices will continue to rise each year which we have assumed as being an increase of 1.7%, year on year. This estimate was provided by the Department for Energy & Climate Change as a central cost scenario.

Business as usual (BAU) assumes an annual increase in emissions of 0.7% each year.

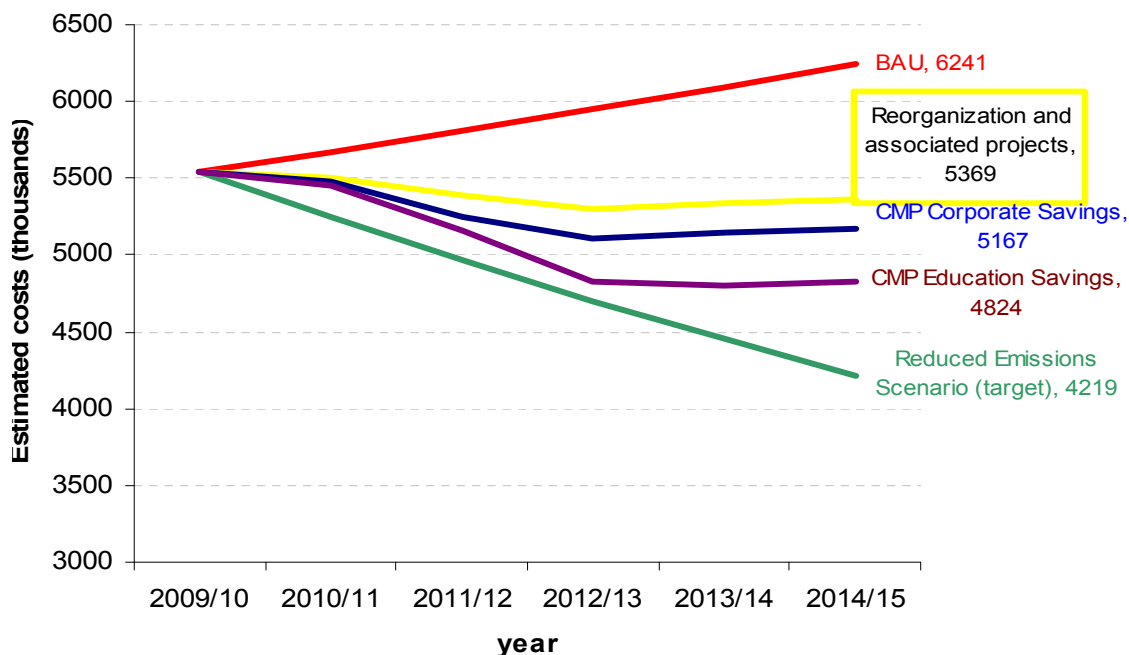
In order to achieve a 6% annual reduction in emissions, it will therefore be necessary to implement projects equating to 6.7% reduction on 2008/09 baseline figures.

**Financial value at stake**



The Financial Value at Stake shown above is therefore the difference between the cost of energy if the council does nothing and the cost of energy if it implements the projects outlined in this Plan. The financial savings from reorganisation of the council – primarily the rationalisation of buildings and reduction in services - are included in the above but have been separated in the graph below.

### Value at stake



The values illustrated in the above graph are shown in the table below with the final row indicating the accumulation of savings during each financial year.

(All figures in £000's)	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
BAU	5,540	5,673	5,810	5,950	6,094	6,241
Reorganization and associated projects	5,540	5,503	5,383	5,298	5,341	5,369
CMP Corporate Savings	5,540	5,472	5,251	5,104	5,140	5,167
CMP Education Savings	5,540	5,458	5,165	4,830	4,797	4,824
Accumulative CMP Savings		31	132	225	395	785

'Reorganisation & associated projects' includes rationalisation/refurbishment of buildings (such as disposal and ICT upgrades), reduction in staff numbers and the projects undertaken as part of the Highways PFI (LED street lighting and controls).

CMP Corporate and CMP Education relate to projects outlined in this plan, whereas the Reduced Emissions Scenario represents the energy cost associated with a 30% reduction in emissions. It should be noted that the value at stake is an estimate based upon the assumptions specified in the Business as Usual and Reduced Emissions Scenario. It shows the total potential costs (£ thousands) that could accrue to the council if it meets its reduction target.



These projects are assumed as an indicative business as usual for the council over the forthcoming years. Their financial savings have not been included within this plan as they have been captured by the council elsewhere.

### **Cost avoidance**

From 2011/12 there will be a direct cost to the council for its emissions from stationary sources as a result of the CRC Energy Efficiency Scheme (CRC). Initially costing £12 / tonne of CO<sub>2</sub>, the anticipated cost to the council is circa £200,000 per year. The emissions scope for the CRC is different to that of this plan and includes emissions from buildings and street lighting\* only.

This has not been factored into the Value at Stake but is a real cost to the council which will enhance the business case for carbon reduction projects in future years (See section 5.7).

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\* *Street lighting is not anticipated to be in the initial scope of the CRC for the Isle of Wight council but may be included within future phases of the scheme.*

## Carbon Management Projects

During 2010/11 we have implemented initiatives providing savings of 276 tonnes CO<sub>2</sub> and £44,801. We have identified further potential savings amounting to £577,907 and 5,962 tonnes CO<sub>2</sub> over the remaining 4 years of this Plan

The following tables provide details of the energy and carbon saving projects that have been identified for implementation over the course of this plan.

All projects have been saved on a spreadsheet provided by the Carbon Trust, known as a CMPR tool. This tool will assist in the tracking of progress against targets and will assist in prioritisation.

A brief explanation of the various projects follow each table and a summary of assumptions have been outlined in Appendix B.

### 4.1 Existing projects

The table below shows projects which are being implemented during 2010/11 and therefore represent the first year of the plan. The ' % of target ' column shows the contribution of the project to the savings target, so that, during 2010/11 projects will achieve 4.1% of the five-year target of 30%.

Ref	Project	Lead <sup>∞</sup>	Cost		Annual Saving		Pay back (years)	% of Target	Year
			Capital	Revenue	Financial	CO <sub>2</sub>			
1	Printer Power down adjustments	AP/TW	0	0	7,608	41	0	0.6	2011
2	Cavity Wall Insulation – Seaclose Offices	TW	2,100	0	887	5	2.7	0.1	2011
3	Draught proofing – 46 Sea street	TW	2,090	0	491	3	4.3	0.0	2010
4	Boiler/Air handling – Waterside pool	TW	100,000	0	15,000	71	6.7	1.1	2010
5	BMS – Freshwater Fire Station	TW/NT	2,045	0	500	3	4.1	0.0	2010
6	BMS – East Cowes Fire Station	TW/NT	2,045	0	387	2	5.3	0.0	2010
7	BMS – Ventnor Fire Station	TW/NT	2,045	0	387	4	3.1	0.1	2011
8	BMS – Newport Fire Station	TW/NT	2,045	0	387	9	1.4	0.1	2011
9	BMS – Ryde Fire Station	TW/NT	2,045	0	734	4	2.8	0.1	2010
10	BMS – Cowes Fire Station	TW/NT	2,045	0	387	2	5.3	0.0	2010
11	BMS – Shanklin Fire Station	TW/NT	2,045	0	527	3	3.9	0.1	2011
12	BMS – Sandown Fire Station	TW/NT	2,045	0	617	4	3.3	0.1	2011
13	Boiler replacement – County Hall	NT	20,000	0	2,100	13	9.5	0.2	2010

<sup>∞</sup> Key to lead officers; AP- Andrew Pye; TW – Tim Watson; NT – Norman Thorne; RW – Richard Williams; GG – Graham Groves; SN – Sean Newton; PL – Peter Locke; JF – Jim Fawcett; AB – Andrew Bond; DW – David Watts; PFI – Private Finance Initiative Team; JB – John Brocklehurst

14	BMS –Heights Leisure Centre	NT	2,045	0	1,200	7	1.7	0.1	2010
15	BMS – Medina High and Leisure Centre	NT	4,100	0	10,000	62	0.5	1	2010
16	Boiler replacement Osborne Middle School	NT	5,000	0	2,500	16	2	0.3	2011
17	Boiler replacement – Freshwater All Saints Primary School	NT	10,000	0	1,089	7	8.3	0.1	2011
<b>EDUCATION</b>			<b>19,100</b>		<b>13,589</b>	<b>85</b>		<b>1.4</b>	<b>2010/11</b>
<b>CORPORATE (existing)</b>			<b>108,180</b>		<b>0</b>			<b>0</b>	<b>2010/11</b>
<b>Energy Management (additional)</b>			<b>36,460</b>		<b>31,212</b>	<b>171</b>	<b>-</b>	<b>1.17</b>	<b>2010/11</b>
<b>Total</b>			<b>161,695</b>		<b>44,801</b>	<b>256</b>		<b>4.1</b>	

The investment has been split into Corporate and Education since Education budgets are devolved to schools, and the corporate budget is further divided into 'Central', where the projects are being funded by services across the Authority and 'Energy Management', where the funding will be provided directly by the Energy & Carbon Manager.

A brief description of each project is provided below:

<b>Project Number(s)</b>	<b>Description</b>
1	Printer power down adjustments have been made to multi functional devices. These have been made at no cost and have been set to minimise wasted energy through reaching the devices' lowest power setting (without switching off) in the quickest time possible. Savings have been estimated based on one sample machine being monitored before and after adjustments had been made. Future investment may be made in timers to reduce the energy consumption of these devices further. The latter has not been quantified as part of this plan but will be included in one of the early revisions.
2	Cavity wall insulation has been installed in Seaclose offices half way through the heating season of 2010/11. Full savings are likely to be realised by mid way through the 2011/12 heating season.
3	46 Sea Street has been made airtight through 'Quattroseal' which is a patented draught proofing system. Old draughty metal windows have now been made airtight, resulting in improved thermal efficiency.
4	Three new high efficiency boilers have been installed at Waterside Pool, along with a very efficient air handling unit. The configuration of the new plant has enabled the disconnection of the electrical elements which previously heated the pool water and resulted in the significant savings for this project. The new air handling unit now heats the pool water in conjunction with the boilers in winter but has the added benefit of heat recovery to water during summer to make use of waste heat from the pool hall. The Council is now

	seeking to outsource the pool to a third party operator.
5-12	Building Management Systems (BMS) have been installed in the majority of Fire Stations. This has enabled the remote control and optimization of the boilers in each site. Historically, stations were required to be kept warm continually during winter. This meant that in the event of a call out, the crew would have a comfortable environment to clean off and change in. Through the newly installed systems, when the control centre receives an emergency call, they are able to remotely switch on the heating (as required) at the same time as calling the crew (retained stations) for a pre determined time. Installations have been carried out throughout the winter of 2010/11 and will be completed by 2012/13.
13	Following the failure of the boiler in County hall, a new high efficiency gas boiler was installed with an anticipated increase in efficiency in excess of 10%.
14-15	Further BMS were installed during 2009/10 at The Heights and Medina Leisure Centres and have proven to be beneficial in reducing heating bills.
16	Through the upgrade of the existing gas supply and conversion of an oil boiler to gas, this has been a low cost solution to improving the carbon footprint of this site. The removal of stored heating oil on site is highly desirable for reducing risk from spillages and fuel supply issues during adverse weather.
17	As with project 16, the upgrade of this gas supply and conversion of the existing oil boiler has benefited this site with both a reduced carbon footprint and reduced risk.

#### 4.2 Planned / funded projects

The table below shows projects which are planned for implementation during 2011/12. They have been fully assessed and quantified and funding is in place. The ‘% of target’ column shows the contribution of the project to the savings target, so that, during 2011/12 projects will achieve 16.7% of the five-year target of 30%.

Ref	Project	Lead <sup>∞</sup>	Cost		Annual Saving		Pay back (years)	% of Target	Year
			Capital	Revenue	Financial	CO <sub>2</sub>			
18	PC power management	RW	10,000*	2,025*	38,654*	210.3*	0.27	3.4	2011
19	Reduce all heating down to 19 °C (corporate)	TW	10,000*	0	12,500*	69*	0.9	1.1	2011
19	Reduce all heating by 1 °C (Schools)	TW	0	0	57,000	365.8	0	5.9	2011
20	Removal of bottled water coolers	GG	0	0	39,000	5	0	0.1	2011
21	Liquid pool cover – Heights Leisure Centre	TW/SN	418*	782*	1,800*	11*	0.4	0.2	2011
22	Liquid pool cover – Medina Leisure Centre	TW/SN	418*	782*	1,800*	11*	0.4	0.2	2011
23	Smart Metering and Behaviour change	TW/JF/PL	20,000*	3,500*	33,849*	147*	0.52	2.4	2011
24	BMS – Yarmouth Fire Station	TW/NT	2,045*	0	600*	4*	3.4	0.1	2011/12
25	BMS – Thompson House	TW/NT	1,572*	0	575*	4*	2.7	0.1	2011/12
26	BMS - Westridge	TW/NT	4,000*	0	1103*	6*	3.6	0.1	2011/12
27	Insulation – 46 Sea Street	TW	1,212*	0	303*	4*	2	0	2011/12
28	Lighting – Public conveniences	AB	20,000*	0	2,278*	12.4*	8.8	0.2	2011/12
29	Lighting – Heights Leisure Centre	DW	7,000	0	2,777	15	2.5	0.2	2011/12
30	Lighting – Westridge squash courts	DW	1,750	0	298	2	5.9	0	2011/12
31	Voltage Optimisation - Heights	TW/NT	15,472*	0	5,247*	29*	2.9	0.5	2011/12
32	Voltage Optimisation – Medina High and Leisure Centre	TW/NT	23,635	0	8,066	44	2.9	0.7	2011/12
33	Boiler replacement - Carisbrooke High School	NT	25,000	0	7,000	43.5	3.6	0.7	2011/12
34	Bolier Replacement – Thompson House	TW/NT	10,000	0	1,725*	11*	5.8	0.2	2011/12
35	Printer rationalization	RW	0	0	TBC	TBC	TBC	TBC	2011/12
36	Air conditioning rationalization	TW/DW	10,000*	0	TBC	TBC	TBC	TBC	2011/12
37	Variable Speed Drives – Medina Leisure Centre	DW	4,000	0	TBC	TBC	TBC	TBC	2011/12
38	Thin Client IT solution	RW	-	0	3,830	21	N/A	0.1	2011/12
39	Timers on Hydroboil units	TW	1,500*	0	675*	4*	2.2	0.1	2011/12
40	Air Source Heat Pump for water heating – Westridge squash courts	DW	8,000	0	2,729	15	4.6	0.2	2011/12
41	Lighting – County Hall	DW	37,500	0	2,926	16	12.8	0.3	2011/12
<b>EDUCATION</b>			<b>48,635</b>	<b>0</b>	<b>72,066</b>	<b>453.3</b>		<b>7.3</b>	
<b>CORPORATE (existing)</b>			<b>68,250</b>	<b>0</b>	<b>51,560</b>	<b>58.8</b>		<b>0.8</b>	
<b>Energy Management (additional)</b>			<b>96,637*</b>	<b>7089*</b>	<b>101,109*</b>	<b>563.7</b>		<b>8.6</b>	
<b>Total</b>			<b>213,522</b>	<b>7,089</b>	<b>224,735</b>	<b>1,076</b>		<b>16.7</b>	

The investment has been split into Corporate and Education since Education budgets are devolved to schools, and the Corporate budget is further divided into

<sup>∞</sup> Key to lead officers; AP- Andrew Pye; TW – Tim Watson; NT – Norman Thorne; RW – Richard Williams; GG – Graham Groves; SN – Sean Newton; PL – Peter Locke; JF – Jim Fawcett; AB – Andrew Bond; DW – David Watts; PFI – Private Finance Initiative Team; JB – John Brocklehurst

'Central', where the projects are being funded by services across the Authority and 'Energy Management', where the funding will be provided directly by the Energy Manager.

A brief description of each project is provided below:

Project Number(s)	Description
18	PC power management essentially ensures that all computers on the visible network have optimum power saving settings. These settings can be determined by the administrator and can range from turning computers on and off to suit business hours to ensuring monitors are turned off when left idle. New software is able to detect whether people are using the computers or not so users will not be inconvenienced in any way. Some versions of this software enable performance league tables to be generated to help identify areas where improvements can be made.
19	Reduction of heating temperatures to 19 Degrees Celsius is considered to be an acceptable temperature for the majority of office environments. This is not to say that some areas may not be above this temperature and some slightly below, as it will not be possible to maintain an even 19°C throughout. While adjusting thermostats and boiler controls to reach this temperature may not achieve these savings on their own, the introduction of a policy to remove all personal electric heaters will contribute to the anticipated savings target. Further discussions with HR are required before implementation of this measure. The capital cost associated with this project is for heating controls, such as Thermostatic Radiator Valves, which will closely control and maintain room temperatures at the desired temperature. This project assumes savings from all corporate buildings (other than those identified within reorganization) and schools. Temperatures in schools are unlikely to be reduced to 19°C but a reduction on temperature of 1°C would return a saving in the region of that outlined here
20	The removal of bottled water coolers does not provide a particularly high carbon saving, although the chilling of bottled water is estimated to account for approximately 5 tonnes of CO2 per annum. The large financial saving associated with this project comes from the removal of all units (and associated costs) and requiring water to be drawn from the tap instead. This will have indirect carbon savings which have not been accounted for in this plan such as the transportation of bottled water and phasing out of plastic cups.
21-22	Liquid pool covers are a relatively new technology (for this application). Totally biodegradable in air and water within 2 days and not affecting the pool water chemistry while in use, this solution acts as an invisible barrier on the pool surface and reduces evaporation. While this is not as efficient as a physical pool cover, it is to be used in the learner pools during operational hours to

	enable a reduction in pool hall temperatures. Pool hall temperatures are required to be 1°C above that of the pool water and with the learner pool being at 2°C warmer than the main pool, this dictates the temperature of the pool hall. Through this technology, it is anticipated that the pool hall temperature can be reduced by 2°C which should result in the savings outlined.
23	Smart Metering and behaviour change are being undertaken hand in hand. Smart metering will enable a detailed analysis of how (and when) a building uses energy, it will enable profiles and trends to be recorded and enable alarms to be set. With these meters in place, building occupants can be encouraged to become more efficient in their energy use and the Energy Management Team will be able to evidence progress as it has been made for those occupants. In addition to assisting behaviour change, Smart Metering is invaluable in detecting abnormal utility consumption such as a leak (water) or inappropriate heating programs (heating on during weekends or overnight unnecessarily).
24-26	BMS in additionally identified sites, these will also be remotely managed.
27	Cavity wall insulation at 46 Sea Street will improve the thermal performance of the building.
28	Lighting in public conveniences is highly desirable to address. Many lights remain on 24 hours a day, regardless of whether they are required or not. This project will replace up to 200 fittings which will equate to about 20 blocks and, through presence detection (determine whether the light is required by occupants) and photocells (senses natural light levels to determine whether lights are required), will significantly reduce the energy consumption in each block. This project can potentially be repeated, subject to the suitability of the remaining blocks, in 2012/13. This has not been quantified as part of this plan but may be included in future revisions.
29	Lighting in The Heights leisure centre has been identified as inefficient in areas due to the use of 50 watt halogen down lights. It is envisaged that these can be replaced with LEDs to achieve these savings. Additional savings which have not been quantified as part of this project are those of maintenance, with LED bulbs lasting considerably longer than halogen.
30	Lighting in Westridge squash courts will be addressed as part of the leisure refurbishment project. These lights, which have historically remained on for significant amounts of time unnecessarily, will now be controlled by microwave presence detection and, as a result, will only be on when required by the user.
31-32	Voltage optimisation is a technology which essentially reduces the voltage within a building to a more efficient level.
33	Boiler replacement in Carisbrooke High School will be undertaken to replace an old oil fired boiler with a new gas fired boiler, following

	approval from the gas suppliers of available capacity in that area. Quotes have not been received for this item of work but the anticipated capital costs make it a worthwhile project.
34	Boiler replacement at Thompson House is highly desirable due to the age of the existing boilers.
35	Printer rationalisation is going to be undertaken in conjunction with reorganisation. This will have no cost implications as most people will be required to use the existing multi functional devices. As the actual number of these units in use (and required to be in use) is unknown at this time, savings from this project have not been quantified or included within this plan, but will be included within the next revision.
36	Air conditioning rationalisation will in majority be undertaken in conjunction with the modernisation of offices, which will facilitate cross ventilation of office spaces (previously not possible due to existing layout). Following completion of the mandatory air conditioning inspections in January 2011, it has been possible to prioritise units for removal, replacement and re use (in terms of efficiency). These savings have not yet been quantified as part of this plan and will be quantified within future revisions.
37	Variable speed drives will be installed as part of the larger leisure project underway; these will enable a considerably more efficient running of the pool plant. Savings have not yet been quantified as this project does have saving conflicts with voltage optimisation, they will, however, be included within future revisions of the plan.
38	Thin client is a considerably more efficient form of computing within office environments. It essentially takes away the need for a regular stand alone type of computer as all data processing is undertaken by the server. This project is being undertaken by ICT and will involve the gradual rollout of this technology across the council over the forthcoming years. Funding has not been included within this Plan and savings are based on 500 computers being replaced each year. It should be noted that this will have saving conflicts with PC power management; however, it is envisaged that the PC power management software will not be installed on computers due for imminent replacement with thin client.
39	Timers on Hydroboil units have been estimated as a viable project for this plan. Through the installation of a 7 day timer, units will switch off out of office hours (as chosen by users of each unit).
40	An Air Source Heat Pump (ASHP) for water heating at Westridge will be installed as part of the larger leisure project. This will replace the existing hot water heater (electric immersion heater) with a considerably more efficient ASHP.
41	Lighting improvements in county hall will be undertaken as part of the larger refurbishment project.



### 4.3 Near term projects

The table below shows projects which are planned for implementation during 2012/13. They have been assessed and quantified and there is confidence in their cost-effectiveness. However, funding is not yet in place, either because it requires a 'spend to save' capital bid or because the funding is required from devolved school budgets and further negotiation with schools is required. The '% of target' column shows the contribution of the project to the savings target, so that, during 2012/13 the full implementation of these projects will achieve 17.3% of the 30% five-year target.

Ref	Project	Lead <sup>∞</sup>	Cost		Annual Saving		Pay back	% of Target	Year
			Capital	Revenue	Financial	CO <sub>2</sub>			
42	PC power management - Schools	TBC	40,300	8,100	154,614	841.4	0.3	6.7	2012
43	Smart Metering and Behavioral change	TW/JF/PL	10,000*	2,000*	33,849*	147*	0.52	2.4	2012
44	BMS -Forelands Middle School site	NT	258	0	159	1	1.6	0	2012
45	BMS -Wootton Primary School	NT	263	0	263	2	6.3	0	2012
46	BMS - Bugle House	TW/NT	1,182*	0	76	0*	15.6	0	2012/13
47	BMS – Sandown High School	NT	TBC	0	3,031	19	TBC	0.3	2012/13
48	BMS – Carisbrooke High School	NT	TBC	0	2,003	12	TBC	0.2	2012/13
49	CHP – Heights Leisure Centre	DW	121,000	8,106	22,661	109	8.3	1.7	2012/13
50	Cavity wall insulation – Heights Leisure Centre	TW	5,000*	0	1,800	11*	3*	0.2	2012/13
51	Cavity Wall Insulation – Medina Leisure Centre	TW	7,000*	0	2,297	14*	3*	0.2	2012/13
52	Cavity Wall Insulation – Newport Fire Station	TW	3,000*	0	796	5*	3.8*	0.1	2012/13
53	Voltage Optimization – Ryde High School	TW/NT	23,635	0	6,456	35	3.7	0.6	2012/13
54	Voltage Optimization – Carisbrooke High School	TW/NT	35,624	0	12,443	68	2.9	1.1	2012/13
55	Voltage Optimization – Sandown High School	TW/NT	27,137	0	9,831	53	2.8	0.9	2012/13
56	Voltage Optimization – Newport Fire Station	TW/NT	7,778*	0	1,468	8*	5.3*	0.1	2012/13
57	Voltage Optimization – Thompson House	TW/NT	7,778*	0	1,616*	9*	4.8	0.1	2012/13
58	Voltage Optimization - Westridge	TW/NT	12,203*	0	2,494*	14*	4.9	0.2	2012/13
59	Thin Client IT solution	RW	-	0	3,830	21	N/A	0.1	2012/13
60	Heat recovery – Heights Leisure Centre	DW	25,000	0	2,400	15	10.4	0.2	2011/12
61	Heat Recovery – Medina Leisure Centre	DW	80,000	0	9,200	56	8.7	0.9	2012/13
62	Pool backwash water recovery – Heights	DW	25,000	0	3,136	8	4	0.1	2012/13
63	Pool Backwash Water recovery - Medina	DW	25,000	0	3,136	8	4	0.1	2012/13
64	Replacement hand driers	TW	4,000	0	382	2	10.5	0	2012/13

<sup>∞</sup> Key to lead officers; AP- Andrew Pye; TW – Tim Watson; NT – Norman Thorne; RW – Richard Williams; GG – Graham Groves; SN – Sean Newton; PL – Peter Locke; JF – Jim Fawcett; AB – Andrew Bond; DW – David Watts; PFI – Private Finance Initiative Team; JB – John Brocklehurst

65	Savaflush in toilets	TW	9,000*	0	16,848*	3*	0.5	0	2012/13
66	Server rationalization	RW	0	-	13,140	72	-	1.1	2012/13
<b>EDUCATION</b>			<b>127,217</b>	<b>8,100</b>	<b>188,800</b>	<b>1,031</b>		<b>9.8</b>	
<b>CORPORATE (existing)</b>			<b>280,000</b>	<b>8,106</b>	<b>57,885</b>	<b>291</b>		<b>4.2</b>	
<b>Energy Management (additional)</b>			<b>62,941*</b>	<b>2,000*</b>	<b>61,244*</b>	<b>211*</b>		<b>3.3</b>	
<b>Total</b>			<b>470,158</b>	<b>18,206</b>	<b>307,929</b>	<b>1,533</b>		<b>17.3</b>	

The investment has been split into corporate and education since education budgets are devolved to schools, and the corporate budget is further divided into 'central', where the projects are being funded by services across the authority and 'Energy Management', where the funding will be provided directly by the Energy & Carbon Manager.

A brief description of each project is provided below:

Project Number(s)	Description
42	PC power management in schools has been identified as a very worthwhile project. Estimated costs have been generated from a previous quote as have the potential savings associated with it. This project assumes the installation in all 'large' schools and would enable them to synchronise computers with lesson timetables and ensure that all computers are switched off out of hours (including holidays).
43	Smart Metering and behavioural change will continue but with a reduced number of new smart meters being installed in year. It is also acknowledged that there will be a reduction in energy savings in year compared to the previous year due to fewer 'quick wins'.
44-48	BMS in schools and education buildings will continue to be rolled out. This will both optimise their boilers and enable remote monitoring of their temperatures to help identify possible improvements.
49	CHP in the Heights Leisure Centre will be installed as part of the larger leisure project. In essence, this is a gas fired engine which produces both heat and electricity, which are both used on site.
50-52	Cavity wall insulation is anticipated to be installed in additional buildings during 2012/13, subject to satisfactory survey.
53-58	Voltage Optimisation will be undertaken in additional sites, subject to satisfactory survey.
59	Thin Client IT solution has been described previously and will continue to be rolled out during 2012/13.
60	Heat recovery in The Heights Leisure Centre will be upgraded from the existing system which is life expired to a new high efficiency system. This work will be undertaken as part of the larger leisure

	project work underway
61	Heat recovery at Medina Leisure Centre will be carried out as part of the larger leisure project underway. This installation will have a reduced return on investment and increased carbon saving over The Heights installation as there is no heat recovery in place at the moment.
62-63	Pool backwash water recovery is envisaged to be installed as part of the larger leisure project. This will enable the recycling of heated pool water back into the pool rather than the disposal. This will save both water consumption and the energy required to heat fresh water entering the pool.
64	Replacement hand driers does not necessarily qualify as a valid project due to the return on investment and minor contribution it will make to the carbon reduction target. It should however be noted that a number of units are life expired and therefore will require replacement by this point. Many units will be replaced as part of larger projects such as the modernisation of offices and leisure centres.
65	Savaflush is a retrofit device which enables the conversion of existing (handle type) fixed volume flush cisterns into cisterns capable of variable flush volumes. On average these devices are envisaged to save 50% water consumption ordinarily used by the toilet. This project assumes that 300 toilets will be converted. It is important to note that where building refurbishment is undertaken, low volume cisterns will be installed. These will have comparable savings to the Savaflush device and have therefore not been quantified as part of this plan to avoid 'double counting' of savings.
66	Server rationalisation will be undertaken as part of a larger ICT project which will enable the removal of redundant servers during 2012/13.

#### 4.4 Medium to long term projects

The table below shows projects which are planned for implementation during 2013/14 and beyond. It allows for some slippage from the previous year. These have been assessed and quantified and there is confidence in their cost-effectiveness. However, funding is not yet in place, either because it requires a 'spend to save' capital bid or because the funding is required from devolved school budgets and further negotiation with schools is required. The '% of target' column shows the contribution of the project to the savings target, so that, the full implementation of these projects during 2013/14 and 2014/15 will achieve 10.5% of the five-year target of 30%.

Ref	Project	Lead <sup>∞</sup>	Cost		Annual Saving		Pay back	% of Target	Year
			Capital	Revenue	Financial	CO <sub>2</sub>			
67	Cavity Wall insulation – County Hall Old block	TW	7,500	0	1,515	9	5	0.1	2013/14
68	Cavity Wall Insulation – Ryde Fire Station	TW	3,000	0	734	4	4.1	0.1	2013/14
69	Voltage Optimization – Adelaide Club	TW/NT	14,430	0	2,161	12	6.7	0.2	2013/14
70	Voltage Optimization – County Hall	TW/NT	15,166	0	2,741	15	5.5	0.2	2013/14
71	Voltage Optimization – St Georges School	TW/NT	6,433	0	2,596	14	2.5	0.2	2013/14
72	Voltage Optimization – Christ The King College	TW/NT	7,778	0	2,004	11	3.9	0.2	2013/14
73	Voltage Optimization – Lake Middle School site	TW/NT	7,778	0	1,974	11	3.9	0.2	2013/14
74	Voltage Optimization – Ryde Bishop Lovett site	TW/NT	7,778	0	1,783	10	4.4	0.2	2013/14
75	Thin Client IT solution	RW	TBC	0	3,830	21	N/A	0.1	2013/14
76	Biomass heating - Carisbrooke High School	TBC	520,000		60,250	287	8.6	4.6	2013/14
77	Voltage Optimization – Guildhall	TW/NT	7,778	0	825	4	9.4	0.1	2014/15
78	Thin Client IT solution	RW	TBC	0	3,830	21	N/A	0.1	2014/15
79	LED street lighting in conjunction with dimming & trimming	PFI	TBC	0	37,563	261	N/A	4.2	2014/15
<b>EDUCATION</b>			<b>546,767</b>		<b>68,607</b>	<b>333</b>		<b>5.4</b>	<b>2013/14</b>
CORPORATE (existing)			TBC		3,830	21		0.1	
Energy Management (additional)			40,096		7,151	40		0.6	
<b>Total</b>			<b>586,863</b>		<b>79,588</b>	<b>394</b>		<b>6.1</b>	
<b>EDUCATION</b>			<b>-</b>		<b>-</b>	<b>-</b>		<b>-</b>	<b>2014/15</b>
CORPORATE (existing)			TBC		3,830	282		4.3	
Energy Management (additional)			7,778		825	4		0.1	
<b>Total</b>			<b>7,778</b>		<b>4,655</b>	<b>286</b>		<b>4.4</b>	

<sup>∞</sup> Key to lead officers; AP- Andrew Pye; TW – Tim Watson; NT – Norman Thorne; RW – Richard Williams; GG – Graham Groves; SN – Sean Newton; PL – Peter Locke; JF – Jim Fawcett; AB – Andrew Bond; DW – David Watts; PFI – Private Finance Initiative Team; JB – John Brocklehurst

The investment has been split into corporate and education since education budgets are devolved to schools, and the corporate budget is further divided into 'Central', where the projects are being funded by services across the authority and 'Energy Management', where the funding will be provided directly by the Energy & Carbon Manager.

A brief description of each project is provided below:

Project Number(s)	Description
67-68	Cavity wall insulation will continue to be undertaken during 2013/14
69-74	Voltage Optimisation will continue to be undertaken during 2013/14
75	Thin client will continue to be rolled out during 2013/14
76	Carisbrooke High School biomass heating is considered a viable project with significant carbon savings. A pre-feasibility study has been undertaken for this option and also for the extension of this heating system (and CHP) to schools located further down the road. As the most viable of the three options provided, this has been included within the plan as a long term project. The other two options which have been considered (and not excluded at this point) have been included within 4.7 'Additional identified projects' but are not contributing to the reduction target at this stage. Whilst a capital cost has been shown, ESCO models might be available where the investment is made by a third party and the School purchases the heat produced
77	Voltage Optimisation will continue to be undertaken during 2014/15
78	Thin client will continue to be rolled out during 2014/15
79	LED street lighting in conjunction with dimming and trimming is likely to be undertaken by the PFI project due to commence in 2013. LEDs have been assumed at this stage but the final technology to be installed will not be finalised until the project commences. It has been assumed in this plan that 20% of existing fittings will be upgraded in year and through the improved energy efficiency of the fittings and reduced hours in operation, a reduction in energy consumption (through those fittings) should be in the order of approximately 50%. It should be noted that due to the possibility of an increased number of lights being installed in other areas of the highway, this reduction may not be represented in the overall fuel consumption for street lighting.

#### 4.5 Reorganisation & Service Reduction

The process of reorganisation is being driven by the desire to provide more efficient services for local residents, schools' reorganisation and the financial constraints resulting from reduced council income. It will result in the disposal of a large number of buildings along with the modernisation of those which remain. Service reduction along with staff numbers which are predicted to be more than 500 during 2011/12 have also been estimated.

As financial savings for the council as a result of reorganisation & service reduction have already been factored into council budgets, they have not been included within this plan. The table below simply shows the carbon impact of the above measures along with reducing business travel on a pro-rata basis.

It must be understood that there is considerable uncertainty in this process, with the disposal of assets often taking longer than envisaged, but the table gives the best estimate of when these changes will take effect.

It can be seen that the carbon impact is considerable, with 43.6% of the 30% five-year savings target being achieved through reorganisation.

Ref	Project	Lead	Cost		Annual Saving		Pay back	% of Target	Year
			Capital	Revenue	Financial	CO <sub>2</sub>			
79	Reorganisation & Service Reduction		-	-	-	20	-	0.3	2010/11
80	Reorganisation		-	-	-	573	-	9.2	2011/12
81	Reorganisation		-	-	-	1,055	-	17	2012/13
82	Reorganisation		-	-	-	780	-	12	2013/14
83	Reorganisation		-	-	-	168	-	2.7	2014/15
85	Reduced Business Travel		-	-	-	97	-	1.5	2011/12
<b>EDUCATION</b>						<b>748</b>		<b>12.1</b>	
<b>CORPORATE</b>						<b>1,847</b>		<b>29.9</b>	
<b>Transport</b>						<b>97</b>		<b>1.5</b>	
<b>Total</b>						<b>-</b>		<b>43.6</b>	

#### 4.6 Summary

A numerical summary of the projects detailed in sections 4.1-4.6 is shown below:

	Total CO <sub>2</sub>		Additional capital (£)		Additional Revenue (£)		Savings (£)	
	In year	Cumulative	In year	Cumulative	In year	Cumulative	In year	Cumulative
2010/11	276	276	36,460	36,460	60,000	60,000	44,801	44,801
2011/12	1,746	2,022	96,637	133,097	67,089	127,089	101,109	145,910
2012/13	2,588	4,610	62,941	196,038	85,295	212,384	61,244	207,154
2013/14	1,174	5,784	40,096	236,134	85,295	297,679	7,151	214,305
2014/15	454	6,238	7,778	243,912	85,295	382,974	825	215,130

#### 4.7 Additional identified projects

A number of other projects have been identified which cannot, at this stage, be fully quantified or implementation guaranteed. They will, however, provide additional benefits and the most likely year for implementation is shown should the projects progress to that stage.

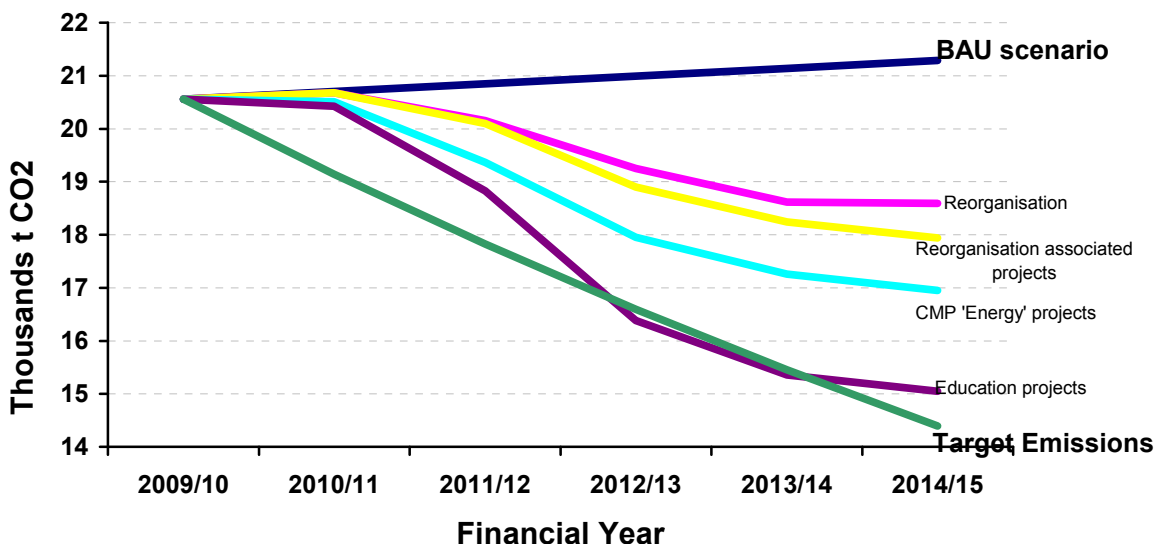
Ref	Project	Lead <sup>∞</sup>	Cost		Annual Saving		Pay back (Years)	% of Target	Year
			Capital	Revenue	Financial	CO <sub>2</sub>			
86/87	Photo Voltaic/Solar thermal	TW/JF	1,785,000		193,387		9.2	0	2011/12
88	Carisbrooke schools heating extension – Biomass CHP	TW/JF /JB	930,000		38,000	225	N/A	3.6	2012/13
89	Heat Recovery – County Hall server room	RW/JF / TW/NT	TBC	TBC	TBC	TBC	TBC	TBC	TBC
90	BMS	TW	4348	0	618	4	7	0.1	2012/13
91	Boiler/Burner replacement	TW	97712	0	13909	84	7	1.3	2012/13
92	Cavity Wall Insulation	TW	19924	0	5986	37	3.3	0.6	2012/13
93	Lighting	TW/NT	33229	0	4379	24	7.6	0.4	2012/13
	<b>Total</b>		<b>2870213</b>		<b>256279</b>	<b>374</b>			

Ref	Description
86-87	The council is keen to install solar systems on buildings with a sufficiently long life to justify the investment. It is currently considering options for procuring PV systems for leisure centres and will develop the business case for solar thermal systems once the details of the Renewable Heat Incentive (RHI) are known and building occupancy rates have been determined.
88	This is the additional cost and effects of extending the proposed biomass system (heating only or CHP) at Carisbrooke High School to the cluster of schools (3 sites) on Wellington Road. The additional cost is largely the underground distribution pipework to take hot water from the High School to the other sites.
89	The server farm at County Hall expels significant quantities of heat from air conditioning units running at approximately 60 kW. This heat could be recycled within the building to provide space and / or water heating.
90-93	These are projects which have been identified for specific buildings, but there is still doubt at this stage whether these buildings will be retained or disposed of as part of the council's reorganisation. There is expected to be clarification on this by 2012/13 after which the projects could be implemented quickly if the buildings are deemed to have a long-term future.

<sup>∞</sup> Key to lead officers; AP- Andrew Pye; TW – Tim Watson; NT – Norman Thorne; RW – Richard Williams; GG – Graham Groves; SN – Sean Newton; PL – Peter Locke; JF – Jim Fawcett; AB – Andrew Bond; DW – David Watts; PFI – Private Finance Initiative Team; JB – John Brocklehurst

#### 4.8 Projected achievement towards target

**Graph Illustrating Progress Towards Target of 30% Reduction In Emissions**

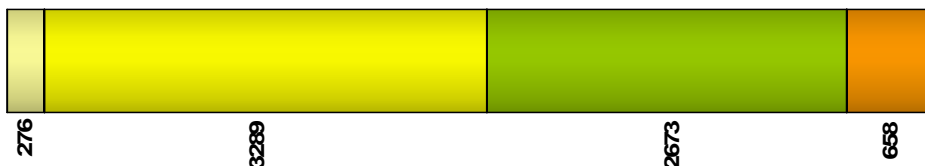


The above graph illustrates how projects across the council contribute to achieving the overall carbon reduction target (shown by the green line titled 'Target Emissions'). It is evident from the graph that further projects need to be identified to achieve the goal of 30% reduction, particularly in the latter stages where fewer projects have been identified.

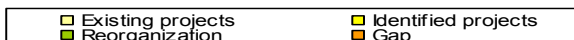
This graph also highlights the importance of schools in enabling the plan to come to fruition. Without a reduction in emissions from schools, there would be a considerable shortfall as represented by the turquoise line (CMP 'Energy' projects). This line represents the total reduction in emissions identified across corporate buildings and assumes that the energy consumption within schools remains constant. The maroon line 'Education projects' represents the total savings which may be achieved through a combination of all the projects identified within this plan, inclusive of schools.



Target: 30%  
(6,896tCO<sub>2</sub>)



Figures in thousand tCO<sub>2</sub>



We have identified projects which will deliver 27% reduction in our emissions. To achieve our target, further projects will be identified and implemented over the course of the next 5 years

### Carbon Management Plan Financing

An existing capital budget exists for implementing many of the projects identified for corporate buildings. This budget was identified as a result of the previous Carbon Management Plan. Schools will be required to fund their individual projects and will be approached with business cases to illustrate the benefits of budgeting for them. There may be scope to include some of the measures as part of the capital works associated with school reorganisation. As this has not been clarified at this time, it has been assumed that a budget has not been identified for these projects.

#### 5.1 Assumptions

- Savings based on consumption rather than cost (See section 3.5 for assumed utility costs) – i.e. cannot predict future price rises
- Financial savings from reorganisation have not been included to ensure that savings identified within this plan are 'new' savings. Carbon savings however have been included as this information is not captured elsewhere and therefore unlikely to be double counted.
- Savings are allocated to the year the investment was made, although in reality this will be a more complex picture, depending on the nature of the project.
- Full investment costs for major renewable energy projects – i.e. biomass DH, solar PV – have been shown – but outsourced options requiring no upfront capital investment are likely to be available
- No carbon savings can be claimed from micro-generation projects for which the Feed In Tariff (FIT) is claimed

## 5.2 Benefits / savings – quantified and un-quantified

	2010/11	2011/12	2012/13	2013/14	2014/15
<b>Annual cost saving (£)</b>	<b>44,801</b>	<b>101,109</b>	<b>61,244</b>	<b>7,151</b>	<b>825</b>
<b>Annual CO<sub>2</sub> saving (tCo2)</b>	<b>276</b>	<b>1,746</b>	<b>2,588</b>	<b>1,174</b>	<b>454</b>
<b>Cumulative tCO2 saving</b>	<b>276</b>	<b>2,022</b>	<b>4,601</b>	<b>5,784</b>	<b>6,238</b>
<b>Cumulative % of target</b>	<b>4.5</b>	<b>32.8</b>	<b>74.6</b>	<b>93.8</b>	<b>101</b>

While the above table illustrates that we will exceed our target of 30% reduction, it does not take into account the business as usual forecast as illustrated in section 4.8 on page 38. Assuming this BAU scenario would result in a shortfall of 658 tCO<sub>2</sub>.

### Unquantified benefits:

Through the council's mandatory participation in the CRC Energy Efficiency scheme, carbon 'allowances' will require purchasing on an annual basis. This effectively (initially) puts a value on carbon of £12/tonne which from 2012-13 onwards will have a direct revenue cost of an estimated £200,000. This cost will be shared with Education who will be required to fund the purchase of their allowances at an estimated cost of £100,000.

Through the implementation of this plan, the anticipated (cost avoidance) CRC savings are as follows.

	2011/12	2012/13	2013/14	2014/15
Reorganization and associated projects (£)	7,824	23,976	33,588	35,759
CMP projects (£)	8,820	11,352	11,832	11,880
Education Saving (£)	6,456	18,828	22,824	22,812
<b>In year revenue saving (£)</b>	<b>23,100</b>	<b>54,156</b>	<b>68,244</b>	<b>70,451</b>
<b>Total accumulative saving (£)</b>	<b>23,100</b>	<b>77,256</b>	<b>145,500</b>	<b>215,951</b>

## 5.3 Additional resources

	2011/12	2012/13	2013/14	2014/15
<b>Education</b>	<b>30,000</b>	<b>30,000</b>	<b>30,000</b>	<b>30,000</b>

Additional resources are required for the successful management and implementation of energy efficiency projects within schools. It will be necessary to establish how this will be delivered.

#### 5.4 Financial costs and sources of funding

	2010/11	2011/12	2012/13	2013/14	2014/15	'Other' identified
<b>Annual costs:</b>						
<b>Total annual capital cost</b>	<b>161,695</b>	<b>213,522</b>	<b>470,158</b>	<b>589,863</b>	<b>7,778</b>	<b>3,538,591</b>
<b>Total annual revenue cost</b>	<b>60,000</b>	<b>67,089</b>	<b>85,295</b>	<b>85,295</b>	<b>85,295</b>	<b>N/A</b>
<b>Total costs</b>	<b>221,695</b>	<b>280,611</b>	<b>555,453</b>	<b>675,158</b>	<b>93,073</b>	<b>3,538,591</b>
<b>Committed funding:</b>						
<b>Committed annual capital</b>	<b>161,695</b>	<b>189,887</b>	<b>341,759</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Committed annual revenue</b>	<b>60,000</b>	<b>67,089</b>	<b>77,195</b>	<b>77,195</b>	<b>77,195</b>	<b>N/A</b>
<b>Total funded</b>	<b>221,695</b>	<b>256,976</b>	<b>418,954</b>	<b>77,195</b>	<b>77,195</b>	<b>0</b>
<b>Unallocated funding</b>						
<b>Unallocated annual capital</b>	<b>0</b>	<b>23,635</b>	<b>128,399</b>	<b>589,863</b>	<b>7,778</b>	<b>3,538,591</b>
<b>Unallocated annual revenue</b>	<b>0</b>	<b>0</b>	<b>8,100</b>	<b>8,100</b>	<b>8,100</b>	<b>N/A</b>
<b>Total unfunded</b>	<b>0</b>	<b>23,635</b>	<b>136,499</b>	<b>594,963</b>	<b>15,878</b>	<b>3,538,591</b>

The full allocation for 2011/12 is secured apart from a small sum for capital projects within schools which needs to be discussed with the schools forum.

For 2012/13 and beyond, annual capital bids will be prepared for energy management projects identified in this plan and further work with schools will aim to secure capital funding for cost effective projects.

The revenue costs shown above include salaries for the Energy & Carbon Manager and Deputy Energy & Carbon Management officer along with software licences and annual maintenance required for the CHP installation at the Heights Leisure Centre. This will be secured through savings, leaving only software licences for schools as unallocated revenue from 2012/13 onwards. Again, we will aim to secure this through the schools forum.

The additional resources for management of carbon and energy saving measures in schools has not been included in the summary table above.

## Actions to Embed Carbon Management in the Organisation

The council has a desire to embed carbon management within its management culture. This requires an awareness of the opportunities to reduce carbon emissions across all service areas and to have regard for the impact on the authority's carbon footprint in the decision-making process. The council will integrate carbon management into the procurement process so that it purchases energy efficient goods and services and influences its suppliers to reduce their carbon footprint.

The council will act as leader in the community, encouraging all organisations and individuals to change their behaviour and set targets for carbon reduction. This is not at odds with economic development, but instead creates a vision of a low impact vibrant economy.

The council will work to embed carbon management across all services, moving to a mature rating on the Carbon Management Matrix shown in Appendix A. The Carbon Management Matrix is a tool to help organisations identify their current level of carbon management maturity across 8 themes and shows what needs to be done to improve the situation. The table below shows, on a scale of 1-5 (bad-good), the current and target maturity ratings:

	Current Rating (2011)	Target Rating (2015)
Corporate Strategy	<b>2</b>	<b>4</b>
Programme Management	<b>3</b>	<b>5</b>
Responsibility	<b>3</b>	<b>4</b>
Data Management	<b>4</b>	<b>5</b>
Communication & Training	<b>2</b>	<b>4</b>
Finance & Investment	<b>3</b>	<b>5</b>
Policy Alignment	<b>2</b>	<b>5</b>
Engagement of Schools	<b>2</b>	<b>4</b>

### 6.1 Corporate Strategy – embedding CO<sub>2</sub> saving across the Council

The council's Corporate Plan (2009-13) reflects Eco Island, the Sustainable Community Strategy, which includes the ambition to be the local authority area with the smallest per capita carbon footprint in England. The Local Area Agreement (2008-11), which provided the initial delivery plan for Eco Island, specified area-wide carbon reductions of 3% per annum and reductions in council

carbon emissions of 4% per annum, as outlined in the original Carbon Management Plan (Section 3.3).

One of the corporate priorities is delivering better services, which requires services to meet the needs of Island residents in the most efficient and cost-effective manner. Resource and energy management are stated as key components of this objective. Through its adoption of the original Carbon Management Plan, the council has already demonstrated its commitment to carbon management within the council and the new Carbon Management Plan will form part of a Climate Change Strategy for the Island which will be produced during 2011.

In order to climb the maturity matrix, the council will publish the Carbon Management Plan on the Eco Island website ([www.eco-island.org.uk](http://www.eco-island.org.uk)) and on the dedicated intranet site ([wightnet.iow.gov.uk](http://wightnet.iow.gov.uk)) with annual reports on performance. It will also be incorporated into the Island Climate Change Strategy as a public statement of the council's intent. Action plans will be worked up with individual business areas to ensure that all parts of the council are contributing to carbon management.

## 6.2 Programme Management – bringing it all together effectively

For the past two years (2008-10), the council's carbon emissions have been reported formally through National Indicator (NI) 185 and through the council's Annual Report. There has been implementation of some carbon management measures identified in CMP1 and an ongoing process of identifying new opportunities.

Through CMP2, programme management will be geared up with regular diagnostic reports provided through director's team. These reports will incorporate the impact of individual business areas on the CRC Energy Efficiency Scheme as well as carbon reduction across the council, with progress against targets published externally.

## 6.3 Responsibility – being clear that saving CO<sub>2</sub> is everyone's job

The Carbon Management Plan has been developed by the council's Energy & Carbon Manager who will be primarily responsible for its implementation, with support from the Deputy Energy & Carbon Management Officer. Both of these are full-time positions.

The development of the Carbon Management Plan identified key stakeholders within the council with a role to play in reducing energy consumption and carbon emissions. The key stakeholders, together with the services they represent, are shown in the table below. This includes officers at a senior level and capable of initiating and implementing projects:

Name	Service
School Capital Planning Manager	Education
Principal Officer (Environment)	Sustainable Economic Development
Corporate Building Manager	Property Maintenance
PFI Programme Director	Highways PFI
Fleet Manager	Fleet Management
Head of ICT	Information and Communication
ACO Governance & Improvement	Fire & Rescue Service
Energy Manager	Energy Management

In order to spread responsibility more widely, the council is establishing a network of Premises Liaison Officers. One of their key responsibilities will be to help improve energy management and they will be asked to:

1. Read gas and electricity meters on a monthly basis to provide accurate information on ongoing consumption.
2. Display Carbon Trust posters, stickers and other literature in buildings to remind users to conserve energy.
3. Provide staff with a simple list of actions that are required to conserve energy – switching off PCs, lights, printers etc – and to monitor the response.
4. Identify, with colleagues, additional energy saving opportunities in buildings and other council activities and to communicate these to the Energy Manager.

A Premises Liaison Officer will be allocated for each of the council's significant buildings. This will exclude Public Conveniences etc where energy consumption is minimal.

## 6.4 Data Management – measuring the difference, measuring the benefit

The Energy Management Team has primary responsibility for collecting, collating, reporting and acting on data relating to the Carbon Management Plan. They have gained experience of collecting data relating to buildings, street lighting and business travel for NI185 and will continue to report locally on the successor to NI185 as well as the CRC Energy Efficiency Scheme.

Over the last 2 years the quality of data collected has improved considerably, but a number of challenges remain:

1. A significant proportion of buildings still record energy consumption through quarterly readings, many of which are estimated. This will be improved through the roll out of smart meters for gas and electricity which will provide automated data on a half-hourly basis and monthly meter readings where smart meters are not feasible.
2. Business travel is only recorded on a mileage basis, requiring assumptions to be made about the proportion of vehicles which use petrol and diesel. Furthermore, information on public transport use is only reflected in the cost of transport, with no reference to mode of transport or mileage travelled.
3. From 2013, Street lighting will be part of the Highways Maintenance PFI. The contractors have yet to be appointed, but the contractual terms must ensure that energy consumption from street lighting is reported accurately and in a timely manner.
4. There are currently separate office waste disposal contracts for each building and quantities of waste are not collected centrally. To avoid estimated quantities in the future, waste disposal should be reported regularly.

The Energy Management team will annually report against the full scope of the Carbon Management Plan and illustrate year on year progress, measured in tonnes of CO<sub>2</sub>. Additional reports will be required as part of the CRC Energy Efficiency Scheme which will be monitored externally and which will help to track reduction of emissions throughout the year.

## 6.5 Communication and Training – ensuring everyone is aware

To date, energy awareness campaigns have taken place on an ad hoc basis with limited success. Top tips for saving energy have been circulated by email along with messages to switch off electrical appliances before public holidays. Carbon Trust posters and stickers have been displayed in some buildings.

For CMP2, both internal and external communications will be planned in order to increase awareness of the carbon management objectives and progress towards the targets. A dedicated intranet site will be the principal means of communicating

with staff, complemented by regular items in the staff e-newsletter. Because of the very low levels of staff recruitment, the focus will be on regular, ongoing communications to reinforce messages, rather than 'one off' opportunities, such as induction training.

Communicating the intentions and outcomes of the Carbon Management Programme is essential in order to increase staff awareness and to demonstrate to the wider community the actions the council is taking.

## INTERNAL

The full, internal communications plan is shown below:

Stakeholder Name / Group	Issues	Key Messages	Means of Communication	Timetable	Responsibility
All Staff	All	Information on carbon baseline, benchmarks, project ideas, agreed projects, implementation plan	LACM intranet site	May 11	Tim Watson / Gavin Muncaster
All Staff	Energy Awareness Campaign	Behavioural change, top tips, turn off appliances etc	All users email	Annual - Sept/Oct	Tim Watson / Claire Robertson
All Staff	Corporate priority for energy saving	Necessity to reduce council's energy costs – message from CE. Updates to staff.	Manager's Briefing – to inform team meetings	Annual – Sept/Oct	Chief Executive/ Directors/ Tim Watson
All Staff	Implementation Plan	Targets, projects and general implementation requirements	The Vine + Intranet site	May 11	Tim Watson / Claire Robertson / Gavin Muncaster
All Staff	'Turn Off' messages	Frequent reminders to encourage behaviour change with urgent messages before breaks (e.g. Christmas, weekends)	The Vine	Every 3 months	Tim Watson / Gavin Foster



EXTERNAL

One of the objectives for carbon management within the council is to provide leadership to the wider community so that other organisations and individuals can understand the importance of reducing carbon emissions and the type of action they can take. The external communications plan will highlight examples of good practice and the overall effectiveness of the programme, as follows:

<b>Stakeholder Name / Group</b>	<b>Issues</b>	<b>Key Messages</b>	<b>Means of Communication</b>	<b>Timetable</b>	<b>Responsibility</b>
All media / residents	Launch of Council's revised Carbon Management Programme	Council leadership / environmental responsibility / cost-effective council	Press release	April 11	Tim Watson
All media / residents	Carbon management projects	Demonstrate quick wins and good practice	Press release incl. photos	May 11 onwards	Tim Watson / Claire Robertson
All residents	All	Regular updates – forward facing info from council	Iwight.com/ council	Ongoing	Tim Watson / Claire Robertson
Businesses & Public Sector	Commitment to reduce carbon emissions	Council setting an example	Eco Island website / Energy Managers' meetings / Business Networks	Jun 11 onwards	Tim Watson

## 6.6 Finance and Investment – the money to match the commitment

Funding for energy management projects has been provided to date through the general building maintenance budget. This has ensured a reasonable level of implementation during 2010/11, with savings and fees covering the cost of the Energy Management Team.

Chapter 5 shows the full costs of implementation of this plan. In the short-term staff costs will continue to be met through fees and savings but, due to the financial constraints on the council, capital cannot be guaranteed beyond 2011/12. Bids will therefore be prepared on an annual basis for the projects outlined in this report, which provide a good financial return for the Council as well as contributing to carbon reduction.

As implementation of the plan progresses, external funds will be sought for projects requiring large investment e.g. PV and biomass systems. Savings from projects will be agreed with service areas and these will accumulate in an internal fund for re-investment in energy management.

#### 6.7 Policy Alignment – saving CO<sub>2</sub> across our operations

The Corporate Plan supports carbon reduction activities in line with the Sustainable Community Strategy which runs to 2020.

Due to financial constraints, the council is currently undergoing a period of unprecedented reorganisation and it is hard to predict how the council will be operating in 3 years time. One of the clear changes is the move to becoming a commissioning organisation, rather than a provider of services, in many areas. This will involve the 'transfer' of carbon emissions to external providers, but this Plan is clear that when this happens, the associated carbon emissions will be recorded and reported by the contractor and will contribute to the council's carbon footprint. Procurement policies must ensure that future contracts include the requirement for reporting associated carbon emissions.

Whilst the council will operate from fewer buildings, there will be an ongoing requirement for maintenance and close links will be maintained with the Building Maintenance section. This team already considers whole life costing and future liaison will attempt to ensure that the most carbon efficient options are chosen and all opportunities for energy management are identified during major refurbishments.

Further work is required to ensure that HR policies are consistent with the aims of the Carbon Management Plan. Policies relating to the heating of offices and restricted travel policies which encourage the use of car-sharing and public transport have been identified as the priorities.

Close liaison will be maintained with ICT. This is a dynamic area which is currently responding to corporate demands for flexible working and higher occupancy rates in buildings. There is a desire to reach a thin client solution for all staff, but it is recognised that a flexible approach will be required to deal with changing demands and competing priorities.

Otherwise, close working relationships will be maintained with the directorate's Business Effectiveness Unit. This new unit will have early sight of emerging plans and policies (as well as reviews of existing policies) and will ensure that the aims of the CMP are integrated, where appropriate.

## 6.8 Engagement of Schools – working with schools to reduce their carbon footprint

Discussions with the Education Department have sought to find a satisfactory way forward for energy management in schools. To some degree, this has been complicated by the major reorganisation of schools, which involves the change from a three-tier to two-tier education system and has led to the closure of a number of school sites and major building works, including the location of temporary classrooms, at many others.

Resources are required to fund the installation of smart meters; pay the school's pro-rata CRC contribution; contribute to the fees for the identification, design and project management of energy conservation measures; and enable the Council's Energy & Carbon Manager to identify overcharging or other anomalies in fuel bills. Schools will still be responsible for the funding of projects through their devolved capital budgets, but part of the service provided by the council will be to identify the savings and payback periods for these projects.

This proposal will be discussed, initially, with the Schools' Forum with the aim of having an agreement in place prior to the new energy supply contract which will commence in October 2011.

## Programme Management of the CM Programme

The Carbon Management Plan will be owned at the most senior level within the organisation. Corporate indicators for carbon reduction will be owned and driven by Director's Team with regular reporting to Cabinet and the Economy & Environment Scrutiny Panel.

### 7.1 The Carbon Management Team – delivering the projects

Overseeing implementation of the Carbon Management Plan will be a Core Group of officers comprising:

Senior Officer Representative (Project Sponsor)	Deputy Director – Economic Development, Tourism & Leisure
Senior Officer Representative	Strategic Manager – Skills Development
Carbon Management	Energy Manager
Carbon Management Support	Deputy Energy & Carbon Management Officer
LACM Carbon Management Team (Financing)	Accountant
LACM Carbon Management Team (Buildings)	Corporate Building Manager
LACM Carbon Management Team (Fleet vehicles)	Fleet Manager
LACM Carbon Management Team (Low carbon projects)	Low Carbon Projects Officer
LACM Carbon Management Team (Procurement)	Senior Procurement Officer
LACM Carbon Management Team (Communications and external relations)	Strategic Manager – Resident Information & Consultation
LACM Carbon Management Team (Co-ordination)	Business Intelligence and Performance Officer
LACM Carbon Management Team (Education)	Premises Development Officer

The Carbon Management Team will have responsibility for:

- Reviewing and updating the Carbon Management Plan on an annual basis
- Monitoring and reporting progress against the plan
- Monitoring and reporting emissions performance and energy cost savings
- Identifying new opportunities for carbon reduction
- Internal and external communication
- Updating the intranet site
- Reporting qualifying emissions for the CRC
- Reviewing programme risks and taking action where necessary
- Ensuring an overlap of knowledge within the team to enable continuity in the event of team members leaving the organisation.

The Carbon Management Team will meet on a quarterly basis.

A progress report will be prepared and presented to cabinet on an annual basis (July of each year). This will include carbon reductions achieved, level of investment made, energy cost savings and, crucially, an updated Implementation Plan showing in detail those projects which will be implemented over the following 3 years. Progress on achieving the carbon reduction targets will be made public through the Eco Island website and council Annual Report.

The principal risks associated with the CMP have been logged on the corporate risk register. The Carbon Management Team and will monitor the planned actions to mitigate this risk, which are shown below:

Risk: Failure to implement the Carbon Management Plan and achieve the identified savings	
Consequences: Reduced revenue savings as a result of reduced number of energy saving initiatives and non capture of savings where applicable.	
Risk Owner: Tim Watson	
Risk Rating: 8 (medium)	
PLANNED ACTIONS	
1.	Negotiate a payment structure with education for schools related savings schemes. There is no ability to capture schools related savings corporately, due to the finance structure for school budgets. A fee payment structure will therefore be negotiated to cover the Energy Manager's time on school related schemes.
2.	Engagement with schools.
3.	Secure additional funding.

4.	Identification of additional projects.
5.	Ensure sufficient capacity of staffing.
6.	Liase with all managers of major projects
7.	Identify and capture savings.

### 7.2 Succession planning for key roles

The Energy Manager has a key role with individual responsibility for developing and implementing the Carbon Management Plan and for achieving the council's Carbon Management targets. Officer support for the Energy Manager has recently been established and this role is also crucial to ensure timely and accurate reporting and managing increasing responsibilities, including carbon reporting for the CRC and work with schools.

The Project Sponsor will ensure the continuity of the role of Project Lead

### 7.3 Ongoing stakeholder management

Key internal stakeholders are represented on the Carbon Management Team and will provide liaison with service areas, so that results are disseminated widely and new project ideas fed back to the Team.

Schools are a key service for engagement and the Schools' Forum will provide the main means of communication at leadership level. Relationships already exist with caretakers and key staff through building maintenance services.

Externally, the Environment Forum and Eco Island Partnership have an interest in the council's performance on environmental issues and reports will be presented to both groups on an annual basis. A group of Energy Managers across the public sector is also being established and this will act as an information exchange across organisations which include the council, NHS, prisons and police.

### 7.4 Annual progress review

A review of performance will be carried out by the Carbon Management Team on a quarterly basis with the results presented to director's team, Cabinet and Scrutiny Panel on an annual basis. Annual reporting will take place in September each year to allow sufficient time for energy consumption data to be collected and converted to carbon emissions.

	2011			2012				2013				2014	
	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr
Review by Carbon Management Team		*	*	*	*	*	*	*	*	*	*	*	*
Review by Director's Team		▲				▲				▲			
Report to Cabinet Approval	◆					◆				◆			
Report to Scrutiny Committee			*				*				*		



Appendix A: Carbon Management Matrix – Embedding

	CORPORATE STRATEGY	PROGRAMME MANAGEMENT	RESPONSIBILITY	DATA MANAGEMENT	COMMUNICATION & TRAINING	FINANCE & INVESTMENT	POLICY ALIGNMENT *	ENGAGEMENT OF SCHOOLS
<b>Mature</b>  5	<ul style="list-style-type: none"> <li>Top level target allocated across organisation</li> <li>CO<sub>2</sub> reduction targets in Directorate Business Plans</li> <li>Action plans in place to embed strategy. Progress routinely reviewed</li> </ul>	<ul style="list-style-type: none"> <li>Cabinet / SMT review progress against targets on quarterly basis</li> <li>Regular diagnostic reports provided to Directorates</li> <li>Progress against target published externally</li> </ul>	<ul style="list-style-type: none"> <li>CM integrated in responsibilities of senior managers</li> <li>CM part of all contracts / Ts &amp; Cs</li> <li>Central CO<sub>2</sub> reduction advice available</li> <li>Green Champions leading local action groups</li> </ul>	<ul style="list-style-type: none"> <li>Regular collation of CO<sub>2</sub> emissions for all sources</li> <li>Data externally verified</li> <li>Monitoring &amp; Targeting in place for:                             <ul style="list-style-type: none"> <li>buildings</li> <li>street lighting</li> <li>transport/travel</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>All staff given formalised CO<sub>2</sub>:                             <ul style="list-style-type: none"> <li>induction and training</li> <li>communications</li> </ul> </li> <li>Joint CM communications with key partners</li> <li>Staff awareness tested through surveys</li> </ul>	<ul style="list-style-type: none"> <li>Finance committed for 2+yrs of Programme</li> <li>External funding being routinely obtained</li> <li>Ring-fenced fund for carbon reduction initiatives</li> </ul>	<ul style="list-style-type: none"> <li>CO<sub>2</sub> friendly operating procedure in place</li> <li>Central team provide advice and review, when requested</li> <li>Barriers to CO<sub>2</sub> reduction routinely considered and removed</li> </ul>	<ul style="list-style-type: none"> <li>A 'whole school approach' including curriculum</li> <li>Mature programme of engagement in place</li> <li>CO<sub>2</sub> saving in schools having a wider community impact</li> </ul>
4	<ul style="list-style-type: none"> <li>CO<sub>2</sub> reduction commitment in Corporate Strategy</li> <li>Top level targets set for CO<sub>2</sub> reduction</li> <li>Climate Change Strategy reviewed annually</li> </ul>	<ul style="list-style-type: none"> <li>Sponsor reviews progress and removes blockages through regular Programme Boards</li> <li>Progress against targets routinely reported to Senior Mgt Team</li> </ul>	<ul style="list-style-type: none"> <li>CM integrated in to responsibilities of department heads</li> <li>Cabinet / SMT regularly updated</li> <li>Staff engaged though Green Champion network</li> </ul>	<ul style="list-style-type: none"> <li>Annual collation of CO<sub>2</sub> emissions for:                             <ul style="list-style-type: none"> <li>buildings</li> <li>street lighting</li> <li>transport/travel</li> </ul> </li> <li>Data internally reviewed</li> </ul>	<ul style="list-style-type: none"> <li>All staff given CO<sub>2</sub> reduction:                             <ul style="list-style-type: none"> <li>induction</li> <li>communications</li> <li>CM matters – communicated to external community</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Co-ordinated financing for CO<sub>2</sub> reduction projects via Programme Board</li> <li>Funding principles and processes agreed</li> <li>Finances committed 1year ahead</li> <li>Some external financing</li> </ul>	<ul style="list-style-type: none"> <li>Comprehensive review of policies complete</li> <li>Lower level policies reviewed locally</li> <li>Unpopular changes being considered</li> </ul>	<ul style="list-style-type: none"> <li>A clear emphasis on energy / CO<sub>2</sub> reduction in schools</li> <li>Council activities fully co-ordinated</li> <li>Broad set of education stakeholders engaged</li> <li>Funding in place</li> </ul>
3	<ul style="list-style-type: none"> <li>Vision for CO<sub>2</sub> reduction clearly stated and published</li> <li>Climate Change Strategy endorsed by Cabinet and publicised with staff</li> </ul>	<ul style="list-style-type: none"> <li>Core team regularly review CM progress:                             <ul style="list-style-type: none"> <li>actions</li> <li>profile &amp; targets</li> <li>new opportunities</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>An individual provides full time focus for CO<sub>2</sub> reduction</li> <li>Key individuals have accountability for carbon reduction</li> <li>Senior Sponsor actively engaged</li> </ul>	<ul style="list-style-type: none"> <li>Collation of CO<sub>2</sub> emissions for limited scope i.e. buildings only</li> </ul>	<ul style="list-style-type: none"> <li>Environmental / energy group(s) given ad hoc:                             <ul style="list-style-type: none"> <li>training</li> <li>communications</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>A view of the cost of CO<sub>2</sub> reduction is developing, but finance remains ad-hoc</li> <li>Some centralised resource allocated</li> <li>Finance representation on CM Team</li> </ul>	<ul style="list-style-type: none"> <li>All high level and some mid level policies reviewed, irregularly</li> <li>Substantial changes made, showing CO<sub>2</sub> savings</li> </ul>	<ul style="list-style-type: none"> <li>A person has responsibility for Schools CO<sub>2</sub> reduction</li> <li>Schools CO<sub>2</sub> reduction projects co-ordinated</li> <li>Ad-hoc funding</li> </ul>
2	<ul style="list-style-type: none"> <li>Draft Climate Change Policy</li> <li>Climate Change references in other strategies</li> </ul>	<ul style="list-style-type: none"> <li>Ad hoc reviews of CM actions progress</li> </ul>	<ul style="list-style-type: none"> <li>CO<sub>2</sub> reduction a part-time responsibility of a few department champions</li> </ul>	<ul style="list-style-type: none"> <li>No CO<sub>2</sub> emissions data compiled</li> <li>Energy data compiled on a regular basis</li> </ul>	<ul style="list-style-type: none"> <li>Regular awareness campaigns</li> <li>Staff given CM information on ad-hoc basis</li> </ul>	<ul style="list-style-type: none"> <li>Ad hoc financing for CO<sub>2</sub> reduction projects</li> </ul>	<ul style="list-style-type: none"> <li>Partial review of key, high level policies</li> <li>Some financial quick wins made</li> </ul>	<ul style="list-style-type: none"> <li>Ad-hoc schools projects to specifically reduce energy / CO<sub>2</sub></li> </ul>
<b>Start</b>  1	<ul style="list-style-type: none"> <li>No policy</li> <li>No Climate Change reference</li> </ul>	<ul style="list-style-type: none"> <li>No CM monitoring</li> </ul>	<ul style="list-style-type: none"> <li>No recognised CO<sub>2</sub> reduction responsibility</li> </ul>	<ul style="list-style-type: none"> <li>No CO<sub>2</sub> emissions data compiled</li> <li>Estimated billing</li> </ul>	<ul style="list-style-type: none"> <li>No communication or training</li> </ul>	<ul style="list-style-type: none"> <li>No specific funding for CO<sub>2</sub> reduction projects</li> </ul>	<ul style="list-style-type: none"> <li>No alignment of policies for CO<sub>2</sub> reduction</li> </ul>	<ul style="list-style-type: none"> <li>No CO<sub>2</sub> / energy reduction policy for schools</li> </ul>



## Appendix B: Definition of Projects

<b>Project:</b>	<b>PC Power Management</b>
<b>Reference:</b>	<b>18</b>
<b>Owner (person)</b>	Richard Williams
<b>Department</b>	ICT
<b>Description</b>	Software to enable the remote management of individual computers to ensure monitors and computers are not on unnecessarily.
<b>Benefits</b>	<ul style="list-style-type: none"> <li>Financial savings: £38,654 (E)</li> <li>Payback period: 0.3 years</li> <li>CO<sub>2</sub> Emissions reduction: 210 tonnes of CO<sub>2</sub></li> <li>% of target – 3.4%</li> </ul>
<b>Funding</b>	<ul style="list-style-type: none"> <li>Project cost, £10,000 (E)</li> <li>Operational costs £2,025 (E)</li> <li>Source of funding: Internal</li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li>Estimated time required to implement project is 1 person for 1-2 weeks per year from existing resources</li> </ul>
<b>Ensuring Success</b>	<ul style="list-style-type: none"> <li>Undertake free trial from software provider to quantify exact savings achievable and total cost of project.</li> <li>Conflicting savings with 'Thin Client' restricts the number of computers which would benefit from this software.</li> <li>Installation and management of software could impact on resources available for rollout of Thin Client</li> </ul>
<b>Measuring Success</b>	<ul style="list-style-type: none"> <li>Success will be measured by reduction in energy consumption</li> <li>Quantification of savings within some sites will be achievable within one month</li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>Milestones / key dates e.g. <ul style="list-style-type: none"> <li>start date: TBC – (2011/12)</li> <li>completion date (when it will deliver savings): TBC – 1 months following start</li> </ul> </li> </ul>
<b>Notes</b>	<p>kWh cost – 10p 750 No. Desktops (7am to 6pm Mon- Fri) 50% left on &amp; 20% idle (covers meeting, lunch etc) 750 No. Laptops 50% left on &amp; 20% idle (All as above)</p> <p>NB – Free trial will quantify all savings before any payment is required. E- Estimated costs as true cost will be unknown until after trail</p>

## Appendix B: Definition of Projects

<b>Project:</b>	<b>Reduce all heating down to 19 °C</b>
<b>Reference:</b>	<b>19</b>
<b>Owner (person)</b>	<i>Tim Watson / Jim Fawcett</i>
<b>Department</b>	<i>Strategic Asset Management Services</i>
<b>Description</b>	<i>A reduction in office heating temperatures undertaken in conjunction with a policy to ban use of personal electric heaters will reduce excessive heating during winter (and cooling during summer).</i>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• <i>Financial savings: £ 12,500</i></li> <li>• <i>Payback period: 0.9 years</i></li> <li>• <i>CO<sub>2</sub> Emissions reduction: 69 tonnes of CO<sub>2</sub></i></li> <li>• <i>% of target – 1.1%</i></li> </ul>
<b>Funding</b>	<ul style="list-style-type: none"> <li>• <i>Project cost, £10,000</i></li> <li>• <i>Operational costs, N/A</i></li> <li>• <i>Source of funding: Internal (existing)</i></li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li>• <i>Additional resource will not be required as delivery can be achieved within existing resources</i></li> </ul>
<b>Ensuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Key success factors, will be the production and enforcement of the heating/cooling policy</i></li> <li>• <i>Principal risks are the non compliance with policy and an inability to enforce it</i></li> </ul>
<b>Measuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Achievement will be measured by a reduction in energy costs</i></li> <li>• <i>Success will be measured monthly for many sites (during November-March)</i></li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>• <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> <li>○ <i>start date: 01/09/2011</i></li> <li>○ <i>completion date (when it will deliver savings): November –March (annually)</i></li> <li>○ <i>interim deliverable / decision points – Producing and signing off of heating/cooling policy before September 2011.</i></li> </ul> </li> </ul>
<b>Notes</b>	<i>A 10% energy saving has been assumed in each building (excluding schools). Many sites will be reducing heating temperatures by in excess of 2 °C which should ensure estimated savings are exceeded. Savings from removal of personal electric heaters will create savings in excess of those estimated. £10,000 has been identified to help overcome heating issues such as installation of radiator valves.</i>

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<b>Project:</b>	<b>Liquid Pool Cover</b>
<b>Reference:</b>	<b>21 &amp; 22</b>
<b>Owner (person)</b>	Tim Watson
<b>Department</b>	Strategic Asset Management Services
<b>Description</b>	Liquid pool covers reduce heat loss from the surface of swimming pools during operational hours when physical pool covers cannot be used. This is to be applied to learner pools only which are maintained at a higher temperature than the main pool and remain calm for longer durations.
<b>Benefits</b>	<ul style="list-style-type: none"> <li>Financial savings: £ 1,800 (each site)</li> <li>Payback period: 0.4 years</li> <li>CO<sub>2</sub> Emissions reduction: 11 tonnes of CO<sub>2</sub></li> <li>% of target – 0.2 %</li> </ul>
<b>Funding</b>	<ul style="list-style-type: none"> <li>Project cost, £418</li> <li>Operational costs, £782 per annum</li> <li>Source of funding: Existing internal</li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li>No additional resources are required for implementation.</li> </ul>
<b>Ensuring Success</b>	<ul style="list-style-type: none"> <li>Key success factors, application of liquid cover will enable reduction in pool hall temperature by approximately 2 °C</li> <li>Principal risks: Inability to reduce pool hall temperature by a sufficient amount to realise quantified savings</li> </ul>
<b>Measuring Success</b>	<ul style="list-style-type: none"> <li>Performance will be measured by the reduction in fuel consumption</li> <li>Success will be measured during the heating season (November – March 2011/12)</li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>Milestones / key dates e.g. <ul style="list-style-type: none"> <li>start date: 01/09/2011</li> <li>completion date (when it will deliver savings): From start</li> <li>interim deliverable – Trial at Heights leisure centre before undertaking additional installations</li> </ul> </li> </ul>
<b>Notes</b>	<p>Learner pool is maintained at a higher temperature than main pool. As pool hall temperatures are required to be maintained at 1°C above that of the water temperature, this technology should enable a reduction in air temperature close to that of the main pool.</p> <p>It is envisaged that this product will only be utilized during the heating season (totally biodegradable within 2 days), to reduce forecasted operational costs (of product) without greatly impacting anticipated savings.</p>

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<b>Project:</b>	<b>Smart Metering and Behavioural change</b>
<b>Reference:</b>	<b>23</b>
<b>Owner (person)</b>	<i>Tim Watson / Jim Fawcett</i>
<b>Department</b>	<i>Strategic Asset Management Services</i>
<b>Description</b>	<i>Rollout of Smart Meters across significant corporate buildings in conjunction with behavioural change campaign. Smart meters enable a very detailed breakdown of energy consumption. Behavioural change will be undertaken through a combination of messages within existing internal newsletters and also through an energy dedicated web page.</i>
<b>Benefits</b>	<ul style="list-style-type: none"> <li><i>Financial savings: £33,849</i></li> <li><i>Payback period: 0.52 years</i></li> <li><i>CO<sub>2</sub> Emissions reduction: 147 tonnes of CO<sub>2</sub></i></li> <li><i>% of target – 2.4%</i></li> </ul>
<b>Funding</b>	<ul style="list-style-type: none"> <li><i>Project cost, £20,000</i></li> <li><i>Operational costs, £3,500</i></li> <li><i>Source of funding: internal, existing</i></li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li><i>Delivery through existing resources, including the Energy &amp; Carbon Manager, Low Carbon Projects Officer, Energy Management Support Officer.</i></li> </ul>
<b>Ensuring Success</b>	<ul style="list-style-type: none"> <li><i>Installation of Smart Meters through existing contract and utilization of web page once in place</i></li> <li><i>Principal risks: Inability to quantify and recapture savings associated with behavioural change and inability to encourage change.</i></li> </ul>
<b>Measuring Success</b>	<ul style="list-style-type: none"> <li><i>Reduction in energy consumption</i></li> <li><i>Measured every 6 months</i></li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li><i>Installation of Smart Meters (year 1) and construction of web page by 1<sup>st</sup> September 2011</i></li> <li><i>Savings delivered subject to billing cycles and impact of behavioural change within each building. Full saving realised within 1 year from implementation.</i></li> </ul>
<b>Notes</b>	<i>It is widely acknowledged that a 10% saving is achievable through behavioural change alone. As some behavioural work has already been undertaken within the Isle of Wight Council, a more conservative saving of 2.5% has been used (excluding schools and reorganization buildings). Project 43 is a continuation of this and has assumed that another 2.5% saving will be achieved during the second year.</i>

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<b>Project:</b>	<b>Lighting – Public Conveniences</b>
<b>Reference:</b>	<b>28</b>
<b>Owner (person)</b>	<i>AB – Andrew Bond</i>
<b>Department</b>	<i>Property Services</i>
<b>Description</b>	<i>A large number of public conveniences currently leave their lights on 24 hours a day for various reasons. Through this investment, many blocks will be rewired and intelligent fittings will be installed to minimise waste of energy.</i>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• <i>Financial savings: £2,278</i></li> <li>• <i>Payback period: 8.8 years</i></li> <li>• <i>CO<sub>2</sub> Emissions reduction: 12.4 tonnes of CO<sub>2</sub></i></li> <li>• <i>% of target – 0.2%</i></li> </ul>
<b>Funding</b>	<ul style="list-style-type: none"> <li>• <i>Project cost, £20,000</i></li> <li>• <i>Operational costs, £N/A (over existing costs)</i></li> <li>• <i>Source of funding: internal, existing - through a combination of Maintenance and Energy budgets</i></li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li>• <i>Implemented through existing resources (Property services surveyor)</i></li> </ul>
<b>Ensuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Identification of wasteful sites for rewiring/lamp replacement</i></li> <li>• <i>Principal risks: vandalism</i></li> </ul>
<b>Measuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Performance will be measured through actual energy savings achieved</i></li> <li>• <i>When success will be measured through reduced energy consumption represented in each bill, ordinarily every 6months-1year for public conveniences)</i></li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>○ <i>start date: April 2011</i></li> <li>○ <i>completion date May 2011 (full savings realised May 2012)</i></li> </ul>
<b>Notes</b>	<i>A conservative estimate of 50% energy saving has been assumed from each block (£20,000 is anticipated to replace 200 fittings which at an average of 10 per block, equates to 20 blocks). In some instances, rewiring will achieve a 50% saving and will be undertaken at a reduced cost to that estimated.</i>

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<b>Project:</b>	<b><i>Voltage Optimisation - Heights</i></b>
<b>Reference:</b>	<b>31</b>
<b>Owner (person)</b>	<i>TW – Tim Watson / NT- Norman Thorne</i>
<b>Department</b>	<i>Property Services</i>
<b>Description</b>	<i>Voltage Optimisation is the term given to reducing the voltage within a building to a more efficient level. A 9% reduction in voltage is anticipated (Appendix C part 1(b)) and should achieve an 8.5% reduction in electrical consumption.</i>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• <i>Financial savings: £5,247</i></li> <li>• <i>Payback period: 2.9 years</i></li> <li>• <i>CO<sub>2</sub> Emissions reduction: 29 tonnes of CO<sub>2</sub></i></li> <li>• <i>% of target – 0.5%</i></li> </ul>
<b>Funding</b>	<ul style="list-style-type: none"> <li>• <i>Project cost, £15,472</i></li> <li>• <i>Operational costs, N/A</i></li> <li>• <i>Source of funding: Existing internal</i></li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li>• <i>Project will be delivered within current resources.</i></li> </ul>
<b>Ensuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Key success factors - Agreement with site for the installation of unit</i></li> <li>• <i>Principal risks: Possible conflicts with Leisure centre refurbishment plans. Possible shortfall in savings</i></li> </ul>
<b>Measuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Achievement will be quantified through a reduction in energy consumption</i></li> <li>• <i>Due to the 'Half Hourly' electricity meter in place, it will be possible to identify performance within 2 days of installation.</i></li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>○ <i>start date: TBC, Estimated at 4 weeks following approval</i></li> <li>○ <i>completion date (when it will deliver savings): 5 weeks from approval</i></li> <li>○ <i>interim deliverable – Await approval from site</i></li> </ul>
<b>Notes</b>	<p><i>Figures provided by Powerperfector (unit suppliers) following and extensive tendering exercise undertaken in 2009.</i></p> <p><i>Ordinarily a 14.5% reduction in energy costs would be achieved through this level of Voltage reduction but, due to conflicting energy saving devices on site this estimate has been reduced to 8.5% reduction.</i></p> <p><i>Similar projects anticipated at Ref;</i> <i>32/53/54/55/56/57/58/69/70/71/72/73/74/75</i></p>

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<b>Project:</b>	<b>CHP – Heights Leisure Centre</b>
<b>Reference:</b>	<b>49</b>
<b>Owner (person)</b>	<i>DW – David Watts / TW – Tim Watson</i>
<b>Department</b>	<i>Strategic Asset Management Services</i>
<b>Description</b>	<i>Combined Heat and Power (CHP) in an efficient method of producing both heat and electricity on site through a gas powered engine.</i>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• <i>Financial savings: £ 22,661</i></li> <li>• <i>Payback period: 8.3 years</i></li> <li>• <i>CO<sub>2</sub> Emissions reduction: 109 tonnes of CO<sub>2</sub></i></li> <li>• <i>% of target – 1.7%</i></li> </ul>
<b>Funding</b>	<ul style="list-style-type: none"> <li>• <i>Project cost - £121,000</i></li> <li>• <i>Operational costs - £8,106</i></li> <li>• <i>Source of funding: Part of existing project budget (TBC)</i></li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li>• <i>This project will be delivered within current resources, in addition to consultants managing the refurbishment of the leisure centre</i></li> </ul>
<b>Ensuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Key success factors, will be the approval to proceed within the existing leisure refurbishment program</i></li> <li>• <i>Principal risks:- Being dropped from refurbishment program due to associated costs and length of payback</i></li> </ul>
<b>Measuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Performance will be measured by the reduced running costs for the site following installation of unit</i></li> <li>• <i>Success will be measured approximately within one month of installation but accurately after 1 full year of operation</i></li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>• <i>Milestones / key dates e.g.</i> <ul style="list-style-type: none"> <li>○ <i>start date: TBC</i></li> <li>○ <i>completion date (when it will deliver savings): TBC</i></li> </ul> </li> </ul>
<b>Notes</b>	<p><i>Costs and savings provided by supplier</i></p> <p><i>Inclusion of savings associated with the CRC would reduce pay back to 7.8 years.</i></p>

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<b>Project:</b>	<b>Heat recovery – Medina Leisure Centre</b>
<b>Reference:</b>	<b>61</b>
<b>Owner (person)</b>	<i>DW – David Watts</i>
<b>Department</b>	<i>Strategic Asset Management Services</i>
<b>Description</b>	<i>Heat recovery from the leisure centre air handling plant minimizes heat loss associated with ventilation, through using the warm air being expelled to heat the colder incoming air</i>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• <i>Financial savings: £ 9,200</i></li> <li>• <i>Payback period: 8.7 years</i></li> <li>• <i>CO<sub>2</sub> Emissions reduction: 56 tonnes of CO<sub>2</sub></i></li> <li>• <i>% of target – 0.9%</i></li> </ul>
<b>Funding</b>	<ul style="list-style-type: none"> <li>• <i>Project cost - £80,000 (E)</i></li> <li>• <i>Operational costs - £0 (above existing plant)</i></li> <li>• <i>Source of funding: Part of existing budget</i></li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li>• <i>Project will be delivered within current resources, in conjunction with consultants/contractors undertaking leisure centre refurbishment.</i></li> </ul>
<b>Ensuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Key success factors, will be the approval to proceed within the existing leisure refurbishment program</i></li> <li>• <i>Principal risks: Being dropped from refurbishment program due to associated costs and length of payback</i></li> </ul>
<b>Measuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Performance will be measured by the reduced running costs for the site following installation of unit</i></li> <li>• <i>Success will be measured approximately within one month of installation but accurately after 1 full year of operation</i></li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>○ <i>start date: TBC</i></li> <li>○ <i>completion date (when it will deliver savings): TBC</i></li> </ul>
<b>Notes</b>	<p><i>Assumed 40% saving on total estimated pool hall heating load.</i></p> <p><i>Unit will have capacity to recover excess heat from the air and contribute to pool water heating.</i></p> <p><i>Additional saving will be achieved through the utilisation of more efficient fans within the new unit.</i></p>



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<b>Project:</b>	<b><i>Pool backwash water recovery</i></b>
<b>Reference:</b>	<b>62</b>
<b>Owner (person)</b>	<i>DW – David Watts</i>
<b>Department</b>	<i>Strategic Asset Management Services</i>
<b>Description</b>	<i>Pool backwash water recovery enables the purification of waste pool water so that it can be put back into the pool. This reduces both water consumption and heating costs</i>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• <i>Financial savings: £ 3,136</i></li> <li>• <i>Payback period: 8 years</i></li> <li>• <i>CO<sub>2</sub> Emissions reduction: 8 tonnes of CO<sub>2</sub></i></li> <li>• <i>% of target – 0.1%</i></li> </ul>
<b>Funding</b>	<ul style="list-style-type: none"> <li>• <i>Project cost - £25,000</i></li> <li>• <i>Operational costs- TBC</i></li> <li>• <i>Source of funding: part of existing project budget</i></li> </ul>
<b>Resources</b>	<ul style="list-style-type: none"> <li>• <i>Project will be delivered within current resources, in conjunction with consultants/contractors undertaking leisure centre refurbishment.</i></li> </ul>
<b>Ensuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Key success factors, will be the approval to proceed within the existing leisure refurbishment program</i></li> <li>• <i>Principal risks:- Being dropped from refurbishment program due to associated costs and length of payback</i></li> </ul>
<b>Measuring Success</b>	<ul style="list-style-type: none"> <li>• <i>Performance will be measured by the reduced running costs for the site following installation of unit</i></li> <li>• <i>Success will be measured approximately within one month of installation but accurately after 1 full year of operation</i></li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>○ <i>start date: TBC</i></li> <li>○ <i>completion date (when it will deliver savings): TBC</i></li> </ul>
<b>Notes</b>	<p><i>Assumed 75% of water returned to pool from annual backwash volume of 1,267m<sup>3</sup>.</i></p> <p><i>Running costs to be confirmed prior to implementation</i></p>



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