



Carbon Management Plan



*Working together
to reduce our
carbon emissions*



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Local Authority Carbon Management Programme

Strategy and Implementation Plan

Adopted April 2008

A joint venture between:

Property & Procurement and Environmental Policy & Sustainability

Torbay Council



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Foreword from the Carbon Trust

Cutting carbon emissions as part of the fight against climate change should be a key priority for local authorities - it's all about getting your own house in order and leading by example. The UK government has identified the local authority sector as key to delivering carbon reduction across the UK inline with its Kyoto commitments and the Local Authority Carbon Management programme is designed in response to this. It assists councils in saving money on energy and putting it to good use in other areas, whilst making a positive contribution to the environment by lowering their carbon emissions.

Torbay Council was selected in 2007, amidst strong competition, to take part in this ambitious programme. Torbay Council partnered with the Carbon Trust on this programme in order to realise vast carbon and cost savings. This Carbon Strategy and Reduction Plan commits the council to a target of reducing CO₂ by a minimum of 20% by 2012, with aspirations to reach 25%, and underpins potential financial savings to the council of around £4 million.

There are those that can and those that do. Local authorities can contribute significantly to reducing CO₂ emissions. The Carbon Trust is very proud to support Torbay Council in their ongoing implementation of carbon management.

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

Richard Rugg
Head of Public Sector, Carbon Trust



Foreword from Torbay Council

Our lives have become dependent upon energy; from helping us to travel long distances to allowing us to turn on the lights in a dark room. Fossil fuels such as gas, oil and coal have been our primary sources of energy since the Industrial Revolution, but the UK, along with other developed nations, has been using these fuel sources at a rate much faster than nature can replenish them or manage the carbon emissions that are created when these fuels are burned.

Action is needed to address issues such as climate change, an increasing scarcity of easily accessible fossil fuels, security of supply and the cost of energy for our schools, businesses and households.

Torbay Council understands that it has a responsibility to help Torbay, the UK and the global community to achieve commitments to reduce carbon emissions from our everyday activities to ensure that the residents of Torbay have a sustainable quality of life, for now and future generations to come.

This strategy and action plan is very welcome and Torbay Council hopes to encourage similar action throughout the Bay.



Cllr. Chris Lewis
Cabinet Member for Transport and Planning

Executive summary

The Challenge

Climate Change

The evidence for climate change is irrefutable and the 2007 Fourth Assessment Report from the United Nations' Intergovernmental Panel on Climate Change has concluded that it is very likely that human activities are its main cause.

The mean annual temperature in Torbay could increase by up to 3.9°C and the maximum summer temperature could be 4.9°C higher than present by 2080. These higher temperatures are predicted to reduce summer rainfall in Torbay by up to 50% and provide the potential to increase winter rainfall by 20%. This would result in an annual precipitation change of -14% by 2080. Furthermore, individual storm events are forecast to become more frequent and intense. A warming climate also causes the oceans to expand and marine and terrestrial ice masses to melt. This could result in Torbay facing a 90cm rise in relative sea level by 2080.

The predicted effects of climate change will impact the lives of every member of the global population, including the residents of Torbay. Torbay's economy and infrastructure will have to adapt to more frequent interruptions to supply chains, structural damage from storms and flooding and the potential loss of Torbay's beaches due to sea level rise.

The impacts of climate change can be reduced by mitigating our emissions of Greenhouse Gases (GHGs) to limit warming to 2°C. This will involve fundamentally changing our behaviour to use less energy, become more energy efficient and develop renewable energy supplies where feasible. The 2006 Stern Review on the Economics of Climate Change predicts that the resulting damage caused by allowing climate change to continue unchecked could cost 5% of global GDP, but reducing greenhouse gas emissions to levels that are likely to avoid the worst impacts of climate change will cost significantly less.

Peak Oil

Peak oil is the point in time at which maximum global oil production is reached, after which production declines. As the availability of oil drops and global consumption remains constant or increases its price will inevitably rise and negative impacts upon the global economy will occur.

The timing of peak oil is difficult to predict and estimates range from 'it's already happened' to '100 years time'. Either way, energy costs have already doubled between 2000 and 2007 and are set to rise. Torbay Council needs to minimise its energy consumption to reduce the impact of future energy price rises on its ability to operate the services expected by the community.

The Carbon Management Programme

This Carbon Management Strategy and Implementation Plan (SIP) sits within the framework of the Climate Change Strategy for Torbay, which has the overarching objectives of reducing Torbay's carbon emissions and adapting Torbay to the impacts of inevitable climate change.

Preparing this SIP with assistance from the Carbon Trust has started Torbay Council's journey towards becoming a low carbon authority. This action is necessary to demonstrate leadership to the community in order to encourage similar action throughout the domestic and business sectors in the Bay.

Carbon management needs to become routine within Torbay Council and will be an activity practiced indefinitely to control carbon emissions and help manage fiscal expenditure on energy in light of peak oil.

Strategic Objectives

To reduce the carbon emissions from the energy and water used within Torbay Council's corporate buildings, schools, street lighting, vehicle fleet, business travel, commuting miles and the disposal of corporate waste.

To realise long-term fiscal savings through the implementation of energy efficiency and carbon reduction projects.

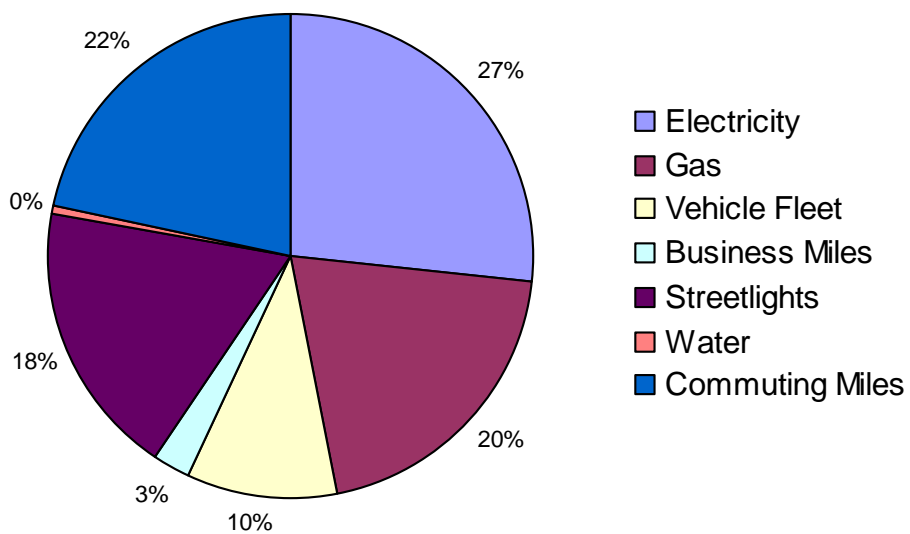
To lead Torbay towards a low carbon economy by demonstrating to the community the council's commitment to climate change mitigation and the rewards that are generated through such action.

Target

Torbay Council aims to achieve a minimum 20% reduction by 2012 of the carbon dioxide emitted from its activities, measured from the 2005/06 baseline. This implementation plan has been prepared with the intention of exceeding this target and achieving a 25% reduction to demonstrate clear community leadership in the reduction of carbon emissions. Whilst this aspiration is challenging, with commitment and dedication from all tiers of the management structure across the organisation it is achievable.

Baseline Emissions

A baseline of carbon emissions has been prepared for the financial year 2005/06. The baseline carbon footprint has been estimated at 17,900 tonnes of CO₂ per annum. The costs associated with producing the footprint are approximately £3.6 million.



Torbay Council's 2005/06 carbon footprint by emissions source

Projections

Based upon recent trends in energy consumption observed nationally by the Department for Business, Enterprise and Regulatory Reform, by 2012/13 the carbon footprint of Torbay Council is likely to have increased by 5% to 18,800 tCO₂. Increasing energy consumption will be accompanied by rising energy prices. By 2012/13 Torbay Council's energy spend will be forecast to have increased to £5.1 million; an increase of 41.7% over the baseline year of 2005/06.

By implementing energy saving and energy efficiency measures and by fundamentally changing staff behaviour, Torbay Council aspires to reduce its carbon footprint by 25% by 2012 with a minimum target of 20%. Assuming a 25% reduction is achieved, the carbon footprint is reduced to approximately 13,435 tCO₂ by 2012/13 but the total energy spend is still predicted to be 3.7% higher than during the baseline year of 2005/06.

The cumulative cost difference between the 'business as usual' and the '25% reduced emissions' scenarios by 2012/13 is approximately £4 million.

Opportunities and Financing

A shortlist of carbon reducing projects has been prepared which, if implemented in full, will save 6051tCO₂ by 2012/13. This will achieve a **carbon emissions reduction of 28.1%** over 2005/06 levels. Details can be found in Section 5.2.

Funding will be sought from internal and external sources to raise the £2.2 million required to implement the projects identified in this plan from 2008/09 – 2012/13. This investment will return an estimated £2.5 million cost saving over the same period.

Stakeholder Management and Communication

The new post of Carbon Reduction Officer will become responsible for running the Carbon Management Programme and for ensuring all stakeholders are communicated with according to the communication plan. **It is important that this post is filled quickly to ensure that the momentum of carbon management within Torbay Council continues.**

Until the new post of Carbon Reduction Officer is filled, the officers responsible for the preparation of this Implementation Plan, Andrew Bourne (Energy Manager) and Doug Eltham (Environmental Policy & Sustainability Officer), will jointly perform this role.

The objective of communication with all stakeholders is to keep all parties informed of progress and to receive feedback on particular projects. The implementation of the projects identified within this plan and the identification of the additional projects required to meet the aspirational target will be significantly easier if all stakeholders are effectively engaged and understand the issues at stake.

SIP Governance, Ownership and Management

The Carbon Reduction Officer and the implementation of the Programme will be aided at a strategic level by the Management and Member sponsors, the Strategic Director for Community Services and the Member for Planning and Transport respectively, who will form the Carbon Management Board to meet quarterly. Officers on the Project Team will be responsible for implementing projects across the listed activities relevant to their business unit activity.

Utility and fuel consumption will be monitored quarterly and a revised carbon footprint will be calculated annually. Progress will be reported to the Carbon Management Board, Senior Management Team, interested Members and Overview and Scrutiny by the Carbon Reduction Officer. Before the



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end of 2012/13 a new carbon reduction target for 2017/18 will be agreed with consideration of the changing international and domestic climate change agenda and achieved performance in Torbay Council over the preceding five years.

1 Introduction

1.1 Background to the Carbon Management Programme

The Carbon Trust has been working with Local Authorities to help them address their carbon emissions and realise considerable financial savings by providing technical and change management support and guidance through a formal programme called the Local Authority Carbon Management Programme. The programme has been running for 5 years and has assisted an elite group of 141 local authorities, of which Torbay Council is proud to be a member.

Cabinet agreed Torbay Council's involvement in Phase 5 of the Carbon Management Programme in June 2007.

1.2 Purpose of the Carbon Management Strategy

In 2005 Torbay Council signed the *Devon, Plymouth and Torbay Declaration on Climate Change and Fuel Poverty*. This demonstrates that Torbay understands that climate change and fuel poverty are likely to be key drivers of change within our community over the coming decades due to their likely effects on the region's economy, society and environment.

Signing the Declaration has committed Torbay Council to achieve a significant reduction of greenhouse gas emissions from the authority's operations especially energy sourcing and use, travel and transport, waste production and disposal and the purchasing of goods and services. Additionally Torbay Council will encourage all sectors in the local community to take the opportunity to reduce their own greenhouse gas emissions and to make public their commitment to action.

The Carbon Management Strategy sits within the framework of the Climate Change Strategy for Torbay, which has the overarching objectives of reducing Torbay's carbon emissions and adapting Torbay to the impacts of inevitable climate change.

Preparing this Carbon Management Strategy and Implementation Plan (SIP) with assistance from the Carbon Trust has started Torbay Council's journey towards becoming a low carbon authority. This action is necessary to demonstrate leadership to the community in order to encourage similar action throughout the domestic and business sectors in the Bay.

Carbon management needs to become routine within Torbay Council and will be an activity practiced indefinitely to control carbon emissions and help manage fiscal expenditure on energy in light of peak oil. This document outlines the vision, emissions reduction target and strategic objectives of carbon management within the authority and describes a programme of practical actions, together with their associated costs and benefits, to realise them.

1.3 Timescale

This implementation plan has been initially prepared to operate over a 5 year timescale between 08/09 and 12/13. The carbon savings implemented in the final year of the project will be identifiable from utility and fuel bills at the end of 13/14.

The target and actions in the SIP will be updated in due course to ensure a continuous rolling programme of measures beyond the 5 year timescale of this initial strategy and implementation plan.



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1.4 Approval

The SIP has been developed in consultation with a wide range of corporate and school representatives from all levels of the council's management structure.

The SIP was approved by Cabinet on the 15th April 2008 and adopted by Council on the 17th April 2008.

2 Carbon Management Strategy

2.1 Context of the Strategy

External Drivers

Negotiation between the leaders of the G8, of which the UK is a member, is underway to determine future, global action on climate change mitigation after the Kyoto Protocol expires in 2012.

At a national level, sustainable development and climate change have been placed at the top of the policy agenda in the UK, which is currently one of the most active nations in advocating action to reduce greenhouse gas emissions. Current targets are to reduce greenhouse gas emissions by approximately 30% by 2020 and 60% by 2050 from 1990 levels.

The national policy drivers are being implemented in the southwest by the emerging Regional Spatial Strategy and the New Performance Framework for Local Authorities from April 2008. Policies SD1 through to SD3 of the draft Regional Spatial Strategy require that:

- SD1 The region's ecological footprint will be stabilised and then reduced
- SD2 The region's contribution to climate change will be reduced, and;
- SD3 the region's environmental and natural resources will be protected and enhanced.

National Indicator 185 in the New Performance Framework for Local Authorities requires Torbay Council to reduce CO₂ emissions from local authority operations and outsourced services on an annual basis. The implementation of the Carbon Management Programme will directly contribute towards meeting the objectives of the Regional Spatial Strategy and of NI185.

Furthermore, rising energy costs have accelerated in recent years leading to a doubling of energy costs in real terms between 2000 and 2007. The Carbon Management Programme will help mitigate the impacts of rising energy costs on Torbay Council's service delivery by reducing energy consumption.

Internal Drivers

The regional objectives are being transposed in Torbay by the Community Plan and the Local Development Framework. This promotes sustainable spatial planning techniques and low carbon building construction to minimise greenhouse gas emissions. Additionally, the Torbay Community Plan and draft 2007 – 2011 Corporate Plan intend to address climate change by reducing energy consumption and the carbon footprint of Torbay as a whole as part of the 'Pride in the Bay' theme.

Torbay's statutory responsibilities require the production of a Municipal Waste Management Strategy and a Local Transport Plan. Both of these documents have implications for climate change and have targets within them that either directly or indirectly minimise greenhouse gas emissions.

The Council's Climate Change Strategy which intends to mitigate climate change by reducing carbon emissions from both the Council's corporate activities and the community. The strategy also aims to adapt Torbay's infrastructure to the effects of inevitable climate change, such as hotter summers and more frequent flooding.

A reduction in the community's carbon emissions will be facilitated by Torbay's commitment to the Carbon Reduction Analysis for Devon, Plymouth and Torbay. This document has been prepared by the Devon Sustainable Energy Network, a partnership of organisations, including Torbay, Plymouth City

and Devon County Councils, working towards a common goal – promoting the use of sustainable energy and working together to combat climate change and fuel poverty.

Participation in the Carbon Trust's Local Authority Carbon Management Programme (LACMP) will relate closely to the Corporate Energy Management Strategy and will demonstrate Torbay Council's commitment to mitigating climate change to the community.

2.2 Vision

Working together to minimise Torbay Council's carbon emissions for a more sustainable future.

2.3 Strategic Objectives

To reduce the carbon emissions from the energy and water used within Torbay Council's corporate buildings, schools, street lighting, vehicle fleet, business travel, commuting miles and the disposal of corporate waste.

To realise long-term fiscal savings through the implementation of energy efficiency and carbon reduction projects.

To lead Torbay towards a low carbon economy by demonstrating to the community the council's commitment to climate change mitigation and the rewards that are generated through such action.

2.4 Target

Torbay Council wishes to lead action on climate change mitigation and demonstrate its commitment to residents, businesses and visitors in creating a low-carbon economy. This has the potential to stimulate investment in environmental technologies and deliver skilled jobs within the Bay.

Torbay Council therefore set a target to achieve a minimum 20% reduction by 2012 of the carbon dioxide emitted from its activities, measured from the 2005/06 baseline and aspires to achieve 25%. Whilst this aspiration is challenging, with commitment of funds and dedication from all tiers of the management structure across the organisation it is achievable.

To satisfy UK greenhouse gas reduction targets Torbay Council needs to reduce its emissions by 2.3% per annum. This trajectory would achieve an 11% reduction in Torbay Council's greenhouse gas emissions by 2012.

2.5 Strategy

Programme Operation

- Ensure effective collection and management of data for the significant sources of council carbon emissions, including an annual report
- Develop an internal financing mechanism for carbon management, including the 'ring-fencing' of fiscal energy savings, and explore external financing opportunities
- Revise staff induction and performance review programmes to include formal training on energy and carbon management in the workplace



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Buildings

- Require BREEAM Excellent for all new council-owned, operated or leased buildings and major refurbishment projects
- Influence procurement contracts to ensure selection of the most sustainable and lowest-carbon options
- Prioritise and target repairs by identifying poor performing buildings
- Invest in new technology, including renewable energy, to minimise energy and water consumption
- Increase and maintain staff awareness and responsibility of energy consumption and its associated carbon emissions

Transport

- Upgrade council vehicle fleet to use lower carbon fuels
- Regulate and promote efficient business and fleet travel
- Encourage the use of low carbon commuting alternatives

Street Lighting

- Improve the energy efficiency of street lighting lanterns by replacing them with new technology and adjusting lux sensitivity
- Investigate the feasibility of supplying street illumination from on-site renewable energy sources
- Consult with local communities on options to re-gain the night sky

Waste

- Improve the energy efficiency of waste transfer equipment
- *Utilise landfill gas for power generation where feasible (not in the baseline)*
- Audit council waste production for inclusion in the Carbon Management Programme from 2009/10
- Promote workplace waste minimisation and recycling
- Pursue a corporate waste management policy

3 Emissions Baseline and Projections

3.1 Scope

Torbay Council is fortunate to have a reliable, wide ranging data set from which a baseline can be prepared. Table 1 details the types of council activities that will be included in the baseline. Energy sources included in the baseline emissions are: Electricity, gas, water and transport fuels including diesel, petrol and LPG. Little data exists regarding the amount and composition of waste produced by the council's activities. Due to the complexity of performing a waste audit and the short implementation period of this project, this data will be omitted from the baseline. However, the scope of the implementation plan's future projects will address corporate waste disposal.

Baseline Emissions Sources

Offices	Promenade Lighting
Libraries	Street Lighting
Public Amenities	Fleet Vehicles
All Schools	Business Travel
Crematorium	Commuting Miles

Table 1: Scope of the baseline

Buildings that are owned by Torbay Council but are operated by third parties have been excluded from the baseline. Many of these facilities, such as the International Riviera Centre and Clennon Valley Leisure Centre, are in communication with the Carbon Trust independently.

3.2 Baseline

A baseline of carbon emissions has been prepared for the financial year 2005/06. The baseline carbon footprint has been estimated at 17,900 tonnes of CO₂ per annum. The costs associated with producing the footprint are approximately £3.6 million. The breakdown of this footprint by emissions source and cost is shown in Figures 3 and 4 respectively.

	Electricity	Gas	Vehicle Fleet	Business Miles	Streetlights	Water	Commuting Miles	Total
tCO₂/a	4771	3648	1766	465	3295	62	3904	17,918
Cost £'000	776.7 + 84k CCL	403.2	524.9	683.5	505.7	623.2	0	3601.2

Figure 2: 2005/06 Torbay Council CO₂ emissions baseline detail. CCL = Climate Change Levy

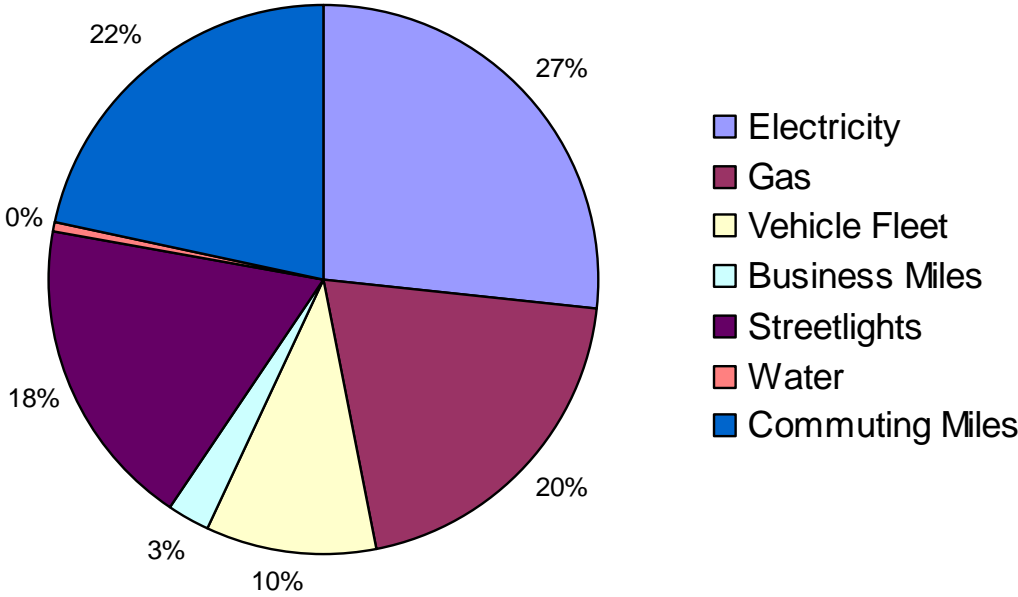


Figure 3: Torbay Council carbon footprint for 2005/06 by emissions source. Total emissions = 17,918tCO₂

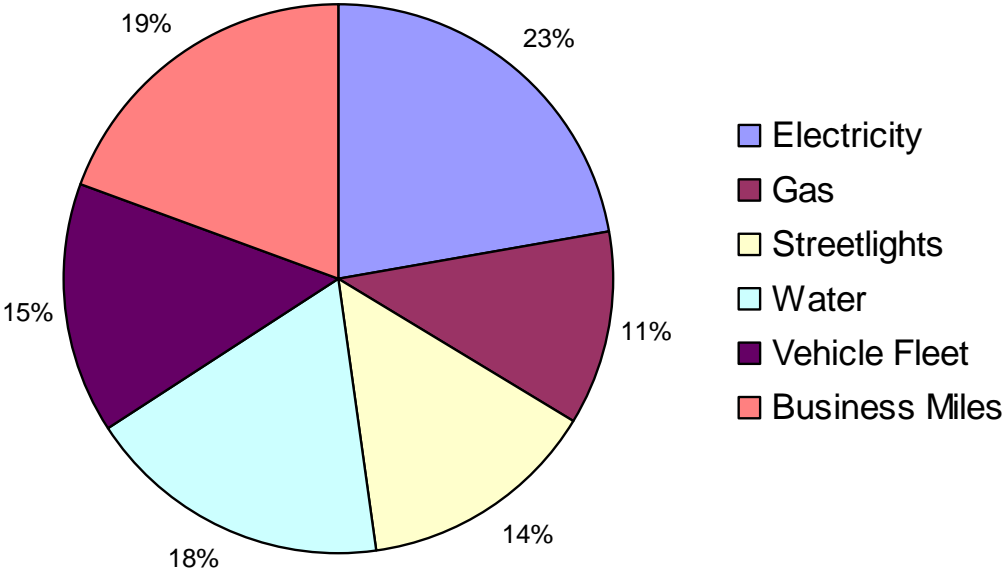


Figure 4: Torbay Council carbon footprint for 2005/06 by cost. Total cost = £3.6 million

Table 2 details the data sources for the carbon emissions baseline and comments on their quality. The Corporate Energy Strategy (2007) will install Automatic Meter Reading in particular buildings to improve the quality of electricity, gas and water data. The quality of commuting miles can be improved by encouraging more staff to complete the next survey.

Emissions Source	Data Source	Quality
Electricity	A combination of direct readings from meters and calculation from utility bills, some of which may have been estimates	Medium
Gas	A combination of direct readings from meters and calculation from utility bills, some of which may have been estimates	Medium
Vehicle Fleet	Fuel orders recorded by Direct Services and Waste	High
Business Miles	Mileage claims recorded by HR	High
Streetlights	Estimated consumption based upon capacity of installed equipment and approximate switching times	Medium
Water	A combination of direct readings from meters and calculation from utility bills, some of which may have been estimates	Medium
Commuting Miles	2004 staff travel survey performed by Strategic Transport	Medium – due to nature of survey

Table 2: Baseline data sources and accuracy

3.3 Projections

Business as Usual Scenario

Energy consumption has been forecast forward using the Carbon Trust’s and the Department for Business, Enterprise and Regulatory Reform’s recommended assumptions for growth in energy consumption. By 2012/13 the carbon footprint will have increased by 5% to 18,798 tCO₂ (Figure 5).

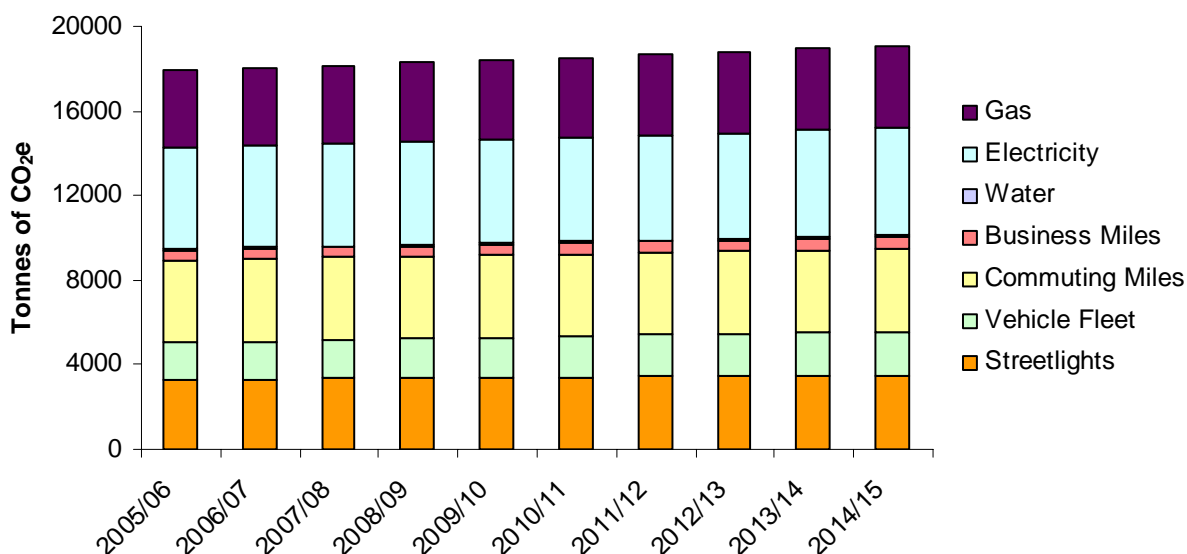


Figure 5: Business as usual emissions projection

Increasing energy consumption will be accompanied by rising energy prices. It has been assumed that energy prices rise by 3.5% per annum and water prices rise by 7% per annum. Figure 6 demonstrates that by 2012/13 Torbay Council's energy spend will have increased to £5.1 million; an increase of 41.7% over the baseline year of 2005/06.

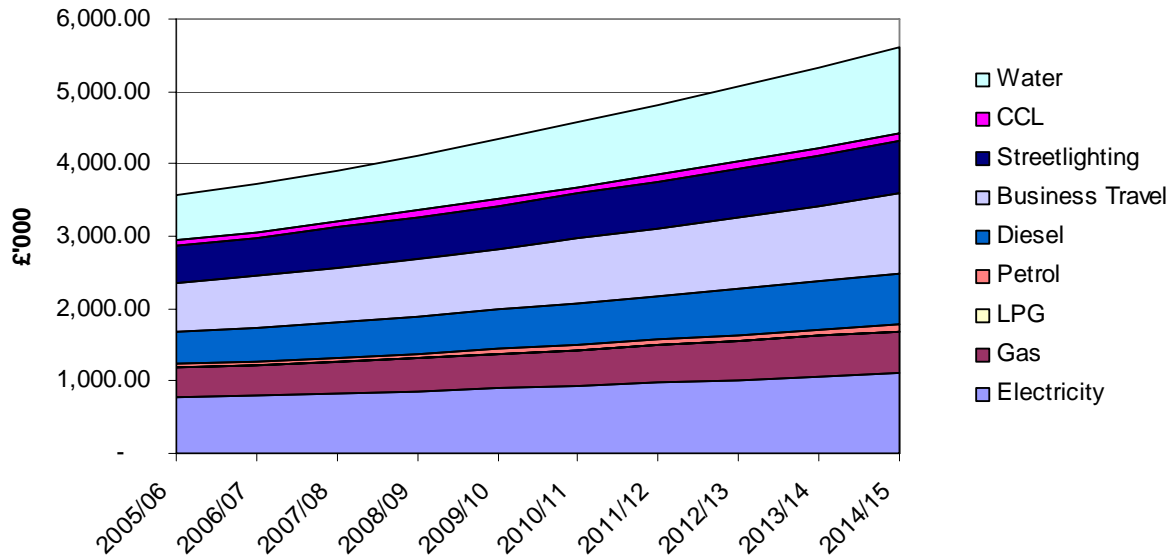


Figure 6: Business as usual forecasted energy costs

Reduced Emissions Scenario

By implementing energy saving and energy efficiency measures and by fundamentally changing staff behaviour, Torbay Council aspires to reduce its carbon footprint by 25% by 2012. Assuming these aspirations are met, the carbon footprint is reduced to approximately 13,435 tCO₂ by 2012/13. By 2012/13 the total energy spend is still 3.7% higher than during the baseline year of 2005/06 (Figure 7).

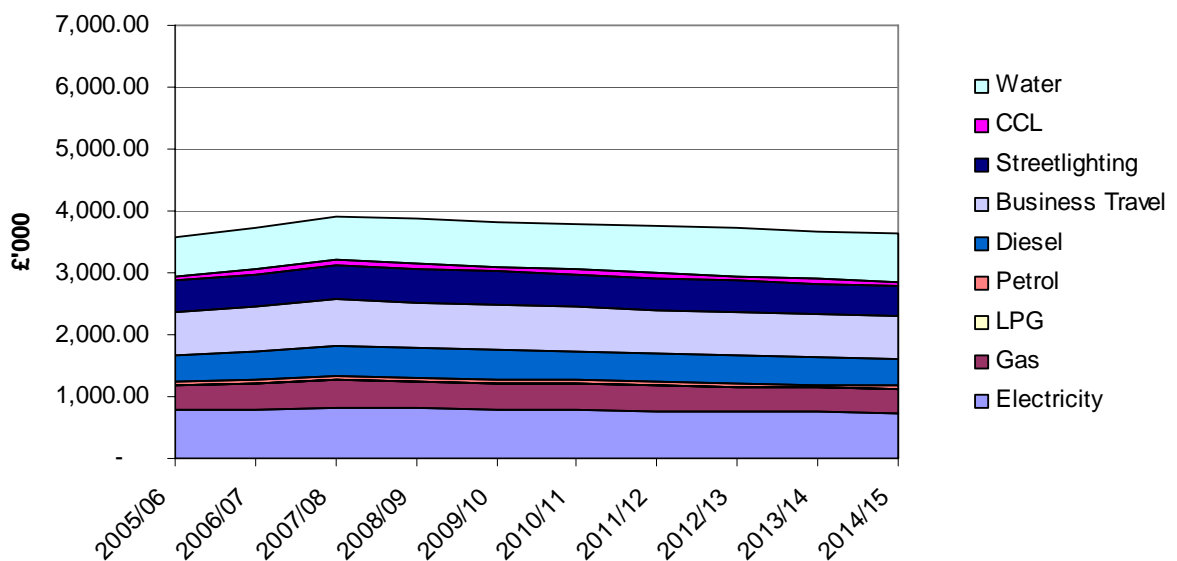


Figure 7: 25% Reduced emissions scenario energy costs

Due to 'business as usual' increases in carbon emissions between 2005/06 and the first implementation year of the Carbon Management Programme (2008/09) and from other areas of the business during the implementation plan period, Torbay Councils carbon footprint needs to be reduced by a total of 5363t CO₂ to achieve a 25% reduction from 2005/06.

Value at Stake

The Value at Stake is a term assigned to the cumulative cost difference between the 'business as usual' (BAU) and the '25% reduced emissions' (RES) scenarios. The cumulative value at stake up to 2012/13, represented by the blue area on the graph in Figure 8, is approximately £4 million.

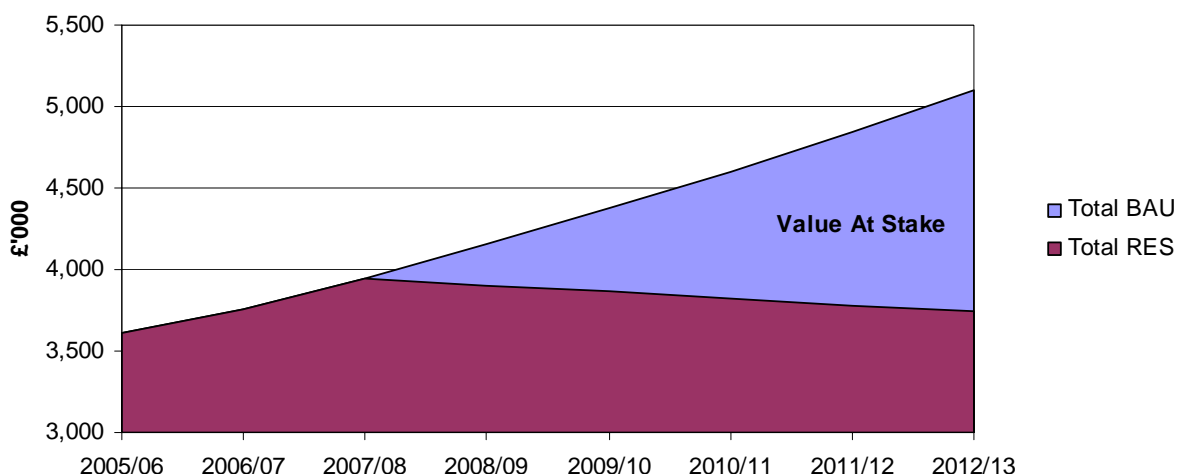


Figure 8: Value at Stake

This value represents the cost of missed opportunities by not investing in carbon management. With peak oil currently estimated to occur in 2011, after which oil supply starts to reduce and price of fossil fuel rises rapidly, this estimate is likely to be conservative.

3.4 Past Actions and Achievements

- Torbay Council has recently drafted a Climate Change Strategy which aims to reduce greenhouse gas emissions from Torbay as a community and to adapt Torbay's infrastructure to inevitable climate change. The Carbon Management Programme is an outcome of this strategy and will demonstrate to the community the commitment Torbay Council has to mitigating climate change.
- The efficiency of Torbay's street lighting is being gradually improved through the scheduled maintenance programme and the energy consumption of IT within the Council has been reduced by replacing CRT PC monitors with flat screen technology.
- The Corporate Procurement Strategy was published in 2007 and has sustainability at its core. It stipulates the use of Best Value purchasing, which ensures the optimum combination of whole life cost and fitness for purpose. A Good Practice Guidance Document on Sustainable Procurement is available on Torbay Council's website which helps those responsible for purchasing to identify the main environmental issues in their decisions. It gives information on the environmental and sustainability implications of certain products and examples of good purchasing practice.



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- Waste office paper is currently recycled throughout Torbay Council's offices and schools. The potential for this scheme to be expanded to include other waste streams has yet to be assessed.
- Energy management in Torbay Council's buildings, including schools, has been a constant operation for many years. Building Management Systems (BMS) have been successfully installed in many schools, offices and car parks to automatically control heating, lighting and water consumption and are already saving money and carbon emissions. This work will be continued through the Corporate Energy Management Strategy in 2007 which complements the intentions of the Carbon Management Programme. For example, the following savings had been achieved by BMS by the end of 2005/06:

Building	CO ₂ Saving
Roebuck House	184t
Parkfield House	30t
Lower Union Lane Car Park	43t
Terrace Car Park	15.5t
Vaughan Road	0.75t

- A range of staff travel initiatives are promoted within the Council, including CarShareDevon.com, the availability of subsidised bus passes and the use of pool bikes for shorter journeys in the Bay. There is a range of measures that can be implemented to encourage staff not to use private cars for commuting and business travel, which can save significant amounts of CO₂, but that require both management and political support. Torbay Council can learn from our colleagues at Devon County Council where such measures are already being trialled and are beginning to deliver results.

4 Carbon Management Implementation Plan

4.1 Shortlisted Actions and Emission Reduction Opportunities

Carbon emission reduction projects have been identified through the Corporate Energy Management Strategy, the Climate Change Strategy for Torbay and two stakeholder opportunities workshops. These were attended by the Carbon Management Plan project team and other invited council officers and representatives from Torbay’s primary and secondary schools.

From the opportunities workshops alone, 76 carbon emission reduction projects were identified. These were sorted, using the knowledge and experience of the workshop stakeholders, into categories based upon their ease of implementation (considering approximate cost, required infrastructure, manpower etc.) and their effectiveness at reducing carbon emissions.

Having performed this exercise the project list was immediately truncated due to many projects being too difficult to implement at the current time for too little return in the form of carbon emission savings. The shortlist of carbon emission reduction projects is detailed below along with the capital expenditure required for those projects not yet started and the annual savings expected from reduced utility bills.

To effectively reduce carbon emissions in a large organisation a range of projects with different purposes is required. This is to ensure changes in behaviour and management priorities are integrated into the culture of the future operation of the business and is not just a short term commitment. Projects can be implemented for the following purposes:

1. Policy Making	3. Measuring/Monitoring	5. Improving Efficiency
2. Awareness Raising	4. Reducing Demand	6. Renewables

Buildings

Ref.	Project Description	Purpose	Capital Expenditure	Annual Net Savings
Long Term Enabling Actions				
1	New post - Carbon Reduction Officer	1, 2, 3, 4, 5, 6	£2500	All savings in SIP
21 & 42	Installation of smart metering in suitable buildings	3, 4	Already started	£106.7k
43	Environmental performance of staff to be incorporated into job descriptions and RADAR process	1, 2	n/a	?
44	School and corporate building condition surveys (leading to subsequent lighting, ventilation and draught stripping projects)	2, 3, 4, 5	£372k (cost of resulting projects)	£86.9k
No and Low Cost Actions				
18	Time switches fitted to water coolers and vending machines across the corporate estate	2, 4	Already started	£860

28	Corporate Accommodation Review	4	Already started	?
35	St. Kilda Care Home boiler upgrade and service provision alteration	5	Already started	£7.2k
29	New lift mechanisms fitted to Lower Union Lane car park	5	Already started	£114
34	Solar powered parking ticket machines	6	Already started	£23
5 & 45	Switch Off! Campaign implemented in corporate buildings and schools	2, 4, 5	Already started by £8.5k needed to keep campaign running (cost for municipal campaigns only)	£59k (inc. savings from school's campaigns)
46	Roebuck House ventilation incorporated into the BMS	4	Already started	£483
Actions Requiring Investment				
2	Automatic PC shutdown software installed in schools	2, 4	£17.2k	£37.2k
3 & 53	Municipal and school building lighting control improvements	2, 4, 5	£78k	£22k
5	Staff training	1, 2, 4	£18k	£29.5k
6	Solar film fitted to southwest façade of Roebuck House	2, 4, 5	£5k	£3.7k
7, 8, 9, 10	Draught stripping corporate buildings	2, 4, 5	£11.5k	£2.5k
11	Auto flush toilets and percussion taps fitted to corporate buildings	2, 5	£25k	£9.8k
12	Cavity wall filling in school buildings	2, 5	£25k	£5.4k
13 & 41	Voltage optimisation installed in selected corporate buildings and all schools	5	£169.5k	£61.3k
14	Rationalise the hot water system in Torquay Town Hall	5	£5k	£1.1k
19	IT server virtualisation	4	Already started	£4.3k
20	Printer rationalisation in corporate buildings	4	Already started	£137.7k
22	Biomass boilers fitted in schools	6	£292.5k (part R & M)	£11.6k
23	Solar water heating fitted to schools	6	£140k	£9.4k
24	Wind turbines fitted to schools	6	£280k	£12.6k
25	Photovoltaic cells fitted to schools	6	£250k	£6.3k
27	Biomass boilers fitted to TQ Town Hall	6	£250k	£16.8k

46 & 50	Multi-storey car park BMS installation	4, 5	£40k	£12.3k
52	Occupancy sensors fitted to Roebuck toilets	2, 5	Already started	£70

Street Lighting

Ref.	Project Description	Purpose	Capital Expenditure	Annual Net Savings
No and Low Cost Actions				
31	Street lighting efficiency improvements through continuous maintenance programme	1, 2, 3, 4, 5, 6	R & M	£19.6k
30	Promenade lighting efficiency improvements and renewable energy installation	1, 2, 3, 4, 5, 6	Already started	£32.3k
Actions Requiring Investment				
4	Street lighting efficiency improvements project	1, 2, 3, 4, 5, 6	£100k	£4.1k (investment pays back through reduced maintenance time)

Business and Fleet Transport

Ref.	Project Description	Purpose	Capital Expenditure	Annual Net Savings
No and Low Cost Actions				
37, 38	5% biofuel use through the Renewable Transport Fuel Obligation	6	n/a	n/a
51	Incorporation of CO ₂ reduction targets into JVC contract	1, 2, 3, 4, 5	n/a	n/a
Actions Requiring Investment				
17	Business unit bus passes for business travel use	2, 4	£37.5k	£90k
16	Promotion of the use of tele-conferencing facilities	2, 4	£5k	£35k
15	Provide cycling infrastructure (showers, lockers etc)	2, 4, 6	£25k	£6.8k

Commuting Miles

Ref.	Project Description	Purpose	Capital Expenditure	Annual Net Savings
No and Low Cost Actions				
32	Implement staff travel plan (car park charging, subsidised public transport, cycle facilities)	1, 2, 3, 4, 5, 6	n/a	n/a
39	5% biofuel use through the Renewable Transport Fuel Obligation	6	n/a	n/a
Actions Requiring Investment				
36	Supporting and funding home working facilities as part of the accommodation review	1, 2, 4, 5	?	n/a

4.2 Implementation Plan Summary

To achieve a 25% reduction in CO₂ emissions by 2012/13 a sufficient number of projects to save 5363tCO₂ are required. Table 3 details the CO₂ savings that have already been realised from projects that have already begun and identifies the proposed implementation year for each of the shortlisted carbon reduction projects and the CO₂ savings expected from each one.

The projects detailed in Table 3, using conservative estimates, are forecast to save 6051tCO₂ by 2012/13; achieving a **carbon emissions reduction of 28.1%** over 2005/06 levels (Figure 9), 8.1% over the minimum target of 20%. These CO₂ emissions savings will not be statistically identifiable on utility and fuel bills until 2013/14 – a full year after their implementation.

Some potential projects, or known projects from which carbon savings are currently incalculable, are identified within Table 3 with question marks or italic font. Additional projects will emerge over the five year period as a result of the school buildings' and corporate buildings' condition surveys. For the purposes of predicting potential CO₂ savings from these surveys it has been predicted that projects to reduce current electricity and gas consumption from these buildings by 10% over 4 years will be identified.

	Already Started	2008/09 Year 1	2009/10 Year 2	2010/11 Year 3	2011/12 Year 4	2012/13 Year 5	
25% CO₂ reduction requirements (tonnes) (5363t CO₂ total)	0	1073	1073	1073	1073	1073	
Buildings	New lifts fitted to Lower Union Lane car park	1					
	Solar powered car park ticket machines	0.14					
	Care Home service provision alteration	184					
	Roebuck House extract fan connected to BMS	3					
	New post - Corporate Carbon Manager		0				
	Installation of smart metering in suitable buildings			384			
	Projects resulting from school condition surveys			110	110	110	110
	Projects resulting from corporate buildings' condition surveys			47	47	47	47
	Corporate Accommodation Review						756
	Automatic PC shutdown software installed in schools			229			
	Municipal and school building lighting control improvements		27	27	27	27	27
	Switch Off! Campaign - Municipal Buildings and Schools		424				
	Staff 'energy awareness' training in RADAR			212			
	Solar film fitted to southwest façade of Roebuck House		23				
	Draught stripping corporate buildings		23				
	Auto flush toilets & percussion taps fitted to corporate buildings		0.2	0.2	0.2	0.2	0.2
	Cavity wall filling in school buildings		49				
	Voltage optimisation installed in corporate buildings		105				
	Voltage optimisation installed in secondary schools			123			
	Voltage optimisation installed in primary schools				133		
	Voltage optimisation in St. Kildas and St. Edmonds Care Homes					16	
	Rationalise the hot water system in Torquay Town Hall		10				
	IT server virtualisation		26				
	Printer rationalisation in corporate buildings		59				
	One school biomass heating installation (two in year 5)			21	21	21	42
	Solar water heating fitted to schools			21	21	21	21
	Wind turbines fitted to schools			19	19	19	19
Photovoltaic cells fitted to schools			10	10	10	10	
Occupancy sensors fitted to Roebuck toilet lighting	0.4						
Timers fitted to corporate vending machines & water coolers	5						
Biomass boilers Torquay Town Hall						152	
Multi-storey Car Park BMS installation		76					
Lower Union Lane Car Park lighting improvements	7						
Street Lights	Street lighting improvements through maintenance programme	48	24	24	24	24	
	Street lighting efficiency improvements project (3 year cycle)		25			25	
	Promenade lighting improvements and renewable energy		57	63	54		
Business & Fleet	5% biofuel (Renewable Transport Fuel Obligation)				59		
	Contractual requirements of the Joint Venture Company			134	134	134	
	Business unit bus passes for business travel use		14	14	14	14	
	Promotion of the use of tele-conferencing facilities		26				
	Provide cycling infrastructure (showers, lockers etc)				5		
Commute Miles	Staff travel plan		514				
	Staff travel plan extension			?	?	?	
	5% biofuel (Renewable Transport Fuel Obligation)				195		
	Support homeworking				193		
	Extension of homeworking policy					?	
CO₂ reductions identified in project year (tonnes to 1 dp)	249	1481	1436	1065	467	1355	
Cumulative 25% CO₂ reduction shortfall (tonnes to 1 dp)	-249	-656	-1020	-1011	-405	-687	

Table 3: Implementation plan summary detailing CO₂ savings expected from each project in the blue cells. Total savings from identified projects = 6051tCO₂. This achieves an emissions reduction of 28.1%.

If the Corporate Accommodation Review fails to be implemented the remaining projects identified in Table 3 still achieve a carbon emissions reduction of 24% over 2005/06 levels by 2012/13. The 1%

shortfall will be filled from additional projects that will be identified by the Carbon Reduction Officer as currently unquantifiable projects are implemented, such as an extension of the staff travel plan, as new technologies appear on the market and existing technologies become more affordable. As an example, only 3 years ago voltage optimisation was not widely available on the UK market and yet it is now a tried and tested technology and will be saving Torbay Council over 370tCO₂ each year once installed.

It is expected that carbon management will be integrated into the emerging Joint Venture Company's (JVC) contractual agreement with Torbay Council and arrangements to include a SMART target have begun. If the JVC agrees the same carbon reduction target as Torbay Council, the JVC could save approximately 528tCO₂ from efficiency improvements to the Aspen Way Depot, Waste Transfer Station and the vehicle fleet alone. Projects that the JVC may wish to consider to reduce the CO₂ emissions from the vehicle fleet include:

- Biofuel replacement (sourced from sustainable supplies) for diesel
- Improve the efficiency of routes taken by waste vehicles and survey vehicles
- Individual driver eco-training and fuel consumption reporting

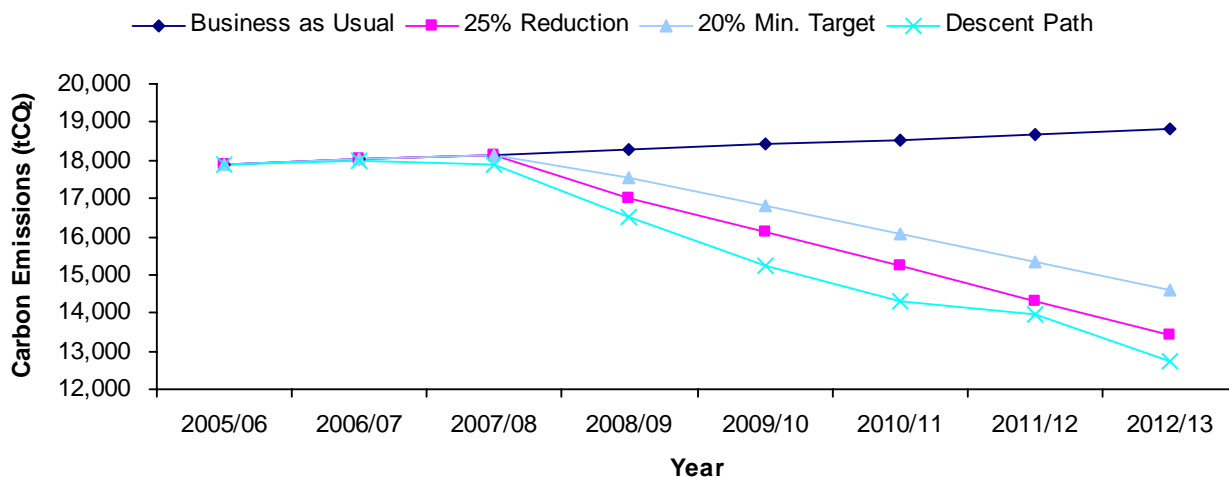


Figure 9: Performance of this plan in relation to the desired CO₂ reduction target.

The annual CO₂ emission targets displayed graphically in Figure 9 as '20% Min. Target' will be integrated into Torbay Council's Corporate Plan in line with Table 4.

Year	CO ₂ Emissions Target	CO ₂ Reduction Target
2008/09	17,546	4% below 2005/06
2009/10	16,815	8% below 2005/06
2010/11	16,084	12% below 2005/06
2011/12	15,353	16% below 2005/06
2012/13	14,622	20% below 2005/06

Table 4: CO₂ reduction targets to be integrated into Torbay Council's Corporate Plan

5 Implementation Plan Financing

5.1 Financial Risks and Issues

Funding will be sought from council resources, individual service budgets and external funding sources to raise the £2.2 million required to implement the projects identified in this plan from 2008 - 2012. This investment will return an estimated £2.5 million cost saving over the same period.

The price of energy in the UK doubled between 2000 and 2007 and liquid fuel costs are also on the rise. This, combined with rising levels of consumption, is forecast to increase Torbay Council's spend on energy and fuel by 41.7% over 2005/06 levels by 2012/13.

Investing in the carbon reduction projects detailed in this plan will significantly reduce the impact of this increase on Torbay Council's budget. Additionally, the Carbon Management Programme will put in place a rolling, flexible programme that can react to the inevitable steeper price increases beyond 2012/13 that are predicted to occur in response to dwindling fossil fuel resources.

Funding will need to be identified not only to start the programme and initial projects, but also to support the programme indefinitely. Whilst some of the carbon savings will be achieved through R & M budgets many of the projects are 'invest to save' and return their investment quickly. Other projects that utilise new technology, such as renewable energy installations, will require large capital investments to install.

5.2 Internal Corporate and School Funding

The following Year 1 (2008/09) projects have either already had their budgets secured or will be implemented through continuing R&M budgets:

- Street lighting improvements
- Promenade lighting improvements
- Auto flush toilets and percussion tap installations
- School and corporate building condition surveys

The projects detailed below will require allocations from existing budgets and relevant discussion with budget holders but have rapid payback periods. Currently the funding streams for these projects are unconfirmed but delaying their implementation until year 2 of the Carbon Management Programme will not affect the 5 year carbon reduction target.

- Incorporate staff 'energy awareness training' into corporate training programme
- Provide business unit bus passes for business travel use
- Promote the use of tele-conferencing facilities
- Corporate Switch Off! Campaign (this project has started but requires additional funding)

Specific details of all of the above projects can be found in Appendix A.

The school condition surveys are being funded through a budget commitment from Children's Services. Carbon reduction projects identified as a result of the surveys will also require funding. There is scope for individual school budgets to fund 'invest to save' projects that have small capital expenditure and rapid rates of return. Those projects requiring large expenditure will require additional funding which has yet to be approved. This applies equally to the projects that emerge from the corporate buildings' condition surveys.

The required project funding for year 2, and subsequent years, needs to be costed in detail and considered as part of the relevant year's budget cycle.

5.3 External Funding

Torbay Council is considering applying for match funding through Salix Finance – an independent company funded by the Carbon Trust to work with the public sector to reduce carbon emissions through investment in energy efficiency measures and technologies. The application would seek to secure a grant of £141,000 which would have to be match funded by the council. The council's contribution has yet to be identified and approved.

Twelve projects are eligible to be implemented under this match-funding arrangement. The eligibility of these 12 projects is based upon their rapid payback (less than 7.5 years max.), the 'persistence factor' of the particular technology (i.e. for how long will the technology be in-situ) and the scale of carbon savings available from implementation. These projects are:

- Auto PC shutdown software installed in schools
- Cavity wall insulation measures in schools x 8
- Voltage optimisation in municipal buildings
- Voltage optimisation in secondary schools
- Voltage optimisation in primary schools
- Lighting control measures in schools and municipal buildings
- Solar film applied to the south west façade of Roebuck House
- Draught proofing Brixham Town Hall
- Draught proofing Torquay Town Hall
- Draught proofing Roebuck House
- Rationalise the hot water system in Torquay Town Hall
- Install BMS to manage lighting in multi-storey car parks

Additionally, The Department for Business Enterprise and Regulatory Reform's Low Carbon Buildings Programme offers part-grants towards renewable energy technologies. The grant proportion ranges from 30 – 50% of the total project cost depending upon which technology is to be installed. Torbay Council is eligible to apply for these grants and it has been assumed that the grant will be awarded to each of the school renewable energy projects identified in this implementation plan for years 2 – 5 for the purposes of costing the required capital investment.

There are other sources of funding that will be pursued over the coming months, including contacting energy suppliers for financial assistance in return for local publicity. There is no guarantee, however, that Torbay Council will be able to secure this funding.

5.4 Summary of Predicted Costs and Savings

The immediate financial costs and benefits accruing from implementing the projects within this plan are shown in Table 5 and Figure 10.

Total Estimated Capital Expenditure 2008 - 2012					£2,222,773
	08/09	09/10	10/11	11/12	12/13
Annual expenditure	£278,660	£437,313	£485,100	£453,600	£568,100
Cumulative Estimated Savings 2008 - 2012					£2,499,329
	08/09	09/10	10/11	11/12	12/13
Cumulative annual savings	£204,557	£433,576	£530,628	£579,441	£751,127
Total Carbon Reductions 2008 – 2012					5803tCO₂
	08/09	09/10	10/11	11/12	12/13
Annual CO ₂ Reduction	1481t	1436t	1065t	467t	1355t
Carbon Footprint	16682tCO ₂	15373tCO ₂	14437tCO ₂	14101tCO ₂	12879tCO ₂

Table 5: Summary of predicted costs and savings

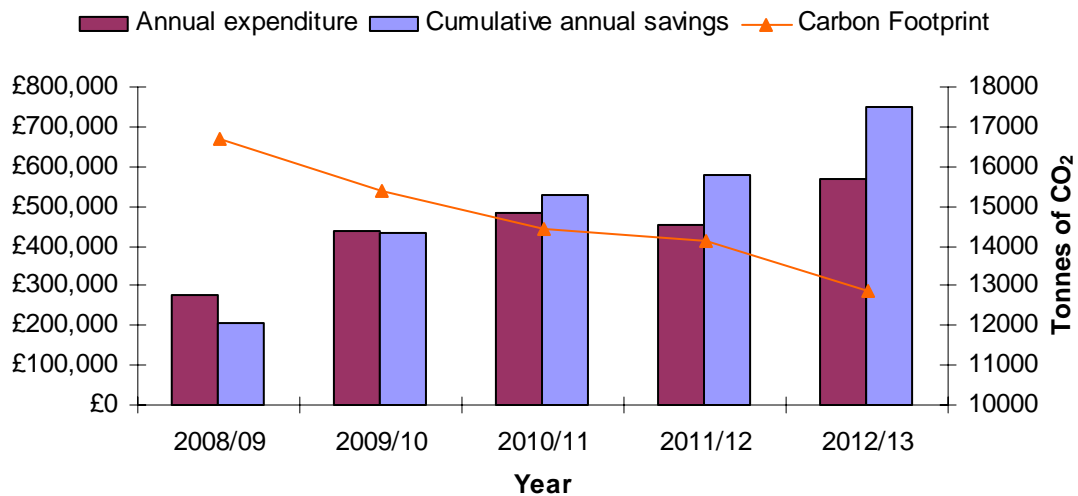


Figure 10: Annual expenditure, cumulative annual savings and the annual carbon footprint within the reduction plan.

6 Stakeholder Management and Communications

6.1 Stakeholder Management

In order to achieve effective communications throughout the lifetime of the project it is fundamental to actively engage with key stakeholders. This is required to not only secure approval for projects but to embed carbon management into the culture of Torbay Council. Changing the culture of Torbay Council will require all Torbay Council staff to be engaged through a Switch Off! campaign and regular programme updates.

The new post of Carbon Reduction Officer will become responsible for running the Carbon Management Programme and for ensuring all stakeholders identified in Table 5 are communicated with according to the communication plan. Until the new post of Carbon Reduction Officer is filled, the officers responsible for the preparation of this Implementation Plan, Andrew Bourne (Energy Manager) and Doug Eltham (Environmental Policy & Sustainability Officer), will jointly perform this role.

6.2 Communications Plan

The objective of communication with all stakeholders is to keep all parties informed of progress and to receive feedback on particular projects. The implementation of the projects identified within this plan and the identification of the additional projects required to meet the aspirational target will be significantly easier if all stakeholders are effectively engaged and understand the issues at stake.

Table 6 details the key stakeholders and the methods used to engage with them to effectively run the programme.

Stakeholder Group	Nominated Individuals	Engagement Method
Elected Members	All interested Members Overview & Scrutiny	Annual Report Feedback from the quarterly meeting with the Corporate Management Board by Member for Planning and Transport
Senior Management Team	Elizabeth Raikes Chief Executive	Annual Report
	Mike Yeo Strategic Director for Community Services	Feedback from the quarterly meeting with the Corporate Management Board by Strategic Director for Community Services
	Margaret Dennison Strategic Director for Children's Services	
	Paul Lucas Strategic Director for Performance Improvement	
	Fiona Tolley Director of Public Health – Torbay Care Trust	
	Vacancy Torbay Development Agency Chief Executive	
Carbon Management Board	Mike Yeo Strategic Director for Community Services	Feedback of Carbon Management Core Team's progress at a quarterly meeting by the Carbon Reduction Officer
	Cllr. Chris Lewis Member for Planning and Transport	
	New Post	

Stakeholder Group	Nominated Individuals	Engagement Method
	Carbon Reduction Officer (Project Lead)	
Project Team (Additional officers invited as appropriate)	New Post Carbon Reduction Officer (Project Lead) Adrian O'Rourke Corporate Finance Manager Dave Simmons Street Lighting Engineer Andrew Bourne Energy Manager Doug Eltham Environmental Policy & Sustainability Officer Chris Varker Building Management Systems Engineer Bob Clark Assistant Director – IT Joint Venture Company Representative Nell Cruse Senior Transport Planner Stuart Left Facilities Manager Robert Love Corporate Procurement Manager Tony Jordan Assistant Director – Schools Organisation and Policy Carol Arthur Recycling Officer Peter Surcombe Communications Officer Representative from each Special, Primary and Secondary School	Quarterly meeting in preparation for the Carbon Management Board
Service Heads	All Assistant Directors All Service Managers	Cascade through line management. Newsletter
Torbay Council Staff	All Council staff including those in schools	Cascade through line management. Newsletter Notice Boards Switch Off! Campaign

Table 6: Stakeholder engagement methods

7 SIP Governance, Ownership and Management

7.1 Main Roles and Responsibilities

Carbon Management will become a continual practice within Torbay Council to mitigate the impact of escalating utility bills and to control carbon emissions from the future growth in energy consumption.

During the preparation of this implementation plan it has become evident that an additional post of Carbon Reduction Officer is required to manage and drive the programme forward. Until the new post of Carbon Reduction Officer is filled, the officers responsible for the preparation of this Implementation Plan, Andrew Bourne (Energy Manager) and Doug Eltham (Environmental Policy & Sustainability Officer), will jointly perform this role but do not have the capacity to run the carbon management programme indefinitely.

The Carbon Reduction Officer and the implementation of the Programme will be aided at a strategic level by the Management and Member sponsors, the Strategic Director for Community Services and the Member for Planning and Transport respectively. Those staff members detailed in Table 7 will be responsible for implementing projects across the listed activities.

The projects identified for each implementation year will be incorporated into the Annual Business Plans of the Business Units responsible for implementation after the Implementation Plan has received Cabinet approval.

Activity	Responsible Person
Project Sponsors <ul style="list-style-type: none"> - Help remove barriers - Provide support - Report to SMT and Members - Members of the Carbon Management Board that meets quarterly 	Mike Yeo Strategic Director for Community Services Cllr. Chris Lewis Member for Planning and Transport
Carbon Management Implementation Plan <ul style="list-style-type: none"> - Set objectives - Manage implementation plan - Monitor and review progress - Manage risks and issues - Manage stakeholders and communication - Report quarterly to the Carbon Management Board 	New Post Carbon Reduction Officer (Project Lead)
Financing of Carbon Management Activities	New Post Carbon Reduction Officer Adrian O'Rourke Corporate Finance Manager Individual Service Managers
Carbon Management in Buildings and Schools	Andrew Bourne Energy Manager New Post Carbon Reduction Officer

Activity	Responsible Person
	Stuart Left Facilities Manager
Carbon Management in Commuting Miles	Nell Cruse Senior Transport Planner Mark Wilson Sustainable Transport Officer
Carbon Management in Fleet	Joint Venture Company
Carbon Management in Business Miles	Service Managers
Carbon Management in Street Lighting	Dave Simmons Street Lighting Engineer
Communications (internal & external)	Peter Surcombe Communications Officer
Staff Awareness	Doug Eltham & Anne Roberts Environmental Policy and Sustainability Officers

Table 7: Carbon management implementation plan: responsibilities

7.2 Risks and Issues Management

A risks/issues log will be maintained by the Carbon Reduction Officer and Project Team. Issues and risks will be added on an ad-hoc basis as they occur. Some issues and risks will be resolved by the Project Team but some may need to be taken higher within the management structure. The content of the log will be reported to the Project Management Board on a quarterly basis.

General risks have been identified for the successful deployment of this Implementation Plan. Specific carbon saving project risks will be identified and managed by individual project managers and reported to the Project Team on a quarterly basis to be referred to the Project Management Board if necessary.

Significant risks that could impair the future success of the Strategy, if approved for implementation, include:

- Having approved the SIP and publicised the targets for carbon reductions, insufficient resources are allocated to deliver all of the projected savings and the programme could, therefore, slip. Taking this risk will enable the task of reducing carbon emissions from the authority's operations and the demonstration of community leadership to begin.

Control: Progress reports will be submitted to Carbon Management Board on a quarterly basis to maintain Member and Director support for the project.

- The expected carbon emissions from particular individual projects within the SIP are not realised due to the data used to estimate savings resulting in publicised targets being missed. This risk is acceptable as the Carbon Management Programme has identified enough carbon reducing projects to achieve 8% over target. Furthermore, additional projects and new technologies to meet any shortfall in expected carbon reductions can be found over the next 5 years.

Control: Case studies of various technologies, approved by the Carbon Trust, have been used to estimate expected carbon savings with assistance from energy consultants.

- The JVC contractual arrangements fail to encourage the carbon management of the vehicle fleet or JVC operated buildings and managed staff. This risk is acceptable as the Carbon Management Programme's target of a minimum 20% reduction in CO₂ emissions by 2012/13 can be met without the JVC implementing carbon reduction measures.

Control: Dialogue has begun between Torbay Council and JVC bidders regarding carbon management

- The Boundary Commission's review of Devon's local government structure causes uncertainty over the future of the Corporate Accommodation Review project, which is expected to achieve significant carbon savings. This risk is acceptable as if the Corporate Accommodation Review and JVC negotiations fail to produce the expected carbon savings, a 19% reduction in carbon emissions is still achieved by 2012/13. The 1% shortfall from the 20% carbon reduction target can be made up from additional projects and new technologies that will emerge over the next 5 years.

Control: Further projects and new technologies are likely to appear on the market to meet any shortfall in the carbon reduction target over the next 5 years

- The Council's reshaping agenda removes members of the project team or project management board resulting in a loss of project drive and available resources.

Control: Chief Executive to advise on interim measures to replace lost resources while the new council structure is being implemented.

7.3 Benefits Management

Where possible, quantifiable benefits arising from carbon reduction projects implemented as part of the Carbon Management Programme will be measured from utilities and fuel consumption data on a quarterly basis in comparison to previous years' data. The benefits measured in this way may be clouded by the business as usual increase in consumption and energy costs.

Therefore, the estimated cost and carbon savings of each project (displayed in Appendix A) successfully implemented within a project year will also be compiled annually and reported to the Project Management Board, Senior Management Team, interested Members and Overview and Scrutiny.

7.4 Reporting and Evaluation

Carbon emissions data will be most effectively monitored one year behind the project implementation year. This is to allow a complete year between implementing a project and re-calculating the carbon footprint of the council. For example, the Implementation Plan is scheduled to start in April 2008, but some of the Year 1 projects will not be implemented until closer to March 2009. To re-calculate the council's carbon footprint in April 2009 based upon fuel and utility consumption, so soon after implementing particular projects, will not demonstrate the full carbon savings implemented in that year.

Therefore, the first carbon footprint re-calculation to be used for performance monitoring purposes will be produced in April 2010 and compared to the 08/09 carbon emissions target. The carbon footprint will then be calculated annually thereafter and progress reported to the Project Management Board, Senior Management Team, interested Members and Overview and Scrutiny by the Carbon Reduction Officer.



working
with



The Implementation Plan will be reviewed and updated annually with additional projects for the initial five year period to meet the 20% minimum reduction target by 2012 target and projects to be implemented over the subsequent five year period to 2017/18.

Before the end of 2012/13 a new carbon reduction target will be agreed with consideration of the changing international and domestic climate change agenda and achieved performance in Torbay Council over the preceding five years.

8 Appendix A: Individual Actions Requiring Funding Year 1 - 08/09

Project 1: Building Lighting Controls

Purpose	Policy Making	Measuring/Monitoring	Improving Efficiency
	Awareness Raising	Reducing Demand	Renewables

Description and notes	Install rundown timers, IR presence sensors and solar sensors in areas such as corridors, stair wells and toilets to avoid lights being left on when not required.	
Timing	FY 08/09 onwards	
Quantified costs and benefits	Capital Investment (£)	£15600/yr
	Revenue Costs (£pa)	Staff costs and minor electrical works
	Financial savings (£pa)	£6000/yr
	Payback period	2.6 yr
	Internal funding	£8400/yr
	External funding	£8400 (Salix fund)
	Emissions reduction	27 tonnes of CO ₂ per year
	Cost per tonne of CO₂	£581
Timing of funding decisions	Salix application to be made once confirmation from Corporate Finance has been received during Spring 2008	
Ownership and accountability	<ul style="list-style-type: none"> Carbon Reduction Officer – to be appointed (see Project 9) Asset Manager – vacant post 	
Risks & Issues	Key Issues	
	Obtaining funding for year 1 Introducing future funding requirement into standing orders	
	Principal Risks	
	Objection by users due to perceived Health & Safety risks	
	Means of Mitigation	
	Staff awareness and training by Energy Envoys and Trade Unions	
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving	
	Consumption targets measured against historic data using M&T package and AMR	
	Key Milestones	
	Survey of buildings Schedule of installations	
Sources of information and guidance	CIBSE Lighting Guide and Carbon Trust *****doc***** www.cibse.org/lighting www.Carbontrust.co.uk	

Project 2: Street Lighting Improvements and Support to Street Lighting Maintenance Budget

Purpose	Policy Making	Measuring/Monitoring	Improving Efficiency
	Awareness Raising	Reducing Demand	Renewables
Description and notes	Support to street lighting maintenance budget to hasten the replacement of lanterns with low energy types and improve maintenance regimes through external project. Establish a Steering Group of officers and members to produce a policy for 'Sustainability in Street Lighting' in conjunction with the Torbay Corporate Energy Strategy for extending the use of renewables for street lighting, low energy luminaries and developing control and dimming systems.		
Timing	FY 08/09 onwards		
Quantified costs and benefits	Capital Investment (£)	£100k over 3 years (£50k year 1)	
	Revenue Costs (£pa)	Staff costs	
	Financial savings (£pa)	£8000/yr (external project & routine maintenance energy savings only)	
	Payback period	5 yr (due to additional maintenance cost savings through pole replacement)	
	Internal funding	£100k over 3 years	
	External funding	Nil	
	Emissions reduction	49 tonnes of CO ₂ per year	
Cost per tonne of CO₂	£4052		
Timing of funding decisions	Funding requested Nov 07 via Mike Yeo (Director/LACMP Sponsor). Funding arrangements for future years to be included in standing orders		
Ownership and accountability	<ul style="list-style-type: none"> Dave Simmons – Street Lighting Engineer 		
Risks & Issues	Key Issues Funding allocation Agreeing revised 'Sustainable Street Lighting Policy'		
	Principal Risks Funding allocation		
	Means of Mitigation Ensure Members are aware of the need to reduce energy consumption by street lighting due to its prominent proportion of Torbay Council's carbon footprint		
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving Review of annual street lighting electricity consumptions		
	Key Milestones Establish steering group and adopt revised 'Sustainable Street Lighting Policy'		
Sources of information and guidance	Institute of Lighting Engineers Interim Advice Note LB1 (2006) – 'Street Lighting – Invest to Save'		

Project 3: Solar Film Application to Roebuck House Windows

Purpose	Policy Making	Measuring/Monitoring	Improving Efficiency
	Awareness Raising	Reducing Demand	Renewables

Description and notes	Installing solar reflective film will have the dual result of reducing radiant heat losses during the heating season and reducing solar gain in the summer, thus cutting gas consumption for heating in winter and electricity consumption for cooling in the summer.		
Timing	FY 08/09		
Quantified costs and benefits	Capital Investment (£)	£5k	
	Revenue Costs (£pa)	Staff time and BMS engineering	
	Financial savings (£pa)	£3683/yr	
	Payback period	1.4 yr	
	Internal funding	£2.5k	
	External funding	£2.5k (Salix funding)	
	Emissions reduction	23 tonnes of CO ₂ per year	
Cost per tonne of CO₂	£221		
Timing of funding decisions	Salix application to be made once confirmation from Corporate Finance has been received during Spring 2008		
Ownership and accountability	<ul style="list-style-type: none"> Carbon Reduction Officer – to be appointed (see Action 9) Asset Manager – vacant post 		
Risks & Issues	Key Issues Obtaining funding		
	Principal Risks Objections by users – perceived loss of natural light Planning permission BMS operations transferred to JVC		
	Means of Mitigation Staff awareness and training by Energy Envoys and trade unions BMS operations transferred to Property and Procurement		
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving Utility consumption measured against historic consumption		
	Key Milestones Survey of building and secure competitive quotation for work Planning requirements finalised.		
Sources of information and guidance	Purlfrost Window Film - http://www.purlfrost.com/solar_film.php		

Project 4: Draught Proofing Programme

Purpose	Policy Making		Measuring/Monitoring	Improving Efficiency	
	Awareness Raising		Reducing Demand	Renewables	

Description and notes	Unwanted air changes through badly fitting doors and windows are the single biggest loss of heating energy. Much of the council's office accommodation has single glazed which will benefit from draught proofing works. This project targets the Town Halls in Paignton, Torquay and Brixham and Roebuck House.	
Timing	FY 08/09	
Quantified costs and benefits	Capital Investment (£)	£10k
	Revenue Costs (£pa)	Staff time
	Financial savings (£pa)	£2500/yr
	Payback period	4 yr
	Internal funding	£5k
	External funding	£5k (Salix finance)
	Emissions reduction	23 tonnes of CO ₂ per year
Cost per tonne of CO₂	£200	
Timing of funding decisions	Salix application to be made once confirmation from Corporate Finance has been received during Spring 2008	
Ownership and accountability	<ul style="list-style-type: none"> • Carbon Reduction Officer – to be appointed (see Action 9) • Asset Manager – vacant post 	
Risks & Issues	Key Issues	
	Obtaining funding Work not completed due to accommodation review	
	Principal Risks	
	Obtaining funding	
	Means of Mitigation	
	Determine details of new lease	
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving	
	Utility consumption measured against historic consumption	
	Key Milestones	
	Survey of building and secure competitive quotation for work	
Sources of information and guidance	Chartered Institute of Building Service Engineers Carbon Trust publication GPG312	

Project 5: Dual Flush Toilets and Percussion Taps

Purpose	Policy Making		Measuring/Monitoring	Improving Efficiency	
	Awareness Raising		Reducing Demand	Renewables	

Description and notes	Saving water has big cost savings but less noticeable carbon savings. However, the council's water consumption is rising and water costs are increasing at rates higher than inflation. Dual flush toilets are already working in some council facilities and an extension of this programme together with the installation of percussion taps will have immediate results.				
Timing	FY 08/09 onwards				
Quantified costs and benefits	Capital Investment (£)	£5k per year			
	Revenue Costs (£pa)	Staff time			
	Financial savings (£pa)	£1960/yr			
	Payback period	2.6 yr			
	Internal funding	£5k			
	External funding	Nil			
	Emissions reduction	0.2 tonnes of CO ₂ per year			
	Cost per tonne of CO₂	£25510			
Timing of funding decisions	To be funded through R&M budgets.				
Ownership and accountability	<ul style="list-style-type: none"> • Carbon Reduction Officer – to be appointed (see Action 9) • Asset Manager – vacant post 				
Risks & Issues	Key Issues				
	Obtaining funding Work not completed due to accommodation review				
	Principal Risks				
	Objections by users – perceived H&S issues				
	Means of Mitigation				
	Staff awareness and training by Energy Envoys and trade unions				
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving				
	Consumption measured against historic consumption				
	Key Milestones				
	Survey of building and secure competitive quotation for work				
Sources of information and guidance	Carbon Trust publication GPG312				

Project 7: Switch Off! Campaign

Purpose	Policy Making	Measuring/Monitoring	Improving Efficiency
	Awareness Raising	Reducing Demand	Renewables

Description and notes	Continually raising awareness is required to ensure staff effectively implement energy saving measures. Competitions, publicity, and keeping staff informed is pivotal to a committed low carbon staff		
Timing	Already started but with limited budget		
Quantified costs and benefits	Capital Investment (£)	£8.5k per year	
	Revenue Costs (£pa)	Staff time	
	Financial savings (£pa)	£200k can be realised once the organisation is 'carbon aware' in conjunction with staff training and integration of energy efficiency into the RADAR process in Year 2 of the LACMP.	
	Payback period	Less than a year. Difficult to quantify as financial savings will increase as staff awareness increases	
	Internal funding	£4k	
	External funding	Nil	
	Emissions reduction	426 tonnes of CO ₂ per year	
	Cost per tonne of CO₂	£10	
Timing of funding decisions	Funding requested Nov 07 via Mike Yeo (Director/LACMP Sponsor). Project has already started with limited funding.		
Ownership and accountability	<ul style="list-style-type: none"> Carbon Reduction Officer – to be appointed (see Action 9) HR Assistant Director – Clare Tanner 		
Risks & Issues	Key Issues		
	Obtaining funding Capacity in the Communications Team to help with the project		
	Principal Risks		
Performance / success measure	Lack of staff time and resources Lack of leadership and 'example setting' from management		
	Means of Mitigation		
	Ensure management receive energy efficiency training and understand the reasons for undertaking the campaign		
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving		
	Utility, fuel and business miles consumption measured against historic consumption		
Sources of information and guidance	Key Milestones		
	Second set of Energy Envoys trained		
Sources of information and guidance	Carbon Trust publication CTG001		

Project 8: Cavity Wall Insulation

Purpose	Policy Making		Measuring/Monitoring	Improving Efficiency	
	Awareness Raising		Reducing Demand	Renewables	

Description and notes	Insulating cavity walls reduces heat loss through the walls by 50%. This work is generally low tech and low cost. This project will complete 8 installations	
Timing	FY 08/09	
Quantified costs and benefits	Capital Investment (£)	£25k over 3 years
	Revenue Costs (£pa)	Staff time
	Financial savings (£pa)	£5400
	Payback period	4.6 yr
	Internal funding	£12.5k
	External funding	£12.5k (Salix Finance)
	Emissions reduction	49 tonnes of CO ₂ per year
Cost per tonne of CO₂	£512	
Timing of funding decisions	Salix application to be made once confirmation from Corporate Finance has been received during Spring 2008	
Ownership and accountability	<ul style="list-style-type: none"> • Carbon Reduction Officer – to be appointed (see Action 9) • Asset Manager – vacant post 	
Risks & Issues	Key Issues Obtaining funding	
	Principal Risks Unable to implement works	
	Means of Mitigation Building condition surveys will highlight areas opportune for cavity fill	
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving Utility consumption measured against historic consumption	
	Key Milestones Survey buildings Obtain competitive quotations	
Sources of information and guidance	Carbon Trust publication GPG312 Chartered Institute of Building Services Engineers	

Project 9: Carbon Reduction Officer

Purpose	Policy Making	Measuring/Monitoring	Improving Efficiency
	Awareness Raising	Reducing Demand	Renewables

Description and notes	A new post of Carbon Reduction Officer is required to deliver the LACMP and associated works across the council, including schools. This post will manage the identification of works, specify and implement works and liaise with all council directorates and departments to secure energy efficiency and carbon reductions.	
Timing	FY 08/09 and continuing	
Quantified costs and benefits	Capital Investment (£)	Nil
	Revenue Costs (£pa)	£40k
	Financial savings (£pa)	Total savings identified in this implementation plan and future savings yet to be identified
	Payback period	Less than 1 year
	Internal funding	£40k
	External funding	Nil
	Emissions reduction	LACMP Target
	Cost per tonne of CO₂	n/a
Timing of funding decisions	Discussions progressing between Corporate Finance, Property and Procurement and Community Services during Spring 2008.	
Ownership and accountability	<ul style="list-style-type: none"> Mike Yeo, Director for Community Services and LACMP sponsor 	
Risks & Issues	Key Issues Obtaining funding	
	Principal Risks Appointment not established and LACMP unable to be implemented effectively	
	Means of Mitigation Raise issue with LACMP Project Management Board	
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving Appointment established and fulfilled	
	Key Milestones Post established Advertised Interviewed Appointed	
Sources of information and guidance	Torbay Council LACMP Management Board Steve Parrock AD Property and Procurement Tony Jordan AD Children's Services – Policy and Planning	

Project 10: Voltage Optimisation in Municipal Buildings

Purpose	Policy Making	Measuring/Monitoring	Improving Efficiency	
	Awareness Raising	Reducing Demand	Renewables	

Description and notes	Application of voltage regulation equipment reduces unnecessary over powering of equipment and offers 12% - 20% savings of electrical energy. This project will install equipment in Torquay Town Hall, Roebuck House, Union House, Electric House and Brixham Town Hall		
Timing	FY 08/09		
Quantified costs and benefits	Capital Investment (£)	£45k	
	Revenue Costs (£pa)	Staff costs and minor works	
	Financial savings (£pa)	£10k per year	
	Payback period	4.5 yr	
	Internal funding	£22.25k	
	External funding	£22.25k (Salix Finance)	
	Emissions reduction	61tCO ₂ per year	
Cost per tonne of CO₂	£739		
Timing of funding decisions	Salix application to be made once confirmation from Corporate Finance has been received during Spring 2008		
Ownership and accountability	<ul style="list-style-type: none"> • Carbon Reduction Officer – to be appointed (See Project 9) • Asset Manager – vacant post • Corporate Energy Manager – Andrew Bourne 		
Risks & Issues	Key Issues		
	Obtaining funding Accommodation review may preclude action in some buildings		
	Principal Risks		
	Disruption to services (such as IT) due to electrical shutdown of buildings		
	Means of Mitigation		
	Plan shut down of buildings well in advance in liaison with IT and facilities management		
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving		
	Utility consumption in comparison to historic consumption		
	Key Milestones		
	Consumption analysis completed (started December 2007) Plan installations and building shut downs with users		
Sources of information and guidance	PowerPerfector www.powerperfector.com		

Project 11: Staff Bus Passes for Business Travel

Purpose	Policy Making	Measuring/Monitoring	Improving Efficiency
	Awareness Raising	Reducing Demand	Renewables

Description and notes	Provide annual Devon-wide bus passes for staff to use when travelling within the county on business. It is assumed that each bus pass would offset one journey equivalent to Torquay – Brixham return by private car for 4 days of a working week. This could be significantly higher if management support is effective. The requested finance would provide 10 passes for a year.		
Timing	FY 08/09		
Quantified costs and benefits	Capital Investment (£)	£7.5k	
	Revenue Costs (£pa)	£7.5k and staff costs for training	
	Financial savings (£pa)	£18k per year	
	Payback period	0.4 yr	
	Internal funding	£7.5k (potentially from introduction of staff car parking charges in the staff travel plan)	
	External funding	Nil	
	Emissions reduction	14 tonnes per year	
Cost per tonne of CO₂	£548		
Timing of funding decisions	Funding will be obtained from the implementation of the staff travel plan during summer 2008.		
Ownership and accountability	<ul style="list-style-type: none"> • Carbon Reduction Officer – to be appointed (See Project 9) • Nell Cruse – Senior Transport Planner 		
Risks & Issues	Key Issues		
	Staff Travel Plan may not receive the required support for implementation		
	Principal Risks		
	Opposition from established staff and managers to changes to conditions of service		
	Means of Mitigation		
	Early consultation with Operation Mercury and trade union representatives		
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving		
	Journeys undertaken with each pass will be recorded by admin teams responsible for the bus pass and data collated quarterly		
	Key Milestones		
	Secure funding		
	Purchase passes		
	Education of staff regarding bus routes in Torbay		
Sources of information and guidance	Torbay Council staff travel plan		

Project 12: Promotion of Telephone Conferencing

Purpose	Policy Making	Measuring/Monitoring	Improving Efficiency
	Awareness Raising	Reducing Demand	Renewables

Description and notes	The promotion of the audio conferencing equipment for meetings would reduce the need for staff to travel both within and outside the Bay. With management support the system could reduce business miles by 5%.		
Timing	FY 08/09		
Quantified costs and benefits	Capital Investment (£)	£20k	
	Revenue Costs (£pa)	staff time for training	
	Financial savings (£pa)	£34k per year	
	Payback period	0.6 yr	
	Internal funding	£20k (potentially from introduction of staff car parking charges in the staff travel plan)	
	External funding	Nil	
	Emissions reduction	26 tonnes per year	
Cost per tonne of CO₂	£774		
Timing of funding decisions	Funding to be derived from the implementation of the staff travel plan or Human Resources		
Ownership and accountability	<ul style="list-style-type: none"> • Carbon Reduction Officer – to be appointed (See Project 9) • IT Assistant Director – Bob Clarke 		
Risks & Issues	Key Issues		
	Obtaining funding		
	Principal Risks		
	Opposition from established staff and managers to changes to ways of working		
	Means of Mitigation		
	Demonstrate to Senior Managers' Forum the benefits of teleconferencing		
	Early consultation with Operation Mercury representatives		
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving		
	Staff survey each year.		
	Key Milestones		
	Secure funding		
	Train staff on its use and encourage managers to use the technology		
Sources of information and guidance			

Project 13: Rationalise Hot Water System in Torquay Town Hall

Purpose	Policy Making	Measuring/Monitoring	Improving Efficiency	
	Awareness Raising	Reducing Demand	Renewables	

Description and notes	The hot water system in the town hall is grossly oversized. Short term measures to reduce running costs have been implemented but the existing equipment requires replacing and capacity reducing to suit present requirements		
Timing	Metering started November 2007 Implementation of engineering FY 2008		
Quantified costs and benefits	Capital Investment (£)	£4k	
	Revenue Costs (£pa)	Nil	
	Financial savings (£pa)	£840 per year	
	Payback period	4.8 yr	
	Internal funding	£2k	
	External funding	£2k (Salix Finance)	
	Emissions reduction	8 tonnes per year	
	Cost per tonne of CO₂	£658	
Timing of funding decisions	Funding requested Nov 07 via Mike Yeo (Director/LACMP Sponsor)		
Ownership and accountability	Salix application to be made once confirmation from Corporate Finance has been received during Spring 2008		
Risks & Issues	Key Issues Obtaining funding		
	Principal Risks Accommodation review may cause the HWS to be replaced in the near future		
	Means of Mitigation Prepare detailed project plan once metering is complete and compare to accommodation review time scales.		
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving Utility consumption measured against historic trends		
	Key Milestones Determine an accurate current utility consumption Agree future capacity requirements in light of accommodation review Implement works if necessary		
Sources of information and guidance	Chartered Institute of Building Service Engineers		

Project 14: Car Park BMS Installation

Purpose	Policy Making	Measuring/Monitoring	Improving Efficiency
	Awareness Raising	Reducing Demand	Renewables

Description and notes	Installing building management systems into the multi storey car parks that currently do not have these systems will allow the lighting to be remotely controlled		
Timing	FY 08/09		
Quantified costs and benefits	Capital Investment (£)	£40k	
	Revenue Costs (£pa)	n/a	
	Financial savings (£pa)	£12.5k	
	Payback period	3.2yr	
	Internal funding	£20k	
	External funding	£20k (Salix Finance)	
	Emissions reduction	76 tonnes per year	
	Cost per tonne of CO₂	£528	
Timing of funding decisions	Salix application to be made once confirmation from Corporate Finance has been received during Spring 2008		
Ownership and accountability	<ul style="list-style-type: none"> Carbon Reduction Officer – to be appointed (See Project 9) Service Manager Town Services – Steve Hurley 		
Risks & Issues	Key Issues		
	Not obtaining Salix Funding meaning that the BMSs have to be implemented through R&M funding		
	Principal Risks		
	Funding is not obtained.		
	Means of Mitigation		
	Early communication with corporate finance regarding match funding		
Performance / success measure	Monitoring required to establish emissions reduction and energy/cost saving		
	Utility consumption in previous years will be used as the carbon emission saving		
	Key Milestones		
	Secure funding		
	Implement works		
Sources of information and guidance			

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