working with

Bracknell Forest Council
Carbon Management Programme

Carbon Management Plan (CMP)

Date: ***03/04/09***

Version number: ***Draft 1.4***

Owner: ***Colin Griffin***

Approval route: Corporate management team to council for adoption by June 2009

Approval status: Approved by council June 2009

Contents

Foreword from our project sponsor and political sponsor

In February 2007, Bracknell Forest Council made a commitment to tackle climate change at a local level by signing the Nottingham Declaration on Climate Change. An outcome of that commitment was the publication of Bracknell Forest Council's first Climate Change Action Plan in October 2008. This included an early action to participate in the Carbon Trust's Local Authority Carbon Management Programme to provide more focus on reducing carbon dioxide emissions from our own operations.

The council applied to the Carbon Trust early in 2008 and was selected to participate in the LA Carbon Management Programme, commencing May 2008. Although the programme has been quite demanding, it provided the necessary structure and support for the successful development and implementation of the council's first Carbon Management Plan. We are grateful to the Carbon Trust, and their consultants, for their support.

This Carbon Management Plan sets a challenging target of reducing Bracknell Forest Council's carbon dioxide emissions from its own operations by 25% by 2012 against our 2007 baseline. This requires significant investment in energy efficient and low carbon technology and changes to the way we manage carbon throughout the organisation.

We are pleased to endorse this Carbon Management Plan and look forward to its successful implementation.

Vincent Paliczka
Director: Environment, Culture & Communities
Project sponsor

Councillor Dorothy Hayes
Executive member: Environment
Member sponsor

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.

Bracknell Forest Council was selected in 2008, amidst strong competition, to take part in this ambitious programme. Bracknell Forest Council partnered with the Carbon Trust on this programme in order to realise vast carbon and cost savings. This Carbon Management Plan commits the council to a target of reducing CO_2 by 25% by 2012 and underpins potential financial savings to the council of around £4.4 million.

There are those that can and those that do. Local authorities can contribute significantly to reducing CO_2 emissions. The Carbon Trust is very proud to support Bracknell Forest Council in their ongoing implementation of carbon management.

Richard Rugg
Head of Public Sector, Carbon Trust

Management Summary

Bracknell Forest Council became a signatory to the Nottingham Declaration on Climate Change in February 2007. In October 2008, the council adopted its first Climate Change Action Plan. The plan included an early action to participate in the Carbon Trust's Local Authority Carbon Management Programme (LACMP) during 2008/09. An outcome of the LACMP is this Carbon Management Plan, which compliments the council's Climate Change Action Plan.

Bracknell Forest Council's carbon dioxide baseline is **18,380** tonnes / CO_2 for financial year April 2007 – March 2008. The council's main CO_2 emission sources, shown below, are buildings, including schools (77%), streetlights (16%) and transport (7%). Water accounts for less than 1% of the total.

	Total	Buildings	Street lights	Transport	Water
Baseline CO_2 emissions (tonnes)	18,380	13,930	3,009	1,350	91
Baseline Cost (£)	3,446,987	2,272,416	538,549	311,936	324,086

Summary of emissions and costs for baseline year 2007/08

The carbon reduction target established by the carbon management programme board is:

Bracknell Forest Council will reduce CO_2 emissions from its own operations by 25% against the 2007/08 baseline by April 2013.

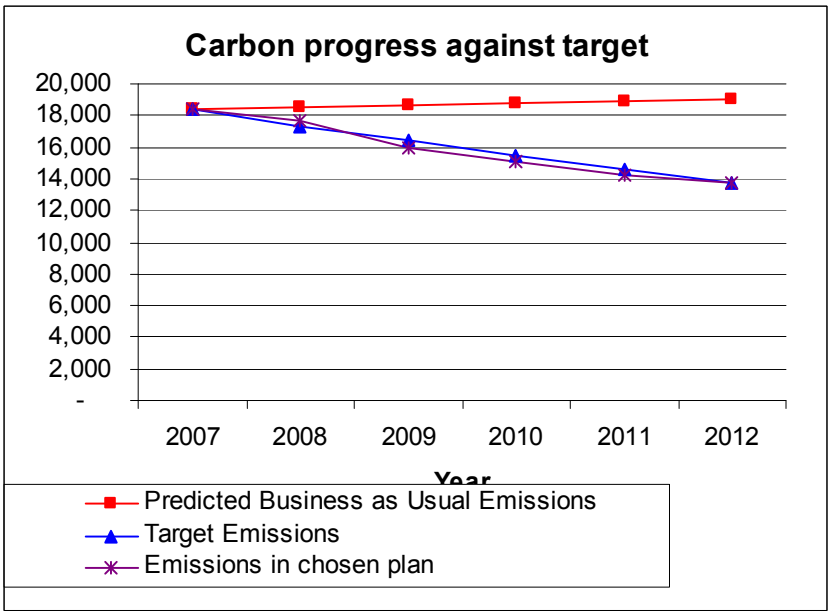
Key strategic themes for the programme:

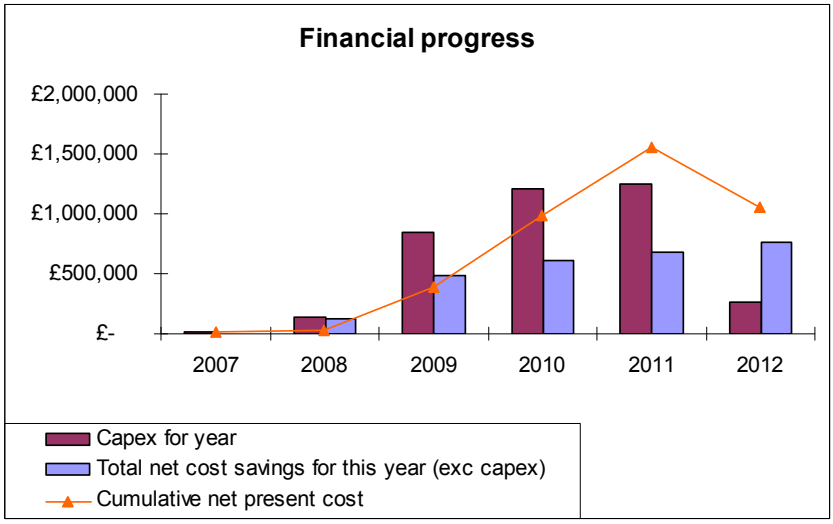
- Reduce CO_2 emissions from energy and water consumption in all council buildings, including schools.
- Reduce CO_2 emissions from energy consumption by streetlights.
- Reduce CO_2 emissions from council owned and outsourced transport services and contractors, including staff business travel.
- Ensure energy/carbon management is fully embedded in council policies and procedures.
- Revise council's £1 million Invest-to-Save scheme to support CO_2 emission saving projects.
- Raise awareness and change behaviour towards energy/carbon management by all council staff.

The financial value at stake of the council's carbon reduction programme is **£4,107,225**. This is the cost difference between "business as usual" with rising energy costs, compared to the cumulative cost savings from the 25% emission reduction scenario.

The carbon management team has identified a variety of short, medium and longer term emissions reduction opportunities and evaluated these using the Projects Register evaluation tool supplied by the Carbon Trust.

Carbon reduction and financial progress for the identified projects is shown below:





The annual cost and CO_2 savings for the plan are shown below:

	2008/09	2009/10	2010/11	2011/12	2012/13
Annual cost saving	**£131,240**	**£358,087**	**£156,759**	**£99,301**	**£113,867**
Annual CO_2 saving	**795**	**2,689**	**3,731**	**4,666**	**5,248**
% of target achieved	**102**	**98**	**99**	**97**	**100**

1.0 Introduction

The purpose of this Carbon Management Plan is to establish a framework for carbon management in Bracknell Forest Council and set out a programme of actions to reduce carbon dioxide emissions from council operations until 2012.

The Carbon Management Plan compliments the Climate Change Action Plan, approved in October 2008 in response to the council's commitment to the Nottingham Declaration on Climate Change. Both plans will be reviewed and revised annually to reflect progress made and new priorities identified.

The Carbon Management Plan is a result of the council's participation in the Local Authority Carbon Management Programme (6) run by the Carbon Trust from May 2008 to March 2009.

The programme consists of five stages:

1) Mobilise the organisation
2) Set baseline, forecast and targets
3) Identify and quantify options
4) Develop Carbon Management Plan
5) Implement plan

Implementation of the Carbon Management Plan will follow council approval of this document by June 2009.

2.0 Carbon Management Strategy

2.1 Context and drivers for carbon management

Climate change is the greatest environmental challenge facing the world today. Rising global temperatures will bring changes in weather patterns, rising sea levels and increased frequency and intensity of extreme weather. The social, environmental and economic effects of climate change could be huge and will be felt in the UK and internationally.

The main human influence on global climate is emissions of the key greenhouse gases - carbon dioxide (CO_2), methane and nitrous oxide. The concentration of these gases in the atmosphere has now reached levels unprecedented for tens of thousands of years.

Under the international Kyoto Protocol, the UK must reduce its greenhouse gas emissions by 12.5% below 1990 levels over the period 2008-2012.

In 1997, the UK Government set a national goal to reduce carbon dioxide emissions by 20% below 1990 levels by 2010. In 2003 the Energy White Paper adopted a longer term goal to put the UK on a path to reduce carbon dioxide emissions by 60% by 2050, with real progress by 2020.

While the UK is on track to meet its Kyoto Protocol target, more needs to be done to achieve our challenging domestic targets. The 2006 Climate Change Programme reaffirms government commitment and sets out a programme to achieve our domestic targets.

The Climate Change Act (2008) puts into statute the UK's target to reduce carbon dioxide emissions through domestic and international action by at least 80% by 2050 and 26% by 2020 against a 1990 baseline.

The UK Government placed an emphasis on local authorities setting a leading example on climate change. Action by local authorities will be critical to the achievement of the Government's climate change objectives, such as the long term goal to reduce CO_2 emissions by 80% by 2050 in the Climate Change Bill.

This has created a number of legislative drivers for local authorities:

- **Display Energy Certificates:** From 1 October 2008 there is a legal requirement for all public sector buildings with a total useful floor area of over 1,000m^2, to show a Display Energy Certificate (DEC) in a prominent place, clearly visible to the public.

  Bracknell Forest Council owns 54 buildings, including schools, with over 1,000 m^2 of useful floor area. These have all been assessed and DECs are displayed showing the energy performance of the building to all interested parties.

- **Carbon Reduction Commitment:** The Carbon Reduction Commitment is a mandatory "cap & trade" emissions trading scheme for local authorities whose total electricity consumption measured through half-hourly meters*, including schools, is greater than 6,000MWh or approximately £500k. If a local authority falls within the CRC scheme **all** electricity and fuel emissions are covered. From 2010 local authorities will have to purchase carbon allowances, which will be repaid with a reward or penalty of up to 10% in the first year, rising to 50% in year five, depending on their position in a CRC league table.

  * Half-hourly meters automatically record electricity consumption at half hourly intervals.

  In 2007, Bracknell Forest Council's electricity consumption measured through half-hourly meters was 7,383MWh including 1,921MWh consumed by schools. This is not expected to change significantly in 2008. As a result, Bracknell Forest Council will participate in the scheme from 2010. Taking the council's baseline CRC cost at £195,840 per annum, the net cost in five year's time (+/- 50%) could be £97,920 - £293,760 depending on our position on the league table.

In April 2008, the government introduced two national indicators specific to CO_2 reduction:

- **NI185 – percentage CO_2 reduction from LA operations:** the public sector is in a key position to lead on efforts to reduce CO_2 emissions by setting a behavioural and strategic example to the private sector and the communities they serve. Measurement against this indicator requires each local authority to calculate its CO_2 emissions from analysis of the energy and fuel use in their relevant buildings and transport, including where these services have been outsourced.

  Bracknell Forest Council adopted NI185 in its Local Area Agreement with Government Office for the South East (GOSE). Targets agreed with GOSE are:
  - 2008 – Establish CO_2 emission baseline
  - 2009 – Reduce CO_2 emissions by 4%
  - 2010 – reduce CO_2 emissions by 6%

- **NI186 – per capita CO_2 emissions in the LA area:** Local authorities are uniquely placed to provide vision and leadership to local communities by raising awareness and to influence behaviour change. The percentage reduction in CO_2 per capita in each LA will be reported annually. This will be produced by Central Government based on CO_2 emissions in the local area from business and public sector, domestic housing, and road transport.

  Bracknell Forest Partnership, the local strategic partnership between the Council and its statutory, business, voluntary and community sector partners, agreed to establish a Bracknell Climate Change Partnership. This will play a key role in reducing per capita CO_2 emissions throughout the borough.

- **Energy Costs:** Measures to reduce CO_2 will also reduce energy costs. This is particularly important for the future given the predicted increases in energy prices. Energy and fuel costs have seen a dramatic rise in recent years, with energy prices increasing by well over 50% since 2004. This trend is not expected to change and we must accept that the price we pay for our energy will continue to increase in the coming years.

  The cost of energy for the council's buildings and street lights has risen to nearly £3.0 million per annum. To reduce energy costs, the council has formed a consortium with other Berkshire local authorities to procure energy, taking advantage of short term market price fluctuations, through the NHS Procurement and Supply Agency (PASA). New electricity and gas supply contracts from October 2008 fall under this scheme.

- **Nottingham Declaration on Climate Change:** The leader and chief executive of Bracknell Forest Council signed the Nottingham Declaration on Climate Change on 27th February 2007. This committed the council to supporting government CO_2 emission reduction targets and to produce local plans, within two years, to address the causes and impacts of climate change, according to local priorities.

  The Bracknell Forest Climate Change Action Plan was approved for implementation by the council in October 2008. This did not contain specific emission reduction targets but did include an early action to participate in the Carbon Trust's Local Authority Carbon Management Programme. The council was accepted onto the 2008 LACMP which establishes the council's CO_2 emission baseline, sets reduction targets and produces this Carbon Management Plan to guide implementation.

2.2 Our low carbon vision

By 2020, Bracknell Forest Council will be a model low carbon local authority, demonstrating good practice in its own operations and carbon reduction leadership throughout the borough.

2.3 Strategic themes

- Reduce CO_2 emissions from energy and water consumption in all council buildings, including schools.
- Reduce CO_2 emissions from energy consumption by streetlights.
- Reduce CO_2 emissions from council owned and outsourced transport services and contractors, including staff business travel.
- Ensure energy/carbon management is fully embedded in council policies and procedures.
- Revise council's £1 million Invest-to-Save scheme to support CO_2 emission saving projects.
- Raise awareness and change behaviour towards energy/carbon management by all council staff.

2.4 Targets and objectives

Bracknell Forest Council will reduce CO_2 emissions from its own operations by 25% from the 2007/08 baseline by March 2013.

3.0 Emissions baseline and projections

3.1 Scope

In February 2008, the council's housing stock was transferred to a new housing association - Bracknell Forest Homes. The few remaining council owned houses, occupied by school caretakers and park rangers, are considered to be "social housing." Both of these categories were excluded from the council's emission baseline.

All other council owned properties, including schools, participating in corporate energy contracts were included. All street lighting was also included.

Council owned commercial premises, leased out to local businesses were excluded.

Council owned community centres, leased by community associations, that provide "local authority functions" but pay their own energy accounts, were excluded. Twelve other council owned properties, leased by businesses or charities that pay their own energy accounts were also excluded. Although these were excluded from our 2007/08 emissions baseline, they will have to be reported to DEFRA for NI185 in 2008/09.

The spreadsheet tool supplied by the Carbon Trust also provided some enhanced features over the basic DEFRA tool, enabling CO_2 emissions from local authority water consumption and waste to be included. Of these, water consumption was included in the 2007/08 baseline but waste was excluded due to a lack of reliable data.

Transport emissions from council owned fleet vehicles and contracted home to school and social services transport were included. Comparison of transport management data with corporate account codes revealed a small number of decentralised vehicle hires without adequate record of mileage or fuel consumption to be included. Any direct hires by schools would not appear in either system.

Business travel by council staff and councillors was calculated from vehicle mileage claims and public transport claims on an average cost per mile basis. This may not be acceptable to DEFRA in 2008/09.

Fuel consumption data from major contractors providing household waste collection and street maintenance services were included. Smaller contractors providing occasional and reactive maintenance services were excluded.

We believe that the scope described above is adequate to establish our carbon dioxide baseline and pursue our emission reduction targets. We will review our scope, however, as new data becomes available or current targets are achieved.

3.2 Baseline

Bracknell Forest Council's carbon dioxide baseline is **18,380** tonnes / CO_2 for financial year April 2007 – March 2008. This aligns with the council's financial reporting cycle and draws on existing data sources. From 2008/09 DEFRA reporting for NI185 is also based on the financial year and will draw on the experience of preparing the council's carbon management baseline in 2007/08. In 2010, the same data sources will be used to report emissions for the Carbon Reduction Commitment.

The council's main CO_2 emission sources, shown in Table 3.1 and Figure 3.1 below, are buildings, including schools, streetlights and transport. Water accounts for less than 1% of the total. Data for these is maintained by the council's energy manager, street lighting manager and head of transport provision. Outsourced CO_2 emission sources were identified from the register of corporate contracts followed by a request from the relevant service manager for the contractor's emission data. Other emission sources, including staff business travel, were identified through the council's accounting system.

The emission factors used to establish the council's carbon dioxide baseline are attached as Appendix C.

	Total	Buildings	Street lights	Transport	Water
Baseline CO_2 emissions (tonnes)	18,380	13,930	3,009	1,350	91
Baseline cost (£)	3,446,987	2,272,416	538,549	311,936	324,086

Table 3.1 – Summary of emissions and costs for baseline year 2007/08

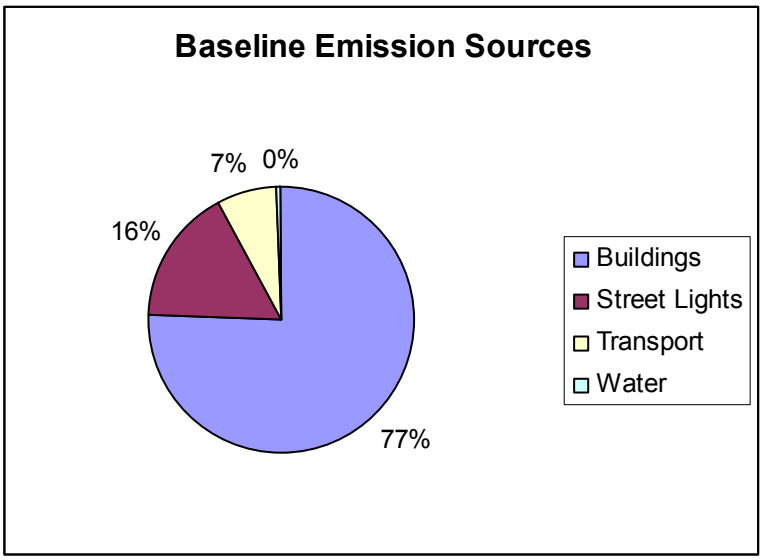


Figure 3.1 Baseline emission sources 2007/08

The departmental share of 2007/08 energy consumption and CO_2 emissions from council buildings is show in Figures 3.2 and 3.3 below.

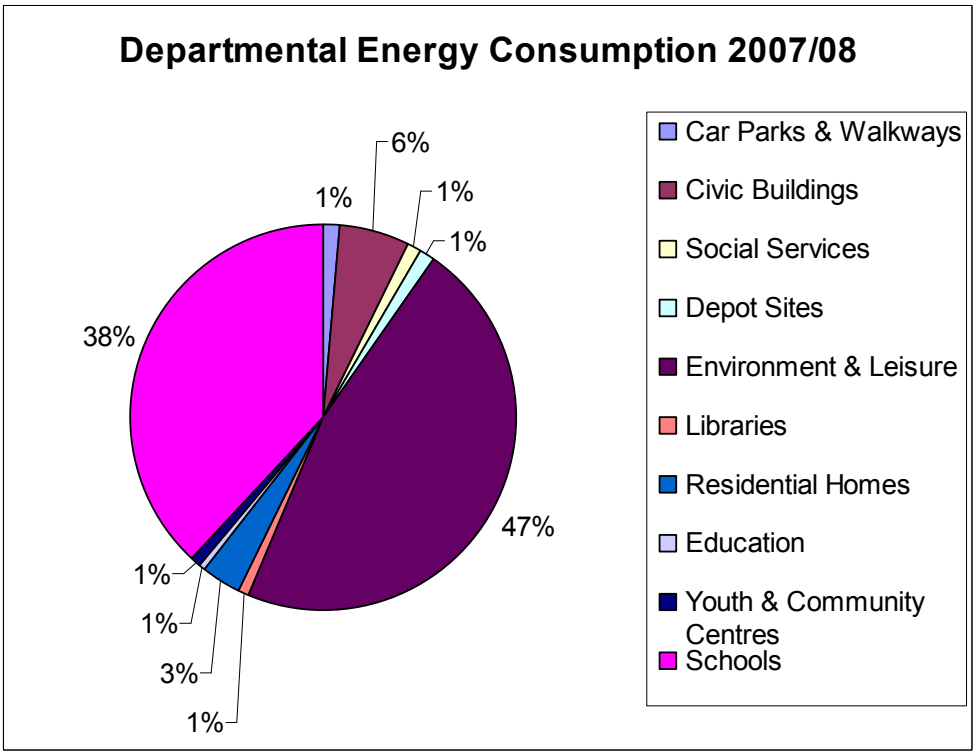


Figure 3.2 Departmental energy consumption

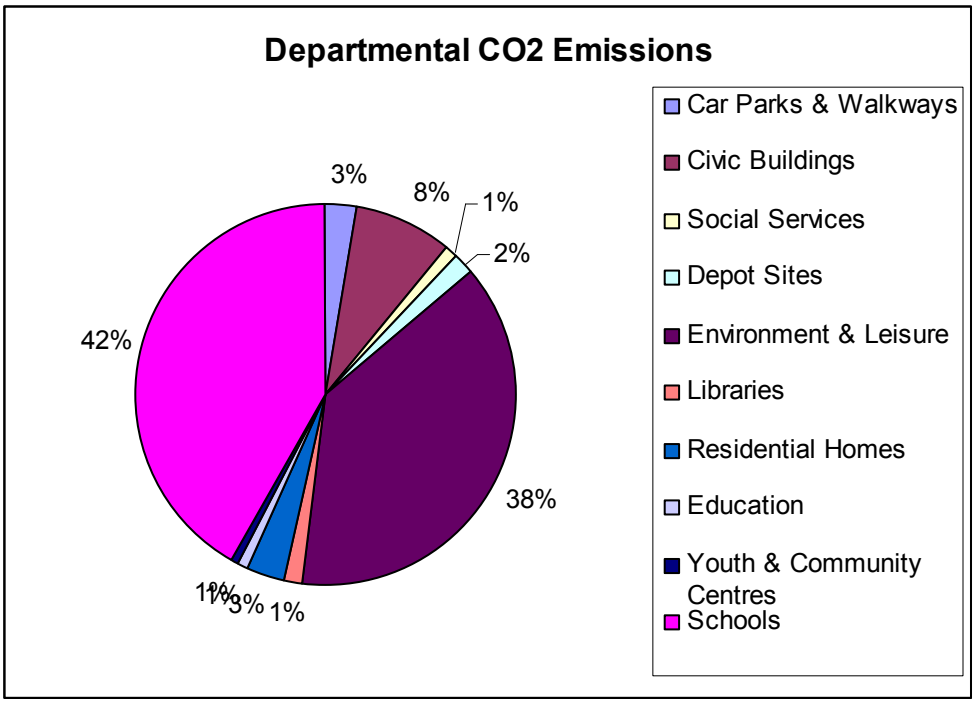


Figure 3.3 Departmental CO_2 emissions

It should be noted that Environment and Leisure is responsible for 47% of total energy consumption in council buildings, but only 38% of the emissions. Schools are responsible for 38% of the energy consumption but 42% of the emissions. This highlights the potential for carbon reduction measures at schools, many of which are still heated by oil fired boilers.

3.3 Projections and value at stake

Tables 3.2 and 3.3 below quantify the carbon dioxide emissions and their associated energy consumption costs over the five year period 2007/08 – 2012/13.

The business as usual (BAU) totals show the projected emissions and energy costs if no action is taken.

The reduced emissions scenario (RES) totals show the projected emissions and energy costs to achieve a 25% emissions reduction target by 2012/13.

Value at stake (VAS) p.a. shows the annual difference between BAU and RES totals.

Value at stake (VAS) cumulative shows the annual VAS values accumulated over the 5 year period.

Carbon Dioxide emissions

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
BAU total	18,380,455	18,509,118	18,638,682	18,769,153	18,900,537	19,032,841
RES total	-	17,352,758	16,382,522	15,466,535	14,601,762	13,785,341
VAS p.a.	-	1,156,360	2,256,160	3,302,618	4,298,775	5,247,499
VAS cumulative	-	1,156,360	3,412,520	6,715,138	11,013,913	16,261,412

Table 3.2 Carbon Dioxide emissions ($kgCO_2$)

The values in Table 3.2 are illustrated graphically in Figure 3.4 below:

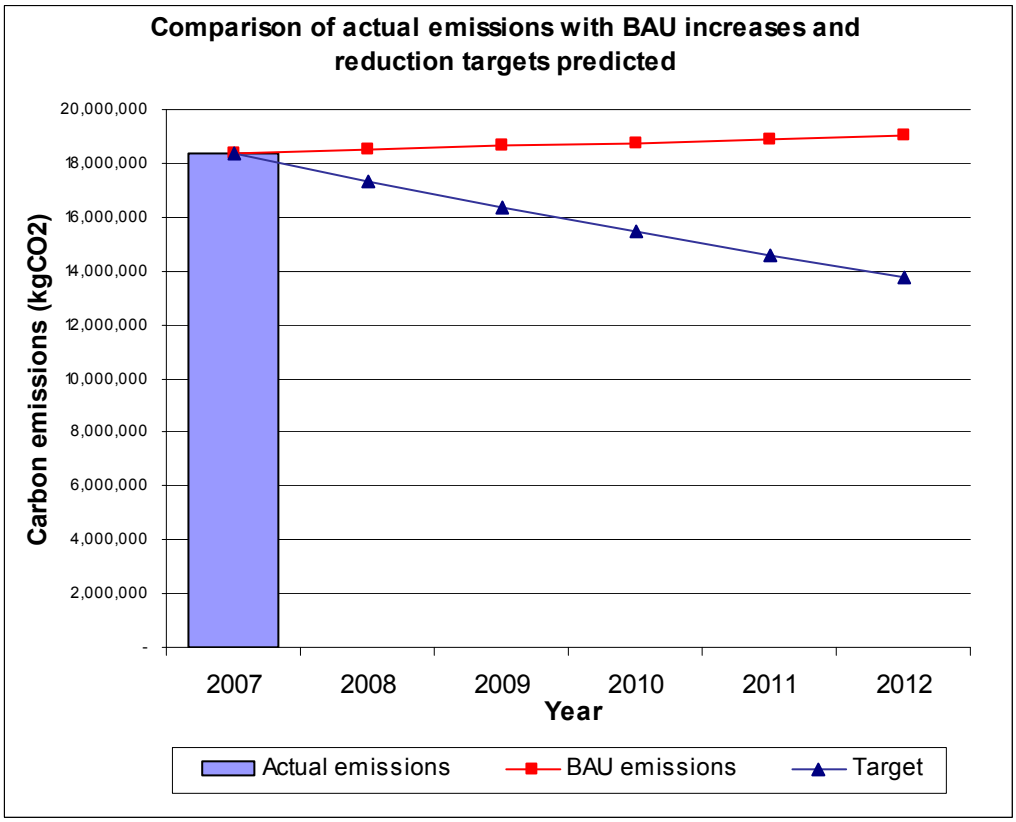


Figure 3.4 Carbon Dioxide emissions (tonnes CO_2)

The businesses as usual (BAU) values are based on the following assumptions:

- BAU increase in demand for all stationary sources, 0.7% (DTI/DBERR EP68)

- BAU increase in demand for transport fleet, 0.7% (DTI/DBERR EP68)
- BAU increase in demand for commuting, 1% (2005 & 2006 internal commuting survey)
- BAU increase in costs for inflation and price changes, 8.4% (Carbon Trust default value)

Energy consumption costs

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
BAU total	3,446,987	3,762,690	4,107,307	4,483,487	4,894,120	5,342,363
RES total	-	3,527,615	3,610,129	3,694,573	3,780,992	3,869,433
VAS p.a.	-	235,075	497,178	788,914	1,113,128	1,472,930
VAS cumulative	-	235,075	732,253	1,521,166	2,634,295	**4,107,225**

Table 3.3 Energy consumption costs (£)

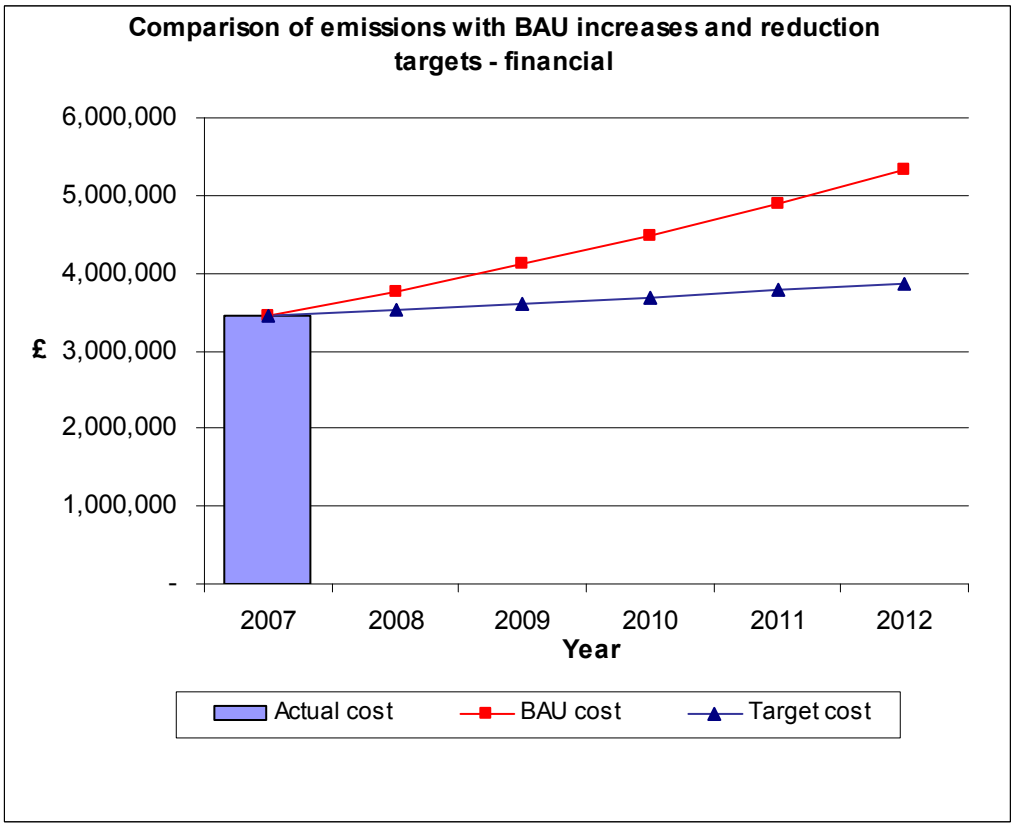


Figure 3.2 – Financial value at stake (£)

The financial value at stake for the council's carbon reduction programme is **£4,107,225**. This is represented graphically by the area between the BAU and target cost curves in Figure 3.2.

4.0 Carbon management projects

Bracknell Forest Council has been addressing energy efficiency and green house gas emissions for many years. Examples include the London Road landfill site, where methane is used to generate heat for a local school. Bracknell Leisure Centre and Coral Reef leisure pool both have combined heat and power plants. Household and municipal green waste has been collected for composting for several years. Excellent progress has also been made in improving home energy efficiency with local residents.

4.1 Existing projects

Projects outlined in Table 4.1 below were initiated before the start of the LA Carbon Management Programme and will have an impact in the 2007/08 baseline year.

Ref	Project	Lead	Cost		Annual saving		Pay back	Year
			Cap'l	Rev'ue	Fin	CO_2		
1	Travel share database	PB	12,160	5,960	9,991	22	3.02	2007/08
2	SAFED pilot	DJ	1,000	0	5,003	11	0.20	2007/08
3	Systems Link	SM	1,950	2,500	51,008	308	0.04	2007/08
4	Energy champions T.S	HH	0	0	2,783	16	-	2007/08
5	Schools energy management	CT	0	0	42,692	260	-	2007/08
6	Staff publications	RY/BF	0	0	9,136	51	-	2007/08
	TOTALS		13,160	8,460	120,613	668		

Table 4.1 Existing projects

4.2 Planned / funded projects

Projects approved with funds allocated for implementation are as follows:

Ref	Project	Lead	Cost		Annual saving		Pay back	Year
			Cap'l	Rev'ue	Fin	CO_2		
7	Green fleet review EST	DJ	0	0	31,056	71	-	2008/09
8	Motorised pool covers	SM	46,000	0	7,300	50	6	2008/09
9	Replacement windows	SM	62,000	0	6,273	43	10	2008/09
10	Energy champions EHH & SH	HH	0	0	1,183	7	-	2008/09
20	Liquid pool cover	SM	382	5,836	16,866	155	.02	2008/09
22	Heat recovery	SM	3,850	0	1,184	8	3.25	2008/09
23	Lighting EHH & library	SM	3,200	0	1,008	6	3.18	2008/09
24	BMS tuning	SM	5,900	0	3,505	24	1.68	2008/09
25	Replace T12 lamps with T5 Sandhurst	SM	11,195	0	1,345	8	8.32	2008/09
26	Replace T12 lamps with T5 EHP	SM	5,465	0	656	4	8.32	2008/09
27	Lighting controls EHP	SM	1,835	0	353	2	5.2	2008/09
28	Server cold aisle	RD	12,310	0	8,133	45	1.51	2009/10
29	Pipework insulation	SM	2,500	0	736	5	3.39	2008/09
	TOTALS		154,637	5,836	79,598	428		

Table 4.2 Funded projects

Potential projects that have been identified through the LA Carbon Management Programme, still needing detailed appraisal, are listed below.

In many cases, funding for these projects will be sought from the council's Invest-to-Save scheme. This is currently under review with the aim of introducing a carbon reduction factor in order to favour carbon saving projects over projects based purely on financial criteria.

4.3 Near term projects

Ref	Project	Lead	Cost		Annual Saving		Pay back	Year
			Cap'l	Rev'ue	Fin	CO_2		
11	Kennel Lane School pool cover	CT	3,000	0	5,593	35	0.54	2009/10
12	Water loggers	RY	5,000	0	8,272	2	0.6	2009/10
13	Voltage optimisers (3)	SM	97,554	0	44,765	250	1.87	2009/10
14	Replace T12 lamps	SM	20,000	0	2,771	15	7.22	2009/10
15	Water monitoring	RY	0	0	16,249	5	-	2009/10
16	Loft & cavity wall insulation	HH	100,000	0	28,726	196	3.48	2009/10
17	Time control all sites	SM	10,000	0	55,008	331	0.18	2009/10
18	Heating controls	SM	40,000	0	20,325	139	1.48	2009/10
19	Kennel Lane School dehumidifier	CT	5,000	0	2,700	17	1.85	2009/10
21	Replace chillers TS	KH	0	0	10,763	60	-	2009/10
43	Signage de-illumination	PM	2,625	0	1,684	9	1.56	2009/10
45	Heathlands CHP	SM	17,000	0	2,734	18	6.22	2009/10
55	Voltage optimisers (7)	SM	117,506	0	30,332	169	3.87	2009/10
58	Boiler control lookout	SM	8,000	0	718	5	11.14	2009/10
60	Reduce staff travel	HR	0	0	16,049	36	-	2009/10
61	SAFED training	DJ	3,400	0	5,003	11	0.68	2009/10
69	Pipe insulation ESC	SM	6,000	0	2,427	17	2.47	2009/10
70	Ascot library boiler	SM	9,000	0	81	1	-	2009/10
72	Close adastron house	CT	0	0	2,399	16	-	2009/10
73	ICT strategy	RD	0	0	28,830	161	-	2009/10
74	Replace windows	SM	200,000	0	13,550	92	14.76	2009/10
79	Energy champions all	HH	0	0	16,041	92	-	2009/10
80	Close Enid Wood Hse	BF	0	0	23,681	150	-	2009/10
	TOTALS		644,085	0	338,701	1,827		

Table 4.3 Near-term projects

Near-term projects have been identified for their relative ease of implementation and cost effectiveness. Some projects, such as lamp replacement, insulation, window replacement and heating controls are applicable to multiple sites and will be implemented over several years.

4.4 Medium to long term projects

Ref	Project	Lead	Cost		Annual Saving		Pay back	Year
			Cap'l	Rev'ue	Fin	CO_2		
30	Garth Hill School	CT	0	0	23,076	161	-	2010/11
31	Replace T12 lamps	SM	20,000	0	2,771	15	7.22	2010/11
32	Loft & cavity insulation	SM	50,000	0	14,363	98	3.48	2010/11
33	Heating controls	SM	40,000	0	20,325	139	1.97	2010/11
34	Biomass boiler SHS	CT	160,000	12,000	2,320	100	-	2010/11
35	Replace T12 lamps	SM	20,000	0	2,771	15	7.22	2011/12
36	Street light reduction	PM	0	0	10,523	59	-	2010/11
37	Heating controls	SM	40,000	0	20,325	139	1.97	2011/12
38	Biomass boiler BHS	CT	377,881	40,000	24,395	450	15.49	2011/12
39	Civic hub	KH	0	0	33,423	195	-	2012/13
40	Biomass boiler RS	CT	160,000	20,000	6,451	185	-	2012/13
41	Replace T12 lamps	SM	20,000	0	2,771	15	7.22	2012/13
42	Heating controls	SM	40,000	0	20,325	139	1.97	2012/13
44	Waymead CHP	SM	17,000	300	2,103	13	8.09	2010/11
46	Ladybank CHP	SM	17,000	300	2,103	13	8.09	2011/12
47	Larchwood CHP	SM	17,000	300	2,103	13	8.09	2012/13
48	Crown Wood School refurbishment	CT	0	0	2,289	14	-	2009/10
49	Gt Hollands School refurbishment	CT	0	0	3,058	20	-	2010/11
50	Kennel Lane School refurbishment	CT	0	0	6,077	39	-	2011/12
51	Meadow Vale School refurbishment	CT	0	0	2,431	16	-	2011/12
52	Sandy Lane School refurbishment	CT	0	0	2,432	17	-	2011/12
53	Boilers & mech BSLC	SM	580,000	0	18,293	125	-	2011/12
54	HW pool CHP	SM	17,000	300	2,734	18	6.22	2011/12
56	Boilers & mech EHHCC	SM	533,000	0	34,865	208	15.29	2011/12
57	Boilers & mech CR	SM	250,000	0	27,100	185	9.23	2010/11
59	Replace oil boilers with gas boilers (15)	SM	120,000	0	26,325	184	4.56	2010/11
62	SAFED training (20)	DJ	3,400	0	5,003	11	0.68	2010/11
63	SAFED training (20)	DJ	3,400	0	5,003	11	0.68	2011/12
64	SAFED training (20)	DJ	3,400	0	5,003	11	0.68	2012/13
65	Gas boilers (8)	SM	56,000	0	4,336	30	12.92	2010/11
66	Gas boiler HSS	SM	45,000	0	271	2	-	2010/11
67	DHW gas boilers SHS	SM	20,000	0	542	4	-	2011/12
68	Gas boiler DGC	SM	18,000	0	894	6	-	2011/12
71	Replace windows SHL	SM	16,000	0	1,572	11	10.18	2011/12

75	Replace windows	SM	200,000	0	13,550	92	14.76	2010/11
76	Replace windows	SM	200,000	0	13,550	92	14.76	2011/12
77	Close BROC	BF	0	0	4,215	24	-	2010/11
78	Replace windows	SM	200,000	0	13,550	92	14.76	2012/13
81	Loft & cavity insulation	SM	50,000	0	14,363	98	3.48	2011/12
82	Loft & cavity insulation	SM	50,000	0	14,363	98	3.48	2012/13
	TOTALS		3,344,081	73,200	3,157			

Table 4.4 Medium to long-term projects

Garth Hill School (30) is a “one school pathfinder” project under the government’s Building Schools for the Future programme. It is designed as a low carbon school with 60% less carbon emissions than 2002 building standards. Heating will be supplied by a biomass boiler. The project is fully funded by the government, with an additional grant to achieve the low carbon standard. The annual savings are an estimate of the reduced emissions from the new school compared to the existing school buildings that will be demolished.

Eighteen schools have inefficient oil fired boilers, some of which could be replaced by biomass boilers similar to Garth Hill. An initial assessment suggests that all secondary schools could be viable for biomass boilers (34, 38, 40). The remaining oil fired boilers should be replaced by efficient gas boilers (59).

Other school refurbishment projects (48-52) are planned under the schools primary capital programme. The savings shown are based on performance improvements gained from current building standards over the existing buildings. As planning progresses, other opportunities for investment in low carbon technologies may be identified.

Four social residential homes (44-47) have high energy consumption due to the special needs of their residents. Heathlands (45) also has an inefficient oil fired boiler. The performance of these sites could all be improved by installing small combined heat and power (CHP) plants.

Property condition surveys have identified numerous opportunities to improve the energy performance of buildings including: replacement gas boilers and other mechanical services (53, 56, 57); replacement gas boilers (65-68, 70); and replacement windows (74-76, 78).

The Civic Hub (39) is a new council office, planned as part of Bracknell Town Centre regeneration. The Civic Hub will be built opposite Time Square offices with combined heat and power supplied to both. The annual savings are an estimate of the reduced emissions from the Civic Hub compared to Easthampstead House and Seymour House, which will be demolished. The recent financial crisis has delayed the start of the Civic Hub, creating uncertainty over the project timing.

4.5 Projected achievement towards target

The following graph shows how the projects identified above contribute towards the council's emissions reduction target.

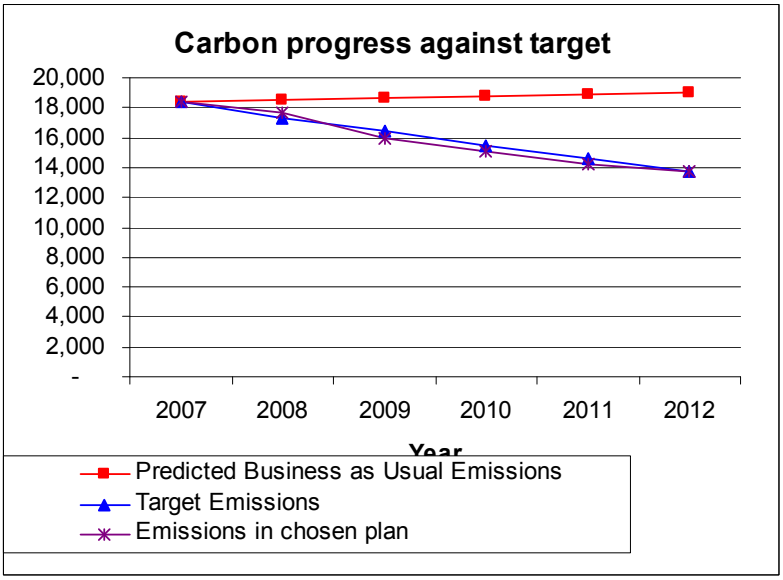


Figure 5.1 Carbon progress against target

5.0 Carbon Management Plan financing

The following graph shows projected capital expenditure for each year and cost savings from the projects implemented. The cumulative net present cost curve shows the overall financial outlook for the chosen plan.

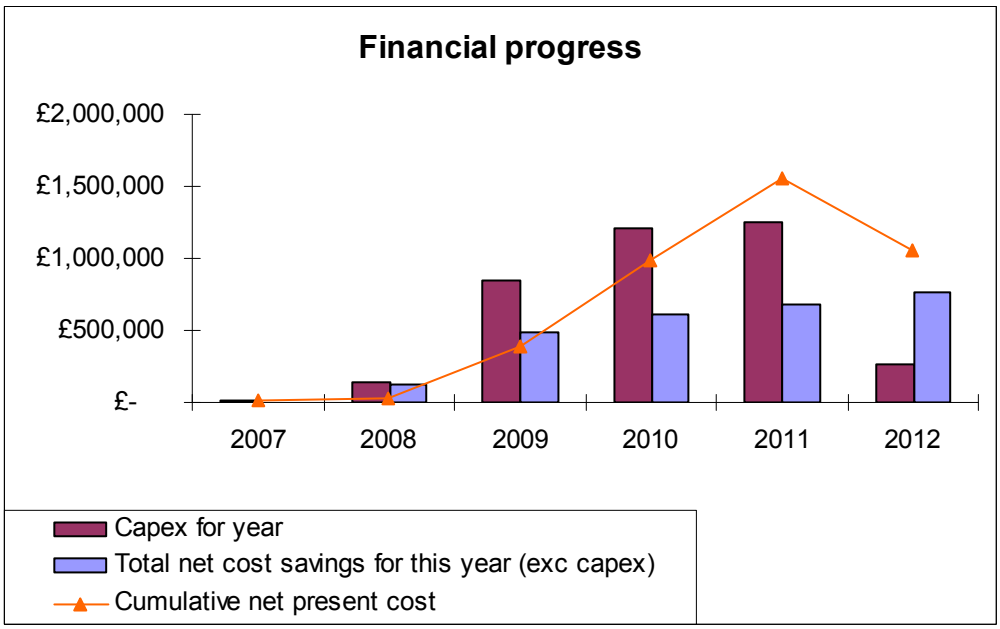


Figure 5.1 Financial progress

While the cumulative net present cost curve shows that capital expenditure exceeds the net cost savings in the short term, the following graph shows the cost savings from the plan in the longer term. The cumulative net present cost of the plan by 2031 is predicted to be

- £4,972,549

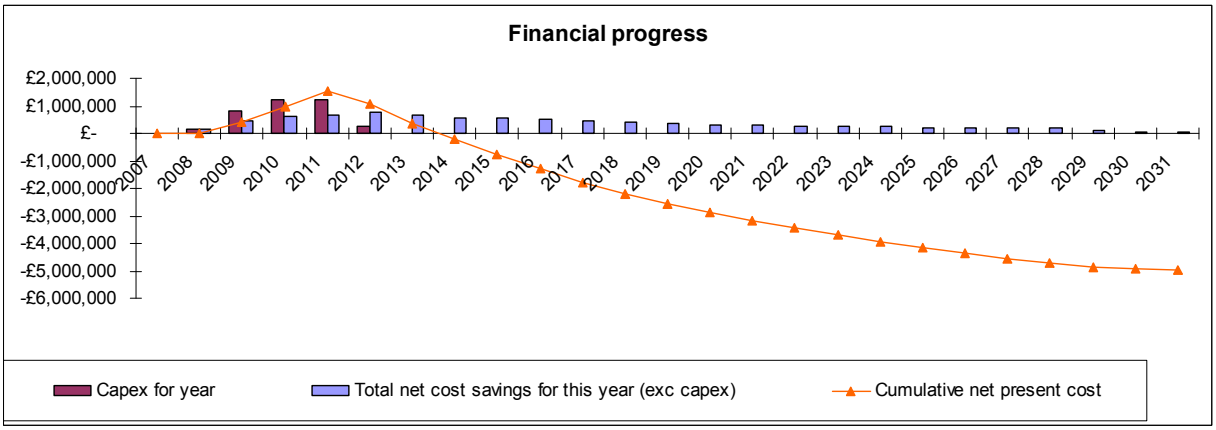


Figure 5.2 Long term financial progress

5.1 Assumptions

The rates used in these calculations are based on the following assumptions:

- Financial discount rate 3.5% (UK Treasury green book 2008)
- Inflation rate 2.5% (Carbon Trust estimate)
- “Persistence” discount rate 3.0% i.e. discount on energy saved (Carbon Trust estimate)

5.2 Benefits / savings – quantified and un-quantified

	2008/09	2009/10	2010/11	2011/12	2012/13
Annual cost saving	**£131,240**	**£358,087**	**£156,759**	**£99,301**	**£113,867**
Annual CO_2 saving	**795**	**2,689**	**3,731**	**4,666**	**5,248**
% of target achieved	**102**	**98**	**99**	**97**	**100**

Table 5.1 Annual cost and CO_2 saving

Unquantified benefits:

- Demonstrating leadership in carbon management.
- Supporting the Bracknell Forest Climate Change Action Plan.
- Meeting the council's local area agreement (LAA) target for NI185 – reducing CO_2 emissions from LA operations.
- Raising the profile of energy and carbon management within the council.
- Developing capacity to participate effectively in the Carbon Reduction Commitment (CRC) from 2010.

5.3 Additional resources

The Climate Change Working Group was established in 2007 to develop and implement the Council's Climate Change Action Plan. The group consists of officers from key functional areas and is chaired by the director: Environment, Culture and Communities.

Mid 2008 the group was expanded to form the LA Carbon Management project team and will continue to support the implementation and future development of the Climate Change Action Plan and the Carbon Management Plan.

Early 2008 the energy manager was transferred from Corporate Services to join the Community & Environmental Development Team in Environment, Culture and Communities. Later in 2008, an energy technical assistant was appointed to support the energy manager in energy data management.

It is anticipated that the existing resources, described above, will be adequate to implement the programme.

5.4 Financial costs and sources of funding

	2008/09	2009/10	2010/11	2011/12	2012/13
Annual costs:					
Total annual capital cost	**£137,514**	**£846,129**	**£1,210,768**	**£1,253,379**	**£263,874**
Total annual revenue cost	**£5,836**	**-**	**£12,300**	**£40,600**	**£20,300**
Total costs	**£143,350**	**£846,129**	**£1,223,068**	**£1,293,979**	**£284,174**
Committed funding:					
Committed annual capital	**£137,514**	**£20,310**	**-**	**-**	**-**
Committed annual revenue	**£5,836**	**-**	**-**	**-**	**-**
Total funded	**£143,350**	**£20,310**	**-**	**-**	**-**
Unallocated funding					
Unallocated annual capital	**-**	**£844,098**	**£1,210,768**	**£1,253,379**	**£263,874**
Unallocated annual revenue	**-**	**-**	**£12,300**	**£40,600**	**£20,300**
Total unfunded	**-**	**£844,098**	**£1,223,068**	**£1,293,979**	**£284,174**

Table 5.2 Funding schedule

Projects receiving capital funds from other known sources are not included in Table 5.2. These include Building Schools for the Future (Garth Hill); schools primary capital programme (48-52); and Town Centre redevelopment (Civic Hub). They may, however, present further carbon saving opportunities which cannot be funded from their original budgets. In such cases, additional Invest-to-Save funds may be sought.

Some projects may be funded from planned maintenance or capital improvement budgets, as yet unknown. This will reduce the funding requirements shown above.

6.0 Actions to embed carbon management in your organisation

The Carbon Management Embedding Matrix, included as Appendix A, shows five stages of carbon management progression from worst performance at level 1 to best performance at level 5. These five stages are used to assess progress across seven areas of corporate governance, namely: corporate strategy, programme management, responsibility, data management, communication & training, finance & investment and policy alignment.

When Bracknell Forest Council signed the Nottingham Declaration on Climate Change in February 2007, five of the seven governance areas were at level 1. Finance & investment, at Level 2, had an "invest to save" scheme which could be used for CO_2 reduction projects, although CO_2 reduction was not part of the appraisal criteria. Data management, at level 3, provided CO_2 emissions data from energy consumption in buildings and fleet transport, but these were not systematically reported to senior management.

Since joining the LA Carbon Management Programme in May 2008, all areas have progressed through level 2 and five have moved into level 3, as follows:

Corporate Strategy -	Bracknell Forest's Climate Change Action Plan was approved in October 2008.
Programme Management -	The Climate Change Working Group is supporting the Climate Change Action Plan and the Carbon Management Plan.
Responsibility -	The executive member for Environment and the chairman of Environment, Culture & Communities Overview and Scrutiny Panel are actively engaged in carbon management through the project board. The director, Environment, Culture and Communities is chairman of the Climate Change Working Group and is responsible for climate change and carbon management in the corporate management team.
Data Management -	Baseline CO_2 emission data is established for buildings, streetlights, transport and water.
Communications & Training -	Energy/carbon management training has been given to key staff. Internet/intranet and paper based communications have been established.

Adoption of this Carbon Management Plan will enable further progress into level 4 during the 2009/10 financial year and the potential to achieve level 5 in 2010/11.

6.1 Corporate strategy – embedding CO_2 saving across your organisation

- Senior management approval and publication of this Carbon Management Plan and its CO_2 reduction targets will make the council's commitment clear and reinforce the need for action throughout the organisation.
- Inclusion of the CO_2 reduction targets in the Corporate Plan will embed carbon management in the corporate planning process facilitating performance management and audit functions.
- Cascading corporate CO_2 reduction targets into departmental service plans will give departments producing CO_2 emissions responsibility for meeting their own reduction targets.
- Embedding disaggregated targets into departmental service plans will reinforce local commitment and ensure that funding and resources are available to meet them.

6.2 Programme management – bringing it all together effectively

This factor of embedding carbon management is covered in section seven of this plan.

6.3 Responsibility – being clear that saving CO_2 is everyone's job

- The "energy champions" network, piloted in Time Square in 2008, will be expanded to all other Council sites during 2009 to raise awareness and build engagement for energy/carbon savings throughout the organisation.
- Annual "environmental management" seminars for head teachers and bursars will include energy/carbon management issues.
- The inclusion of CO_2 reduction in departmental service plans needs to be reflected in job descriptions, e.g. heads of service.
- Carbon reduction objectives to be included in performance management framework.
- All staff to be encouraged/supported to use energy/carbon efficient working practices.

6.4 Data management – measuring the difference, measuring the benefit

- SystemsLink energy management software to be used to enter all manual energy and water meter data and monitor consumption at all corporate properties.
- Energy/carbon emission data to be monitored monthly by energy manager, street lighting manager and transport manager.
- Carbon saving projects to be monitored by Climate Change Working Group.
- Quarterly energy/carbon monitoring reports to departmental management teams.
- Annual energy/carbon management reports to corporate management team.

6.5 Communication and training – ensuring everyone is aware

- Regular energy/carbon saving articles to be published on intranet site BORIS and staff magazine Forest Views.
- Regular energy/carbon saving articles to be published in Town & Country magazine to all households in the borough and press releases to local media.
- Low carbon culture to be included in staff induction programme for all new employees.
- Provide training to groups of staff with specific energy/carbon saving responsibilities, e.g. facilities managers, security officers, caretakers, cleaners, etc.
- Provide training to staff with budget responsibility for energy/carbon savings, e.g. heads of service, centre managers, head teachers, school bursars, etc.
- Survey staff energy/carbon saving awareness and behaviour using questionnaires, workshops and observation techniques.
- Include carbon reduction in council's Corporate Report for publication and distribution to key partners.

6.6 Finance and investment – the money to match the commitment

This factor of embedding Carbon Management is covered in section five of this Plan.

6.7 Policy alignment – saving CO_2 across your operations

- Strategic Procurement Group to review council's procurement policy against Improvement and Efficiency South East (IESE) sustainable procurement policy exemplar including energy/carbon whole life costing by December 2009.
- Office of Government Commerce (OGC) 2008 "Quick Wins" adopted in council procurement specifications in October 2008.
- Consider carbon costing in procurement and finance policies in light of council's participation in the Carbon Reduction Commitment "cap and trade" scheme from 2010.
- Review council's Invest-to-Save scheme for CO_2 reducing projects and to encourage participation by schools.
- Low Carbon Schools and Low Carbon Buildings grants to be applied for in all eligible capital projects.
- Complete review of essential car users and introduce alternative CO_2 reducing modes of staff travel in HR policy.

7.0 Programme management of the CM programme

Carbon management has become an important local authority function driven by national performance indicators and carbon reduction targets. It also has significant financial and resource implications for the organisation, requiring strategic oversight by senior management and elected members.

The Carbon Management Programme contains a diverse set of projects affecting every part of the organisation. Coordination of these projects will be provided by a representative carbon management team reporting to the programme board

7.1 The programme board – strategic ownership and oversight

The programme board will provide oversight of the Carbon Management Programme and promote support for the programme from senior management and elected members.

The board will comprise:

- Chairman: Vincent Paliczka, director Environment, Culture & Communities
- Councillor Dorothy Hayes, executive member Environment
- Councillor Marc Brunel-Walker, chairman, Environment, Culture & Communities Overview & Scrutiny Panel
- Peter Robinson, head of finance, Environment, Culture & Communities

Board meetings will take place every two months, approximately one week after the carbon management team meeting.

At each meeting, the chaiman will provide a progress report from the carbon management team and highlight any risks to the programme.

By 31 July each year carbon management team will produce an annual Carbon Management Report for endorsement by the board and presentation to the corporate management team and elected members.

7.2 The carbon management team – delivering the projects

The council's climate change working group was expanded to form the carbon management team. The group is chaired by the director Environment, Culture and Communities, who is responsible for climate change and carbon management in the corporate management team. The group will meet every two months to review progress and maintain momentum for carbon management in their own departments. Responsibility for delivering projects will be assigned to individuals through the council's service planning process.

Role	Name and position in the LA	Contact details
Carbon management team members	*Colin Griffin* *Community & Environmental development team leader*	*01344 351110* *colin.griffin@bracknell-forest.gov.uk*
	Steven Milne *Energy manager*	*01344 351518* *steven.milne@bracknell-forest.gov.uk*
	Hazel Hill *Sustainable energy officer*	*01344 352536* *hazel.hill@bracknell-forest.gov.uk*
	Chris Spence *Communications officer*	*01344 352105* *chris.spence@bracknell-forest.gov.uk*
	David Elmes Civic facilities manager	01344 352124 david.elmes@bracknell-forest.gov.uk
	Phillip Burke Travel plan co-ordinator	01344 351266 phillip.burke@bracknell-forest.gov.uk
	Rehan Yunus Environmental development officer	01344 35 4104 rehan.yunus@bracknell-forest.gov.uk
	Damian James Head of transport provision	01344 355157 damian.james@bracknell-forest.gov.uk
	Phil Moir Street lighting manager	01344 351901 phil.moir@bracknell-forest.gov.uk
	Kelly Hilman Strategy & partnerships officer	01344 353036 kelly.hillman@bracknell-forest.gov.uk
	Rachel Scott Senior planning policy officer	01344 351608 rachel.scott@bracknell-forest.gov.uk
	Janet Dowlman Waste & recycling manager	01344 352511 janet.dowlman@bracknell-forest.gov.uk
	Chris Taylor Admissions & property manager	01344 354062 chris.taylor@bracknell-forest.gov.uk
	Anthony Chadwick Head of building surveyors	01344 355188 anthony-chadwick@bracknell-forest.gov.uk
	Derek Fitz-Gibbon Principal procurement officer	01344 352093 derek.fitz-gibbon@bracknell-forest.gov.uk

	Richard Dawson IT services manager	01344 351707 richard.dawson@bracknell-forest.gov.uk

7.3 Succession planning for key roles

The Carbon Management Programme remains vulnerable to loosing key post holders until carbon management is fully established and embedded in the running of the council.

On the programme board, Councillor Dorothy Hayes, executive member for Environment is supported by Councillor Marc Brunel-Walker, chairman Environment, Culture & Communities Overview and Scrutiny Panel.

Vincent Paliczka, director Environment, Culture & Communities is Chairman of the programme board and carbon management team. This is a key role which, if vacated, will be delegated to another member of the corporate management team by the chief executive.

All other team members are delegated by their Heads of Department, who will nominate alternates, should vacancies occur.

7.4 Ongoing stakeholder management

Individual or Group	Influence	Impact	Their interest or issues	Means of Communication
Elected members	H	M	Public perceptions Scrutiny	Dorothy Hayes to brief members monthly
Bracknell Forest Partnership	M	L	Local area agreement NI185 target Influence on partners & NI186	Vincent Paliczka to brief BFP & Climate Change Partnership
Corporate management team	H	H	Support for Climate Change Action Plan Support for Carbon Management Plan Financial savings.	Vincent Paliczka to brief CMT VP to submit CMP report for CMT approval by December 2008
Alan Nash Head of finance	H	M	Cost / budgets Invest-to-Save Salix funding	Vincent Paliczka to discuss financing schemes for CO2 reduction objectives
Strategic procurement group	H	M	Sustainable (low carbon) procurement policy & procedures Quick Wins	Derek Fitz-Gibbon reviewing with Strategic Procurement Group bi-monthly
Departmental budget holders	H	H	Cost / budgets / personnel	CMT members to ensure that CMP actions are included in 2009 departmental service plans and resourced accordingly

School bursars	H	H	Cost / budgets / personnel	Chris Taylor to drive support from head teachers, bursars and governors
Staff members	H	L	Working practices/behaviour	Communications plan established through BORIS & Forest Views.

7.5 Annual progress review

The programme board will submit an annual Carbon Management Report for review by the council from September 2010. The report will include:

- CO_2 savings against targets
- Projects implemented
- Value and sources of project funding
- Financial savings
- Progress on Carbon Management Matrix - embedding
- Less quantifiable benefits
- Forward planning
- NI185 and Local Area Agreement alignment
- Carbon Reduction Commitment alignment (from 2011)

Quarterly progress reports will also be submitted to the corporate management team by the director, Environment, Culture & Communities.

working with

Appendix A: Carbon Management Matrix - embedding

	CORPORATE STRATEGY	PROGRAMME MANAGEMENT	RESPONSIBILITY	DATA MANAGEMENT	COMMUNICATION & TRAINING	FINANCE & INVESTMENT	POLICY ALIGNMENT *
BEST 2010 5	• Top level target allocated across organisation • CO_2 reduction targets in Directorate Business Plans	• Cabinet / SMT review progress against targets on quarterly basis • Quarterly diagnostic reports provided to directorates • Progress against target published externally	• CM integrated in responsibilities of senior managers • CM part of all job descriptions • Central CO_2 reduction advice available • Green champions leading local action groups	• Quarterly collation of CO_2 emissions for all sources • Data externally verified • M&T in place for: ○ buildings ○ street lighting ○ waste	• All staff given formalised CO_2 reduction: ○ induction and training ○ communications • Joint CM communications with key partners • Staff awareness tested through surveys	• Finance committed for 2+yrs of Programme • External funding being routinely obtained • Ring-fenced fund for carbon reduction initiatives	• CO_2 friendly operating procedure in place • Central team provide advice and review, when requested • Barriers to CO_2 reduction routinely considered and removed
2009 4	• CO_2 reduction commitment in Corporate Strategy • Top level targets set for CO_2 reduction • Climate Change Strategy reviewed annually	• Sponsor reviews progress and removes blockages through regular programme boards • Progress against targets routinely reported to senior mgt team	• CM integrated in to responsibilities of department heads • Cabinet / SMT regularly updated • Staff engaged though green champion network	• Annual collation of CO_2 emissions for: ○ buildings ○ street lighting ○ transport ○ waste • Data internally reviewed	• All staff given CO_2 reduction: ○ induction ○ communications ○ CM matters communicated to external community	• Coordinated financing for CO_2 reduction projects via programme board • Finances committed 1yr ahead • Some external financing	• Comprehensive review of policies complete • Lower level policies reviewed locally • Unpopular changes being considered
2008 3	• CO_2 reduction vision clearly stated and published • Climate change strategy endorsed by cabinet and publicised with staff	• Core team regularly review CM progress: ○ actions ○ profile & targets ○ new opportunities	• An individual provides full time focus for CO_2 reduction and coordination across the organisation • Senior sponsor actively engaged	• Collation of CO_2 emissions for limited scope i.e. buildings only	• Environmental / energy group(s) given ad hoc: ○ training ○ communications	• A view of the cost of CO_2 reduction is developing, but finance remains ad-hoc • Some centralised resource allocated • Finance representation on CM team	• All high level and some mid level policies reviewed, irregularly • Substantial changes made, showing CO_2 savings
2 2007	• Draft Climate Change Policy • Climate change references in other strategies	• Ad hoc reviews of CM actions progress	• CO_2 reduction a part-time responsibility of a few department champions	• No CO_2 emissions data compiled • Energy data compiled on a regular basis	• Regular awareness campaigns • Staff given CM information on ad-hoc basis	• Ad hoc financing for CO_2 reduction projects	• Partial review of key, high level policies • Some financial quick wins made
1 **Worst**	• No policy • No climate change reference	• No CM monitoring	• No recognised CO_2 reduction responsibility	• No CO_2 emissions data compiled • Estimated billing	• No communication or training	• No specific funding for CO_2 reduction projects	• No alignment of policies for CO_2 reduction

* Major operational policies and procedures, e.g. Capital Projects, Procurement, HR, Business Travel

Appendix B: Definition of projects

This template should be used to define each of the projects within your programme. It should contain all the key information without being too long – one page would be a fair guide. The owner of the project should, if at all possible, complete the project definition.

Please take this template as a basis and tailor it to your own requirements.

Project: reference:	***A short name for the project*** *It would help the Carbon Trust if you also use the following reference:* ***LA6-[first three letters of your authority]–[sequence number, e.g. 001]*** *but you may choose to use a unique reference of your own.*
Owner (person)	*Name of the person responsible for delivering the project*
Department	*Which part of the organisation the project sits within*
Description	*A short description of the project, no more than a paragraph*
Benefits	• *Financial savings: £ [x]* • *Payback period: [x] years* • *CO_2 emissions reduction: [x] tonnes of CO2* • *% of target – the percentage of your CO2 saving target will this project annually contribute*
Funding	• *Project cost, e.g. the initial cost of implementing the project* • *Operational costs, e.g. annual maintenance or running costs* • *Source of funding: internal, external, investment criteria to be met etc.* • *Say how /when decision on funding will be made*
Resources	• *Additional resource (e.g. people) requirements to enable delivery and where these will come from* • *If this project will be delivered within current resources, say so*
Ensuring success	• *Key success factors, or things that will need to happen for this project to succeed* • *Principal risks: technical, financial (eg what happens if the project is insufficiently resourced), etc.*
Measuring success	• *Metrics for displaying performance or achievement* • *When success will be measured / evaluated*
Timing	• *Milestones / key dates e.g.* ○ *start date: dd/mm/yyyy* ○ *completion date (when it will deliver savings): dd/mm/yyyy* ○ *interim deliverable / decision points* *[you could also lay these out as a milestone chart for ease and clarity]*
Notes	

Appendix C: Emission factors

Category	Units	Factor	Ref
Stationary Sources		kg/ CO_2/unit	
Electricity (grid)	kWh	0.537	DEFRA
Burning oil	kWh	0.245	DEFRA
Natural gas	kWh	0.185	DEFRA
LPG	kWh	0.214	DEFRA
Transport			
Petrol	litres	2.32	DEFRA
LPG	litres	1.50	DEFRA
Diesel	litres	2.63	DEFRA
Medium petrol car, from 1.4 - 2.0 litres	km	0.21	DEFRA
Large diesel car, over 2.0 litre	km	0.26	DEFRA
Medium/large diesel van (>1.25 ≤3.5t)	km	0.27	DFT
Bus	km	0.11	DEFRA
Refuse trucks or road sweepers (rigid size)	km	2.63	DEFRA
Large petrol cars, above 2.0 litres	km	0.30	DEFRA
HGV ALL HGVs UK average	km	0.91	DEFRA
Water			
Water consumed	M^3	0.404	BRE

Source: NI185 carbon assessment tool – LACM6 version 1.2 issued 25 7 08.