

Decision Maker: EXECUTIVE

Date: 28 November 2012

Decision Type: Non-Urgent Executive Non-Key

Title: CARBON MANAGEMENT PROGRAMME:
PROGRESS REPORT 2011/12

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Chief Officer: Nigel Davies: Director of Environmental Services
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Ward: All Wards

1. Reason for report

- 1.1 The Executive established the Council's Carbon Management Programme (CMP) and Carbon Management Fund (CMF) in October 2008 to help reduce energy costs and carbon emissions.
- 1.2 At the October 2008 meeting, the Executive requested that it should receive annual carbon management reports, and that the Carbon Management Fund's annual performance should be separately reported to the Improvement & Efficiency sub-committee.
- 1.3 This fourth annual report presents the Executive with the Council's progress in reducing both its energy consumption and carbon footprint during 2011/12, and since the 2006/07 baseline.

2. **RECOMMENDATION(S)**

That the Executive:

- 2.1 Notes the contribution of all Council departments in achieving an 18% reduction (6,637t) in emissions and £389k avoided spend over the past four years (against the 2006/2007 baseline).
- 2.2 Approves continuing action to reduce emissions and costs with the aim of achieving:
 - a) the 25% emissions reduction target by the end of March 2013
 - b) future efficiencies (see section 3.34), as advised by the Programme Board
- 2.3 Receives an annual progress report in one year's time, detailing 2012/13 performance and how the Council ultimately performed against its five-year, 25% reduction ambition

Corporate Policy

1. Policy Status: Existing Policy:
 2. BBB Priority: Excellent Council & Quality Environment:
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Financial

1. Cost of proposal: Not Applicable:
 2. Ongoing costs: Not Applicable:
 3. Budget head/performance centre: Civic Centre and Street Lighting Energy budgets
 4. Total current budget for this head: £329k and £1.45m
 5. Source of funding: Existing revenue budgets for 2012/13
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Staff

1. Number of staff (current and additional): 1 FTE
 2. If from existing staff resources, number of staff hours:
-

Legal

1. Legal Requirement: Non-Statutory - Government Guidance:
 2. Call-in: Applicable:
-

Customer Impact

1. Estimated number of users/beneficiaries (current and projected): N/A
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Ward Councillor Views

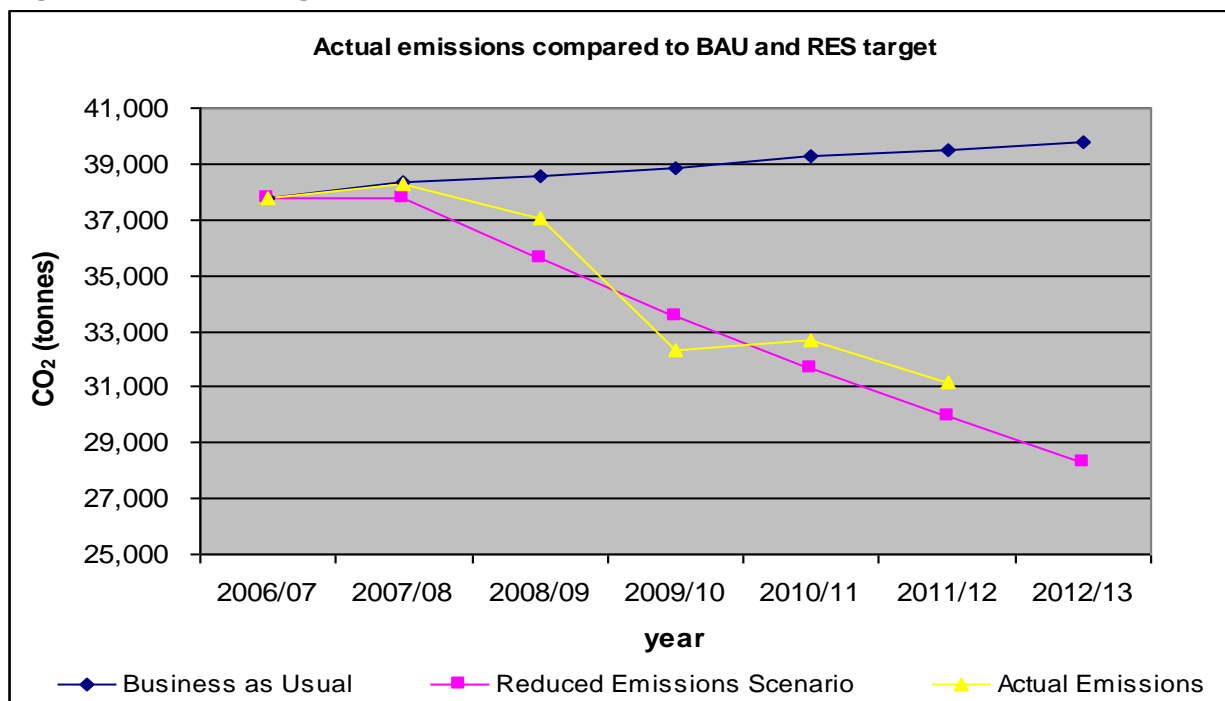
1. Have Ward Councillors been asked for comments? Not Applicable
2. Summary of Ward Councillors comments: N/A

3. COMMENTARY

Background

- 3.1 The Carbon Management Programme has been delivered by the Carbon Trust to 575 public sector bodies (local authorities, NHS, police and fire services) which want to formalise their plans to reduce carbon emissions and energy costs. The typical reduction target has risen from 16% in 2006 to 28% in 2011, highlighting increased levels of ambition driven by the need to improve environmental and financial efficiency. Recently the Carbon Trust has worked with LB Bexley, Croydon, Hammersmith, Wandsworth, and the Royal Borough of Kensington & Chelsea to produce good quality carbon management plans. Other public sector participants include The Home Office, HM Treasury and various NHS trusts (including Guy's and St Thomas').
- 3.2 LB Bromley joined the programme in 2007/2008 and produced a five-year Strategy and Implementation Plan, which was endorsed by the Executive in October 2008 (ED08067, minute 69). The Executive requested that annual progress reports should be submitted and this fourth annual report details progress up to and including 2011/12.
- 3.3 Bromley's ambition is to reduce emissions by 25% over five years. In practice this means reducing emissions by 9,445t from 37,780t (our 2006/07 baseline) to 28,335t by the end of 2012/13. Figure 1 shows progress to date (yellow line) against what would have happened if no action was taken (Business as Usual - blue line) and the 25% reduction target (pink line).

Figure 1: Annual Progress



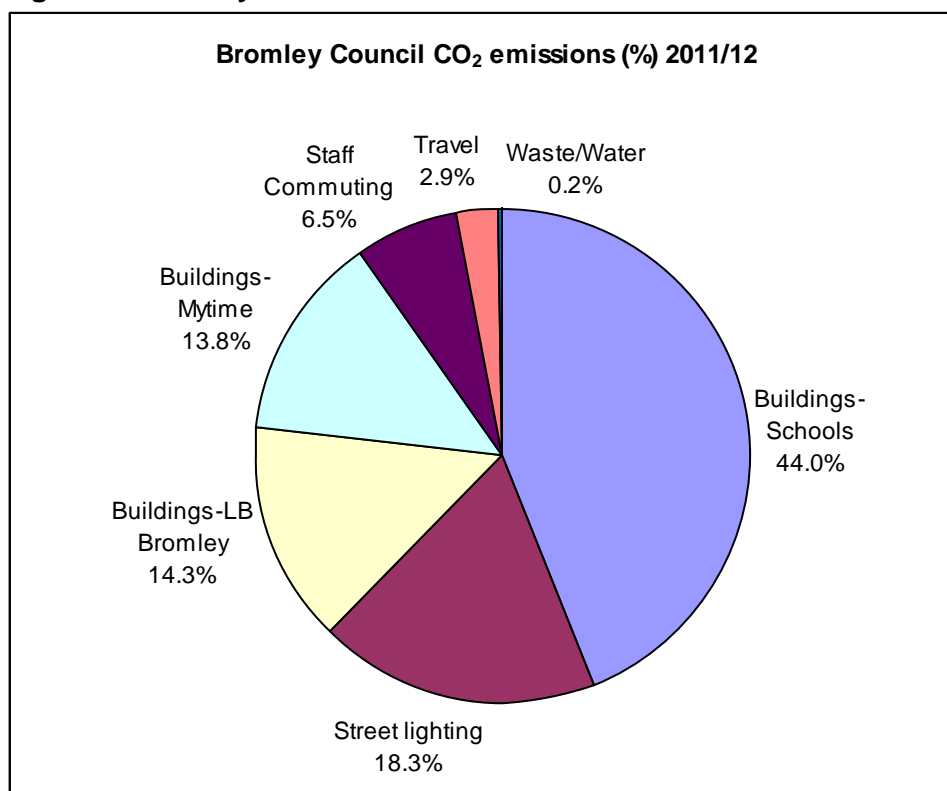
- 3.4 By the end of 2011/12, the Council's ambition was to have been 20 percentage points towards its 25% target. In practice, an 18 percentage point reduction (6,637t) had been achieved, meaning that a further 7 percentage point (2,808t) reduction is required by the end of 2012/13 to achieve the final target for this phase of the Carbon Management Programme.
- 3.5 Since the previous report (ES12007, March 2012), the government's advisor, The Committee on Climate Change, has recommended that Local Authorities across the UK should have a statutory duty to combat climate change. The Local Government Association also launched its Climate Local initiative which urges councils to take local action to reduce carbon emissions and improve their ability to protect people and services from anticipated weather changes.

- 3.6 LB Bromley is also required to submit greenhouse gas emission data to Department for Energy and Climate Change (DECC) as part of the revised 'Single Set' Indicator regime. Rather than create a new dataset, LB Bromley reports the comprehensive background information used to prepare this Executive Report (deposited in the Members' Room). This background information was published on DECC's [website](#) for the first time in July 2011 (for both 2009/10 and 2010/11) and the Council submitted its [2011/12 information](#) in July 2012.
- 3.7 The CMP helps to control energy purchasing costs as well as carbon emissions (section 5). Since the start of the Programme (2006/07), the Council has avoided nearly 10 million kWh of consumption and almost £390k revenue spend (see section 5.7). The CMP also helps to reduce exposure to the Carbon Reduction Commitment (CRC) tax. The Council submitted its 2011/12 CRC Annual Report to the Environment Agency in July 2012 and purchased 23,235 allowances at a cost of £278,820. This cost of this tax would have been £17,748 greater had it not been for the CMP actions taken to reduce the Council's emissions (see section 5.9).

Carbon Footprint Reporting

- 3.8 In 2011/12, LB Bromley's CMP footprint was 31,143t CO₂. Figure 2 shows the different sectors that comprise Bromley's carbon footprint.

Figure 2: Bromley Council CO₂ Emissions



- 3.9 Energy use in buildings comprises 72% of our carbon emissions. Schools are the largest contributor, being responsible for 44% of total emissions, followed by Street Lighting at 18%.

3.10 Table 1 shows progress since the base year (2006/07). Overall, carbon emissions have fallen by 18% (6,637t) with significant progress being made across the whole Buildings sector.

Table 1: Progress against Baseline (2011/12 compared with 2006/07)

Sector	2006/07 (tCO ₂ e)	2011/12 (tCO ₂ e)	Tonnage Change	Percentage Change
Buildings	28,610	22,448	-6,162	-22%
<i>(Buildings – Council)</i>	5,688	4,462	-1,226	-22%
<i>(Buildings – Schools)</i>	17,216	13,695	-3,521	-20%
<i>(Buildings – Mytime)</i>	5,706	4,291	-1,415	-25%
Fleet & Business Travel	1,001	917	-84	-8%
Street Lighting	5,791	5,699	-92	-2%
Waste & Water	104	50	-54	-52%
Commuting	2,274	2,029	-245	-11%
TOTAL	37,780	31,143	-6,637	-18%

'Carbon dioxide' may be termed 'CO₂e' or 'emissions' for brevity (and expressed in tonnes as t)

3.11 Table 2 shows annual progress between 2010/11 and 2011/12. Overall, there was a 5% (1,502t) decrease in emissions – the most significant reduction (13%) relating to emissions from Council buildings.

Table 2: Annual Progress (2011/12 compared with 2010/11)

Sector	2010/11 (tCO ₂ e)	2011/12 (tCO ₂ e)	Annual Change	Percentage Change
Buildings	23,648	22,448	-1,200	-5%
<i>(Buildings – Council)</i>	5150	4,462	-688	-13%
<i>(Buildings – Schools)</i>	14,487	13,695	-792	-5%
<i>(Buildings – Mytime)</i>	4,011	4,291	280	7%
Fleet/Business Travel	991	917	-74	-7%
Street Lighting	5,769	5,699	-70	-1%
Waste/ Water	48	50	2	4%
Commuting	2,189	2,029	-160	-7%
TOTAL	32,645	31,143	-1,502	-5%

3.12 Despite achieving the planned annual 5% reduction in emissions between 2010/11 and 2011/12, Bromley is currently 1,197t behind target. To reach the Council's 2012/13 target (28,335t), Bromley needs to achieve a 7.4% reduction (2,808t) on the baseline figure (37,780t) which will be a challenge and, to some extent, will be reliant on winter temperatures.

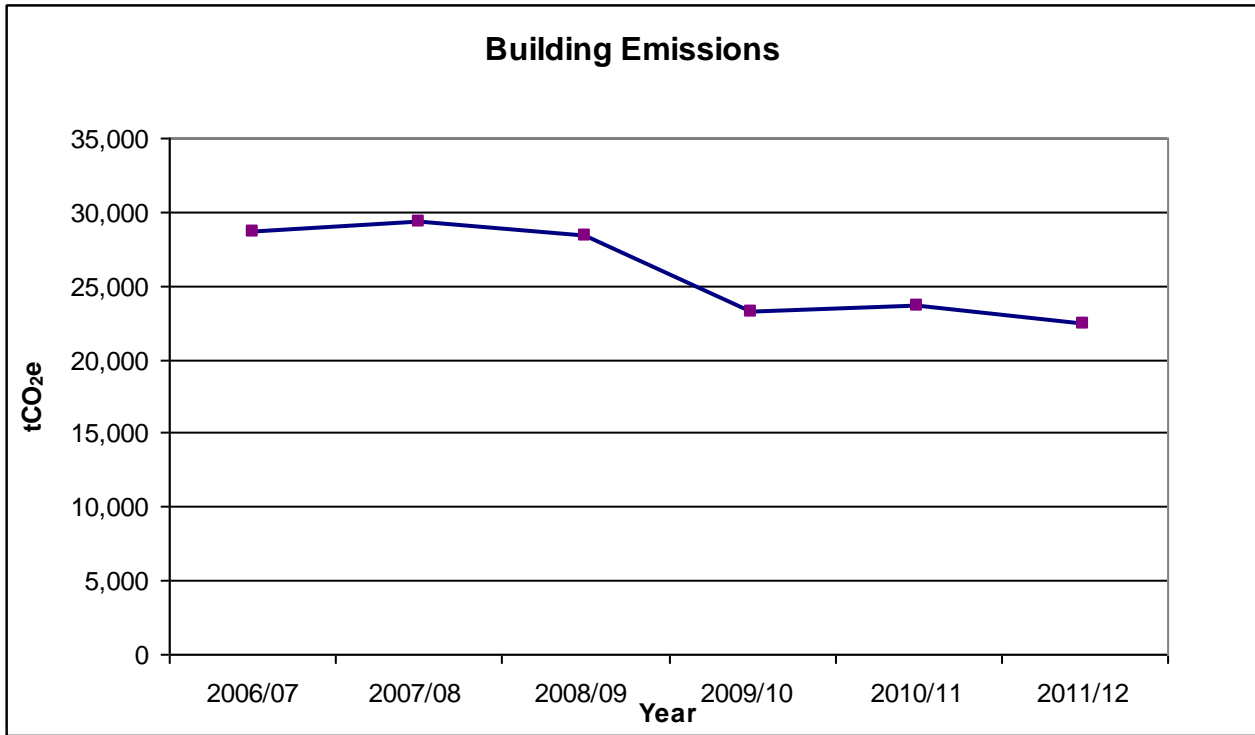
3.13 In the following paragraphs, progress and barriers faced in each sector are discussed.

Buildings

3.14 In 2011/12, emissions from buildings were 22,448t. This is a decrease on 2010/11 of 1,200t (5%), and is a marked improvement on the 2006/07 baseline year (28,610t).

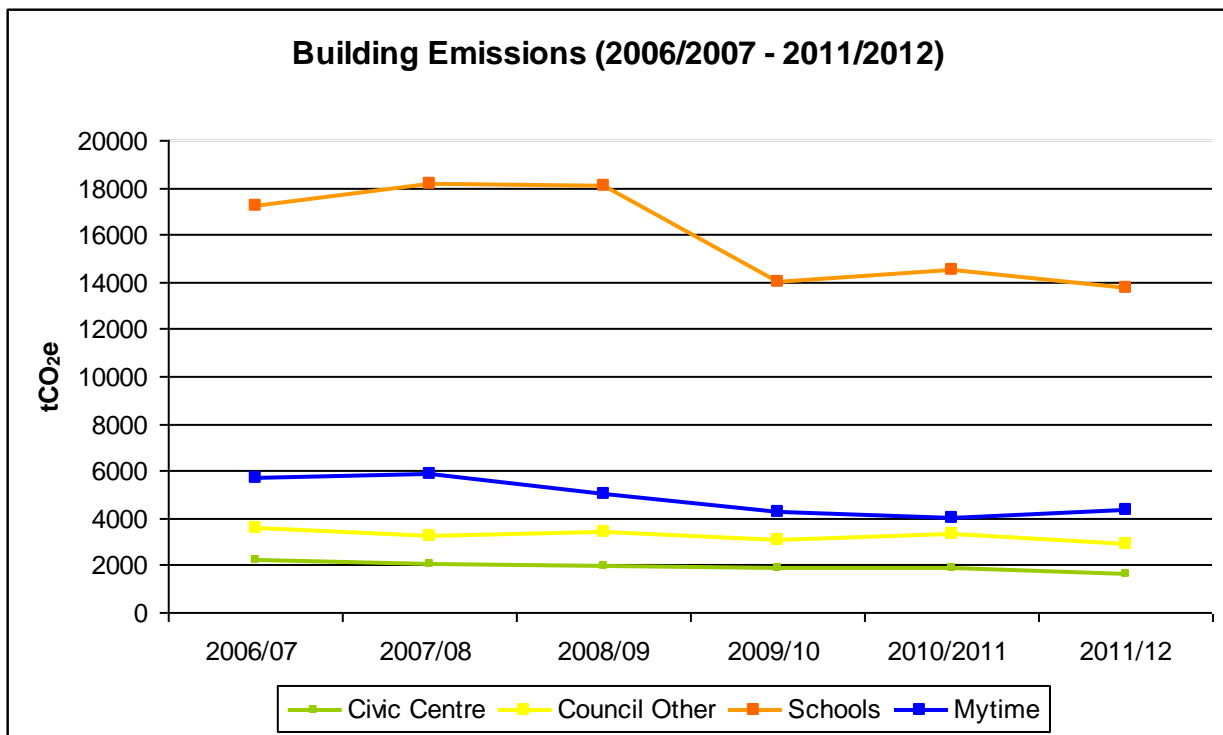
3.15 Figure 3 shows emissions from buildings since the baseline year. The fall in emissions between 2007/08 and 2009/10 is partially attributable to the reduction in gas consumption in schools and action on energy use by Bromley Mytime. The small increase between 2009/10 and 2010/11 highlights increased gas consumption as a result of the cold winter.

Figure 3: Buildings' Emissions



3.16 Figure 4 shows emissions from different buildings types from baseline year until 2011/12.

Figure 4: Buildings' Emissions by Type



Schools

3.17 Emissions from schools fell by 791t between 2010/11 and 2011/12. This decrease is exclusively a result of reduced gas consumption, with electricity consumption rising slightly. While energy efficiency will certainly have played a part in this decrease, it is worth noting that there were 1,819 degree days in 2011/12 – which is 339 fewer than 2010/11 (2,099) and similar to the 20-year average (1,761). Degree days are a simplified representation of outside air-temperature data: the colder the weather, the greater the number of degree days ([Background Information](#)).

3.18 As the sector with the largest carbon footprint, schools remain the key to achieving the Council's carbon target. However, the Council has little direct control over such emissions and the growing number of conversions to Academy schools makes this even more problematic. On average, nationally, Academy schools are more carbon-intensive per pupil than Maintained secondary schools, which are themselves more carbon-intensive than Maintained primary schools. Working with schools remains a significant and growing challenge and initiatives carried out to reduce schools' emissions include:

- Bromley Sustainable Schools Forum
- Planned Maintenance Programme with an energy efficiency focus
- Access to data to enable improved monitoring and targeting (facilitated by a 'duty to cooperate' under the CRC regulations)
- Exploring how schools can improve energy efficiency through specialist funding such as Salix Finance and the RE:FIT Programme

Council Operational Buildings

3.19 Operational property is responsible for 14% of Bromley's CMP carbon emissions. Emissions from this sector reduced by 688t (13%) compared with 2010/11.

3.20 Civic Centre emissions fell steadily until 2010/11, when there was a small increase of 7t. In 2011/12, emissions at the Civic Centre fell by a significant 267t.

3.21 Emissions from other Council buildings (Libraries, Day Centres, Depots, Cemeteries and Parks) fell by 421t compared with 2010/11.

3.22 While the aforementioned milder weather undoubtedly had a positive impact, Members can be confident that energy efficiency measures installed during 2011/12 also contributed to the difference. Measures included:

- Two new condensing boilers and a Building Management System (Civic Centre)
- Decentralisation of hot water, with the three direct fired water heaters (Civic Centre)
- Reduction in hot water temperature of Walnuts District Heating System
- North Block being vacant and unheated
- Environmental Champions' Network work
- Planned maintenance programme

3.23 It is anticipated that these measures, the anticipated consolidation of other Civic Centre buildings, and new invest-to-save projects (such as the replacement of air-conditioning in the Civic Centre server room with evaporative cooling), will lead to further emission reductions by 2012/13. Proposals to survey other Council buildings (such as the Widmore Centre) for potential invest-to-save energy efficiency projects are also underway.

3.24 The impact of staff reoccupying the refurbished North Block (with increased operational hours) will, however, increase emissions despite the building being significantly more energy efficient. This may be partially off-set by Ann Springman and Joseph Lancaster block being empty.

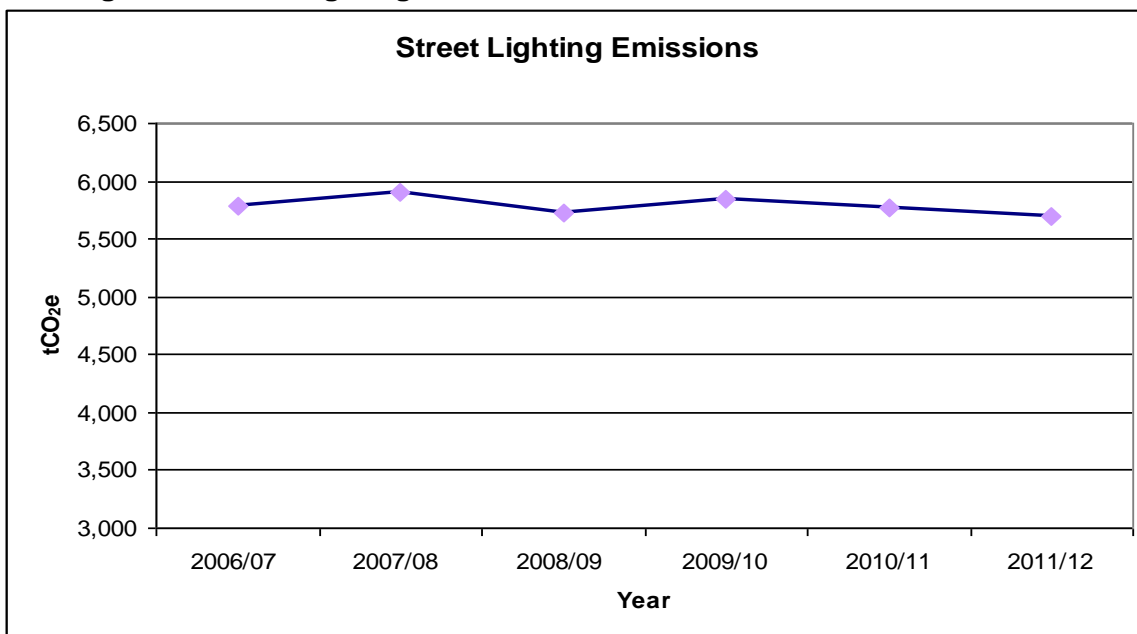
Bromley Mytime Buildings

3.25 Mytime buildings are responsible for 14% of total CMP emissions, down from 15% in the base year. Mytime emissions increased by 280t between 10/11 and 11/12 and have fallen 1,415t since the baseline year. This is due to the installation of smart meters, voltage optimisation, swimming pool covers and LED lighting.

Street Lighting

3.26 Street lighting emissions were 5,699t in 2011/12 - representing 18% of total emissions.

Figure 5: Street Lighting Emissions



3.27 There was a 71t fall between 2010/11 and 2011/12 and a 92t (2%) fall since the baseline year.

3.28 Measures taken late in 2010/11 such as upgrading MI26 Lanterns control gear and converting crossing island posts so they are only on in hours of darkness have yielded full year savings during 2011/12. New measures in 2011/12 including the conversion of crossing bollards so they are no longer lit 24 hours a day have also contributed to this annual reduction.

3.29 Projects currently underway include fitting more efficient lamps to a large number of the High Pressure Sodium (SON) street lights.

2012/13 Projects

3.30 There are a range of projects in the pipeline which will enable further emissions reduction and assist the Council in achieving its 25% reduction target. Some of these projects funded by the Salix Invest-to-Save fund and others by Property or Highways budgets.

Table 3: Potential Projects

Potential Carbon Saving Projects for 2012/13
• Energy efficiency measures at the Central Library
• Energy efficiency measures at the Widmore Centre
• Increasing use of flexible working initiatives
• Continued rationalisation of Civic Centre site
• Street Lighting Replacement Programme
• Installation of Centralised Management System for street lighting
• Upgrade of SON (high pressure sodium) street lighting
• Upgrade of transport fleet upon contract renewal
• Schools energy efficiency projects (through the RE:FIT programme)

Future Scope & Ambition

- 3.31 2012/13 will be final year of this five-year programme. Consideration of future options has been made by the Programme Board (4 October 2012) as the CMP will have finished by the time the 2012/13 annual report is presented to the Executive.
- 3.32 The fundamental reasons for the CMP (the need to control energy consumption, carbon emissions and revenue costs) remain: indeed, they have become even more acute as global energy prices continue to rise and put pressure on budgets. In addition to controlling energy revenue costs, there is also now the need to control CRC costs (Report ES 12123) and this will become increasingly important if the tax rate increases.
- 3.33 When consideration was first given to the CMP in 2007/08, the Programme's ability to deliver was taken largely on trust – albeit based on the experience of other organisations in reducing their emissions and costs. Now it can conclusively be shown that sustained and appropriately resourced management action to reduce energy consumption and hence emissions and costs has worked in Bromley. Members can have a high degree of confidence in the efficacy of continued action through a new programme of action.
- 3.34 The issues to be determined relate to what is an appropriate level of ambition, scope, baseline and timescale for a continuation of the Programme. Taking each in turn:
- **Ambition:** The current CMP aimed to reduce emissions by 5% each year over 5 years (25% reduction). After four years, an average annual reduction of 4.5% had been achieved (18% reduction). This level of ambition (5% p.a.) was realistic in the early years as the more obvious inefficiencies were tackled. However, as the 'low-hanging fruit' is picked, opportunities become harder to identify and more costly to implement. A stretching but achievable target can still be set, but not as high as that of the first Programme.
 - **Scope:** The current Programme's scope focuses on internal environmental impacts associated with buildings (operational property and schools) street lighting, commuting, business travel, and waste and water associated with the Civic Centre. One option would be to retain this internal focus but include waste production and water consumption at all major sites. Consideration was given by the Programme Board to managing external environmental impacts / costs (e.g. borough waste management) and the Board's view was that CMP should be driven by financial benefits to the Council
 - **Baseline:** The baseline for the current Programme was 2006/07. Some sites were excluded due to poor data quality. This issue has now been resolved, meaning that these sites could now be part of the new programme. In addition, it makes sense to report on the same sites covered by the CRC programme. Incorporating such sites would mean creating a new baseline – which would be 2012/13. The downside is that this would make progress against the original baseline difficult, if not impossible, to calculate.
 - **Timescale:** The current Programme was designed to last for five years (plus the one year preparatory year - 2007/08). This was because a shorter period would make it difficult to realise long-term projects and a longer period would make the target date feel so distant that it would lack urgency. Therefore, a further five-year term would seem appropriate.
- 3.35 As advised by the Programme Board meeting (4 October 2012), it is recommended (see 2.2) that the Executive endorses a new Carbon Management Programme to continue to drive down costs and emissions comprising:
- **Ambition:** 15% (3% p.a.) reduction– effectively delivering a 40% reduction over 10 years
 - **Scope (Sites):** All sites covered by the CRC Programme (excluding Bromley Mytime)
 - **Scope (Sectors):** As CMP plus water and waste from key sites (not just Civic Centre)
 - **Baseline:** 2012/13
 - **Timescale:** Five years: 2014/15 – 2018/19

4. POLICY IMPLICATIONS

- 4.1 The Quality Environment section of the Building a Better Bromley 2020 Vision states that 'we are also determined to work together in reducing energy consumption', and 'reducing energy use' is also identified as an issue to be tackled and how we will judge success.
- 4.2 A key aim set out in the 2012-15 Environment Portfolio Plan is: "Reducing energy costs and emissions".
- 4.3 The completion of this work will place the Council in an improved position with regard to compliance with the Carbon Reduction Commitment Scheme: see Executive report ES12123.

5. FINANCIAL IMPLICATIONS

- 5.1 The Council cannot control energy prices but it can aim to reduce energy consumption and, in this way, help to control spend and protect budgets.
- 5.2 If consumption and prices remained constant then measures designed to reduce consumption and emissions would directly translate into budget savings. However, prices and consumption vary due to factors outside the Councils control (e.g. markets and weather). Because of this, the term 'avoided spend' is used in this report rather than 'saving'. For instance:
 - If efficiency measures reduced consumption but, say, cold weather increased heating costs then although an absolute saving won't have been made, significant spend will have been avoided which would otherwise have been incurred
 - Similarly, if efficiency measures reduced consumption but prices rose then similarly financial savings won't have been made but significant spend will have been avoided

Equally if cold weather does not negatively impact on consumption and prices don't increase above budget, then the avoided spend does indeed come through as a true budget saving.

- 5.3 The carbon savings in this report include energy used by schools and Bromley Mytime, and commuting by staff, and so not all the avoided spend will accrue to LB Bromley.
- 5.4 However carbon savings relating to operational property, street lighting, fleet, business travel, waste and water, will directly help LB Bromley to avoid unnecessary energy spend and help to reduce revenue budget pressures. In the following sections, the Civic Centre (which is the major source of operational property emissions and the location for the majority of energy efficiency projects) and Street Lighting data are used to show the links between avoided consumption, carbon and energy costs.
- 5.5 In the October 2008 report (ED08067) a scenario was projected showing what would happen if no action was taken (Business as Usual) and what would happen if Bromley achieved its 25% carbon reduction ambition (Reduced Emissions Scenario). The difference between the two is known as the 'value at stake' and represents 'avoided spend'.
- 5.6 Table 4 (below) shows avoided consumption and spend for the Civic Centre and Street Lighting by quantifying the difference between what was predicted would happen if no action was taken (Business as Usual) with what actually happened in each year.
 - Avoided consumption is the difference between our 2006/07 forecast of increased energy use ('Business as Usual' assumed a 0.7% increase in operational property and 0.75% increase in street lighting consumption) and our actual energy consumption each year
 - Avoided spend was calculated by applying actual energy unit prices paid each year to this 'avoided consumption'.

5.7 Since the start of the Carbon Management Programme (2006/07), the Council has avoided nearly 10 million kWh of consumption and avoided unnecessary revenue spend of ~£390k.

Table 4: Avoided Consumption and Spend

	2007/08	2008/09	2009/10	2010/11	2011/12	Cumulative
Civic Centre Avoided Consumption (kWh)	907,230	1,142,971	1,584,957	1,750,261	3,006,346	8,391,766
Civic Centre Avoided Spend	£8,512	£37,792	£42,543	£48,644	£113,523	£251,013
Street Lighting Avoided Consumption (kWh)	170,256	349,099	138,793	460,091	728,689	1,506,415
Street Lighting Avoided Spend	-£12,041	£45,001	£13,512	£36,142	£55,315	£137,929
Total Avoided Consumption (kWh)	736,974	1,492,070	1,723,750	2,210,352	3,735,035	9,898,181
Total Avoided Spend	-£3,529	£82,793	£56,055	£84,786	£168,838	£388,942

5.8 Detailed reasons for the annual changes in energy consumption (e.g. weather, behaviour, technology, property maintenance) are appended to each annual CMP Executive Report. The following bullet points highlight some of the more significant price and consumption factors to have affected annual performance in terms of avoided consumption and spend.

- Civic Centre: 2007/08 performance was rather modest as activity was mainly focussed on preparing the Strategy & Implementation Plan, but the Environmental Champions Network was launched to help change behaviour. 2008/09 initiatives included server virtualisation, solar hot water pre-heater, Ann Springman boiler replacement and Voltage Optimisation. The step change improvement between 2007/08 and 2008/09 can be ascribed to a combination of this reduced consumption and an electricity price increase (which magnifies avoided spend). 2009/10 included significant improvements to St Blaise and East and West wings, such as new windows and roofs. In 2010/11 gas consumption fell for a third year, in part a result of the installation of a high efficiency boiler in the main boiler room. 2011/12 saw a fall of approximately one million kWh of gas consumption compared with the previous year. This is a significant achievement and reflects major improvements in the heating systems as well as the temporary closure of North Block for refurbishment.
- Street Lighting: 2007/08 was the CMP preparatory year when carbon management plans were being developed. Street lighting consumption actually rose by 2% (1.25% higher than the forecast) leading to an increase, rather than reduction, in consumption. In 2008/09 street signs were changed so they were no longer illuminated 24hrs a day, there was an inventory rationalisation, and zebra beacons were converted to lower wattage LEDs. The step change between 2007/08 and 2008/09 is due to these initiatives which helped to protect the Council against a 70% electricity price increase. In 2009/10 and 2010/11 other initiatives such as more lit sign conversions and part-night dimming have contributed to further avoided spend. 2011/12 measures included converting crossing bollards so they aren't lit 24 hours a day.

5.9 The Executive is aware that the Council currently has to pay £12 for every tonne of carbon emitted under the Carbon Reduction Commitment. Clearly any reduction in energy use and carbon emissions will reduce both energy bills and CRC tax bills. Action taken under the Carbon Management Programme during 2011/12 reduced emissions from Council buildings by 688t and schools by 791t and this resulted in a 2011/12 CRC tax saving of £17,748.

6. LEGAL IMPLICATIONS

- 6.1 Reporting annual greenhouse gas emissions is a mandatory component of the Government's Single Data List known as 'Sharing information on Greenhouse Gas Emissions from Local Authority own Estate and Operations'.
- 6.2 In practice, this requirement involved officers uploading the detailed background information used to prepare this Executive Report to the Council's public web site. This information ([link](#) – also lodged in Members' Room) was submitted (July 2012), together with explanatory information to the Department of Energy and Climate Change (DECC). DECC publishes the information from all participating local authorities on its [website](#).
- 6.3 The Carbon Management Programme also provides the raw data which enables the Council to comply with the Carbon Reduction Commitment scheme, which is a statutory duty enforced through a system of civil and criminal penalties (also see Executive Report ES12123).

Non-Applicable Sections:	Personnel Implications
Background Documents: (Access via Contact Officer)	ED08067 Carbon Management Programme (Executive Report, October 2008) ES09100 Carbon Management Programme 2008/09 (Executive Report, October 2009) ES10188 Carbon Management Programme 2009/10 (Executive Report, January 2011) ES12007 Carbon Management Programme 2010/11 (Executive Report, March 2012) Sharing information on Greenhouse Gas Emissions from Local Authority own Estate and Operations (background information to this report – also placed in Members' Room)