GREENHOUSE GAS EMISSIONS (GHG) ANNUAL REPORT 2012/13

REPORT AUTHORS
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1 Background

1.1 Stevenage Borough Council (SBC) is the local authority for the Stevenage non-metropolitan district of England, the United Kingdom. Stevenage is located in the north-east of Hertfordshire, in the East of England region. There are 39 elected members, representing thirteen electoral wards.

1.2 The Council employs approximately 650 full time equivalent employees. The arms length management organisation (ALMO), Stevenage Homes Ltd (SHL), has been reintegrated from December 2011 to carry out in-house responsibilities for the management of Council owned social housing in Stevenage.

1.3 SBC retains an in house Environmental Services operation which includes domestic, clinical and commercial trade waste collection, kerbside recycling collection, grounds maintenance, fleet management, equipment and vehicle repairs, parks and amenities management, transfer station waste sorting and recycling. Building maintenance and repairs has returned to in house management from December 2011.

1.4 SBC has a comprehensive climate change strategy and action plan which is currently under review. The Council is committed to the objectives as set out in the Environmental Management Policy Statement and the Energy Management Policy Statement.

1.5 SBC is below the threshold level of the total half-hourly electricity consumption of 6,000 megawatt-hours (MWh) for statutory registration with the Carbon Reduction Commitment CRC Energy Efficiency Scheme. SBC at present is at approximately 3,093 megawatt-hours (MWh), 51.6%, of the threshold of the total half-hourly electricity consumption of 6,000 MWh.

1.6 The commitment of Stevenage Borough Council for a sustainable approach to all its services to help achieve maximum benefit for the community is fully endorsed by the Leader, Members, Chief Executive and the Strategic Management Board.

2 Organisation contact details

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3 Dataset Reporting

3.1 National Indicators have been discontinued, some to be eliminated entirely and others to be replaced by reporting datasets. For CO_2e reporting the sharing of information on greenhouse gas (GHG) emissions from local authority own estate and operations is the successor to National Indicator 185.

3.2 The Department for Energy and Climate Change (DECC) requested that each local authority publish its own GHG report locally on its own website. As a minimum the standard template in Annex I of the Department for Environment, Food and Rural Affairs (Defra) guidance (4.2) should be used, so that totals in CO_2e for scoping bands Scope 1, Scope 2 and Scope 3 are obvious. This is to support the localism agenda by ensuring local authorities are accountable to their local people for their greenhouse gas emissions.

3.3 DECC requested that each local authority publish its GHG report by the end of the July following the April-March previous reporting year.

3.4 DECC collates the total figures for each local authority for their Scope 1, Scope 2 and Scope 3 (if reported) emissions in tonnes of carbon dioxide equivalent (CO_2e) covering all greenhouse gas emissions. The total figures for all LAs are therefore now available in one place. DECC is provided with a short description of what each local authority has included and excluded in its report.

4. Requirements

4.1 Stevenage Borough Council is required to identify activities in the organisation which are responsible for GHG emissions being released into the atmosphere.

4.2 This report has been produced following Defra guidelines on how to measure and report greenhouse gas emissions.

4.3 Greenhouse Gas (GHG) emissions activities recommended for inclusion in the annual report are:

- direct (scope 1) – fuel combustion, owned transport, process emissions, fugitive emissions
- energy indirect (scope 2) – consumption of purchased electricity, heat, steam and cooling

Additionally there are discretionary emissions activities for reporting

- other (scope 3) – purchased materials and fuels, transport related activities, waste disposal, leased assets, franchising and outsourcing, sold goods and services

4.4 The approach for GHG emissions reporting must be consistent. The options

are from three established approaches:

- the equity share approach
- the financial control approach
- the operational control approach

The operational control approach most closely reflects the approach taken previously by Stevenage Borough Council when reporting under NI185/NI194. For consistency and efficiency this is the approach adopted for GHG emissions reporting, given that the Council has operational control, whether directly under its own control or through subsidiaries and partners, of operations included in GHG emissions reporting.

4.5 This is the third year for the reporting of GHG emissions. The SBC report also included data for 2008/2009 for comparison as the base year.

5 Operational Scopes Included

5.1 Stevenage Borough Council has measured its scope 1, 2 and significant scope 3 emissions from the sources listed below. Not all sources listed in 4.3 have been assessed. Some are not applicable to SBC and, in the case of the discretionary sources in scope 3, not included due to lack of available data.

5.1.1 Scope 1 Direct emissions from:
- owned and controlled transport freight diesel
- owned and controlled transport freight petrol
- natural gas fuels combustion
- LPG fuels combustion

5.1.2 Scope 2: Energy indirect emissions from:
- consumption of purchased electricity and heat.

5.1.3 Scope 3: Other indirect from:
- transport related activities – business travel
- water consumption and disposal

6 Emissions 2010/2011 – 2012/2013

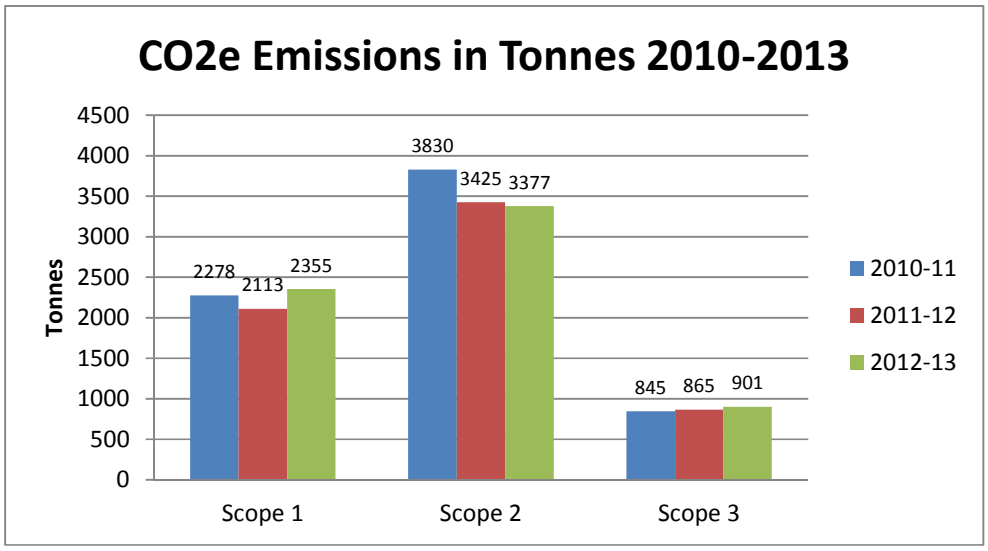
6.1 4.3 lists the source areas for emissions data. The 2012-13 emissions have been calculated using the appropriate Defra spreadsheet.

7 Year on Year Comparisons

7.1 Emissions totals for Scopes 1-3 year on year are shown in Table 1

7.2 The comparisons of CO_2e emissions for Scopes1,2 & 3 over a three year period are shown in Graph 1.

Graph 1 CO2e Emission in Tonnes, Scopes, 1,2 and 3.



7.3 Scope 1 emissions have contributed approximately 2,200 tonnes of CO_2e per year over a three year period since April 2010. The 2012/13 figure is slightly higher compared with previous years at 2,355 tonnes.

Scope 2 emissions have contributed approximately 3,400 - 4000 tonnes of CO_2e per year over the three year period since April 2010 and continue to decrease against the base year.

Scope 3 emissions have contributed approximately 870 tonnes of CO_2e per year over the three year period since April 2010 and has increased slightly during 2012-13.

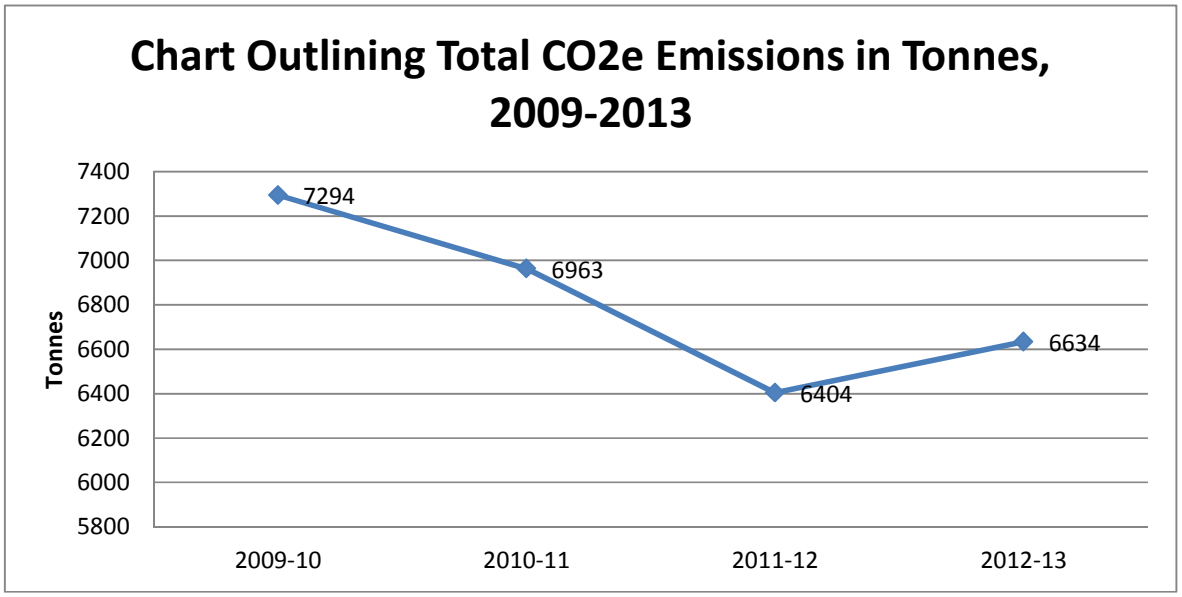
			2010/2011 GHG CO_2e (kg)				2011/2012 GHG CO_2e (kg				2012/2013 GHG CO_2e (kg)			
			Scope 1	Scope 2	Scope 3	Total	Scope 1	Scope 2	Scope 3	Total	Scope 1	Scope 2	Scope 3	Total
Scope 1	Emissions Direct	Own or controlled transport freight diesel	825,466	NA	156,536	**982,002**	979,451	NA	221,291	**1,200,743**	999,021	NA	225,712	**1,224,734**
	Emissions Direct	Owned or controlled transport freight petrol	35,613	NA	6,302	**41,915**	31,708	NA	6,717	**38,425**	31,735	NA	6,723	**38,457**
	Emissions Direct	Natural gas fuels combustion	1,411,100	NA	137,005	**1,548,105**	1,097,965	NA	113,373	**1,210,438**	1,319,334	NA	136,343	**1,455,678**
	Emissions Direct	LPG fuels combustion	5,953	NA	745	**6,698**	4,863	NA	609	**5,472**	5,156	NA	645	**5,801**
	Emissions Direct	Gas oil fuels combustion	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Emissions Direct	Process emissions	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Emissions Direct	Fugitive emissions	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Scope 2	Emissions Indirect	Consumption of purchased electricity	NA	3,830,312	504,765	**4,335,077**	NA	3,425,592	457,189	**3,882,781**	NA	3,377,544	450,776	**3,828,320**
	Emissions Indirect	Consumption of purchased heat	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Emissions Indirect	Consumption of purchased steam or cooling	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Scope 3	Emissions (other) Indirect	Transport related activities (business travel)	NA	NA	41,430	**41,430**	NA	NA	51,899	**51,899**	NA	NA	64,682	**64,682**
	Emissions (other) Indirect	Water consumption and disposal	NA	NA	7,974	**7,974**	NA	NA	14,353	**14,353**	NA	NA	16,858	**16,858**
	Emissions (other) Indirect	Waste disposal (own estate waste, recycling)	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	Emissions (other) Indirect	Leased assets, franchising and outsourcing	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	Emissions (other) Indirect	Sold goods and services (use of goods, services, contractors)	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	Emissions (other) Indirect	Purchased materials and fuels (extraction, processing and production)	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		TOTAL	2,278,132	3,830,312	845,757	**6,963,201**	2,113,987	3,425,592	865,431	**6,404,111**	2,355,246	3,377,544	901,739	**6,634,530**

Table 1 GHG emissions 2010/11 – 2012/13

NA – not applicable NI – not included

7.4 Total CO_2e emissions year on year are compared in Graph 2.

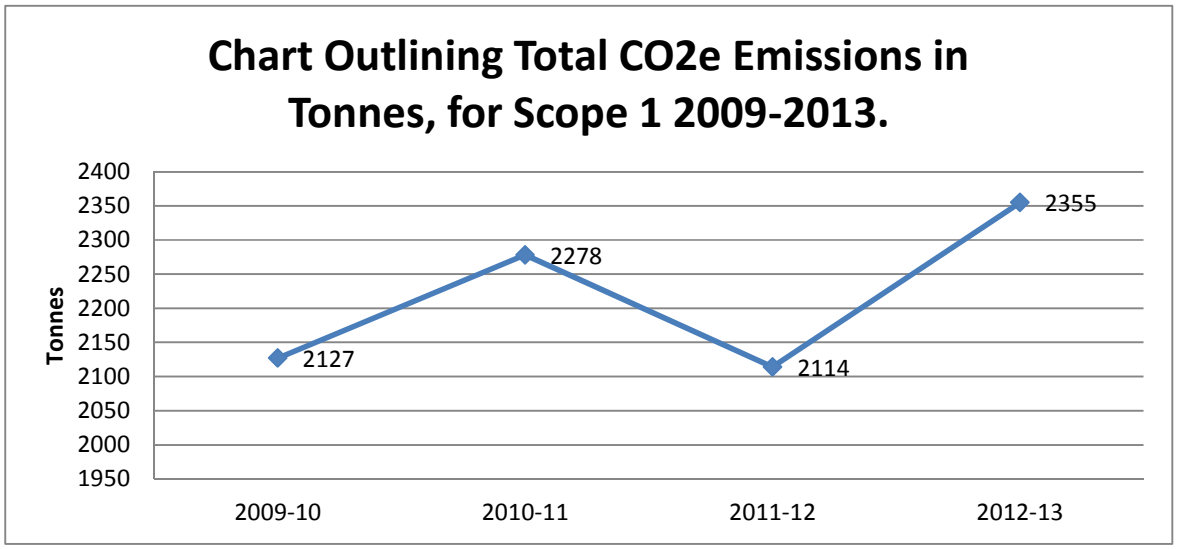
Graph 2



Total CO2e output has increased by approximately 3.5% in 2012/13 compared to the 2011/12 year.

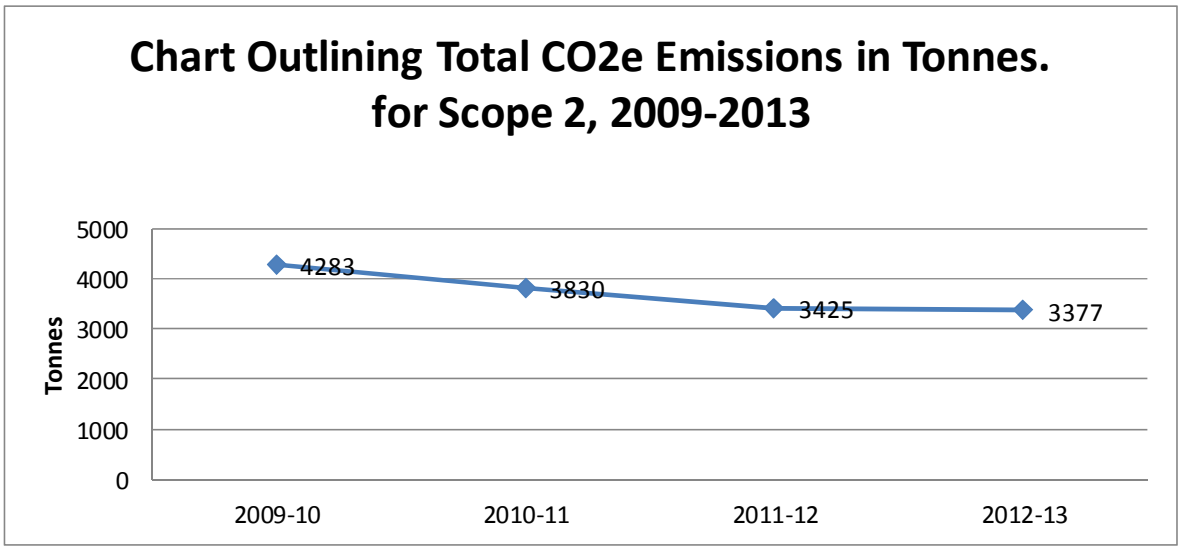
7.5 Total Scope 1 emissions year on year are compared in Graph 3.

Graph 3



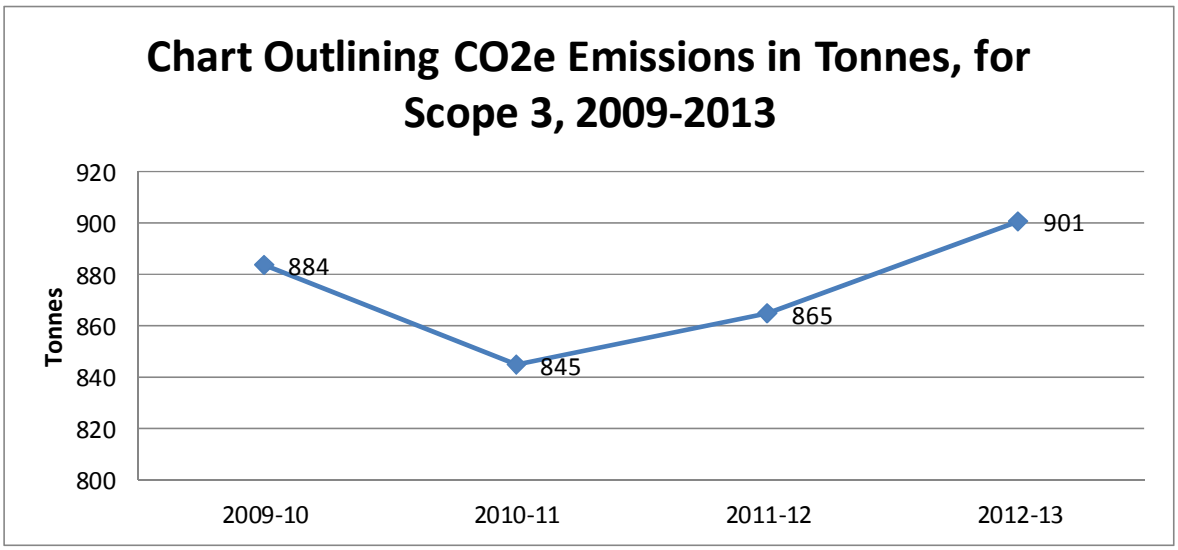
7.6 Total Scope 2 emissions year on year are compared in Graph 4.

Graph 4



7.7 Total Scope 3 emissions year on year are compared in Graph 5.

Graph 5



7.8 Table 2 overleaf highlights percentage increases and decreases in CO_2e emissions

against the 2008/09 base year. Fleet diesel emissions increased in 2009/10, 2010/11, 2011/12 and 2012/13. Purchased electricity emissions reduced in 2012/13, although another big CO2e contributor natural gas increased. Business travel and water consumption emissions both increased 2011/12 and 2012/13 against the base year. Fleet petrol, LPG fuels and purchased electricity emissions have decreased in all years since the 2008/09 base year.

7.9 The year 2010/11 had shown a large percentage increase in GHG emissions resulting from natural gas alongside a significant percentage decrease in GHG emissions resulting from consumption of purchased electricity. This is a significant effect of the introduction of a combined heat and power (CHP) plant to the Stevenage indoor swimming pool managed and operated by Stevenage Leisure Ltd on behalf of SBC. However, natural gas also reduced by 9% against the base year even though it now continues to fuel the CHP plant in the swimming pool.

Table 2: Year on Year % increase/decrease

Year by Year % increase/decrease against base year					
	2008/2009 Base	**09/10**	**10/11**	**11/12**	**12/13**
Fleet Diesel	0	+1.56%	+7.15%	+31.00%	+33.63%
Fleet Petrol	0	-27.82%	-15.10%	-22.16%	-22.10%
Natural Gas	0	+7.96%	+16.32%	-9.06%	+9.37%
LPG Fuels	0	-48.76%	-40.87%	-51.69%	-48.8%
Purchased Electricity	0	-0.83%	-11.31%	-20.57%	-21.7%
Business Travel	0	-19.65%	+6.91%	+33.91%	+66.9%
Water Consumption	0	-5.05%	+10.60%	+99.07%	+133.8%
Overall	**0**	**+0.72%**	**-3.85%**	**-11.57%**	**-8.4%**

7.10 Table 3 shows the percentage contribution to CO_2e emissions of the individual sources to the annual total calculated emissions.

The majority of the sources are fairly consistent in levels of percentage contribution to the annual totals of emissions in different years.

Table 3 Individual source emissions as percentage of annual total

Emissions Percentage of Annual Total					
	Base 2008/2009	**2009/2010**	**2010/2011**	**2011/12**	**2012/13**
Fleet Diesel	12.65%	12.76%	14.10%	18.75%	18.46%
Fleet Petrol	0.68%	0.49%	0.60%	0.60%	0.57%
Natural Gas	18.38%	19.70%	22.23%	18.90%	21.94%
LPG Fuels	0.16%	0.08%	0.10%	0.09%	0.087%
Purchased Electricity	67.50%	66.45%	62.26%	60.63%	57.70%
Business Travel	0.54%	0.43%	0.59%	0.81%	0.25%
Water Consumption	0.10%	0.09%	0.11%	0.22%	0.97%

7.11 The most significant contribution to GHG emissions on a continuing basis has been purchased electricity at between 58-68% of the annual total. Natural gas has contributed between 18-23% and fleet diesel fuel has contributed between 12-19%.

7.12 Fleet petrol, LPG fuels, business travel and water consumption each contributed less than 1% of the total of GHG emissions. The combined total contribution of theses sources has been between 1-1.9%

8 Intensity Ratios

8.1 The intensity ratios are provided to give a year on year comparison of GHG CO_2e emissions per defined units. This helps to provide direct comparisons between years even though the numbers of units, e.g. fulltime equivalent employees (FTE's), can change from year to year.

8.2 Selected intensity ratios for comparison are shown in Table 4:

Table 4 Intensity ratios (tonnes)

Intensity measurement	2008/09	2009/10	2010/11	2011/12	2012/13
Total of CO_2e emissions tonnes per FTE employee (654.38 as at March 2013).	13.07	13.84	13.95	9.85	10.14
Scope 1 natural gas fuels CO_2e emissions tonnes per FTE employee	2.40	2.73	3.10	1.86	2.02
Scope 1 fleet diesel fuels CO_2e emissions tonnes per vehicle	8.65	8.86	9.44	5.97	7.99
Scope 2 Consumption of purchased electricity CO_2e emissions tonnes per FTE employee	8.82	9.20	8.69	11.66	5.16

8.3 FTE employees on 31 March 2013 stood at 654.38 with a diesel fleet of 125. The total CO2e emissions in the categories shown in table 4 for 2012/13 indicates a small reduction in CO2e per employee compared with the previous year.

9 GHG Emissions Reduction

9.1 For the Scopes used (5.1) Stevenage Borough Council operations and estate emitted 6,634 tonnes greenhouse gas CO_2e in 2012/2013. The data collected and emissions levels calculated provide a base for future emissions reduction strategies. It is clear that the major target areas for emissions reduction will be purchased electricity, natural gas and fleet transport diesel.

9.2 Reductions in all three of the above GHG sources would result in not only achieving the aim of reducing emissions, but also would contribute in the drive to reduce public sector costs.

9.3 Fleet diesel transport emissions are subject to service obligations. Increasing service delivery of, for example, household recycling can lead to increased requirements for freight vehicle miles. However EEC requirements for increasingly stringent EURO standards on diesel engines help with the continuing improvement in GHG emissions from fleet freight vehicles.

9.4 Given that purchased electricity continues to represent approximately 60% of SBC's annual emissions then this is the area which could potentially provide the biggest return in both emissions reduction and cost savings. However, all options for reduction in purchased power and fuels should be considered.

9.5 Energy saving options continue to be explored and the implications, opportunities and potential advantages of the Renewable Heat Incentive (RHI) are being evaluated.

9.6 The SBC Funding Officer periodically identifies potential opportunities, including considerable EEC funding through the new European Energy Efficiency Fund (EEE-F). There are further opportunities identified through, for example, the Green Grants Machine, the Energy Efficiency Financing Scheme.

9.7 It is essential to follow these and other sources of funding and partnerships up and evaluate relevance, viability and cost benefits. Some initiatives may be medium to long term and involve an 'invest to save' approach. Failure to monitor and investigate opportunities may result in missed opportunities to both save money, ensure energy security and reduce emissions.

Definitions and Acronyms

ALMO	Arms length management organisation. SBC social housing is managed by SHL
CHP	Combined heat and power
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent. Unit of measurement used to indicate the global warming potential of a greenhouse gas in terms of the global warming potential of one unit of CO_2.
CRC	Carbon reduction commitment
CRC Energy Efficiency Scheme	Statutory UK scheme aimed at driving improvements in energy efficiency
DECC	Department of Energy and Climate Change
Defra	Department for Environment, Food and Rural Affairs
EEC	European Economic Community
EEE-F	European Energy Efficiency Fund
FTE	Full time equivalent (employee)
GHG	Greenhouse gas

Greenhouse gas	A gas that contributes to the greenhouse effect by absorbing infrared radiation
Greenhouse effect	The greenhouse effect is the natural process by which the atmosphere traps some of the Sun's energy, warming the Earth enough to support life
Intensity Ratio	Intensity ratios express GHG impact per unit of activity. e.g. tonnes/FTE
LA	Local authority
LPG	Liquid petroleum gas
NI 185	National indicator for carbon emissions reporting. Now discontinued. Replaced by GHG annual reporting from 2010/11
RHI	Renewable Heat Incentive
SBC	Stevenage Borough Council
Scope	GHG protocol definition which defines the operational boundaries in relation to direct and indirect GHG emissions
SHL	Stevenage Homes Ltd
SLL	Stevenage Leisure Ltd
Tonne	Metric ton = 1000Kg