

READING BOROUGH COUNCIL

REPORT BY DIRECTOR OF ENVIRONMENT AND NEIGHBOURHOOD SERVICES

TO:	STRATEGIC ENVIRONMENT, PLANNING AND TRANSPORT COMMITTEE		
DATE:	NOVEMBER 2018	AGENDA ITEM:	13
TITLE:	ANNUAL CARBON FOOTPRINT REPORT, 2017/18		
LEAD COUNCILLOR:	CLLR PAGE	PORTFOLIO:	Strategic Environment, Planning and Transport
SERVICE:	SUSTAINABILITY	WARDS:	ALL
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1. PURPOSE OF REPORT AND EXECUTIVE SUMMARY

- 1.1 Reading Borough Council's 'Carbon Plan, 2015-2020' sets out actions to meet a carbon emissions target of 50% by 2020. In addition a new renewable energy target was set to generate renewable energy equivalent to 15% of total energy consumed.
- 1.2 Reading's Climate Change Strategies 2008 and 2013, set out the ambition to have a low carbon future and for the Council to reduce carbon emissions by 50% by 2020 and to zero by 2050. In 2016, The Council pledged to aim for 100% clean energy in Reading by 2050 (UK100), requiring a step change in energy efficiency and renewable energy deployment across the Borough.
- 1.3 This report shows that in 2017/18, the Council continued to make reductions of carbon emissions, with a 16.1 % reduction in corporate emissions and a 13.1 % reduction in emissions within the wider influence of the Council, against the previous year's levels (2016/17). The 2017/18 carbon footprint for the Council's corporate activities is 53.9 % lower than the baseline emissions in 2008/09, exceeding the 2020 target three years early. The full report can be found in Appendix 1.
- 1.4 The total renewably generated energy in 2017/18 was equivalent to 6.1 % of energy used in buildings. This slow progress has primarily been due to national policy changes but also due to the challenges associated with providing renewable heat. In addition, Reading Transport Ltd continues to invest in its bus fleet to reduce the impact on the environment and improve its efficiency.
- 1.5 It is estimated that the avoided costs to the Council from the reduced energy consumption since 2008 are £7.1m¹, compared to if no action had been taken. In 2017/18 these avoided costs are £1.3m¹. With energy costs set to rise, limiting the Council's exposure to increased energy bills is a priority.
- 1.6 Looking forward, on-going and new initiatives will support further reductions these including investments in energy efficient technologies in buildings programmes such as the town hall, Leisure sites and Bennet Road depot. A coordinated energy awareness and training programme and sustained improvements in data capture and analysis also play an important part. A number of renewable energy and storage

¹ excluding standing charges and other contract charges

technologies will be tested in a new EU match funded project for which RBC is awaiting confirmation of funding.

- 1.7 Appendix 1 to this report provides the full Reading Borough Council: Greenhouse Gas (GHG) Protocol Report 2017-18. This is a technical document which is required to meet the Government's expectations for performance recording.

2. RECOMMENDED ACTION

- 2.1 The Committee notes the continued reduction of carbon emissions for 2017/18, with the emissions from the Council's corporate activities 53.9 % lower than the baseline emissions in 2008/09, exceeding the 2020 target by 3.9% three years ahead of schedule. The emissions from the Council's wider activities (including schools and managed services) being 38.1 % lower than the baseline emissions in 2008/09.
- 2.2 The Committee notes that total renewably generated energy in 2017/18 was equivalent to 4.5 % of the total energy use of the council, or 6.1 % of energy used in buildings. In addition the Committee recognises that the 2020 renewable energy target continues to be challenging following the significant changes to the 'Feed in Tariff' incentive scheme made by government in 2015/16, and its forthcoming withdrawal in April 2019.
- 2.3 The Committee continues to support the delivery of the carbon plan by resourcing ongoing investment in low carbon technologies and initiatives to reduce energy costs and the carbon footprint of Council operations subject to budget approvals.

3. POLICY CONTEXT

The current position:

- 3.1 In 2008, following the adoption of the UK Climate Change Act 2008, the first climate change legislation anywhere in the world, the Council launched its climate change strategy, '*Stepping Forward for Climate Change*'. A key commitment in this document was to reduce its carbon footprint by 50% by 2020. The latest Reading Climate Change Strategy 2013-20, '*Reading Means Business on Climate Change*' is a collaborative strategy with business, community and public sector. It invites other organisations to join in a shared ambition to reduce their emissions by 7% per annum. Reading Borough Council's 'Carbon Plan, 2015-2020', was approved in 2015, with a target to reduce the organisation's carbon emissions by 50% against the 2008/9 baseline and generate renewable energy equivalent to 15% of total energy consumed, by 2020.
- 3.2 In 2016, the Council signed a pledge to move to 100% clean energy for Reading by 2050 (UK100). This commitment is consistent with the Council's original strategy, which sets out the aim for the Council to be zero carbon by 2050. The Council are working with the Reading Climate Change Partnership and Reading 2050 to establish a roadmap towards the goal of achieving the aim to become zero carbon by 2050. A new Climate Change Strategy and revised Carbon Plan will be published in 2020/21.
- 3.3 Work by the Council, over the next three years, will be shaped by the newly published corporate plan, *Shaping Reading's Future 2018 - 2021*. Commitment to carbon reduction by the Council continues as a priority through *keeping Reading's*

environment clean, green and safe, against a backdrop of financial challenges such as reductions in Government funding and growing demands on key Council services.

3.4 The Government's latest strategy aimed at delivering the fifth carbon budget and air quality objectives is called the Clean Growth Strategy. It focuses amongst other things on innovation in renewable energy, smart energy systems and low carbon transport. It seeks to link air quality and low carbon growth and will be relevant to how the Council approaches its low carbon and air quality investments going forwards.

3.5 Carbon reduction work in 2017/18 has developed across a broad range of areas, as outlined below;

- In 2008, the Council implemented a government backed scheme called SALIX, which provides a revolving investment fund to invest-to-save in low carbon technologies that reduce the carbon emissions of the authority and the costs associated with energy. By the end of 2017/18 the Council had invested over £1.5m, in almost 90 single or multi-technology projects. There are currently a further 14 Salix projects in progress or development.
- To date the Council has installed over 7,500 solar panels on 40 council, community and school buildings, and 457 houses. These provide renewable electricity to power the buildings and generate income from the Feed in Tariff scheme, which pays for each unit of electricity generated. In 2017/18 the systems generated 1.3MWh of electricity, the equivalent to powering approximately 400 houses with 100% of their electricity needs.
- Over the last six years, significant improvement has been made with automatic metering and data quality. The majority of the council's electricity and gas meters are now Automatic Read Meters (AMR), providing more accurate data and improved billing. An additional 9 electricity meters in 2017/18 were upgraded to be Half-Hourly meters. These meters measure and record electricity consumption every half hour, and this has enabled a more detailed analysis and understanding of electricity use at these sites. Using this data we have significantly improved our understanding of energy used within RBC buildings, which has helped with targeting energy efficiency measures.
- 2017/18 was the third full year of operation of the newly refurbished Civic Offices building. Investments were made in energy efficiency, including LED lighting and controls, energy efficient boilers, refurbishments of Air Handling Units and motors. In addition the Council installed its largest single solar panel system, to date, on the roof of the building. Following the third full year of occupation, the energy used in the refurbished Civic Offices continues to be considerably lower, 62%, than the energy used in the old Civic Offices. Work continues to find further energy and water efficiencies within the building to make additional savings.
- In 2016/17 an awareness raising programme was developed, and 2017/18 was the first full year of the programme. Four awareness raising and training sessions were run for corporate and housing staff, schools business managers and site controllers. In addition regular 'all staff' communications have been distributed to increase general levels of awareness.
- In 2017/18 council staff responded to supplier warnings of higher energy costs at peak electricity demand periods in the winter months, known as TRIAD warnings. By reducing or shifting electricity demand in response to these warnings the council avoided costs of over £14k.
- In 2016 Reading Community Energy Society was launched. An Energy4All cooperative raised share capital from a community share offer and installed 186kWp of solar panels on 10 Council and community buildings. RCES are in the process of developing another share offer which could include some further Council buildings. The energy supplied from these systems in 2017/18 meant a

further increase in clean energy supply in the borough, some of which is supplied directly to Council buildings.

- The commercial water market was de-regulated in April 2017. In 2017 the council's retail water supplier changed from Thames Water to Castle Water. The council has worked over the last 12 months to facilitate this move between suppliers, validate the water assets register and establish a good baseline of water consumption data. This work will now place the organisation in a good position procure a new supplier competitively.
- 3.6 In 2017/18 there has been a 16.14 % reduction in corporate emissions against our 2016/17 levels. When taking into account the gross emissions of the wider influence of the Council, the footprint decreased by 13.11 %. The full report can be found in Appendix 1.
- 3.7 The 2017/18 carbon footprint for the Council's corporate activities is now 53.9% lower than the baseline emissions in 2008/09, meaning the Council has achieved the 2020 50% reduction target three years early.
- 3.8 The total renewably generated energy in 2017/18 was equivalent to 6.1% of the energy used by the Council (excluding fuel for transport). Whilst this falls well below the 2020 target figure of 15%, a more detailed analysis shows that the Council generates the equivalent to 12% its annual electricity demand using renewable technologies. Problems with the Council's biomass plant at Cedar Court and ground source heat pumps at the Avenue Centre in 2017/18 meant that almost no renewable heat was generated this year.
- 3.9 The 2017/18 carbon footprint for the Council's wider activities (including schools and managed services) is 38.1% lower than the baseline emissions in 2008/09. This excludes emissions from Reading Transport Ltd buses and other vehicles.

Looking forward:

- 3.10 Whilst the completion of schemes already mentioned has led to reductions in carbon emissions, further activities are being implemented or planned to continue the reduction of the Council's energy costs and carbon emissions in future years. This is important as, whilst the Council have been very successful in reducing emissions, the costs of energy have risen by more, meaning that our energy costs continue to rise. In addition the Council is committed to reduce its emissions of greenhouse gases and as the Council implements the most cost effective measures, this becomes ever more challenging.
- 3.11 A full street lighting upgrade to LED technology was started in April 2016, in collaboration with two other neighbouring authorities. The upgrade programme was due to be completed over two years, in March 2018. The original 2 year contract period has been extended into a third year and will now be completed by 31st March 2019. The LED upgrades are 90% complete and works to sign lights, bollards and high mast columns are currently being carried out. Significant energy savings and carbon emissions reductions should be realised from this programme. In the final quarter of 2017/18 energy consumption by street lighting was reduced by 42.5%, compared to the same period before the upgrade programme started (2015/16).
- 3.12 Further SALIX investment will be integrated through other property development programmes, such as the Office Accommodation Strategy, the Condition/Compliance programme, and the community hubs programme. This approach brings capital Salix funding to support scheduled building improvements through the most energy efficient technology where possible, and to investigate the opportunities for further energy saving measures whilst building work is planned/taking place. Work is already

planned to upgrade insulation, change lighting to LEDs and improve heating systems in various facilities across the council estate, for example supporting the works planned at the Town Hall, Southcote Youth and Community Centre and 19 Bennet Road.

- 3.13 In 2017 an application was made for EU (ESIF) funds to support some innovative, low carbon projects in the Council's buildings estate. These seek to combine technologies to enable solutions which can offer potentially viable low carbon energy opportunities in the future without additional funding. These include 'whole building' approaches to energy efficiency, solar car parking canopies, solar PV and battery storage and/or electric vehicle charging and vehicle to grid. Renewable heat technologies supported will include ground and water source heat pump technologies.
- 3.14 Work continues to improve the council's energy data capture. Improvements in accuracy and precision of data will aid our understanding of the organisation's energy use and help in targeting work to improve the efficiency of its use and to make reductions through the efficient operation of assets, with a particular focus on understanding and reducing energy use within the organisation's larger buildings.
- 3.15 The renewables target, '15% of total energy used', remains challenging, particularly following the changes to incentive schemes for renewable energy by the government in 2015/16. Business cases for investment in renewable technology are currently less compelling, although opportunities will continue to be investigated to identify the most promising opportunities. Low carbon and renewable technologies such as heat pumps, Combined Heat and Power (CHP) and solar P.V. in combination with battery storage are actively being considered.
- 3.16 Whilst the Council continues to invest in solar PV as a technology, the problem with meeting the 2020 target of 15% of energy supplied by renewables rests almost entirely in finding viable renewable heat alternatives to gas. In 2018 to 2021, the Council is planning to conduct some trials of ground and water source heat pumps, to enable investment into these technologies. Biomass investment is less likely due to the implication for local air quality, although this technology may be suitable for locations that have low levels of fine particulates and nitrogen dioxide.
- 3.17 A coordinated awareness raising programme is in operation which seeks to make all staff aware of energy and carbon, and how their actions can influence it. Initial training sessions were run in 2017/18. Further training sessions and communications are planned and scheduled, with a particular focus on the Council's larger buildings.
- 3.18 In the last year Reading Buses (Reading Transport Ltd) have seen the expansion of the gas compression facility at Great Knollys Street to give 50% more capacity to fast-fuel CNG powered vehicles. The new plant cost approximately £2m (£1.6m of that was covered by a Low Emission Bus Fund grant from the Department for Transport). This expanded facility has allowed Reading Buses to place orders for 5 new CNG double deck buses for Route 33 (the first order for such vehicles in the UK) and subsequently commissioned 17 similar vehicles (with dual doors) for Route 17. All 22 vehicles were deployed between December 2017 and January 2018.
- 3.19 In 2017/18 Electric Vehicle Charging Fast Charge facilities were installed outside the Civic Offices. These were installed alongside a bank of chargers in the basement car park which are available to RBC fleet vehicles. A number of additional EV charging points are planned to be installed at the Bennet Road Depot site, if the EU funded programme goes ahead. The Council will increase its rate of procurement of Electric Vehicles as it installs charging infrastructure. The Council will also actively seek to co-locate electric vehicle charging points with renewable energy generation and or storage facilities to reduce the carbon emissions associated with the electricity consumed by the vehicles.

3.20 The development and use of electric vehicle charging facilities will contribute to both the Council’s commitment to reduce its carbon footprint as well as support air quality improvement initiatives. A report on publically accessible electric charging points is reported elsewhere on the same Committee agenda.

4. THE CARBON FOOTPRINT

4.1 The Council’s carbon emissions for its controlled (corporate) operations in 2017/18 was 9,095 tCO₂, down 16.14 % (1,750 tCO₂) against 2016/17 emissions. Renewably generated electricity, exported to the grid, or sold to third parties was equivalent to 6.1 % of energy consumed, excluding transport fuel.

4.2 The absolute carbon emissions of the organisation’s wider activities, including emissions from schools and managed services, were 17,395 tCO₂ (excluding fuel use from Reading Buses) for 2017/18, down 13.11 % compared to 2016/17 figures.

4.3 The GHG carbon footprint figures for 2017/18 are illustrated in Table 1 below, compared against 2016/17 data.

YEAR	2016/17	2017/18
	tCO ₂	tCO ₂
SCOPE 1 - Corporate		
	4,348	4,395
SCOPE 2 - Corporate		
	5,776	4,135
SCOPE 3		
<i>CORPORATE</i>	721	565
<i>SCHOOLS</i>	6,944	6,447
<i>MANAGED ASSETS/SERVICES</i>	2,229	1,853
GROSS EMISSIONS - Scope 1, 2, 3 - CORPORATE	10,845	9,095
GROSS EMISSIONS - ALL	20,018	17,395
ELECTRICITY EXPORTED/SOLD TO GRID/OTHERS	610	500
NET EMISSIONS - Scope 1, 2, 3 - CORPORATE	10,235	8,595
NET EMISSIONS - ALL	19,409	16,895

Table 1: Reading Borough Council GHG Emissions 2017/18, compared to 2016/17 figures.

4.4 Work on carbon reduction for the Council’s corporate activities is ahead of the reduction target, as illustrated in Figure 1a, below. Figure 1b shows the Council’s wider carbon footprint. The emissions from the wider activity of the Council (including schools and managed services) also have reduced compared to baseline levels. It should be noted that the pupil numbers in Reading’s schools have seen a significant increase, of over 30% since 2008/9. The carbon emissions per pupil across Reading have decreased by over 7% between 2016/17 and 2017/18, going from 0.32tCO₂/pupil to 0.30tCO₂/pupil.

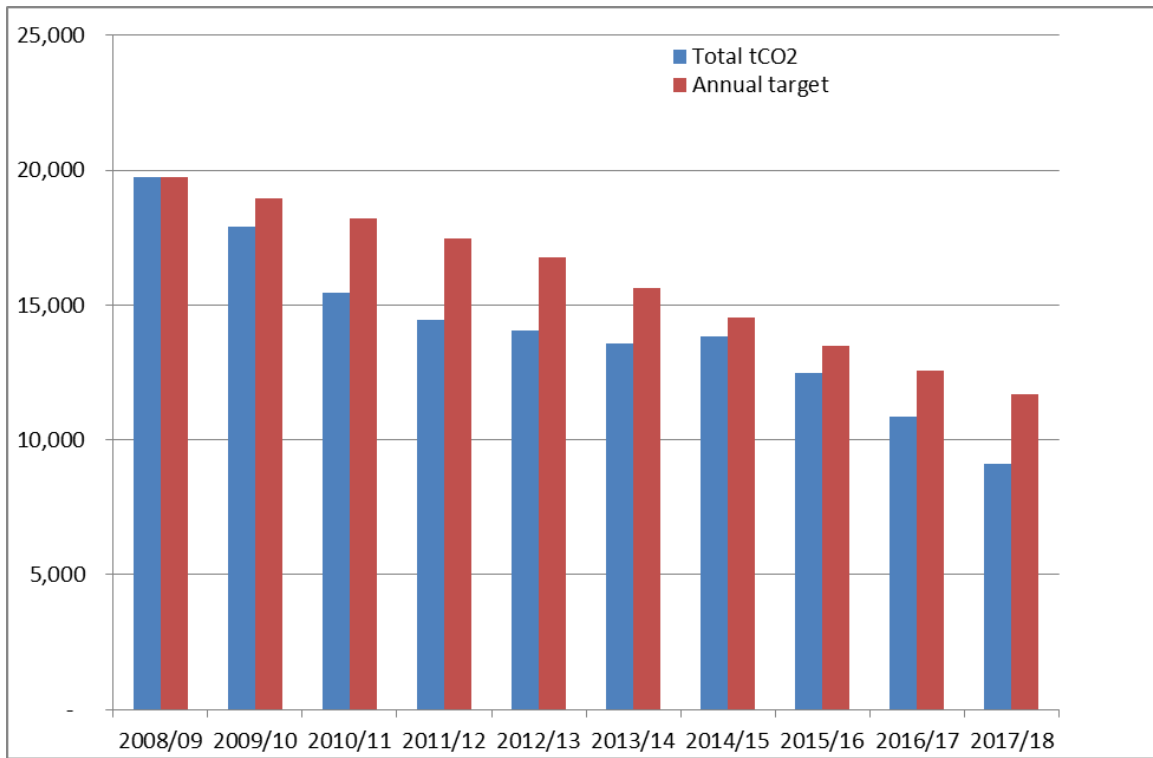


Figure 1 a): Reading Borough Council's corporate GHG emission performance against annual 4% target from the Baseline year (2008/9) through to 2017/18

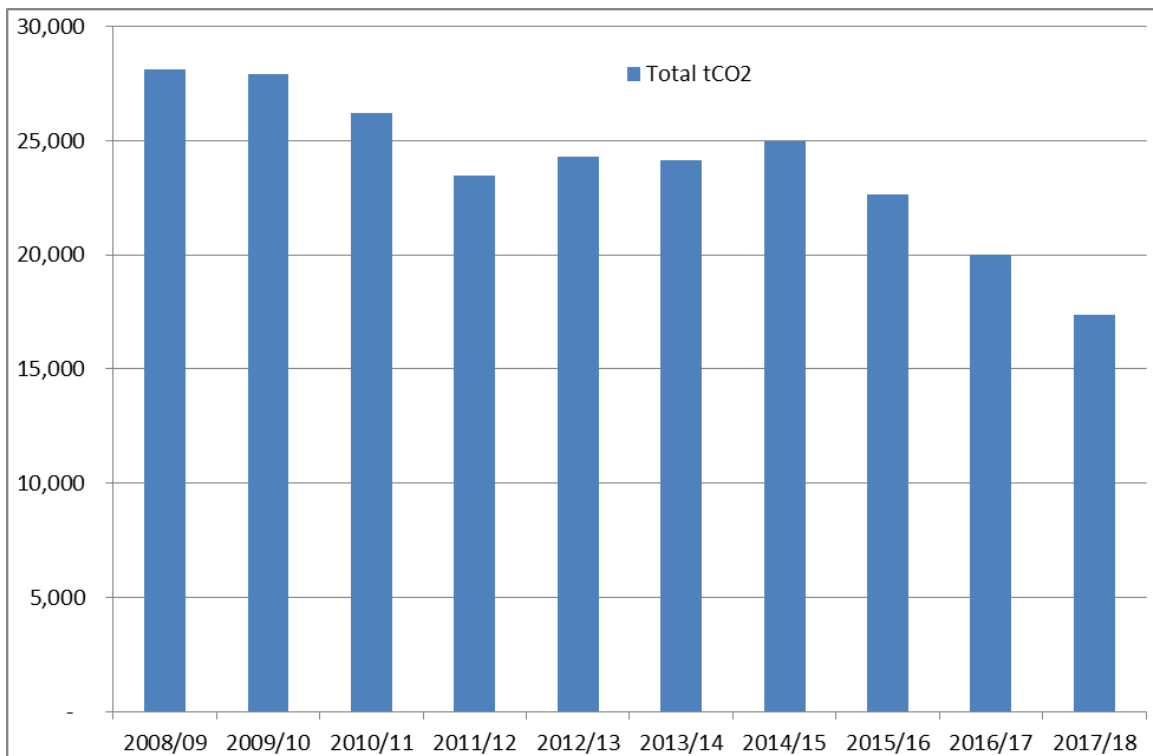


Figure 1 b): Reading Borough Council's wider GHG emission performance, from the Baseline year (2008/9) through to 2017/18 (including schools and managed services)

4.5 Table 2 below provides the annual corporate carbon footprint figures, compared against the target. The 2017/18 carbon footprint is 53.9 % lower than the 2008/09 baseline, exceeding the 2020 target by 3.9% three years early.

- 4.6 The 2017/18 carbon footprint for the Council’s wider activities (including schools and managed services) is 38.1% lower than the baseline emissions in 2008/09, as illustrated in Table 2.

		2008/09	2013/14	2014/15	2015/16	2016/17	2017/18
CORPORATE	Total tCO ₂	19,761	13,584	13,997	12,485	10,845	9,095
	Annual target	19,761	15,609	14,516	13,500	12,556	11,677
SCHOOLS	Total tCO ₂	5,216*	7,778	8,005	7,487	6,944	6,447
MANAGED SERVICES	Total tCO ₂	3,125	2,777	2,959	2,656	2,229	1,853
TOTAL	Total tCO ₂	28,102	24,139	24,961	22,628	20,018	17,395

Table 2: Annual RBC corporate, schools and managed services carbon emissions.* Note: early data from the schools sector was variable in quality and coverage. Data provided was the best available at the time.

- 4.7 Total carbon emissions of the Reading Buses’ fleet have increased slightly in 2017/18, compared to 2016/17. A number of factors within the last year have contributed to this increase. In 2017/18 Reading Transport Ltd has provided a more extensive service across a wider Thames Valley region. The existing fleet have been running on longer distance routes, and doing high-speed work, including motorway running. This type of operation is outside the most efficient working range of the existing fleet’s engines. Additional congestion and roadworks across the borough in 2017/18 resulted in more of the local network operations being stop-start and less steady running. With the expansion of the network range, congestion and roadworks, extra vehicles were required in 2017/18 to meet the service needs. To bridge the gap before newer, more efficient vehicles came into service later in the year, older, less efficient vehicles have been kept operational, which has had an impact on fuel consumption. Despite the marginally higher carbon emissions of the fleet in 2017/18, the CNG vehicles have much lower tailpipe NOx emissions, and hence have been contributing to improving the air quality in Reading. It should also be noted that the majority of fleet growth has been in the CNG buses and whilst the carbon emissions from these are reported through the GHG methodology, these emissions are offset by injection of bio-methane into the gas grid, making them effectively ‘zero carbon’.

	2012/13		2013/14		2015/16		2016/17		2017/18	
FLEET	tCO ₂	kg CO ₂ /km	tCO ₂	kg CO ₂ /km	tCO ₂	kg CO ₂ /km	tCO ₂	kg CO ₂ /km	tCO ₂	kg CO ₂ /km
DIESEL	7,971		6,889		9,203		7,952		8,204	
CNG	451		1,706		2,610		2,599		3,110	
TOTAL	8,422	1.12	8,595	1.11	11,813	1.23	10,551	1.11	11,314	1.28

Table 3: Reading Buses fuel use since the introduction of CNG fuelled vehicles in 2012/13

- 4.8 As set out in the ‘Air Quality’ report to this Committee, following a detailed submission to the Government in relation to measures to bring forward air quality improvements, the Government has directed Reading Borough Council to implement a bus retrofit scheme which would potentially result in a significant number of buses being retrofitted to a Euro 6 standard.

5. CONTRIBUTION TO STRATEGIC AIMS

5.1 The work on carbon reduction directly contributes to the Council's Corporate Plan priority:

- Keeping Reading's environment clean, green and safe;

5.2 This work also contributes to the sustainable development of Reading, helping to reduce our impact on the environment and reduce costs now, to support Reading for the future.

6. COMMUNITY ENGAGEMENT AND INFORMATION

6.1 As required by the government Department for Business Energy and Industrial Strategy, the Reading Borough Council Greenhouse Gas (GHG) Report: 2017-18 is published on the Reading Borough Council website.

7. EQUALITY IMPACT ASSESSMENT

7.1 An Equality Impact Assessment (EIA) is not required for the Carbon Footprint report.

8. LEGAL IMPLICATIONS

8.1 Nationally, legal obligations in respect of climate change are incorporated into legislation through a range of regulations set out under the Climate Change Act 2008. These include the Energy Performance of Buildings Regulations 2012, Heat Network (Metering and Billing) Regulations 2014 and the Energy Efficiency Regulations 2015.

9. FINANCIAL IMPLICATIONS

9.1 The Council's actions in relation to carbon reduction form a key element of the financial savings programme of the Council. Annual energy bills amount to around £2m. The cost of energy is predicted to rise beyond inflation and therefore it is important to maintain investment and operational control on energy and fuel to enable significant reductions in energy consumption. Prices increased by around 20% in 2017/18 against 16/17. The reduced energy consumption of the council is estimated to have avoided costs of around £1.3 m in 2017/18 compared to if no action had been taken. It is estimated that the avoided energy costs to the Council from the reduced energy consumption since 2008 are £7.1m², compared to if no action has been taken.

10. BACKGROUND PAPERS

Environmental Reporting Guidelines: Including mandatory greenhouse gas emissions reporting, June 2013, Department for Environment, Food and Rural Affairs

Reading's Climate Change Strategy 2008-2013. Stepping forward for Climate Change

Reading's Climate Change Strategy 2013-2020; *Reading Means Business on Climate Change*

Reading Borough Council: Carbon Plan, 2015-2020

² excluding costs such as standing charges and other contract charges

