



# Greenhouse Gas Emissions from Local Authority own estate and operations

## Reporting year 2014_15

Oxford City Council

**Date: 24 July 2015**
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**Foreword - Carbon Reduction as part of Oxford City Council's broader sustainability strategy**

Carbon reduction is a key aspect of Oxford City Council's work around environmental sustainability and is a priority area in which the Council is ambitious and has an excellent track record of achievement and leadership.

However, this is only one strand of a broader sustainability agenda and the Council's Sustainability Strategy sets out its activities undertaken to achieve a wide range of sustainability targets around city-wide carbon reduction, air quality, waste reduction, land quality, fuel poverty, biodiversity and flood management.

Environmental sustainability is a major corporate priority, from energy and fleet management, refuse and recycling collections, sustainable procurement, parks and open spaces, to IT and housing. It is the unifying theme in all 5 of the Council's corporate priorities as laid out in the Corporate Plan and represents investment in resilience and future proofing of the organisation and the City.

The Council's sustainability work is vulnerable to some key risk factors, including the impact of UK government policy, rising energy prices, competing priorities for regional development, the threats of flooding and pressure on air quality from increasing mobility and visitor transport.

There are also significant opportunities within sustainability which benefit the whole organisation and its stakeholders, including generating income through government Feed in Tariffs (FiTs) and Renewable Heat Incentives (RHI), efficiency savings and increasingly effective partnership working with key stakeholders.

In recognition of its work, the Council was awarded Most Sustainable Local Authority in the 2014 Public Sector Sustainability Awards.

**Greenhouse Gas Emissions (GHG) from Local Authority own estate and operations covering financial year 2014_15**

## Introduction

Oxford City Council is fully committed to reducing its $CO_2$ emissions from its buildings and operations and continues to build on activity in this area. The Council launched its first Carbon Management Strategy and Implementation Plan ("Getting Our House in Order") in 2008/09 mapping out a route to implementing a range of measures to achieve a reduction in $CO_2$ emissions by 25% by 2011 (on a 2005 baseline) and 3% year on year thereafter. This Plan[1] was refreshed and updated in August 2012 with a stretched target of a 5% year on year implementation of $CO_2$ reduction measures, and an expanded scope (including supplies of electricity and gas in communal areas of council housing stock) bringing in more emissions sources that are under the Council's control.

The Council was a full participant in Phase 1 of the Carbon Reduction Commitment Energy Efficiency Scheme (CRC) reporting on annual $CO_2$ emissions associated with a strictly defined set of its emission sources but dropped out of the Scheme in Phase 2 (2014/15 onwards) due to half-hourly electricity consumption through settled meters dropping below the 6000MWh threshold. The reason for the drop in electricity consumption is due to the implementation of efficiency measures across the council's estate and operations.

We have estimated that the efficiency improvements which have resulted in reduced gas, electricity and water consumption have made the council over £500k/year better off in 2014/15 compared to energy and water consumption levels before we started implementing a carbon management plan.

The areas that contribute to the bulk of the Council's $CO_2$ emissions are from:

- Heating and electricity consumption in Council operational sites (e.g. office buildings, depots, leisure centres, car parks, sports pavilions, public conveniences and other miscellaneous sites)

- Fuels consumed in Council fleet vehicles (e.g. refuse trucks, vans and pool cars), non-road going vehicles and plant (e.g. lawnmowers, chippers, and portable heaters)

- Travel for business purposes (e.g. fuel consumed in staff-owned vehicles, pool cars and from the use of public transport to conduct Council business)

- Operational waste deposited in landfill sites (generated from Council operations)

This report provides GHG emissions data (in $CO_2e$ and $CO_2$) for the reporting period 2014/15 (as well as includes details of emissions from the previous 2 years, 2012/13 and 2013/14). ($CO_2e$ gives the global warming effect of the mass of GHG in terms of what mass of carbon dioxide would produce the equivalent effect.)

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1 http://www.oxford.gov.uk/Library/Documents/Environmental%20Development/Carbon%20Management%20Plan%202012-17.pdf

A summary of 2014/15 GHG emissions included in this report are as follows (*see Sections 4 and 5 below for scope of emissions coverage in this report*):

| **Total GHG emissions for period 1 April 2014 to 31 March 2015*** | | |
|---|---|---|
| | **Tonnes of $CO_2$** | **Tonnes of $CO_2e$** |
| Year | **2014/15** | **2014/15** |
| Scope 1 | 4,568 | 4,596 |
| Scope 2 | 4,497 | 4,534 |
| Scope 3 | 442 | 573 |
| **Total GHG emissions** | **9,507** | **9,704** |

** see Sections 4 and 5 below for scope of emissions coverage in this report*

Please see Section 7 below for a discussion of $CO_2$ emissions reductions trends over the past 3 reporting years (i.e. including the current reporting year 2014/15).

## 1. Organisation Information

Oxford City Council is a non-metropolitan district council as defined by Section 1(4) and Schedule 1 Part II of the Local Government Act 1972. The Local Authority main contact details are: Oxford City Council, Town Hall, St Aldates, Oxford, OX1 1BX.

## 2. Reporting period

1 April 2014 – 31 March 2015.

## 3. Approach

We have based this report on the Government's Guidance on how to measure and report greenhouse gas emissions as outlined in communications from Department for Energy and Climate Change and The Department for Food, Environment and Rural Affairs.
https://www.gov.uk/measuring-and-reporting-environmental-impacts-guidance-for-businesses

## 4. Organisational boundary

Having reported on core emissions sources only in previous GHG reports in the initial reporting years, given higher accuracy and availability of more comprehensive energy and water data, we have now expanded the scope (in line with the refreshed Carbon Management Plan) to cover all Council buildings and operations as well as water consumption. The following emissions sources are covered:

- Electricity and gas consumed in all buildings and sites (e.g. emissions from our operational buildings and other sites office buildings, depots, leisure centres, car parks, sports pavilions, public conveniences and other miscellaneous sites).

- Fuel consumption from fleet vehicles, non-road going vehicles and plant.

- Miles or kilometres travelled in staff-owned vehicles and estimated to be travelled in public transport for business purposes.

- Water consumed in Council operational buildings and other miscellaneous sites within the scope of the Council's influence and operations.

In future years, as data quality and availability improves we propose to expand the scope to cover other emissions sources across the Council estate and operations that the Council has direct influence over (e.g. operational waste deposited in landfill sites and staff commuting).

**5. Operational scopes**

We have measured our total scope 1, 2 and significant scope 3 emissions covering the areas outlined in the organisational boundary (see above). Further details are outlined in Table 1 below.

**Table 1: Operational scopes**

<table>
<tr><th>Scope One</th><th>Scope Two</th><th>Scope Three</th><th>Not included</th></tr>
<tr><td>Fuel used to heat our buildings (e.g. natural gas, gas oil, kerosene and liquid petroleum gas)</td><td rowspan="4">Purchased electricity for our buildings and other electricity consuming sites (e.g. offices, leisure centres, depots, car park and public conveniences).</td><td rowspan="2">electricity (transmissions and distribution factors)</td><td>Perfluorocarbons (PFC), hydrofluorocarbons (HFC) and sulphur hexafluoride ($SF_6$)</td></tr>
<tr><td rowspan="2">Fuel used in council vehicle fleet and also to power non-road going vehicles and plant such as lawn-mowers and, chippers.</td><td>Staff commuting</td></tr>
<tr><td>Business mileage by car</td><td>Emissions from Council operational waste deposited in landfill sites</td></tr>
<tr><td rowspan="2">Fuel used in waste collection vehicle fleet</td><td>Business mileage by public transport (bus and train)</td><td>Emissions from Leased commercial properties or housing stock where tenants are paying energy/water bills.</td></tr>
<tr><td>Water consumed (supply and treatment)</td><td>Total indirect emissions: e.g. due to upstream emissions from production and delivery of fuel to power stations or transport fuel stations.</td></tr>
<tr><td></td><td>Half-hourly metered and non-half-hourly metered electricity supplies (ie Meter profile classes 01-08, HH and Unmetered Supplies)</td><td></td><td>Avoided emissions from on-site renewable energy have not been included to date</td></tr>
</table>

Where possible we will work towards including the excluded emissions in future years.

A summary of GHG emissions for the past 3 years including the current reporting year (2014/15) is outlined in the following tables:

**Table 2:** Total GHG emissions for the period 1st April 2012 to 31 March 2013

| 2012/13 | Total Units | tCO2 | tCO2e |
|---|---|---|---|
| **Scope 1** | | | |
| Gas consumption (kWh) | 17,130,181 | 3,166 | 3173 |
| Gas Oil (litres) | 29,041 | 80 | 88 |
| Kerosene (litres) | 4,000 | 0 | 10 |
| LPG (litres) | 15,892 | 24 | 24 |
| Diesel (litres) - average biodiesel blend | 679,841 | 1,743 | 1756 |
| Petrol (litres) - average biofuel blend | 54,431 | 122 | 122 |
| | ***Total Scope 1*** | **5,135** | **5,173** |
| **Scope 2** | | | |
| Purchased Electricity (kWh) | 8,997,442 | **4,112** | **4,139** |
| **Scope 3** | | | |
| Electricity - Transmission and distribution | 8,997,442 | 325 | 327 |
| Average petrol car (miles) - unknown fuel | 183,770 | 57 | 58 |
| Passenger travel – train, national rail (km)# | 130,004 | 7 | 8 |
| Passenger travel – average local bus (km)# | 49,402 | 5 | 6 |
| Water supply($m^3$) | 115,052 | n/a | 40 |
| Water treatment($m^3$) | 115,052 | n/a | 82 |
| | ***Total Scope 3*** | **395** | **519** |
| | **Totals** | **9,642** | **9,831** |

* Defra emissions factors guidance - dated June 2012 used https://www.gov.uk/measuring-and-reporting-environmental-impacts-guidance-for-businesses

# estimated derived from financial data

a – Defra Emissions Conversion factor tool used (2012 data) http://www.ukconversionfactorscarbonsmart.co.uk/

Heating degree days (to base 15.5°C) for the Thames Valley Region for the 2012/13 reporting period were 2498.

**Table 3**: Total GHG emissions for period 1 April 2013 to 31 March 2014

| 2013/14 | Total Units | tCO2 | tCO2e |
|---|---|---|---|
| **Scope 1** | | | |
| Gas consumption (kWh) | 15,237,185 | 2,798 | 2,804 |
| Gas Oil (litres) | 45,060 | 123 | 132 |
| Kerosene (litres) | 4,000 | 10 | 10 |
| LPG (litres) | 1,174 | 2 | 2 |
| Diesel (litres) - average biodiesel blend | 693,108 | 1,789 | 1,803 |
| Petrol (litres) –(average biofuel blend) | 28,804 | 64 | 64 |
| | ***Total Scope 1*** | ***4,785*** | **4,815** |
| **Scope 2** | | | |
| Purchased Electricity (kWh) | 9,384,005 | **4,151** | **4,180** |
| **Scope 3** | | | |
| Electricity - Transmission and distribution | 9,384,005 | 355 | 357 |
| Average petrol car (miles) - unknown fuel | 167,979 | 51 | 51 |
| Passenger travel – train, national rail (km)[#] | 83,658 | 4 | 4 |
| Passenger travel – average local bus (km)[#] | 5,424 | 1 | 1 |
| Water supply($m^3$) | 126,333 | n/a | 43 |
| Water treatment($m^3$) | 126,333 | n/a | 90 |
| | ***Total Scope 3*** | ***411*** | **547** |
| | **Totals** | **9,348** | **9,542** |

* Defra emissions factors guidance - dated June 2013 used https://www.gov.uk/measuring-and-reporting-environmental-impacts-guidance-for-businesses

# estimated derived from financial data

a – Defra Emissions Conversion factor tool used (2013 data) http://www.ukconversionfactorscarbonsmart.co.uk/

Heating degree days (to base 15.5$^{o}$C) for the Thames Valley Region for the 2013/14 reporting period were 2002.

**Table 4:** Total GHG emissions for the period 1 April 2014 to 31 March 2015

| 2014/15 | Total Units | tCO2 | tCO2e |
|---|---|---|---|
| **Scope 1** | | | |
| Gas consumption (kWh) | 14,160,656 | 2,613 | 2,619 |
| Gas Oil (litres) | 36,178 | 99 | 106 |
| Kerosene (litres) | 4,000 | 10 | 10 |
| LPG (litres) | 0 | 0 | 0 |
| Diesel (litres) - average biodiesel blend | 697,152 | 1,800 | 1,814 |
| Petrol (litres) –(average biofuel blend) | 21,243 | 46 | 47 |
| | ***Total Scope 1*** | ***4,568*** | **4,596** |
| **Scope 2** | | | |
| Purchased Electricity (kWh) | 9,173,950 | 4,497 | 4,534 |
| **Scope 3** | | | |
| Electricity - Transmission and distribution | 9,173,950 | 393 | 396 |
| Average petrol car (miles) - unknown fuel | 144,121 | 44 | 44 |
| Passenger travel – train, national rail (km) | 88,186 | 4 | 4 |
| Passenger travel – average local bus (km) | 7,889 | 1 | 1 |
| Water supply($m^3$) | 120,984 | n/a | 42 |
| Water treatment($m^3$) | 120.984 | n/a | 86 |
| | ***Total Scope 3*** | ***442*** | **573** |
| | **Totals** | **9,507** | **9,704** |

* Defra emissions factors guidance - dated June 2014 used https://www.gov.uk/measuring-and-reporting-environmental-impacts-guidance-for-businesses

# estimated derived from financial data

a – Defra Emissions Conversion factor tool used (2014 data) http://www.ukconversionfactorscarbonsmart.co.uk/

Heating degree days (to base 15.5°C) for the Thames Valley Region for the 2014/15 reporting period were 1870.

We have referenced heating degree days figures for each reporting year as a rough indication of the severity of the heating season. This is not a precise assessment on a building per building basis accounting for heating loads, building fabric and other factors that may influence heating related consumption but solely used as rough indicator of general heating demand. A lower degree day number indicates a less severe heating requirement and may have an influence on quantity of gas used.

**Table 5:** Summary of annual GHG emissions for period 1 Apr 2012 to 31 Mar 2015

| | 12/13 tCO2e | 13/14 tCO2e | 14/15 tCO2e |
|---|---|---|---|
| **Scope 1** | | | |
| Gas consumption (kWh) | 3173 | 2,804 | 2,619 |
| Gas Oil (litres) | 88 | 132 | 106 |
| Kerosene (litres) | 10 | 10 | 10 |
| LPG (litres) | 24 | 2 | 0 |
| Diesel (litres) - average biodiesel blend | 1756 | 1,803 | 1,814 |
| Petrol (litres) –(average biofuel blend) | 122 | 64 | 47 |
| ***Totals Scope 1*** | **5173** | **4,815** | **4,596** |
| **Scope 2** | | | |
| Purchased Electricity (kWh) | **4,139** | **4,180** | **4,534** |
| **Scope 3** | | | |
| Electricity - Transmission and distribution | 327 | 357 | 396 |
| Average petrol car (miles) - unknown fuel | 58 | 51 | 44 |
| Passenger travel – train, national rail (km) | 8 | 4 | 4 |
| Passenger travel – average local bus (km) | 6 | 1 | 1 |
| Water supply($m^3$) | 40 | 43 | 42 |
| Water treatment($m^3$) | 82 | 90 | 86 |
| ***Totals Scope 3*** | **519** | **547** | **573** |
| **Totals** | **9831** | **9,542** | **9,703** |
| Degree days* | 2498 | 2002 | 1870 |

The above data from Table 5 is further detailed in the stacked bar chart below to show the overall trends on absolute emissions at the appropriate annual conversion factors supplied:

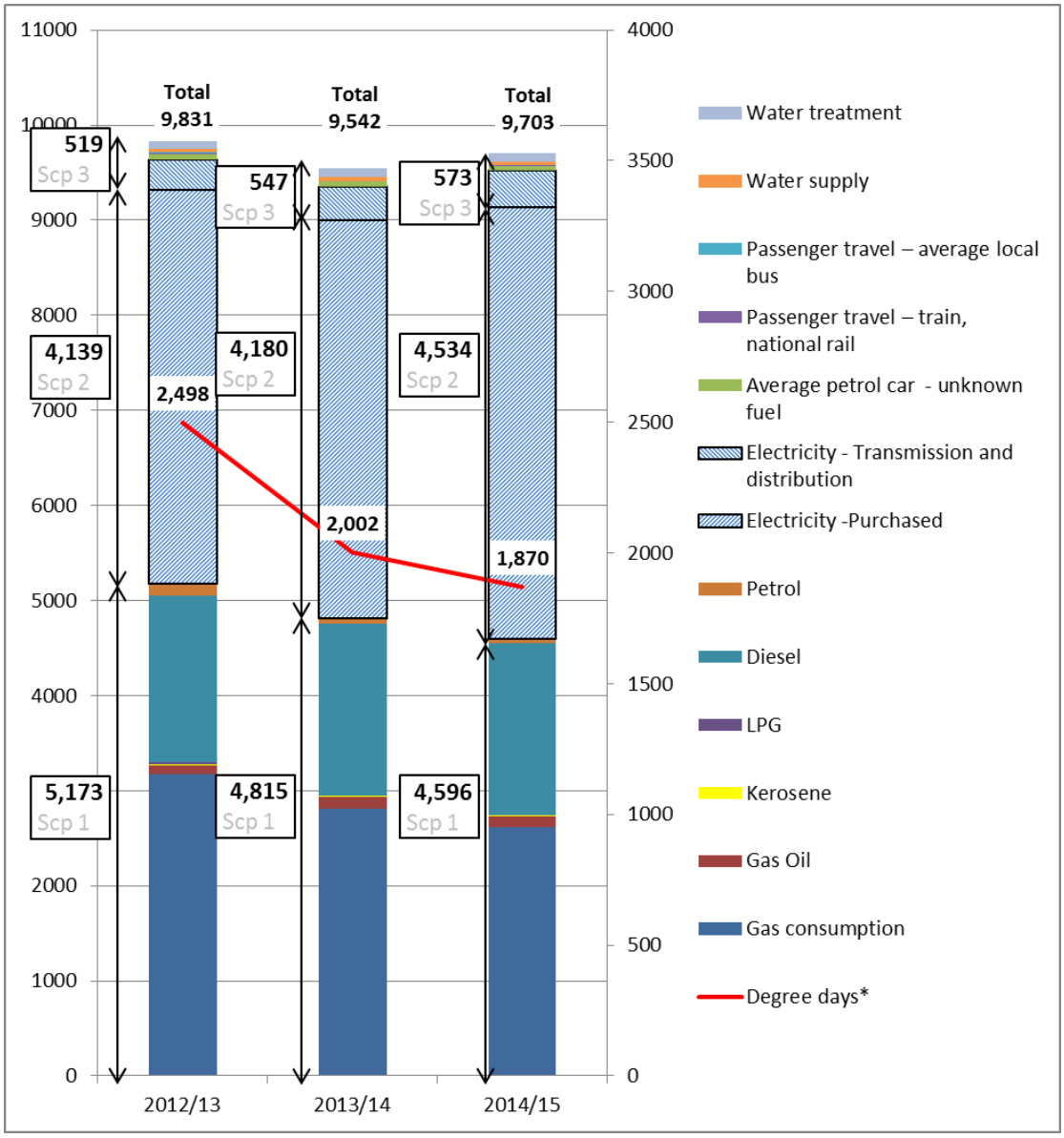



***Chart 1: Stacked bar chart showing GHG emissions from all three scopes for the past three reporting years covering the expanded scope of emissions.***

## 6. Base Year

Our base year for this GHG reporting process is 2013/14 (the previous reporting year) as this is aligned with our year on year target outlined in our revised Carbon Management Plan approved in August 2012 ("Carbon Reduction at the Heart of Everything we Do").

## 7. Targets

In the existing Carbon Management Plan (CMP), the Council $CO_2$ reduction target for 2014/15 was to put measures in place calculated to reduce $CO_2$ emissions by a minimum of 5% compared with the previous year (equivalent to **478tCO2**) which was exceeded. The impact of measures implemented in 2014/15 are not expected to be fully represented in the carbon emissions data for the 2014/15 reporting year - as

they were implemented at periods throughout the reporting year so would not have had a full year's impact.

**Governance and targets:** Tim Sadler, Director, Community Services has overall accountability and Jo Colwell, Environmental Sustainability Manager is responsible for the achievement of the target. Councillor John Tanner (lead member for Cleaner, Greener Oxford), is responsible for this work area. Internal assurance and governance for the Carbon Management Programme and related work area is provided through the Cleaner, Greener Board on which the aforementioned officers are Board members. Cross party elected member steer is via the Carbon and Natural Resources Members Board, chaired by the portfolio holder.

In terms of progress in year on year reduction in absolute emissions our total GHG emissions in 2014/15 (scopes 1, 2, and 3 as outlined in Sections 4 and 5 above) were **1.7%** ($CO_2$) and **1.7%** ($CO_2e$) more than in the previous year 2013/14.

This figure has been affected by the recent changes in use of $CO_2$ conversion figures with the electricity $CO_2$ conversion figure in 2014/15 being significantly larger compared to that provided in 2013/14 (Due to increase in use of coal fired power in the reference year used to calculate the 2014/15 $CO_2$ conversion figures).

In terms of estate-wide electricity and gas consumption, a 2.2% reduction in electricity consumption and a 7.1% reduction in gas consumption have been observed. This is also against a backdrop of increases in participation numbers at leisure centres, municipal waste collection and commercial activity over the past three years.

To give an indication of the general trend of carbon dioxide emissions reductions from estate and operations, we have also depicted data in the following chart by setting the $CO_2$ conversion for electricity using the fixed rate for 2014/15 for the past three years (i.e. taking out the impact of the national electricity generating mix and allowing focus on the impact of measures implemented by the city council). We observe a year on year decrease in CO2e emissions as outlined in the chart below. This equates to a 3.4% reduction in CO2e emissions in 2014/15 compared to the previous year and a 5.1% reduction over the 2 year period to 2012/13.

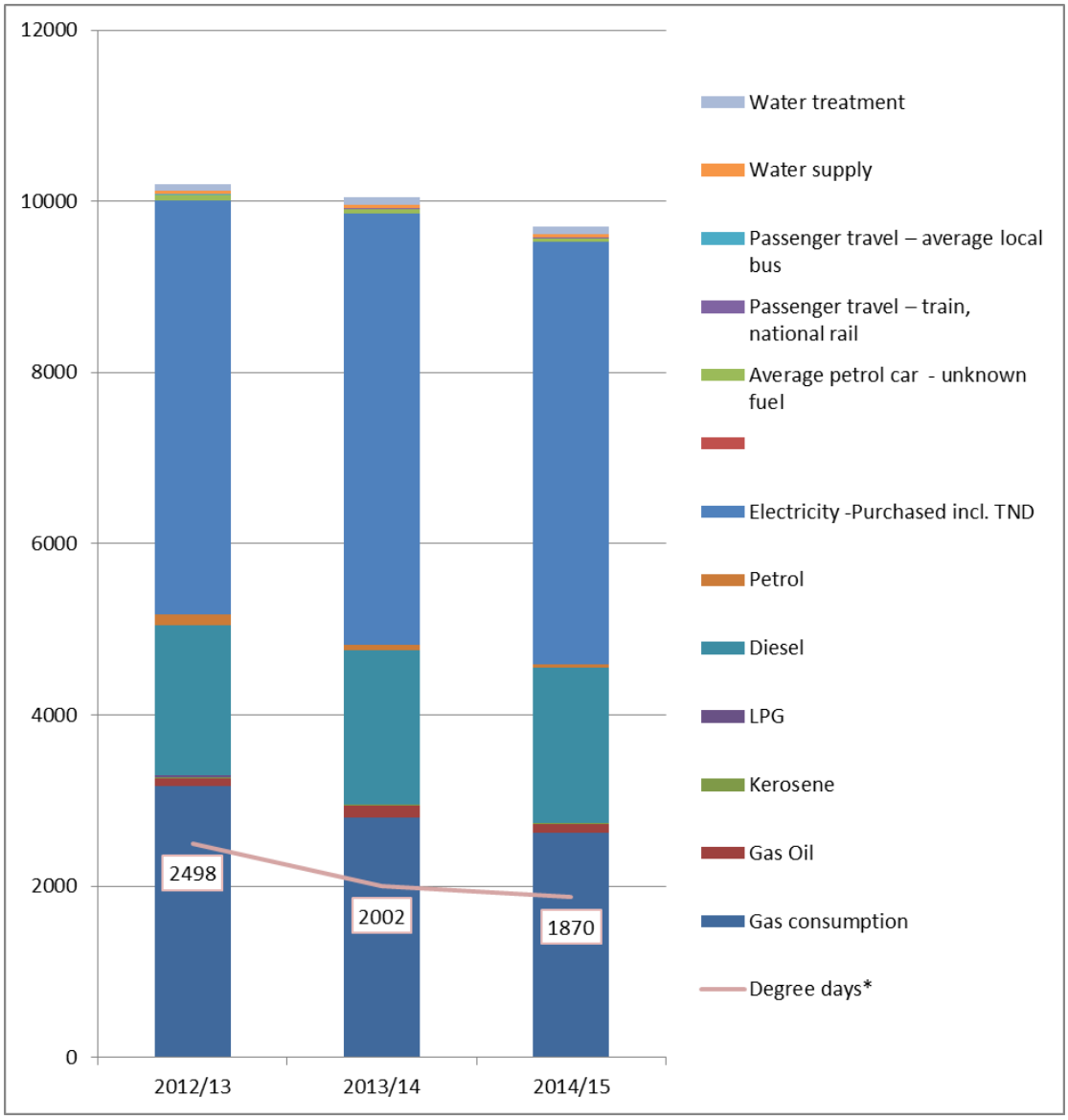



***Chart 2: Stacked bar chart showing local trend in CO2e emissions (by using constant electricity conversion factor rate over the three reporting years - 2014/15 factor)***

Further analysis of GHG reduction performance is outlined in the following section against significant intensity measurements.

## 8. Intensity measurements

This section provides more detail on underlying trends in GHG emission data against significant intensity measurements related to areas of activity at the Council.

### 8.1 Leisure centre visit increases

Leisure centres account for over 40% of building related GHG emissions and therefore activity in these buildings can have an impact on overall energy and water consumption if not managed effectively. As with the Council-wide emissions, leisure centre related $CO_2$ emissions increased (by 0.55%), whereas electricity consumption was reduced by 1.3%, gas consumption reduced by 11.5% and water consumption reduced by 10.9% compared to the previous reporting year (2013/14). This small

carbon increase, despite reductions in electricity and gas consumption, result from the increased official electricity carbon conversion factors for 2014/15 (as discussed above).

Consumption levels will have been beneficially impacted by the closure of two old and inefficient leisure centres at the end of December 2014, concurrently replaced with a large new leisure centre built to surpass modern standards with biomass boiler, CHP, and Solar PV (BREEAM - Very Good). We expect to see a clearer picture of the resulting improved performance across our leisure centres in the next year's reporting figures.

Participation numbers in leisure centres have steadily increased over the past three years which will have an impact on energy and water consumption (and therefore GHG emissions) in these buildings.

Applying an intensity measurement against visitor numbers shows a ca8% reduction in kgCO2e per visit compared to the previous year. The following table summarises these trends over the last three years:

Table 6: Leisure visits over 3 years and carbon, and carbon/visit comparison

| | 2012/13 | | 2013/14 | | 2014/15 | |
|---|---|---|---|---|---|---|
| | **Visits** | **tCO2e/ visit** | **Visits** | **tCO2e /visit** | **Visits** | **tCO2e/ visit** |
| Barton Leisure Centre | 113,353 | 3.38 | 118,955 | 3.15 | 121,584 | 2.95 |
| Blackbird Leys Swimming Pool* | 27,689 | 5.01 | 27,624 | 5.3 | 19,243 | 5.29 |
| Ferry Leisure Centre | 491,586 | 1.14 | 505,248 | 1.11 | 550,783 | 1.11 |
| Hinksey Outdoor Pool | 47,238 | 8.48 | 69,391 | 6.28 | 60,372 | 6.74 |
| Leys Pools and Leisure Centre** | 173,636 | 2.05 | 169,892 | 2.12 | 277,759 | 2.05 |
| Oxford Ice Rink | 160,926 | 3.74 | 170,289 | 4.17 | 175,204 | 4.18 |
| Temple Cowley Pool* | 183,807 | 4.11 | 142,268 | 5.01 | 111,169 | 4.94 |
| **Totals** | **1,198,235** | **-** | **1,203,667** | **-** | **1,316,114** | **-** |
| Overall kgCO2e per visit in Leisure Centres | | **2.67** | | **2.74** | | **2.52** |
| Visits: % change on previous year | **n/a** | | **+0.50%** | | **+9.30%** | |
| tCO2e/visit: % change | | **n/a** | | **+2.62%** | | **-8.03%** |

**Facilities closed in December 2014; ** New swimming pool complex attached to existing leisure centre (Blackbird Leys Leisure Centre) and renamed as Leys Pools and Leisure Centre (completed December 2014)*

### 8.2 Municipal waste collection: increased activity

There has been a marked increase in waste collection (and commercial trading) activities by the Council's Direct services operations team over the past three years.

Increases in GHG emissions related to this activity have been limited by gradual upgrading of fleet to modern lower emission, more fuel efficient vehicles as well as rolling out advanced driver training to educate drivers on techniques to conserve fuel consumed in vehicles. Regular eco-driver training and investment in vehicle telemetry, giving on-board engine management systems/alerts, are assisting this work.

Table 7 details waste collection tonnages over the past three years – with a steady increase in collection being observed. In terms of fleet vehicle related GHG emissions, a 1.7% reduction in absolute emissions has been achieved in 2014/15 compared to the previous year against a backdrop of a 3% increase in waste collection tonnage.

Assessing performance against activity levels (Table 8), a 4.6% reduction in kgCO2e per tonne of waste collected was achieved giving an indication that increased fuel economy measures are having a positive impact on performance. We will continue to track this metric in future reporting years.

Table 7: Domestic and Trade waste collection figures (Oxford City Council)

| Year | Domestic | | Trade | | **Total waste collected in tonnes** | **Increased activity** |
|---|---|---|---|---|---|---|
| | Total Residual | Total Recycling | Total Residual | Total Recycling | | |
| 2012/13 | 24,852.17 | 20,259.17 | 5,910.86 | 2,916.95 | **53,939.15** | n/a |
| 2013/14 | 24,995.39 | 20,123.79 | 6,019.34 | 3,826.48 | **54,965.00** | 1.9% |
| 2014/15 | 24,641.12 | 21,199.15 | 6,426.52 | 4,369.91 | **56,636.70** | 3.0% |

Table 8: Vehicle related $CO_2$ emissions against waste collected

| | **Fleet fuel kgCO2e** | **Total waste collected in tonnes** | **kgCO2e/tonne waste collected** | **% reduction in carbon/tonne waste collected** |
|---|---|---|---|---|
| 2012/13 | 1,990,000 | 53,939 | 36.89 | n/a |
| 2013/14 | 2,001,000 | 54,965 | 36.40 | -1.32% |
| 2014/15 | 1,967,000 | 56,637 | 34.73 | -4.60% |

Increased tonnage of waste handled is only part of the story. There has also been an increase in recycling operations over the period, reducing the amount of food waste going to landfill and the subsequent GHG methane as it decomposes under the ground. In the current reporting year (2014/15), 16,000 flats started having their separated food waste collected (to bring them into line with the service offered to the houses of Oxford).

The food waste is taken on alternative weeks to either a nearby composting facility or anaerobic digestion (AD) plant (at Cassington, Oxfordshire) where methane produced in a controlled process is used to generate electricity with the residue applied to farm land. Obviously increased separated recycling is a very positive environmental benefit compared to landfill, but it does mean vehicle movements and hence carbon emissions from our activities (and recorded in our reporting here) can increase as a result. (The net benefit on overall carbon emissions by collecting more food waste – avoiding landfill - and taking to AD plant is significant.)

Table 9: Breakdown of domestic waste collected showing increasing organic (food + garden waste) volumes

| Year | Domestic | | |
|---|---|---|---|
| | Total Residual | Total Recycling | % increase recycling |
| **2012/13** | 24,852.17 | 20,259.17 | n/a |
| *…of which dry recycling* | - | *13,782.97* | *n/a* |
| *…of which organic* | - | *6,476.20* | *n/a* |
| **2013/14** | 24,995.39 | 20,123.79 | -0.7% |
| *…of which dry recycling* | - | *13,517.18* | *-1.9%* |
| *…of which organic* | - | *6,606.61* | *+2.0%* |
| **2014/15** | 24,641.12 | 21,199.15 | +5.3% |
| *…of which dry recycling* | - | *13,828.39* | *+2.3%* |
| *…of which organic* | - | *7,370.75* | *+11.6%* |

**8.3 Commercial trading activity increases**

The council is bucking the national trend for the public sector to outsource service delivery and instead is offering its services to other organisations in the area. This has led to increases in external revenue generation which is supporting front line services.

The kind of services offered centre on commercial waste collection, private and HGV vehicle MOT testing and, servicing ground maintenance and building maintenance. All of this activity results in extra vehicle movements and increased office and workshop energy and water use, producing an upward pressure on our carbon emissions.

Table 10: External revenue generation from Council services offered to other organisations

| | **Total Direct Services budget** | **Total external revenue from Council services*** | **% external revenue contribution** |
|---|---|---|---|
| 2012/13 | £29,000,000 | £4,500,000 | 15.50% |
| 2013/14 | £29,000,000 | £5,300,000 | 18.30% |
| 2014/15 | £33,000,000 | £6,200,000 | 18.80% |
| **** Direct services operations on non-Council work streams paid for externally such as commercial trade waste collection, gas and electrical works, vehicle maintenance etc*** | | | |

This trend for increased revenue generating services offered outside the organisation can be seen in the data for commercial waste collection – total tonnage has gone up by 6.8% in 2014/15 and 8.7% over 2 years from 2012/13. However this does not tell the whole story as commercial recycling tonnage has gone up 14% in 2014/15 and 50% over the 2 years since 2012/13.

| Year | Trade | | % Increase | |
|---|---|---|---|---|
| | Total Residual | Total Recycling | Total Residual | Total Recycling |
| 2012/13 | 5,910.86 | 2,916.95 | n/a | n/a |
| *…of which dry recycling* | - | *2,287.75* | - | *n/a* |
| *…of which organic* | - | *629.20* | - | *n/a* |
| 2013/14 | 6,019.34 | 3,826.48 | +1.8% | +38% |
| *…of which dry recycling* | - | *3,062.20* | - | *+34%* |
| *…of which organic* | - | *764.28* | - | *+2.1%* |
| 2014/15 | 6,426.52 | 4,369.91 | +6.8% | +14% |
| *…of which dry recycling* | - | *3,415.17* | - | *+11.5%* |
| *…of which organic* | - | *954.74* | - | *+25%* |

Table 11: Breakdown of trade waste collected showing increasing organic (food + garden waste) volumes

In the absence of a detailed breakdown of data on the additional $CO_2$ emissions from extra fuel, energy and water consumed in delivering commercial activities at present, an approach has been developed to account for the carbon associated with this increased commercial activity.

We need to do this to allow the underlying trend of carbon emissions from Oxford City Council's estate and core/statutory operations to be assessed.

The approach uses the proxy for carbon emissions of the available data on value of works carried out both internally – i.e. as part of our core duties - and externally – i.e. due to level of commercial activity. Carbon emissions from vehicle fleet and depot buildings and operations are reduced by the ratio of the value of commercial activity to the value of the total (internal and external) activity.

For 2012/13 this ratio was 15.5%, for 2013/14 it was 18.3% and for 2014/15 it was 18.8%.

The impact of this adjustment is detailed below in Section 8.4.

**8.4 Carbon reduction trends allowing for factors we can quantify – consistency with 5% target.**

We can now produce a time series of carbon emissions for the three years giving an underlying trend more representative of actual performance delivering core/statutory duties which allows for:

(i) the impact of changing national carbon conversion factors due to the grid electricity generating mix (by recalculating the time series using the most recent (2014/15) factors

and

(ii) decoupling carbon emissions due to external revenue generation activities

This analysis yields a 4% reduction in $CO_2e$ emissions over the year 2013/14 to 2014/15, and a 6% reduction over the 2 year period 2012/13 to 2014/15.

The winters in 2013/14 and 2014/15 were not too dissimilar in degree day terms (2014/15 slightly milder) – but both are milder than 2012/13 – resulting in a downward influence on carbon emissions. The degree days to a base temperature 15.5C are presented above in this document as this is the traditional approach.

Base temperature is the outside temperature at which the building heating system is deemed to be not required to maintain internal comfort levels – the heating requirement being met by internal gains from people and equipment. However for modern energy efficient buildings with higher internal gains from electronic equipment and greater density of occupation, a lower base temperature could be considered as more representative. For example, taking a 12C base temperature 2013/14 and 2014/15 heating seasons are very similar, within a couple of per cent in terms of degree day totals. 2012/13 is around 15% more severe.

We can conclude that the underlying 4% carbon reduction observed from 2013/14 to 2014/15 for a very similar degree day period is consistent with meeting our target for 5% carbon savings per year, based on implemented measures when increased usage of the leisure facilities and increased vehicle movements for improved recycling and food waste collection are considered.

## 9. Renewable energy installations

Oxford City Council has continued to implement renewable energy installations to generate on-site electricity and reduce its use of grid-sourced electricity. A summary of current installed capacity and the context against overall electricity consumption/$CO_{2e}$ emissions is outlined below:

**Oxford City Council Solar Photovoltaic (PV) installed annual generation figures:**

- Commercial sites (i.e. where OCC pays energy bills): 346,468 kWh/year

- Domestic Sites (i.e. where tenants pay energy bills and benefit from free solar electricity): 102,369 kWh/year

Total: 448,837 kWh/year (i.e. nearly half-a-million kWh of additional grid electricity would have been consumed without the PV that OCC has installed. (equivalent to ca241tCO2e/year avoided)

To put these figures into context against electricity and CO2e figures the PV makes the following contribution:
% contribution to OCC electricity consumption (Commercial only): 3.6%
% contribution to OCC electricity consumption (all): 4.7%
% contribution to OCC CO2e emissions (commercial only): 1.9%
% contribution to OCC CO2e emission (all sites): 2.4%

## 10. Sustainable Buildings

The Council continues to invest in the upgrade of its estate with a programme of refurbishments and new build projects. Where possible energy efficiency solutions that go beyond minimum building regulation requirements (and other sustainability measures) are implemented. The Council's own planning requirement for the city for larger developments insists on a Natural Resource Impact Assessment and 20% on-

site renewable - or very low carbon - energy generation. This requirement influences new Council buildings as well as those built by others in the city.

For example, the Council recently constructed a new Competition swimming pool (completed in December 2014) which achieved BREEAM “Very Good” certification. The pool building includes a roof-mounted 122kWp Solar PV system, 195kW Biomass (woodchip) and Combined Heat and Power (CHP) boilers and significant quantities of LED lighting. The Council is also working towards generating its own wood fuel supplies from estate-wide and commercial woody waste arisings to supply the pool biomass boiler.

Additional new build projects are in process including the building of a brand new community centre which will feature some of the highest efficiency Solar PV panels available on the market as well as refurbishment of 5 tower blocks which will include low U-value insulated cladding and LED lighting throughout.

**11. £500k + Financial benefit to Oxford City Council of carbon and natural resource management**

Compared with building energy and water consumption before the carbon management programme kicked in from 2008, we have calculated that the efficiency improvements have resulted in an avoided cost (for reduced gas, electricity and water consumption, and by getting below the CRC threshold and avoiding purchase of ca£70k worth of carbon allowances) of over £500k/year in 2014/15.

**12. External Assurance Statement**

We have received independent external assurance for our energy reduction performance and supporting data in recent years through achievement of the British Standards Institute Energy Reduction Verification (ERV) for our core CRC buildings and vehicle fleet emissions. Our British Standards Kitemark certification (KM 573819) can be found on the Oxford City Council public website at:
http://www.oxford.gov.uk/Direct/BSIERVKitemarkLicence1.pdf
This was valid up until June 2012.

Since getting ERV certification – and having received the assurance that our energy/carbon management practices are up to Best Practice levels - we have focussed on building capacity of key staff e.g. through undergoing training in energy management and professional accreditations. Team members include a Certified Energy Manager and Certified Measurement & Verification Professional, BREEAM Accredited Professionals, Energy Institute qualifications and membership (eg TEMOL and MEI status) and membership of the Association of Energy Engineers (AEE) with one team member recently being appointed as Board member for the UK Chapter of the AEE. Energy and water data is validated and managed via a market leading Energy bureau database package (Team Sigma) with again the team developing expertise in this area in-house.

**13. Additional information on the Council’s wider Environmental Sustainability activities**

Appendix A outlines Oxford City Council’s performance against a broad set of sustainability targets around city-wide carbon reduction, air quality, waste reduction, land quality, biodiversity, fuel poverty and flood management.

**Appendix A: Oxford City Council Environmental Sustainability report 2014/15**

**City-wide partnerships**

The Council is making excellent progress against internal carbon reduction targets, but is only responsible for 1% of the city's total $CO_2$ emissions. In order to achieve ambitious city-wide targets to reduce emissions by 40% by 2020, the Council is leading on several pioneering partnership projects:

- Low Carbon Oxford - The Council leads on coordinating the Low Carbon Oxford partnership – a collaborative network of over 40 organisations that are responsible for the majority of Oxford's $CO_2$ emissions. The Council leads a programme of networking events for partners to share best practice and explore opportunities for joint working. This year's emissions report – showing mixed progress from partner organisations against an agreed 3% year on year target – is on the Low Carbon Oxford website.
- OxFutures - The Council programme manages a partnership project between Oxford City Council, Oxfordshire County Council and the social enterprise the Low Carbon Hub (LCH) to mobilise large-scale investment to develop renewable energy and energy efficiency projects across the city and county. The programme was kick-started by a grant from Intelligent Energy Europe with a target to leverage investment of £18 million into local energy projects by summer 2016. This year the Council provided a £2.3m loan facility to the LCH to provide construction finance for community benefit renewable energy projects and so far the project has leveraged £3million of investment, seen 13 solar school projects and a micro hydro installed in the city and county and £150k of investment in in energy efficiency on social housing in Barton. In October 2014 Oxford City Council hosted the 'Powering UP' national conference on community energy and was proud to be awarded Local Authority Partner of the Year at the first ever Community Energy Awards
- Greening the Arts: Oxford City was the first UK council to integrate environmental reporting into its arts funding in the pioneering Greening the Arst project with charity Julie's Bicycle. It commissioned sustainability experts from Julie's Bicycle to work with its cultural partners (venues, organisations and events) to help them become as sustainable as possible and submit environmental policies, action plans and annual emissions reports as part of their on-going funding agreement with the Council.
- Heat Networks: Following a master-planning exercise for heat networks in Oxford, funded by the Heat Networks Development Unit (HNDU) in DECC, the Council is working with The University of Oxford , Oxford Brookes University and a number of industrial partners to look into heat networks across the city. It is currently investigating the feasibility of distributed heat networks around the city centre University science area, Cowley (around the MINI Plant) and the Headington hospital area.
- Low Carbon Oxford Week (LCO Week): The Council leads on organising and funding the annual LCO Week festival. Held for the first time in June 2014, LCO Week uses culture, creativity and community to inspire local people to take action against climate change. The festival also showcases leading sustainable organisations within the city and puts Oxford firmly on the map as a leading low carbon city. In 2014, it collaborated with 50 partner organisations to offer over 80 events across Oxford and in 2015 became even bigger and worked with over 60 organisations to offer over 100 events to engage over 40,000 people. Watch a short film about LCO Week on the official website - www.lcoweek.org

**Domestic energy efficiency and fuel poverty**

Whilst the perception of Oxford might be of a generally healthy, relatively wealthy part of the country, the city has pockets of significant deprivation -17 super output areas are in the 25% most deprived in the country. An estimated 7000 Oxford households were in fuel poverty in 2012, according to the latest definition.

This year the Council has made strong progress towards addressing these issues in its own estate by employing an Energy Efficiency Projects Officer to work jointly with Housing to implement projects to benefit vulnerable Council housing tenants.

Using a combination of the Green Deal Home Improvement Fund, Energy Company Obligation and capital funding, the Council has completed 50 external wall insulations, 95 cavity wall insulations and 35 solar PV installations on its housing stock over the last two years. This includes 30 properties in Rose Hill that also have Maslow battery storage systems installed as part of an innovative government funded Project ERIC research project, led by Bioregional.

With a higher than average number of privately rented properties in the city, Environmental Health teams have run a number of promotions to landlords on future legislation changes that will affect them and on energy efficiency measures that can be implemented in their properties. The Council also offered thermal imaging surveys on properties to help target areas of energy waste followed by advice and information to landlords in Oxford on how improvements in energy efficiency can be made. In total, 23 properties were surveyed and thermally imaged in 2014 and 36 properties in 2015.

**Water saving**

Reducing water consumption is a relatively new priority for Oxford City Council where an internal target of reducing water use by 3% year on year was introduced in 2013.

Since then the Council has installed water smart metering (AMR) to all its main offices and four out of five of its leisure centres, which helps it to identify possible savings from excess water use, including a major issue at Barton Leisure Centre, the repair of which has saved nearly 6000m3 of water per year.

The Council has included water saving measures such as grey water recycling and percussion taps in its park pavilion refurbishment programme and has also installed water sensors on urinals and point of use water heaters in place of boilers.

This year the Council has implemented measures to reduce water use by 9,958m3 – exceeding its target by 6,621m3. It is still working to improve the quality of its water data, but in terms of actual billed water usage it used 120,984m3 in 2014/15 compared with 126,333m3 in 2013/14 – equivalent to a reduction of 4.2%.

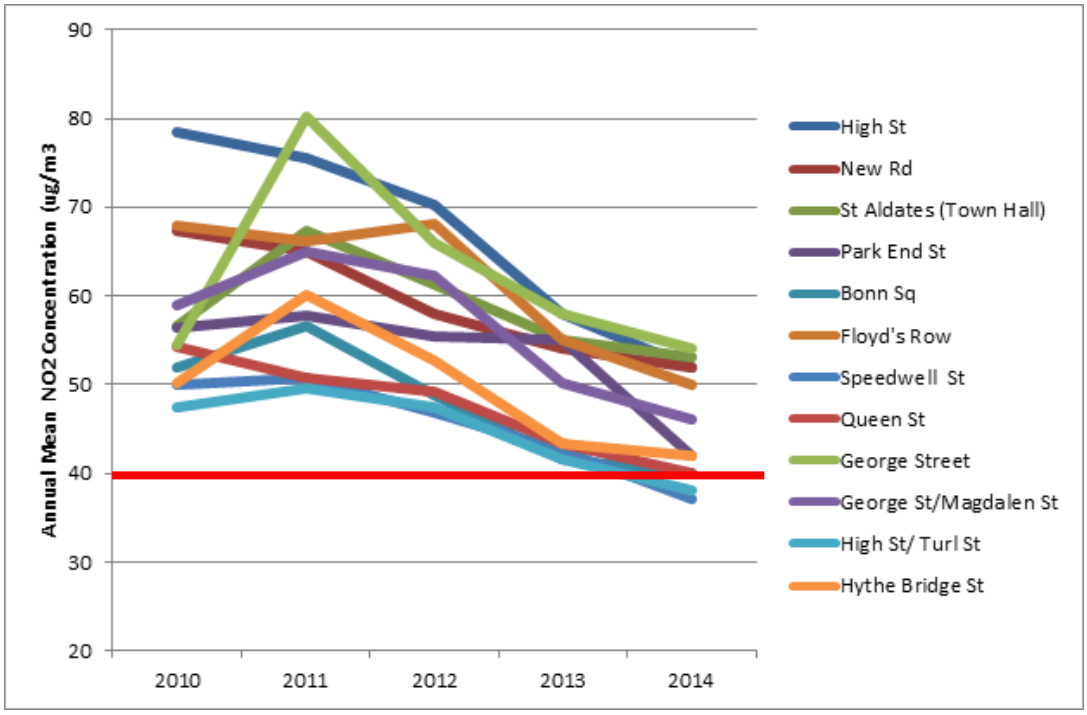
**Air Quality**

Air quality is a particular issue of concern in Oxford and its Low Emissions Strategy sets out the connection between carbon reduction and air quality.

On 1 January 2014, Oxford City Council became one of the first cities in the UK to implement a Low Emission Zone (LEZ) across the city, which requires all local bus

services within the streets affected to be operated exclusively by buses whose engines meet the Euro V emission standard (for nitrogen oxides (NOx)).

Whilst it is too early to fully assess the impact of the LEZ, long term trends in local air quality that the Council monitors across Oxford are showing significant signs of improvement (see table below). The LEZ has also raised awareness of air quality issues with elected members, bus companies and the general public and has helped developed a partnership working approach which has laid a foundation for future developments




Following a study into freight in the city, commissioned jointly with the County Council, Oxford City Council has worked with Oxford University developing its own Delivery and Servicing Plan (DSP) to achieve sustainable freight management at St. Aldate's Chambers and the Town Hall. This is designed to reduce the frequency of goods and servicing vehicle trips and contribute towards reduced congestion, increased bus efficiency and improved air quality.

The Council has submitted bids in partnership with Oxfordshire County Council for the Go Ultra Low City Scheme and the Ultra-Low Emission Taxi Scheme run by the Office for Low Emissions Vehicles (OLEV). If successful, these bids will provide funding to increase the uptake of ultra-low emission cars and taxis in the city. Our bid to the Go Ultra Low City Scheme has successfully progressed through the first round and we are preparing our final bid. The Council was also awarded an electric taxi feasibility study by OLEV to assess the opportunities for introducing electric vehicles into the city's taxi fleet to improve air quality and reduce noise.

The Council's Oxford Cycle City project has delivered over £250,000 worth of cycling improvements in Oxford, including 1650metres of cycle path resurfacing and improved signage. In June 2015 it launched a new Park & Pedal scheme by installing and promoting 70 new cycle parking spaces at its Park and Ride sites at Redbridge and Seacourt.

## Waste Reduction

The Council recognises waste as a resource with value and aims to reduce the amount of waste generated, encourage the re-use of products rather than throwing away and encourages recycling and composting of waste as far as possible. The Council's approach to waste and recycling is laid out in its Waste and recycling strategy.

In 2014/15, the Council introduced food waste recycling to 16,000 flat sites across the city. Food collected goes to the Cassington Anaerobic Digestion Plant where it is used to generate clean, green electricity to power local homes. The City Council's popular ReFashion event became part of Oxford Fashion Week this year and attracted over 700 people who donated over one third of a tonne of clothing for reuse and recycling. The Council worked with Oxford Brookes University and the University of Oxford on a highly successful Student Moving Out campaign which led to a record high in donations to the British Heart Foundation charity.

As a result of these and other initiatives, the recycling rate in Oxford continues to increase against a nationwide trend of falling/stagnating rates. Oxford City's Current recycling rate is just over 46%; the 3rd highest recycling rate of any city in the UK.

## Supply Chain and Procurement

Oxford City Council's Procurement Strategy outlines a variety of measures taken to ensure sustainability within our supply chain, including: insisting on Forest Stewardship Council (FSC) certified wood; purchasing only 100% recycled paper; requiring involvement of at least one local supplier for all request for quotations below £100k; specifying an appropriate Building Research Establishment Environmental Assessment Method (BREEAM) for any new build or refurbishment project to ensure that its buildings are designed to the most appropriate sustainable standard.

Looking ahead, there are opportunities for the Council to further consider the carbon footprint of our supply chain, which, according to an Oxfordshire County Council assessment, could account for potentially twice the carbon emissions associated with our own estate and operations. The Council will also investigate the options for using the procurement process to require lower emission standards from freight operators.

## Biodiversity

This year the Council drafted and ran a public consultation on its first Corporate Biodiversity Action Plan (BAP), providing an overview of how we fulfil duties as set out in the Natural Environment and Rural Communities (NERC) Act 2006. It outlines our achievements, goals and future actions relating to biodiversity in our role as landowner and manager, regulator and policy maker, and advocate and facilitator.

The Council has started to undertake various measures for the benefit of biodiversity and the wider environment, such as replacing labour intensive, thirsty bedding plants with low maintenance, perennial plants in many of our parks and landscaped areas and reducing close mown grass which has resulted in tall grass habitats which are beneficial for invertebrates. These measures not only benefit biodiversity but also are providing a cost and efficiency savings to the council.

The Council has also worked with the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT) on a long-standing project at Iffley Meadows nature reserve to restore a rare habitat in the heart of the city and partnered with BBOWT to deliver the Wild Oxford project.

For further information please visit the City Council's biodiversity webpage.

**Land Quality**

This year the Council published the Land Quality Strategy for Oxford, describing its aims and objectives for land quality and sustainable remediation of land containing contaminates. It also partnered with other districts in Oxfordshire to produce a guidance document for developers which sets out the local requirements for contaminated land management.

Collaboration between Planning and Environmental Policy Teams has resulted in land quality issues being addressed at the planning application stage. This has made it easier for developers to carry out proper land quality assessments and has allowed the City Council to ensure adequate protection measures have been implemented and to promote sustainable solutions in the re-development of contaminated land.

This year the Council also undertook a strategic inspection to identify any contaminated land within Oxford, including a systematic review of historic land use maps to identify landfill and other former industrial sites. The sites were prioritised and are managed by the use of Geographic Information Systems (GIS). Any land identified as contaminated is made public in the Public Register of Contaminated Land. Currently, there are no known contaminated land sites in Oxford.

For further information, please visit the Land Quality pages on the Oxford City Council website

**Flooding and climate change adaptation**

This year the Council improved Property-Level Flood Protection (PLP) for 39 houses which had flooded in 2013-2014 through administering Government grants for businesses and homes. It also completed the Osney Island PLP scheme – providing protection for 31 houses.

The Council identified the probable cause of sewage flooding that has been getting worse over the last three river floods and liaised with Oxfordshire Fire and Rescue Service and Thames Water to improve flood response in Oxford.

The Kennington Road Flood Alleviation scheme - a joint project between six partner organisations - won the Institution of Environment and Sustainability Award for the Thames Valley Branch of the Institution of Civil Engineers.

Oxford City Council is also working in partnership with Environment Agency to:

- Support and deliver the EA-led Oxford and Abingdon Flood Alleviation Scheme; and
- Lead the delivery of the Marston and Northway Flood Alleviation Scheme.


13 -21 June 2015
Pop up green events
across our city
WHAT
EVER


CLEANER
GREENER
OXFORD
P+
Park&Pedal
Get fit for the day


Be a bright spark!
Recycling your unwanted food stops it
going to waste and generates electricity.
NO PLASTIC BAGS
WITH THIS LID
WASTE
RECYCLING
ONLY
food waste