

Greenhouse Gas Emissions from Local Authority own estate and operations

Reporting year 2016_17

Oxford City Council

**Date: 2 August 2017
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Greenhouse Gas Emissions (GHG) from Local Authority own estate and operations covering financial year 2016_17

1. Introduction

Oxford City 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 CO₂ emissions by 25% by 2011 (on a 2005 baseline) and 3% year on year thereafter. The Plan was refreshed and updated in August 2012 (Carbon Reduction at the Heart of Everything we Do) with a stretched target of a 5% year on year implementation of CO₂ 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.

A refreshed and updated plan¹ covering the next 5 years (2017/18 to 2021/22) was published in March 2017 following City Executive Board approval and maps a path to continual improvement in carbon and energy management, driving down energy, fuel and water spend and their associated carbon dioxide emissions.

The areas that contribute to the bulk of the Council’s CO₂ 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 CO₂e and CO₂) for the reporting period 2016/17 (as well as includes details of emissions from the previous 3 years, 2013/14, 2014/15 and 2015/16). (CO₂e gives the global warming effect of the mass of GHG in terms of what mass of carbon dioxide would produce the equivalent effect.)

¹ https://www.oxford.gov.uk/downloads/download/552/carbon_management_strategy

A summary of 2016/17 GHG emissions included in this report are as follows (see Sections 5 and 6 below for scope of emissions coverage in this report):

Total GHG emissions for period 1 April 2016 to 31 March 2017*		
	Tonnes of CO₂	Tonnes of CO₂e
Year	2016/17	2016/17
Scope 1	5,074	5,103
Scope 2	3,327	3,347
Scope 3	350	505
Total GHG emissions	8,751	8,955

* see Sections 5 and 6 below for scope of emissions coverage in this report

Please see Section 6 onwards below for a discussion of carbon emissions trends over the past 5 reporting years (including the current reporting year 2016/17).

2. 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 1DS.

3. Reporting period

1 April 2016 – 31 March 2017.

4. 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 The Department for Food, Environment and Rural Affairs.

<https://www.gov.uk/measuring-and-reporting-environmental-impacts-guidance-for-businesses>

5. Organisational boundary

The scope of this report covers all Council buildings and operations as well as water consumption and disposal.

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, staff commuting and procurement).

6. 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

Scope One	Scope Two	Scope Three	Not included
Fuel used to heat our buildings (e.g. natural gas, gas oil, kerosene and liquid petroleum gas)	Purchased electricity for our buildings and other electricity consuming sites (e.g. offices, leisure centres, depots, car park and public conveniences).	electricity (transmissions and distribution factors)	Perfluorocarbons (PFC), hydrofluorocarbons (HFC) and sulphur hexafluoride (SF ₆)
Fuel used in council vehicle fleet and also to power non-road going vehicles and plant such as lawn-mowers and, chippers.			Staff commuting
		Business mileage by car	Emissions from Council operational waste deposited in landfill sites
		Business mileage by public transport (bus and train)	Emissions from Leased commercial properties or housing stock where tenants are paying energy/water bills.
Fuel used in waste collection vehicle fleet		Water consumed (supply and treatment)	Total indirect emissions: e.g. due to upstream emissions from production and delivery of fuel to power stations or transport fuel stations.
	Half-hourly metered and non-half-hourly metered electricity supplies (ie Meter profile classes 01-08, HH and Unmetered Supplies)		Avoided emissions from on-site renewable energy have not been included to date

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

A summary of total GHG emissions for the current reporting year (2016/17) is outlined in Table 2 below. Headline figures over the last five years (including the current reporting year) are detailed in Table 3 and the stacked bar chart (Chart 1). A more detailed breakdown of Total GHG emissions and sources for the previous three years can be found in Appendix 1.

Table 2: Total GHG emissions for the period 1 April 2016 to 31 March 2017

2016/17	Total Units	tCO2	tCO2e
Scope 1			
Gas consumption (kWh)	16,915,814	3,107	3,112
Gas Oil (litres)	32,412	88	96
Kerosene (litres)	4,000	10	10
LPG (litres)	0	0	0
Diesel (litres) - average biodiesel blend	703,669	1,823	1,838
Petrol (litres) –(average biofuel blend)	21,345	47	47
Total Scope 1		5,074	5,103
Scope 2			
Purchased Electricity (kWh)	8,123,213	3,327	3,347
Scope 3			
Electricity - Transmission and distribution	8,123,213	301	303
Average petrol car (miles) - unknown fuel	147,119	44	44
Passenger travel – train, national rail (km)#	81,889	4	4
Passenger travel – average local bus (km)#	8,048	1	1
Water supply(m3)	145,136	0	50
Water treatment(m3)	145,136	0	103
Total Scope 3		350	505
Totals		8,751	8,955

* Defra emissions factors guidance – last updated June 2015 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 (2016 data)

<http://www.ukconversionfactorscarbonsmart.co.uk/>

Heating degree days (to base 15.5°C) for the Thames Valley Region for the 2015/16 reporting period were **1975**.

We have referenced heating degree day figures (to base 15.5 °C) 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 3: Summary of annual GHG emissions (tCO₂e) for period 1 Apr 2012 to 31 Mar 2017

	12/13 tCO ₂ e	13/14 tCO ₂ e	14/15 tCO ₂ e	15/16 tCO ₂ e	16/17 tCO ₂ e
Gas consumption (kWh)	3173	2,804	2,619	2,946	3,112
Gas Oil (litres)	88	132	106	106	96
Kerosene (litres)	10	10	10	10	10
LPG (litres)	24	2	0	0	0
Diesel (litres) - average biodiesel blend	1,756	1,803	1,814	1,832	1838
Petrol (litres) – (average biofuel blend)	122	64	47	44	47
Totals Scope 1	5,173	4,815	4,596	4,939	5,103
Purchased Electricity (kWh)	4,139	4,180	4,534	3,838	3,347
Electricity - Transmission and distribution	327	357	396	317	303
Average petrol car (miles) - unknown fuel	58	51	44	38	44
Passenger travel – train, national rail (km)	8	4	4	4	4
Passenger travel – average local bus (km)	6	1	1	1	1
Water supply(m ³)	40	43	42	49	50
Water treatment(m ³)	82	90	86	101	103
Totals Scope 3	519	547	573	510	505
Totals	9,831	9,542	9,703	9,286	8,955
Degree days*	2498	2002	1870	1815	1975

The above data from Table 3 is further detailed in the stacked bar chart below to show the overall trends in absolute emissions at the appropriate annual conversion factors supplied:

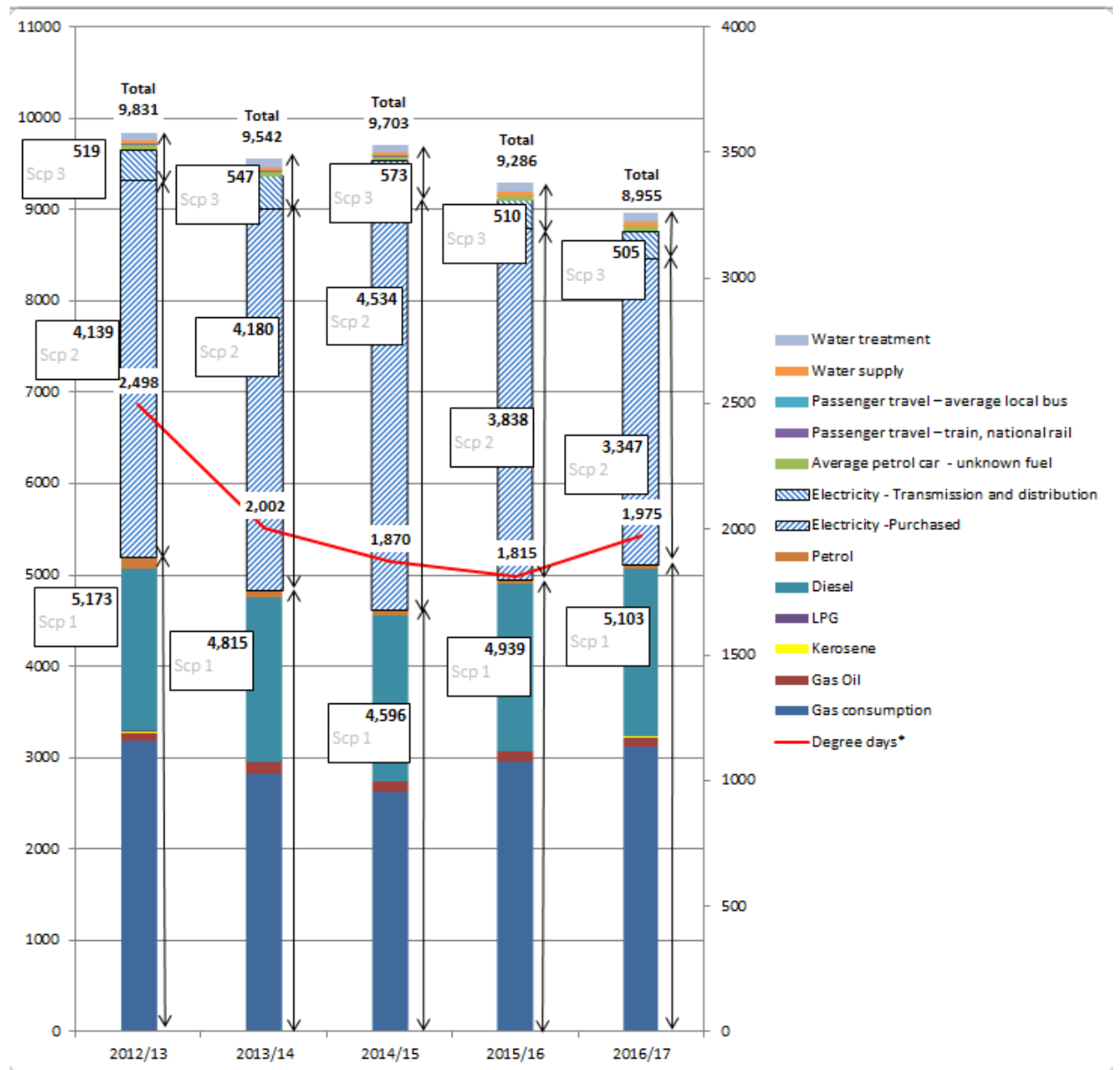


Chart 1: Stacked bar chart showing GHG emissions (tCO2e) from all three scopes for the past five reporting years (2012/13 to 2016/17).

7. Base Year

Our base year for this GHG reporting process is 2015/16 (the previous reporting year) as this is aligned with our year on year target outlined in our Carbon Management Plan 3 approved in February 2017 (“Continual improvement in carbon and cost reduction”).

8. Targets

In the Carbon Management Plan covering the reporting period for this report, the Council CO₂ reduction target for 2016/17 was to put measures in place calculated to reduce CO₂ emissions by a minimum of 5% compared with the previous year (equivalent to 248tCO₂) which was exceeded. A range of energy conservation measures were implemented and tracked during the reporting year delivering a total estimated reduction of 254tCO₂/year. A summary of measures is detailed as follows:

- Boiler upgrade at Leys pools and leisure centre (dry side, old Blackbird Leys Leisure Centre): 39tCO₂
- Building disposals: 27tCO₂
- Fleet fuel reduction measures (in-cab technology reducing the number of missed bin pick-ups plus improved MPG performance of vehicles): 74tCO₂
- LED lighting upgrades at:
 - Covered Market: 31tCO₂;
 - Low rise sheltered housing blocks communal lighting areas: 49tCO₂;
 - Multi-use games areas floodlighting: 2tCO₂; and
 - Town Hall Assembly Rooms chandeliers :1tCO₂
- Monitoring & targeting savings (targeting and correcting excess consumption issues arising): 13tCO₂
- Replacement lower energy multifunctional devices: 18tCO₂

The impact of measures implemented in 2016/17 are not expected to be fully represented in the carbon emissions data for the 2016/17 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 (City Executive Board Member for A Clean and Green Oxford), is responsible for this work area. Internal assurance and governance for the Carbon Management Programme and related work area is provided through the 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 2015/16 (scopes 1, 2, and 3 as outlined in Sections 5 and 6 above) were **3.6%**(CO₂) and **3.6%**(CO₂e) less than in the previous year 2015/16.

In terms of estate-wide electricity and gas consumption, **a 2.2% decrease in electricity consumption** and **a 5.9% increase in gas consumption** have been observed. An 8.8% increase in degree days was observed in 2016/17 compared to the previous year which may have led to some increased demand on gas consumption in buildings. Further analysis of GHG reduction performance is outlined in the following section against significant intensity measurements.

9. 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.

a. Leisure centre visits

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.

Leisure centre related CO₂e emissions decreased (by 5.5%) in 2016/17 compared to the previous year. Applying an intensity measurement against visitor numbers also shows a ca0.4% decrease in kgCO₂e per visit compared to the previous year.

The following table summarises these trends over the last three years.

	2014/15		2015/16		2016/17	
	Visits	kgCO ₂ e/ visit	Visits	kgCO ₂ e/ visit	Visits	kgCO ₂ e/ visit
Barton Leisure Centre	122,196	2.86	126,012	2.78	113,966	2.98
Blackbird Leys Swimming Pool*	19,243	5.21	0	0	0	0
Ferry Leisure Centre	550,783	1.11	619,562	1.01	498,469	1.38
Hinksey Outdoor Pool	60,372	6.74	62,357	10.43	56,830	7.99
Leys Pools and Leisure Centre	408,171	1.39	439,921	1.84	537,045	1.54
Oxford Ice Rink	175,204	4.18	193,441	3.61	161,661	4.09
Temple Cowley Pool*	111,169	4.93	0	0	0	0
Totals	1,447,138	-	1,441,293	-	1,367,971	
total kgCO ₂ e per visit in Leisure Centres		2.29		2.18		2.17
Visits: % change on previous year	20.20%		-0.40%		-5.09%	
kgCO ₂ e/visit: % change		-16.40%		-5.00%		-0.4%

*sites closed down during 2014/15

Table 4: Leisure visits over 3 years and carbon emissions/visit comparison

b. Municipal waste collection: increased activity

There has been an 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 5 below 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 slight decrease of 0.05% in absolute emissions (tCO₂e) has been observed in 2016/17 compared to the previous year against a backdrop of a 2.0% increase in waste collection tonnage.

Assessing performance against activity levels (Table 6), a 2.1% reduction in kgCO_{2e} 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 5: 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		
2014/15	24,641.12	21,199.15	6,426.52	4,369.91	56,636.70	3.0%
2015/16	24,575.22	21,703.79	7,451.01	4,195.67	57,925.69	1.0%
2016/17	23,113.25	22,750.34	8,312.61	4,959.96	59,136.16	2.0%

Table 6: Vehicle related CO_{2e} emissions against waste collected

	Fleet fuel kgCO _{2e}	Total waste collected in tonnes	kgCO _{2e} /tonne waste collected	% reduction in carbon/tonne waste collected
2014/15	1,967,000	56,637	34.73	-4.60%
2015/16	1,982,000	57,926	34.22	-1.47%
2016/17	1,981,000	59,136	33.50	-2.10%

There has also been an increase in recycling operations over the period, reducing the amount of domestic and trade food waste going to landfill and the subsequent GHG methane as it decomposes under the ground. Tables 7 and 8 below show the increasing trend in food waste collection.

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.

Table 7: Breakdown of domestic waste collected in tonnes showing increasing organic (food + garden waste) collection

Year	Domestic		
	Total Residual	Total Recycling	% change recycling
2014/15	24,641.12	21,199.15	+5.3%
<i>...of which dry recycling</i>	-	13,828.39	+2.3%
<i>...of which organic</i>	-	7,370.75	+11.6%
2015/16	24,575.22	21,703.79	+2.4%
<i>...of which dry recycling</i>	-	13,487.37	-2.5%
<i>...of which organic</i>	-	8,216.42	+11.5%
2016/17	23,113.25	22,750.34	+4.8%
<i>...of which dry recycling</i>	-	13,407.60	-0.6%
<i>...of which organic</i>	-	9,342.75	+13.7%

Table 8: Breakdown of trade waste collected in tonnes showing increasing organic (food + garden waste) collection

Year	Trade		
	Total Residual	Total Recycling	% increase recycling
2014/15	6,426.56	3,741.43	-
<i>...of which dry recycling</i>	-	2,786.69	-
<i>...of which organic</i>	-	954.74	-
2015/16	7,451.01	4,195.67	+12.14%
<i>...of which dry recycling</i>	-	3,097.11	+11.14%
<i>...of which organic</i>	-	1,098.56	+15.06%
2016/17	8,312.61	4,959.96	+18.22%
<i>...of which dry recycling</i>	-	3,712.38	+19.87%
<i>...of which organic</i>	-	1,247.58	+13.57%

c. 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 purchasing, movements and increased office and workshop energy and water use, producing an upward pressure on our carbon emissions.

Table 9 below outlines changes in the make-up of the vehicle fleet in the last three years with a 9% increase in the number of vehicles used to conduct council operations compared to the previous year. In spite of increased operational activity, continuing driver training and purchase of energy efficient vehicles is assisting with ensuring that fuel consumption and the associated GHG emissions are kept under control. This is reflected in the fact that fuel consumption related emissions (tCO₂e) have decreased (against increasing carbon intensity of diesel) during 2016/17 compared to the previous reporting year.

Table 10 outlines the latest available data (2013 to 2016) on external revenue generation from Council services provided to other organisations showing a steady increase in commercial activity in recent years. This has an upward pressure on Council-wide energy and fuel consumption and related emissions with increased operating hours and vehicle movements.

Table 9: Increase in vehicle fleet numbers

	2014/15	2015/16	2016/17	%
Vehicle Types	No of vehicles	No of vehicles	No of vehicles	Change prev year
Car and Car derived vans	64	83	79	-4.8%
Misc light/heavy plant and ride on machinery	319	451	532	18.0%
Trucks and tippers up to 3500kg GVW	66	73	72	-1.4%
Vans up to 3500kg GVW	80	99	92	-7.1%
Vans, trucks and tippers between 3501 and 7500kg GVW	18	13	20	53.8%
Vans, trucks and tippers between 7501 and 18000kg GVW	9	8	11	37.5%
Refuse Collection Vehicles	26	28	32	14.3%
Sweepers	15	17	18	5.9%
Tractors, shovels and light loaders	19	11	7	-36.4%
Trailers	46	51	46	-9.8%
Totals	662	834	909	9.0%

Table 10: External revenue generation from Council services offered to other organisations from 2013/14 to 2015/16

	Total internal revenue (excluding Statutory works)	Total external trading revenue *	Total trading type works	% external trading revenue contribution
2013/14	£26,493,000	£5,432,000	£31,925,000	17.01%
2014/15	£29,177,000	£6,493,000	£35,670,000	18.20%
2015/16	£27,846,000	£7,035,000	£34,881,000	20.17%
<i>* Direct services operations on non-Council work streams paid for externally such as commercial trade waste collection, gas and electrical works, vehicle maintenance etc</i>				

10. 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 actual Solar PV generation figures and the context against overall electricity consumption/CO_{2e} emissions is outlined below:

Oxford City Council Solar Photovoltaic (PV) actual generation figures 2016/17 as recorded by Solar PV generation meters:

- **Commercial sites** (i.e. where OCC pays energy bills): **431,510kWh/year**
- **Domestic Sites** (i.e. where tenants pay energy bills and benefit from free solar electricity): **291,207kWh/year**

Total: **722,718 kWh/year** (i.e. the additional grid electricity that would have been consumed without the PV that OCC has installed. (equivalent to ca325tCO₂e/year avoided at current grid electricity conversion factors)

To put these figures into context against electricity and CO₂e figures:

% generated compared to OCC electricity consumption (Commercial PV only): 5.1%

% generated compared to OCC electricity consumption (all PV): 8.5%

% generated compared to OCC CO₂e emissions (commercial PV only): 2.1%

% generated compared to OCC CO₂e emission (all PV): 3.5%

11. 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.

12. External Assurance Statement

Having received the assurance that our energy/carbon management practices are up to Best Practice levels in previous years (e.g. attaining British Standards Institute Energy Reduction Verification kitemark to June 2012 and ISO 14001 accreditation in June 2016), we have focussed on building capacity of key staff e.g. through undergoing training in energy management and professional accreditations. Developing ISO50001 level systems for all key buildings and operations is scheduled for roll out over the next five years as outlined in the new carbon management plan (CMP3). The first phase in 2017/18 will target the Town Hall and St Aldates Chambers (main Council office building) which will further improve and develop expertise and best –practice in carbon and cost reduction across the Council.

Team members include a Certified Energy Manager and Certified Measurement & Verification Professional, BREEAM Accredited Professionals, BREEAM-in-Use Assessor, Public Building Energy Assessor, Energy Institute qualifications and membership (eg TEMOL and MEI status) and membership of the Association of Energy Engineers (AEE) with one team member being a regular 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.

Appendix 1: Total GHG emissions for the last three reporting years (2013/14, 2014/15 and 2015/16)

Table a: Total GHG emissions for the period 1st 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°C) for the Thames Valley Region for the 2013/14 reporting period were **2002**.

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

2014/15	Total Units	tCO ₂	tCO ₂ e
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**.

Table c: Total GHG emissions for the period 1 April 2015 to 31 March 2016

2015/16	Total Units	tCO2	tCO2e
Scope 1			
Gas consumption (kWh)	15,971,143	2940	2946
Gas Oil (litres)	35,366	99	106
Kerosene (litres)	4,000	10	10
LPG (litres)	0	0	0
Diesel (litres) - average biodiesel blend	709,109	1,817	1,832
Petrol (litres) –(average biofuel blend)	20,148	44	44
Total Scope 1		4,910	4,939
Scope 2			
Purchased Electricity (kWh)	8,303,027	3,807	3,838
Scope 3			
Electricity - Transmission and distribution	8,303,027	314	317
Average petrol car (miles) - unknown fuel	127,785	38	38
Passenger travel – train, national rail (km) [#]	84,989	4	4
Passenger travel – average local bus (km) [#]	7,550	1	1
Water supply(m ³)	143,015	n/a	49
Water treatment(m ³)	143,015	n/a	101
Total Scope 3		357	510
Totals		9,074	9,286

* 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 (2015 data)

<http://www.ukconversionfactorscarbonsmart.co.uk/>

Heating degree days (to base 15.5°C) for the Thames Valley Region for the 2015/16 reporting period were **1815**.