

# Carbon Footprint Appraisal Report



Assessment Period:  
1<sup>st</sup> April 2018 - 31<sup>st</sup> March 2019

## Executive Summary

Carbon Footprint Ltd has assessed the greenhouse gas (GHG) emissions of Winchester City Council (hereafter referred to as WCC) from 1<sup>st</sup> April 2018 to 31<sup>st</sup> March 2019, based on a dataset provided by the organisation. Carbon Footprint Ltd strongly recommends that Winchester City Council offsets its emissions to mitigate its contribution to climate change.

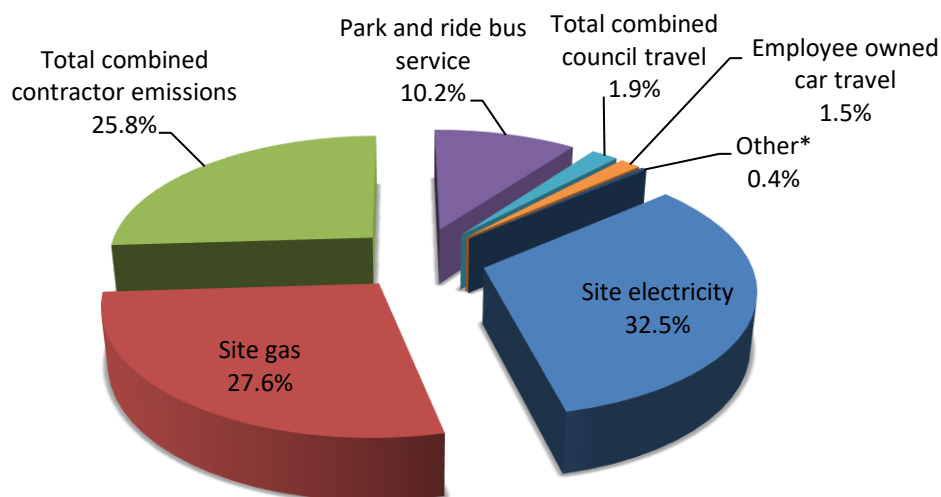
### Current Performance

- The Council's GHG emissions have decreased since the previous year by 4.3%
- Gas consumption accounts for 27.6% of the total footprint and increased by 10.4% since the previous year.

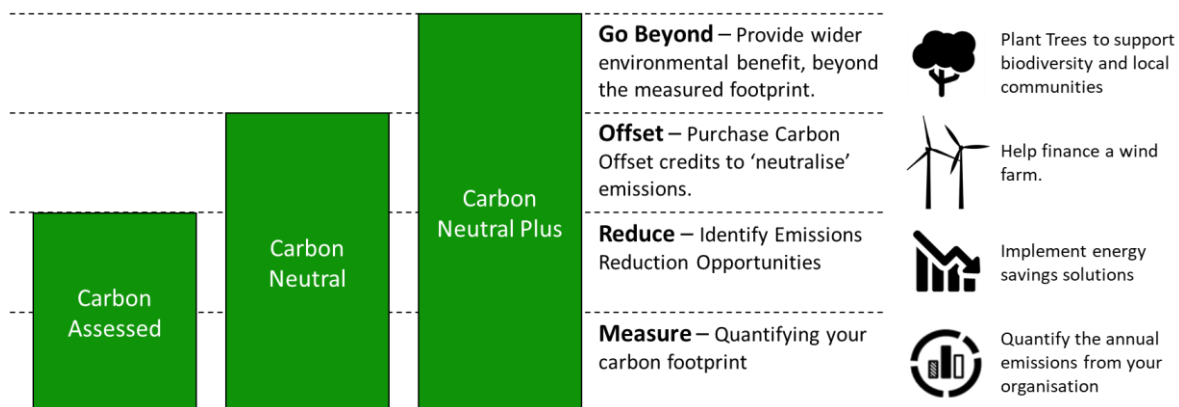
### Future Recommendations

- Offset the Council's GHG emissions by supporting certified projects which are providing solutions to climate change. These projects also provide communities with great social and economic benefits, helping to reach the United Nation's Sustainable Development Goals.
- Complete energy audits at the leisure centres and top consuming sites to identify energy saving opportunities.
- Switch to alternative fuels for the Park & Ride buses.
- Consider reporting market-based scope 2 emissions (following GHG Protocol methodology) to reflect electricity purchasing decisions.
- Expand the scope to include water consumption for all large sites.

### Breakdown of carbon footprint



	2009/10	2017/18	2018/19	% change from baseline year	% change from previous year
<b>Total Tonnes CO<sub>2</sub>e</b>	5,476.89	4,186.84	4,005.19	<b>-26.9%</b>	<b>-4.3%</b>
<b>Tonnes of CO<sub>2</sub>e per employee</b>	9.61	8.59	8.21	<b>-14.6%</b>	<b>-4.4%</b>
<b>Tonnes of CO<sub>2</sub>e per capita</b>	0.048	0.034	0.032	<b>-33.4%</b>	<b>-6.7%</b>



# Table of Contents

Executive Summary.....	I
1. Introduction.....	1
2. Calculation Scope and Accuracy.....	4
3. Carbon Footprint Results.....	6
4. Comparison and Benchmarking.....	13
5. Key Recommendations.....	16
6. References.....	20
A. Annex A – Calculation Methodology (Additional Notes).....	21
B. Annex B – Supplied Data and Emissions Breakdown.....	22

## Quality Control

<b>Report issue number:</b>	1.1
<b>Date:</b>	09 June 2020
<b>Calculations completed by:</b>	Jenny Webb
<b>Calculations reviewed by:</b>	Georgina Whitlock
<b>Report produced by:</b>	Jenny Webb
<b>Report reviewed by:</b>	Georgina Whitlock
<b>Director approval:</b>	Dr. Wendy Buckley

# 1. Introduction

## 1.1. Winchester City Council's carbon management journey

Carbon Footprint provides a simple six step annual journey to enhance WCC's sustainability credentials whilst complying to best practice and differentiating your brand. Winchester City Council has completed the first step of its carbon management journey.



Measure



Aim



Reduce



Offset



Communicate



Comply

The purpose of this report is to:

- Summarise the results of WCC's carbon footprint assessment.
- Recommend realistic aims for WCC's carbon reduction target.
- Provide practical recommendations to enhance your sustainability programme and reduce WCC's emissions.

## 1.2. What is a carbon footprint?

A carbon footprint is a measure of the impact our activities have on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide equivalents (CO<sub>2</sub>e). A carbon footprint is made up of two parts, direct and indirect emissions.

### 1. Direct emissions:

Direct emissions are produced by sources which are owned or controlled by the reporting organisation and include electricity use, burning oil or gas for heating, and fuel consumption as a result of business travel or distribution. Direct emissions correspond to elements within scopes 1, 2 and 3 of the World Resources Institute GHG Protocol, as indicated in Table 1.

**Table 1: Direct emissions sources**

Footprint	Activity	Scope
Direct	Electricity, heat or steam generated on-site	1
	Natural gas, gas oil, LPG or coal use attributable to company owned facilities	1
	Company owned vehicle travel	1
	Production of any of the six GHGs (CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFCs, PFCs and SF <sub>6</sub> )	1
	Consumption of purchased electricity, heat steam and cooling	2
	Employee business travel (using transport not owned by the company)	3

### 2. Indirect emissions:

Indirect emissions result from a company's upstream and downstream activities. These are typically from outsourced/contract manufacturing, and products and the services offered by

the organisation. Indirect emissions correspond to scope 3 of the World Resources Institute GHG Protocol excluding employee business travel as indicated in Table 2.

**Table 2: Indirect emissions sources**

Footprint	Activity	Scope
Indirect	Employee commuting	3
	Transportation of an organisation's products, materials or waste by another organisation	3
	Outsourced activities, contract manufacturing and franchises	3
	GHG emissions from waste generated by the organisation but managed by another organisation	3
	GHG emissions from the use and end of life phases of the organisation's products and services	3
	GHG emissions arising from the production and distribution of energy products, other than electricity, steam and heat, consumed by the organisation	3
	GHG emissions from the production of purchased raw or primary materials	3
	GHG emissions arising from the transmission and distribution of purchased electricity	3

For businesses, the assessment focuses on direct emissions, as these lie under the control of the organisation. However, we ask companies to recognise that there is an indirect emissions footprint and select suppliers based on their environmental credentials alongside price and performance.

### 1.3. Why is it important?

Over the past two decades the effects of climate change have accelerated. Considerable evidence exists proving climate change has been exacerbated by human activity. Changes in our post-industrial lifestyles have altered the chemical composition of the atmosphere, generating a build-up of greenhouse gases – primarily carbon dioxide, methane, and nitrous oxide levels – raising the average global temperature.

The consequences of inaction will be disastrous. Sea level will continue to rise and local climate conditions to be altered causing an increase in extreme weather events, affecting forests, crop yields, and water supplies. It will also affect human health, accelerate species extinction, and disrupt many ecosystems.

Climate change is a global threat which will impact the lives of everyone on the planet. Hence, it is vital that all individuals, businesses, organisations and governments work towards the common goal of reducing greenhouse gas emissions. This carbon footprint assessment will enable Winchester City Council to continue doing its bit by monitoring, reducing and offsetting its emissions.

## 1.4. BS ISO 14064-1:2018

This GHG report has been prepared in accordance with Part 1 of BS ISO 14064: 2018. The GHG inventory, report, or statement has not been verified.

This standard requires the estimation of likely error margin based on a simple error analysis, to identify uncertainty in the calculations. Our simple error analysis provides a level of uncertainty based on the accuracy of the data provided. This shows the error for each emissions source, as well as the sum of these divided by the total emissions, to produce a total percentage error.

## 1.5. Calculation methodology

The carbon footprint appraisal is derived from a combination of client data collection and data computation by Carbon Footprint's analysts.

Carbon Footprint's analysts have calculated Winchester City Council's footprint using the 2018 conversion factors developed by the UK Department for Environment, Food and Rural Affairs (Defra) and the Department for Business, Energy & Industrial Strategy (BEIS). These factors are multiplied with the company's GHG activity data. Carbon Footprint has selected this preferred method of calculation as a government recognised approach and uses data which is realistically available from the client, particularly when direct monitoring is either unavailable or prohibitively expensive.

Additional methodology information is presented in Annex A.

## 1.6. Data supplied for the carbon footprint appraisal

A summary of the data supplied by Winchester City Council for the appraisal is presented in Annex B.

## 1.7. Abbreviations

A/C	Air Conditioning
BEIS	Department for Business Energy & Industrial Strategy
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
Defra	Department for Environment, Food and Rural Affairs
FTSE	Financial Times Stock Exchange
EU	European Union
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standards Organisation
km	Kilometres
kWh	Kilowatt Hours
PR	Public Relations
UN	United Nation

## 2. Calculation Scope and Accuracy

### 2.1. Scope of this work

Carbon Footprint has assessed the GHG emissions from 1<sup>st</sup> April 2018 to 31<sup>st</sup> March 2019 resulting from the energy consumption at Winchester City Council’s facilities and its business transport activities.

### 2.2. Organisational & reporting boundaries

The organisation has accounted for all quantified GHG emissions and/or removals from facilities over which it has operational control. The following exclusions and assumptions have been made:

- Energy consumption which is metered directly to tenants by the supplier has been excluded.
- Where 3<sup>rd</sup> party tenants are recharged by Winchester City Council and operational control is not perceived (i.e. tenants have individual boilers), energy has been included in scope 3.
- Where tenants have individual boilers (and therefore operational control), though the property only has one meter and is all recharged to tenants, the energy use/boiler that the Council has operational control over (i.e. communal space) has been reported in scope 3 due to unable to separate out the data.
- Where there is a central plant serving the whole property (flats and communal spaces), it has been deemed this is under the Council’s operational control.

**Figure 1: Assessment boundary**

Scope 1 Direct Emissions	Scope 2 Energy Indirect	Scope 3 Other Indirect
<u>Fuel combustion</u> <b>Natural gas, kerosene, petrol</b>	<u>Consumption of purchased electricity, heat steam and cooling</u> <b>Electricity</b>	<u>Purchased materials and fuels</u> <b>Water</b>
<u>Owned Transport</u> <b>Council-owned car and van travel</b>		<u>Transmission and distribution of energy</u> <b>Electricity</b>
<u>Process emissions</u> <b>None</b>		<u>Leased assets, outsourcing and franchising</u> <b>Contractor emissions<sup>1</sup>, park &amp; ride bus service, managed leisure centres, and housing</b>
<u>Fugitive emissions</u> <b>Refrigerants</b>		<u>Transport related activities</u> <b>Rail, air and employee-owned car travel</b>
		<u>Sold goods and services</u> <b>None</b>
		<u>Waste Disposal</u> <b>Residual &amp; Recyclable</b>

Key:

Within the assessment boundary	Not included within assessment boundary
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Indirect GHG sources that are outside the assessment boundary have been excluded from quantification as it is not technically feasible or cost effective, to include these in the GHG assessment.

<sup>1</sup> Includes car, van and lorry travel, and other fuel use.



### 2.3. Calculation accuracy & materiality

The result of a carbon footprint calculation varies in accuracy depending on the data set provided. The more accurate the data supplied, the more accurate the final result which will subsequently allow for better targeting of areas where improvements can be made. Materiality is determined by the percentage contribution of each element to the overall footprint. The data provided is derived from energy bills, expenses claims and data collected by Winchester City Council (Table 3). A simple error analysis has been used to estimate the error margin for the appraisal results.

**Barnes Close** – due to estimated billing causing high variation in year-to-year consumption, gas has been estimated based on an actual reading in October 2016 and March 2019, pro-rated to the data period.

**To improve accuracy for future assessments, please refer to recommendations in section 5.1.**

*Table 3: Assessment accuracy, materiality and simple error analysis*

Dataset	Source of data and comments	Accuracy	Materiality	Potential Error Margin (tCO <sub>2</sub> e)
Site electricity	Provided by the Council from utility bills and meter readings.	Very Good	High (>20%)	39.02
Site gas	Provided by the Council from utility bills and meter readings. Significant differences queried.	Very Good	High (>20%)	33.21
Depot contract emissions	Vehicle details, miles travelled and fuel consumption were provided from contractors.	Very Good	High (>20%)	31.02
Park and ride bus service	The total km travelled as well as the estimated MPG of the vehicles at 7.85 was provided. This was converted into litres of diesel.	Very good	Medium (5-20%)	12.28
Council-owned vehicle travel	Vehicle details, annual distance travelled and fuel consumption was provided from internal/financial records.	Excellent	Low (1-5%)	0.77
Employee-owned vehicle travel	Vehicle details and annual distance travelled were provided from internal/financial records.	Excellent	Low (1-5%)	0.61
Other fuel usage	From internal records.	Excellent	Very Low (<1%)	0.05
Rail travel	Expenses/internal records.	Good	Very Low (<1%)	0.63
Water (and wastewater)	Data provided for a selection of sites. Missing leisure centres and public conveniences.	Average	Very Low (<1%)	1.95
Taxi travel	Expenses/internal records.	Good	Very Low (<1%)	0.10
Flights	Expenses/internal records.	Excellent	Very Low (<1%)	0.002
<b>Total</b>				<b>119.65 (3.0%)</b>



## 3. Carbon Footprint Results

### 3.1. Summary of results

The total carbon footprint for Winchester City Council for the period ending 31<sup>st</sup> March 2019 was **4,005.19 tonnes CO<sub>2</sub>e**. The following table and graphs provide a summary of results for Winchester City Council's carbon footprint calculation by scope and source activity. As the management of WCC's two leisure centres is contracted out, the associated energy consumption is recorded as scope 3 emissions. Housing energy consumption reported in scope 3 include energy which is not under WCC's operational control and is recharged to tenants.

**Table 4: Results of Winchester City Council's carbon footprint assessment by scope and source activity**

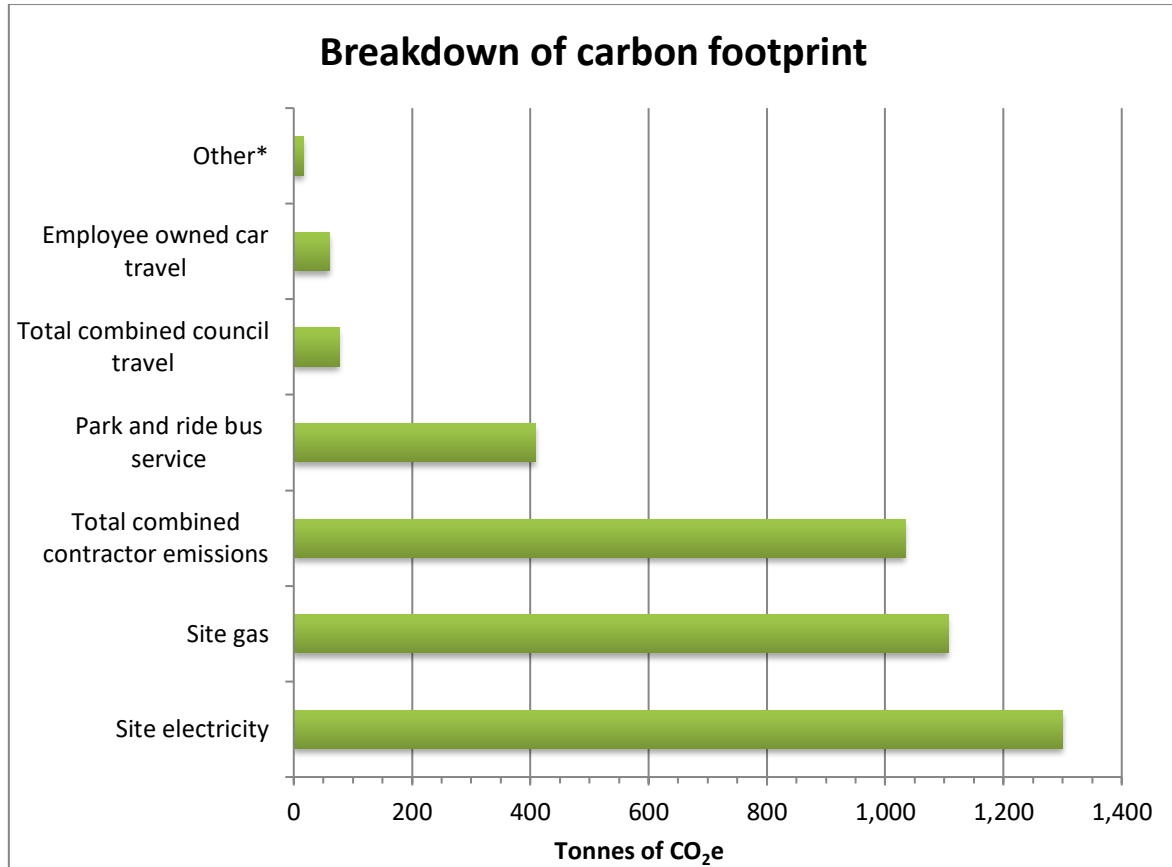
Scope	Activity	Tonnes CO <sub>2</sub> e
<b>Scope 1</b>	Natural gas consumption	324.69
	Council-owned vehicle travel	77.15
	Other fuel consumption	4.95
	Refrigerants	0
<b>Scope 1 Sub Total</b>		<b>406.79</b>
<b>Scope 2</b>	Electricity generation	897.76
<b>Scope 2 Sub total</b>		<b>897.76</b>
<b>Scope 3</b>	Depot contractor emissions <sup>2</sup>	1,034.04
	Managed leisure centres (electricity & gas)	915.95
	Park & ride bus service	409.29
	Housing energy recharged to tenants <sup>3</sup>	192.81
	Electricity transmission and distribution	76.53
	Employee-owned car travel <sup>4</sup>	60.60
	Rail travel	6.34
	Water (and wastewater)	3.91
	Taxi travel	1.01
	Flights	0.16
<b>Scope 3 Sub Total</b>		<b>2,700.65</b>
<b>Total Tonnes of CO<sub>2</sub>e</b>		<b>4,005.19</b>
<b>Tonnes of CO<sub>2</sub>e per employee</b>		<b>8.21</b>
<b>Tonnes of CO<sub>2</sub>e per capita</b>		<b>0.032</b>

Electricity and gas consumption are the two most significant aspects of Winchester City Council's GHG emissions, together accounting for 60.1% (Figures 2 & 3). The next most significant emission source is from contractors' transport and fuel use (this refers to activities undertaken by Biffa and ID Verde for the Council). In the following two charts, the electricity and gas consumption categories include the externally managed leisure centres and housing combined with all WCC sites. The 'other' category includes: rail travel, taxi travel, other fuel consumption, water consumption and air travel.

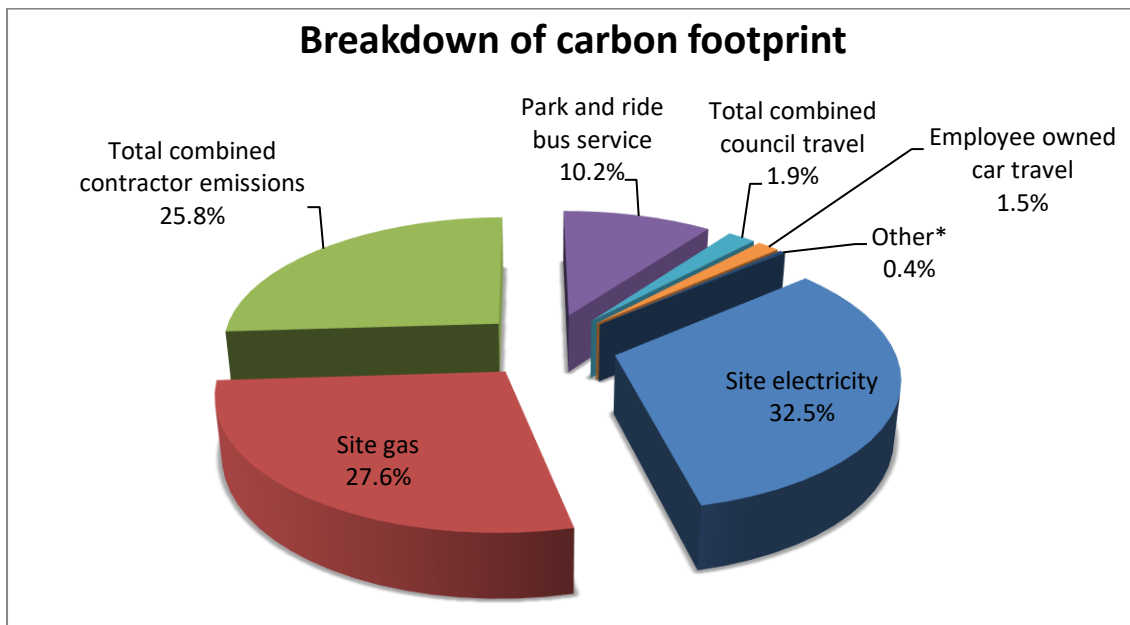
<sup>2</sup> Includes lorries, vans, cars and other fuel use.

<sup>3</sup> Electricity and gas consumption recharged to tenants, not under WCC's operational control. Does not include energy which is directly metered to tenants by energy suppliers.

<sup>4</sup> Includes grey fleet travel and cash opt out travel.



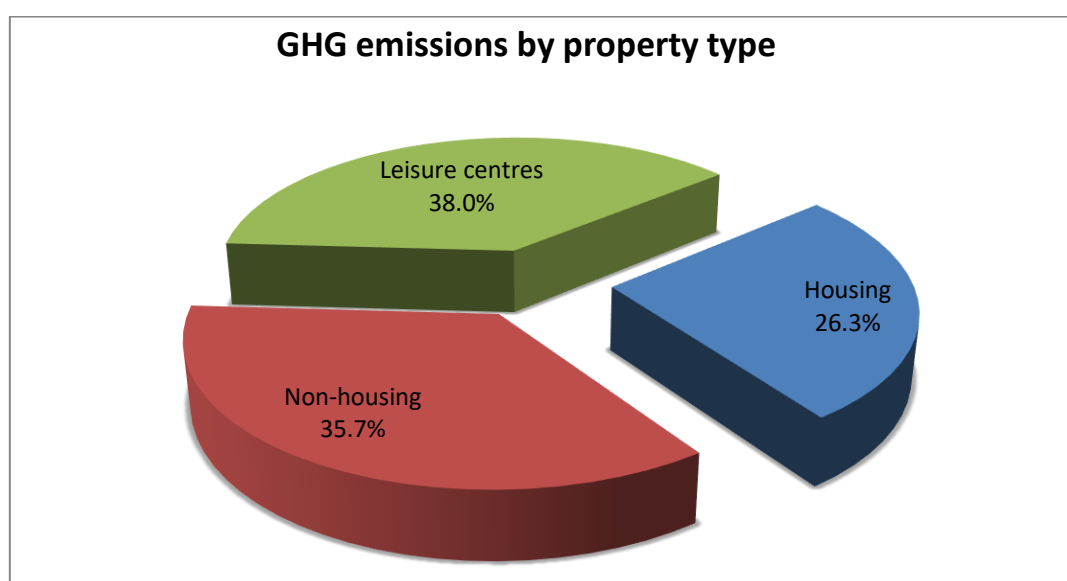
**Figure 2: Contribution in tonnes of CO<sub>2</sub>e of each element of Winchester City Council's carbon footprint**



**Figure 3: Percentage contribution of each element of Winchester City Council's carbon footprint**

### 3.2. Emissions from energy usage at site facilities

Figure 4 show the breakdown of emissions from on-site energy usage by property type across WCC's assets. It can be seen that the leisure centres account for the highest proportion of emissions from energy use (38.0%), yet this only consists of two sites. I therefore recommend that the Council should focus on optimising energy efficiency (e.g. utilising **heat recovery systems**), eliminating unnecessary energy use and increasing proportion generated by renewable energy sources (e.g. **solar thermal panels**). Solar thermal panels use solar energy to directly heat air or water. This conversion can be 90% efficient compared to photovoltaic panels which tend to only be 15-20% efficient in converting solar energy to electricity.



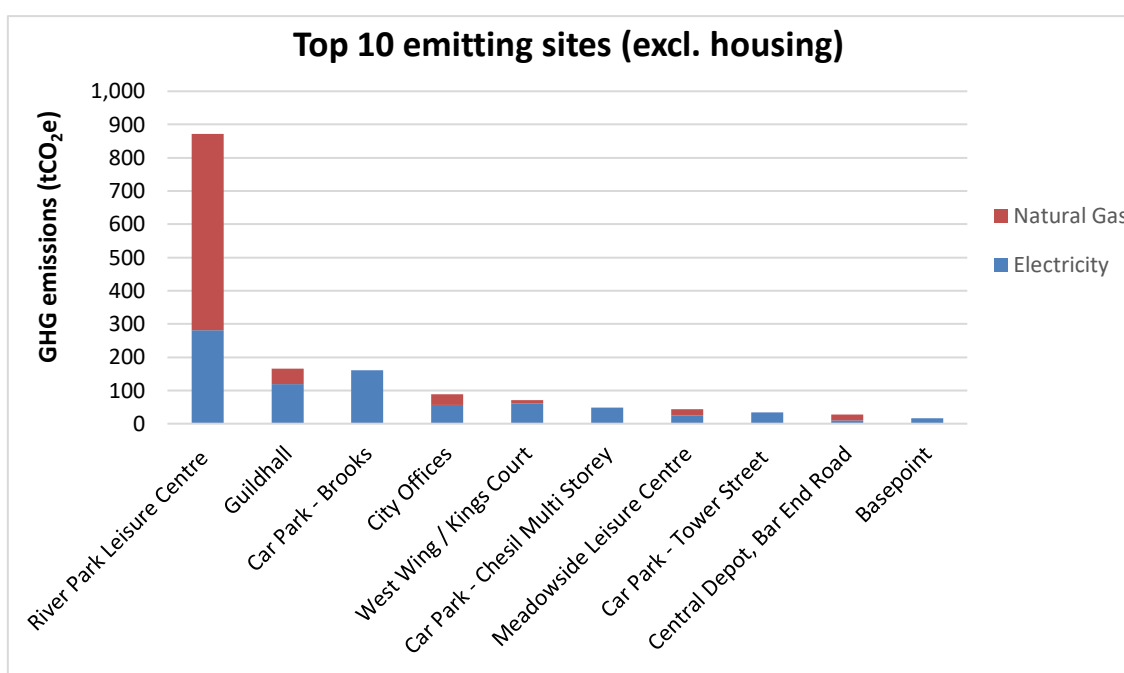
**Figure 4: Breakdown of site CO<sub>2</sub>e emissions by property type**

Table 5 and Figure 5 shows the top 10 energy consuming sites, excluding housing. In line with the previous year, the River Park Leisure Centre remains the site with the highest emissions, accounting for 49.1% of the total energy consumption from non-housing assets. Approximately 67.8% of River Park Leisure Centre's site emissions is due to gas consumption. River Park's total emissions has reduced by 7% (65.5 tonnes) since the previous year. This is due to a 17.2% (190,000 kWh) reduction in electricity consumption, combined with the UK national electricity grid decarbonising by 20.1%. Gas consumption, however, increased by 15.4% (428,000 kWh). I recommend further investigation and regular monitoring of the month-to-month and year-on-year variations, in order to identify causes of excess consumption and where efficiencies can be made. An on-site energy audit and in-depth data analysis would be beneficial in identifying opportunities for improvement.

The cumulative total of the 10 non-housing sites with the highest emissions have decreased by 250 tonnes of CO<sub>2</sub>e (14.1%) since the previous year.

**Table 5: CO<sub>2</sub>e emissions as a results of site energy consumption for the top 10 sites (excluding housing)<sup>5</sup>**

Site Name	Electricity (tCO <sub>2</sub> e)	Natural Gas (tCO <sub>2</sub> e)	Total Emissions (tCO <sub>2</sub> e)
River Park Leisure Centre	280.78	591.08	871.86
Guildhall	118.85	46.94	165.79
Car Park – Brooks	161.08	n/a	161.08
City Offices	56.92	31.38	88.30
West Wing / Kings Court	61.87	8.61	70.49
Car Park – Chesil Multi Storey	47.74	n/a	47.74
Meadowside Leisure Centre	25.03	19.06	44.09
Car Park – Tower Street	33.54	n/a	33.54
Central Depot, Bar End Road	9.29	18.35	27.64
Basepoint	16.40	n/a	16.40
<b>Total</b>	<b>811.49</b>	<b>715.43</b>	<b>1,526.92</b>

**Figure 5: CO<sub>2</sub>e emissions per site and energy type for the top 10 emitting sites (excl. housing)**

For housing sites, which include communal areas and flats under the Council's operational control (or recharged to tenants)<sup>6</sup>, Table 6 and Figure 6 show that Chesil Lodge produced the largest amount of emissions in 2018-19. This was a new build and therefore is the first time appearing in the scope of the assessment. As with previous years, Whitewings House, Danemark Court and Makins Court make up the largest emitters, the majority of which is due to gas consumption. The gas consumption for Makins Court has decreased significantly by 47.8% and Barnes Close has increased by 331.1% compared to the previous year (2017-18). This was investigated and found to be due to estimated billing in 2017-18 and an actual reading taken in 2018-19 which accounted for the previous underestimations. For Barnes Close, the 2018-19 data was adjusted to reflect a truer representation

<sup>5</sup> Top 10 emitters shown – see Annex B for complete breakdown of energy consumption and emissions for all sites.

<sup>6</sup> Does not include flats which are directly metered to tenants by the energy supplier.

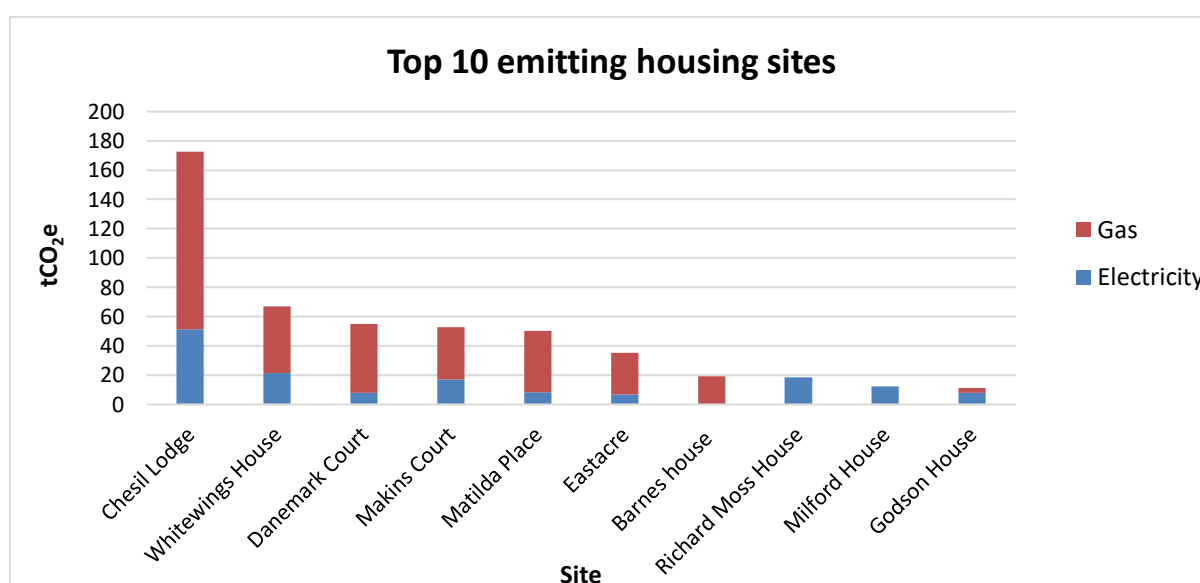
of the building's consumption for 12 months. Makins Court has now been switched to an Automatic Meter Reader (AMR) and therefore billing will be based on actual readings going forward.

The reported housing GHG emissions vary year-on-year due to whether properties/flats are tenanted during the data period, occupancy rates, common rooms being converted into flats, heating and lighting upgrades etc. This year there have been gas consumption reductions at Coitbury House due to the property now derelict, and at Normandy Court which now has individual boilers for each flat and metered directly by the supplier.

**I recommend an energy audit is completed for the top 5 properties to identify whether the heating system and controls are operating at appropriate settings and where there may be opportunities for improvement.**

**Table 6: Top 10 housing sites with the highest emissions**

Site Name	Electricity (tCO <sub>2</sub> e)	Natural Gas (tCO <sub>2</sub> e)	Total Emissions (tCO <sub>2</sub> e)
Chesil Lodge	51.37	121.09	172.46
Whitewings House	21.39	45.51	66.90
Danemark Court	7.80	47.19	54.99
Makins Court (Landlords Supply)	17.07	35.79	52.85
Matilda Place	8.16	42.19	50.35
Eastacre	6.81	28.28	35.10
Barnes house	0.00	19.16	19.16
Richard Moss House	18.40	0.00	18.40
Milford House	12.30	0.00	12.30
Godson House	7.90	3.25	11.16
<b>Total</b>	<b>151.20</b>	<b>342.46</b>	<b>493.66</b>

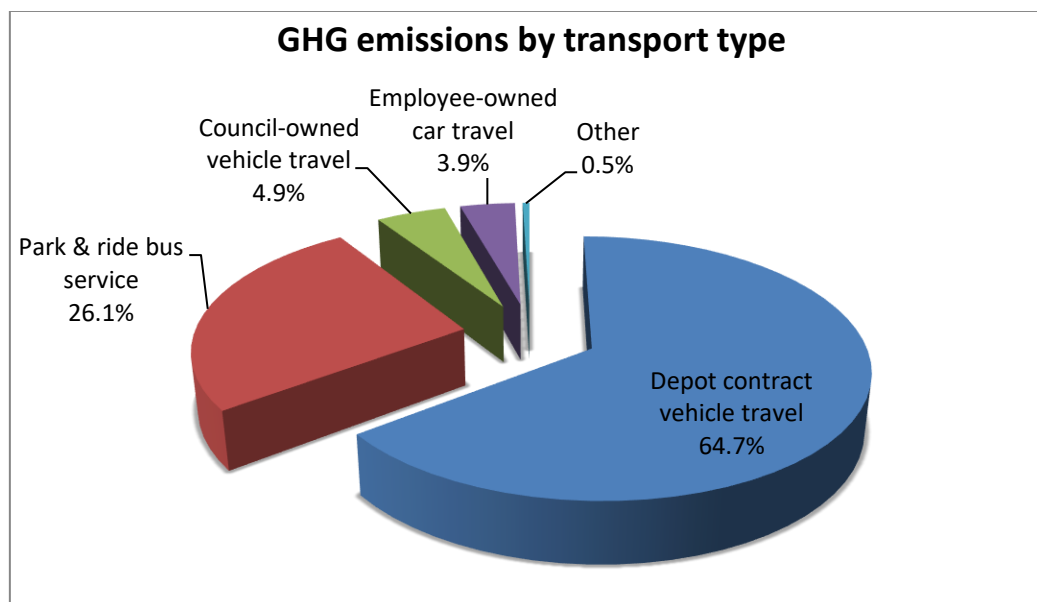


**Figure 6: CO<sub>2</sub>e emissions per site and energy type for the top 10 emitting sheltered housing sites**

The detailed results are given in Annex B.

### 3.3. Emissions from transport and travel

Depot contract vehicle travel (includes cars, vans and trucks) accounts for 64.7% of the total transport emissions (Figure 7 & Table 7). The Park & Ride bus service is the next most significant transport element. Together these account for over 90% of the transport emissions, and should therefore be the focus on making reductions. For example, the buses could be replaced or retrofitted to run on alternative fuels such as biogas or electricity.



**Figure 7: Percentage contribution of each element to transportation emissions**

**Table 7: CO<sub>2</sub>e emissions due to transportation**

Type of Travel / Transport	Tonnes of CO <sub>2</sub> e
Depot contract vehicle travel	1,016.05
Park and ride bus service	409.29
Council-owned vehicle travel	77.15
Employee-owned car travel	60.60
Rail travel	6.34
Taxi travel	1.01
Flights	0.16
<b>Total</b>	<b>1,570.60</b>

The detailed results are given in Annex B.

### 3.4. Other emissions

#### Water

WCC has provided water consumption data for four sites, in line with previous years and the results are shown below in Table 8. Due to improvements in data monitoring, all sites will be reported in the 2019/20 assessment. As with previous years, the Guildhall continues to be the site which has the highest water consumption and therefore associated emissions. However, it is expected this will significantly change next year when analysis can be made on all sites, including leisure centres and public conveniences.

*Table 8: CO<sub>2</sub>e emissions from water consumption*

Site	Water supply (m <sup>3</sup> )	Tonnes of CO <sub>2</sub> e
Guildhall	2,032	0.70
City Offices	1,273	0.44
West Wing	479	0.16
Abbey House	58	0.02
<b>Totals</b>	<b>3,842</b>	<b>1.32</b>

#### Other fuel consumption

WCC gathered and provided data for fuel used for purposes other than heating, such as forklifts and equipment (Table 9). This includes data from external contractors.

*Table 9: CO<sub>2</sub>e emissions from fuel used by contractors*

Type of fuel	Litres	Emissions (tCO <sub>2</sub> e)
Petrol	8,297	18.28
LPG	141	0.21
<b>Total</b>	<b>8,438</b>	<b>18.49</b>

#### Refrigerants

There have been no reported refrigerant top-ups during this data period.





## 4. Comparison and Benchmarking

### 4.1. Comparison to base year emissions

For the baseline year emission data please refer to the 2009/10 report. Table 10 below shows historical emissions per activity, as well as Winchester City Council’s total carbon footprint, tonnes of CO<sub>2</sub>e per employee and tonnes of CO<sub>2</sub>e per capita.

Winchester City Council has decreased its total carbon footprint by 26.9% between this period and the baseline year, and by 4.4% since the previous year (Table 10 and Figure 8). This is a fantastic achievement, which has primarily been due to reductions in electricity consumption over the years, due to installation of efficient lighting and equipment, improved data monitoring, and the continual decarbonisation of the national electricity grid.

Since the previous year, the largest increase has been due to gas consumption. It has increased by 568,600 kWh (10.4%), equivalent to 103.5 tonnes of CO<sub>2</sub>e. This is likely due to the opening of a new sheltered housing scheme (Chesil Lodge), which accounted for 10.9% of the Council’s total gas consumption. However, as previously mentioned, some of this year-to-year variation is also partly due to the accuracy of billing during the data periods. Therefore, I recommend that the sites with the largest gas consumption are targeted for AMR installation, if not already installed, and regularly monitored against previous months/years to identify anomalies in a timely manner.

Figure 9 shows both intensity metrics have decreased since the previous year, and remain below the baseline year level. However, the rate of this decrease needs to be faster in order to address the Climate Emergency with the urgency it deserves.

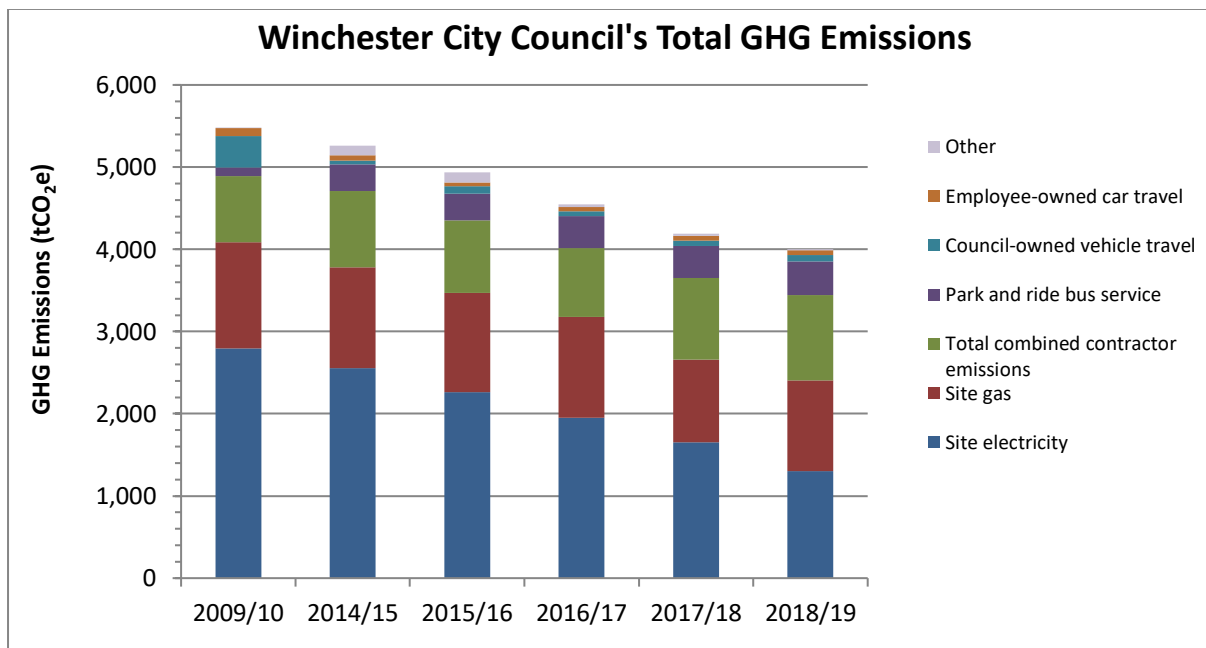
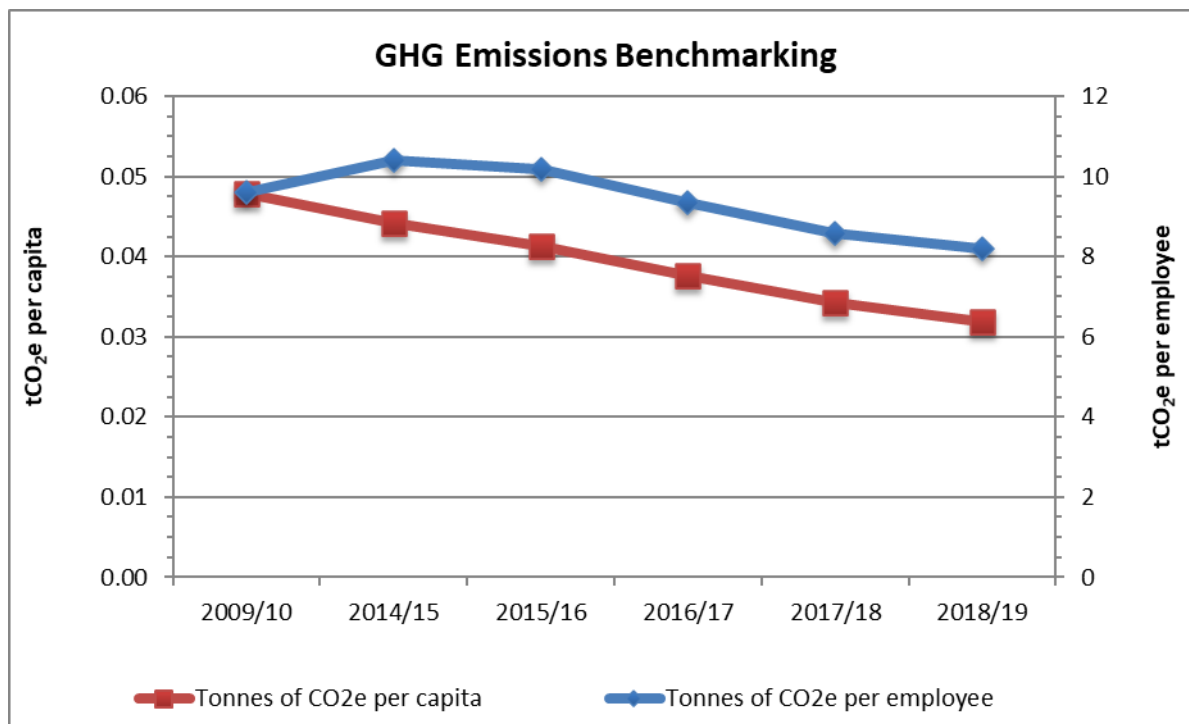


Figure 8: Detailed emissions comparison for the various aspects of Winchester City Council’s emissions

**Table 10: Winchester City Council's carbon footprint comparison and percentage change**

Element	2009/10	2014/15	2015/16	2016/17	2017/18	2018/19	% change on baseline year (2009/10)	% change on previous year
Site electricity	2,795.32	2,557.74	2,264.36	1,950.26	1,651.97	1,300.65	-53.5%	-21.3%
Site gas	1,290.79	1,222.98	1,208.10	1,227.42	1,003.59	1,107.08	-14.2%	+10.3%
Depot contract lorry travel	803.95	876.66	625.55	586.66	824.39	903.91	+12.4%	+9.6%
Park and ride bus service	101.74	327.76	325.43	388.13	386.42	409.29	+302.3%	+5.9%
Depot contract car and van travel	0.00	50.27	255.63	249.19	152.93	112.14	n/a	-26.7%
Council owned van travel	344.14	7.51	56.78	43.31	43.40	53.62	-84.4%	+23.5%
Cash opt out car travel	0.00	47.29	32.82	41.39	45.67	45.43	n/a	-0.5%
Council owned car travel	39.61	38.19	31.52	20.80	22.65	23.53	-40.6%	+3.9%
Contractor fuel use	0.00	0.00	0.00	0.00	20.54	17.99	n/a	-12.4%
Employee owned car travel (grey fleet)	97.10	14.90	13.31	10.05	10.66	15.18	-84.4%	+42.3%
Rail travel	4.07	4.27	3.66	5.68	6.57	6.34	+55.8%	-3.5%
Kerosene & gas oil	0.00	82.51	76.81	15.94	0.30	4.45	n/a	+1407.1%
Water (and wastewater)	0.00	4.69	3.94	4.00	4.59	3.91	n/a	-14.9%
Other*	0.17	25.73	35.65	6.35	13.15	1.67	+886.9%	-87.3%
<b>Total tonnes of CO<sub>2</sub>e</b>	<b>5,476.89</b>	<b>5,260.51</b>	<b>4,933.57</b>	<b>4,549.19</b>	<b>4,186.84</b>	<b>4,005.19</b>	<b>-26.9%</b>	<b>-4.3%</b>
<b>Tonnes of CO<sub>2</sub>e per employee</b>	<b>9.61</b>	<b>10.42</b>	<b>10.17</b>	<b>9.34</b>	<b>8.59</b>	<b>8.21</b>	<b>-14.6%</b>	<b>-4.4%</b>
<b>Tonnes of CO<sub>2</sub>e per capita</b>	<b>0.048</b>	<b>0.044</b>	<b>0.041</b>	<b>0.038</b>	<b>0.034</b>	<b>0.032</b>	<b>-33.4%</b>	<b>-6.7%</b>

\* 'Other' includes: taxi travel, site petrol use, air travel, motorbike travel and refrigerants.

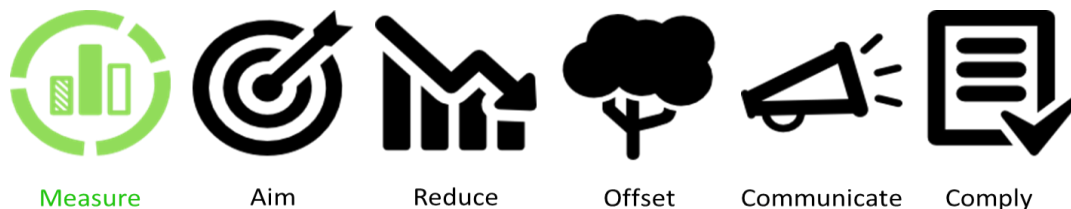


**Figure 9: Carbon footprint of Winchester City Council for internal benchmarks**

Carbon Footprint recommends that organisations use the base-year GHG inventory as a benchmark to measure against. When using the base-year GHG inventory as a benchmark, organisations can set realistic reduction targets and measure their progress year on year. This can also provide excellent marketing opportunities, where real figures can demonstrate WCC’s commitment towards helping fight climate change.

## 5. Key Recommendations

The following recommendations are designed to help Winchester City Council build upon the results of the appraisal and its carbon management over the coming year.



### 5.1. Improving the accuracy of future carbon footprint assessments

To improve the accuracy of future assessments, we recommend the following:

- Include water consumption from all sites or at least the leisure centres in future assessments.
- Report market-based scope 2 emissions, following GHG Protocol methodology, to reflect the impact of the Council's electricity purchasing decisions.
- Continue to work closely with the external contractor to source reliable and accurate mileage/fuel consumption data.
- Ensure to include all staff business travel data (e.g. rail and air travel) with the most accurate details available. This will prevent having to duplicate results from previous assessments, which can lead to either under- or over-estimated emissions.
- Consider expanding the scope to include paper consumption and employee commuting.



### 5.2. Reducing emissions

To reduce GHG emissions, we recommend the Council:

- Conduct energy audits at the leisure centres and other largest consuming properties to identify energy-saving opportunities. Working alongside the leisure centres to do this should improve energy efficiency and reduce overall energy consumption, as well as reducing operational costs.
- Investigate the potential for using heat recovery systems at the leisure centres.
- Consider installing solar thermal panels at the leisure centres for air and water heating.
- Switch to alternative fuels for the Park & Ride buses, such as biogas from waste treatment facilities. Case study example – Nottingham City: <https://www.nctx.co.uk/gasbus>.

#### 5.2.1. Setting carbon reduction budgets based on emissions

Having an agreed and defined system for investing in future carbon reduction activities helps drive carbon reduction and cost savings in a business. Many leading organisations are doing this through

setting an “Internal Carbon Tax” or an “Internal Carbon Price” within their organisation (see [http://www.carbonfootprint.com/internal\\_carbon\\_pricing.html](http://www.carbonfootprint.com/internal_carbon_pricing.html) for more information).

We suggest starting by setting a price of £20-25 per tonne of CO<sub>2</sub>e, as this typically relates to 1-6% of the cost of causing emissions (as shown in the table below). WCC may wish to collect the “taxation” by each functional group (depending on their emissions), or simply account for this at the top-level company budgeting.

**Table 11: Carbon price compared to energy and travel costs**

Emissions Source	Electricity	Natural Gas	Car Miles	Flights
<b>1 tonne CO<sub>2</sub>e is equivalent to</b>	2400 kWh	5500 kWh	3300 miles	5200 km
<b>Cost to produce 1 tonne CO<sub>2</sub>e</b>	£335	£220	£1485*	£400
<b>£20 carbon price represents</b>	6%	9%	1%	5%

\*assumes a rate of 45p per mile

We recommend allocating this defined budget to help both internal and external carbon reduction activities. For example, it could be split:

- 75% on internal carbon reduction measures
- 25% on external carbon offsetting activities

Investments in internal carbon reduction activities should be made based on the level of carbon savings and the associated cost savings. Good carbon reduction investments usually pay for themselves and give a return on investment to the business within 3 years. Carbon offsetting return on investment is primarily measured through access to tenders, brand enhancement and PR (use marketing return on investment techniques).



### 5.3. Carbon offsetting to become a Net Zero Carbon Council

**Carbon offsetting is a great way to compensate for the emissions that Winchester City Council cannot reduce, by funding an equivalent carbon dioxide saving elsewhere.**

We can provide both UK-based<sup>7</sup> and international projects for the Council to support. The majority of projects focus on the development of renewable energy in developing countries, however there are others which have a greater focus on social benefits as well as environmental benefits. Further detail on the type and specific projects that we currently have in our portfolio can be provided on request or be found at: <http://www.carbonfootprint.com/carbonoffsetprojects.html>.

*Example of Carbon Offsetting Projects:*



*Tree Planting in UK Schools*



*Avoided Deforestation in the Brazilian Amazon*



*Clean Water in Rwanda*

<sup>7</sup> Our UK projects are buddied with internationally certified offset projects (i.e. Verified Carbon Standard etc.).



## 5.4. Carbon Footprint Standard

### 5.4.1. Brand endorsement

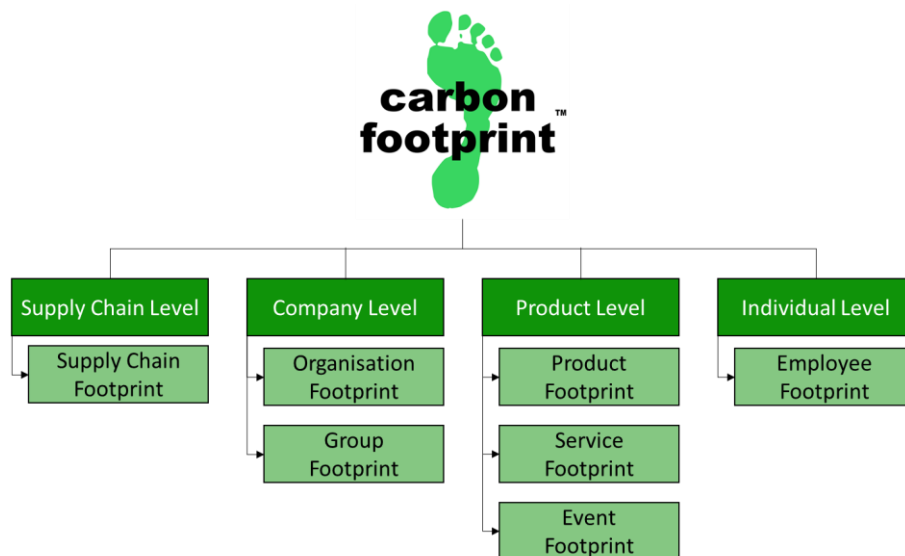
Winchester City Council, in conjunction with Carbon Footprint Ltd, has assessed its carbon footprint, and shown a reduction of 26.9% based on its absolute emissions against the baseline year. By achieving this Winchester City Council has qualified to use the Carbon Footprint Standard branding. This can be used on all marketing materials, including website and customer tender documents, to demonstrate your carbon management achievements.



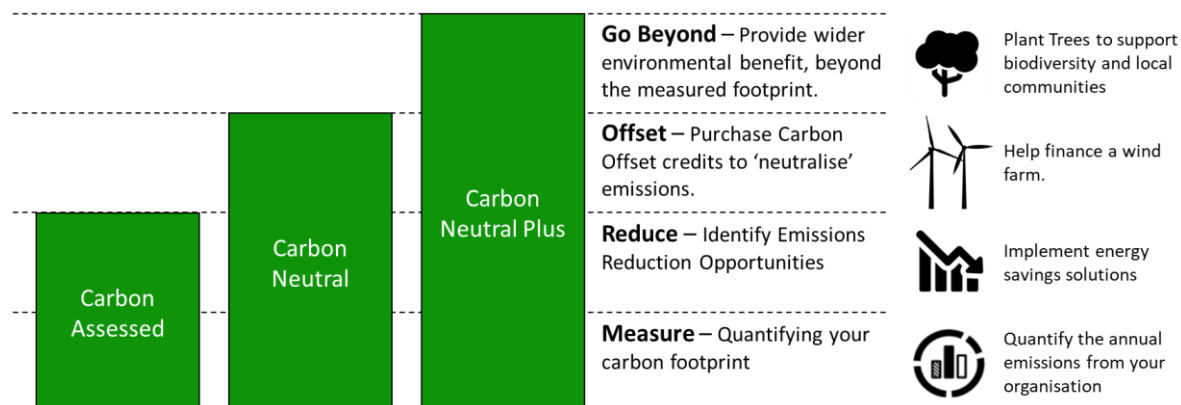
The Carbon Footprint Standard is recognition of your organisation's commitment to carbon management. The text to the right-hand side of the logo demonstrates what level you have achieved in line with international best practice.

### 5.4.2. Scope

As WCC are at the beginning of its Carbon Footprint Journey, WCC have decided to focus on the carbon footprint at the organisational level. This is a great start. Over time, WCC can progress its carbon footprinting to increase the scope and encompass its products, supply chain and employees. By doing so WCC will be able to receive the Carbon Footprint Standard for these categories, thus standing out amongst your competitors.



Once the scope has been identified, the Carbon Footprint Standard will allow Winchester City Council to develop from a novice to an exemplar in the market. WCC can progress from a Carbon Assessed Organisation to a Carbon Neutral or a Carbon Neutral Plus Organisation by supporting a range of environmental projects that come with wider CSR and PR opportunities.



### 5.4.3. Communicate

Make sure you communicate your actions and achievements effectively, both within your organisation, to help develop your culture, and externally to help improve your brand image.

When promoting your actions, be sure to utilise all marketing channels available to you, such as website, newsletters, brochures, press releases, conferences/events and social media etc.

WCC should:

- Explain why climate change matters (for more information visit: [www.carbonfootprint.com/warming.html](http://www.carbonfootprint.com/warming.html))
- Tell the story of where WCC have come from, the progress you have made and what your commitment is for the future (e.g. targets).
- Be clear and accurate about what you have achieved – take care not to exaggerate.
- Use the Carbon Footprint Standard branding, certificates, images of offset projects you are supporting and graphs of your carbon performance to help communicate your point in a clear and enticing manner.

## 6. References

1. BEIS GHG Conversion Factors for Company Reporting (August 2018)
2. Guidelines to Defra's Greenhouse Gas (GHG) Conversion Factors for Company Reporting – annexes (June 2013)
3. The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition (March 2004)



## A. Annex A – Calculation Methodology (Additional Notes)

### A.1 How is the carbon footprint calculated?

Carbon Footprint confirms that the methodology used to quantify the carbon footprint meets the following principles:

- a) The subject and its boundaries have been clearly identified and documented.
- b) The carbon footprint has been based on primary activity data unless the entity could not demonstrate that it was not practicable to do so, in which case an authoritative source of secondary data relevant to the subject was used.
- c) The methodology employed minimised uncertainty and yielded accurate, consistent and reproducible results.
- d) Emission factors used are germane to the activity concerned and current at the time of quantification.
- e) Conversion of non-CO<sub>2</sub> greenhouse gases to CO<sub>2</sub>e has been based upon the 100-year Global Warming Potential figures published by the IPCC or national (Government) publication.
- f) Carbon footprint calculations have been made exclusive of any purchases of carbon offsets.
- g) All carbon footprints have been expressed as an absolute amount in tCO<sub>2</sub>e.

### A.2 Biomass

There are no CO<sub>2</sub> emissions from the combustion of biomass to be considered within this report.

### A.3 Greenhouse gas removals

Within the calculation of Winchester City Council's carbon footprint, there are no business processes resulting in the reduction of greenhouse gases from the atmosphere to be deducted from the calculation.

## B. Annex B – Supplied Data and Emissions Breakdown

Please see the accompanying MS Excel spreadsheet.