

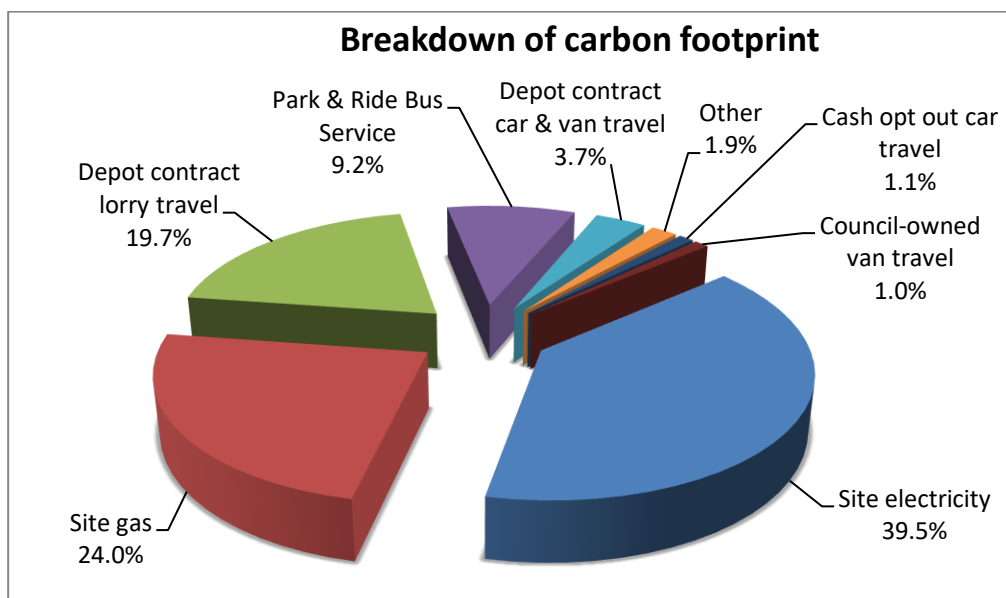
Carbon Footprint Appraisal Report



Assessment Period:
1st April 2017 – 31st March 2018

Executive Summary

Carbon Footprint Ltd has assessed the greenhouse gas (GHG) emissions of Winchester City Council (henceforth referred to as WCC) from 1st April 2017 to 31st March 2018 based on a dataset provided by the organisation. The chart below shows the sources of emissions, with electricity consumption accounting for 39.5% of the total emissions.



* 'Other' includes: Council-owned & employee-owned car travel, petrol & gas oil use, refrigerants, water, rail travel and air travel.

The table below demonstrates historical emissions compared to this year's results showing:

- A decrease in absolute emissions by 8.0% compared to the previous year (2016/17) and 23.6% compared to the baseline year (2009/10).
- A decrease in emissions per employee by 10.7% since the baseline year.
- A decrease in emissions per capita by 28.7% since the baseline year.

	2009/10 (Baseline Year)	2016/17 (Previous Year)	2017/18	% change from baseline year	% change from previous year
Total tonnes CO₂e	5,476.89	4,549.19	4,186.84	-23.6%	-8.0%
Tonnes of CO₂e per employee	9.61	9.34	8.58	-10.7%	-8.2%
Tonnes of CO₂e per capita	0.048	0.038	0.034	-28.7%	-9.1%

Key Recommendations:

- Report market-based scope 2 emissions (following GHG Protocol methodology) to reflect electricity purchasing decisions.
- Consider increasing the scope of water data included within the assessment to include all sites, or at least the leisure centres and public conveniences (currently only water data for four sites are included).
- Investigate the mileage increase and work with Biffa to determine where any efficiencies can be made, reducing any unnecessary travel.
- Investigate alternative fuels for the Park & Ride buses.
- Complete energy audits at the leisure centres & Guildhall to determine where reductions and efficiencies can be made.

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Quality Control

Report issue number: 1.1
Date: 17 July 2019

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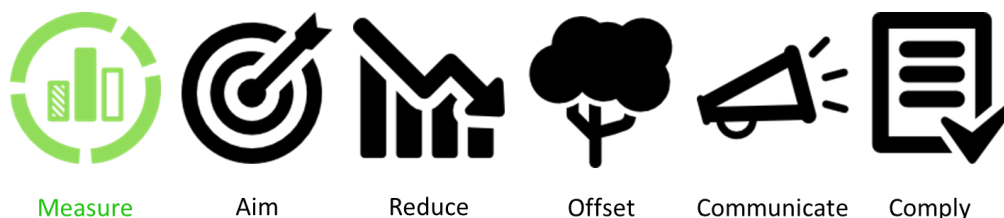
Report produced by: Georgina Whitlock
Report reviewed by: Hayley Maynard

Director approval: John Buckley

1. Introduction

1.1. Winchester City Council's carbon management journey

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



The purpose of this report is to:

- Summarise the results of your carbon footprint assessment.
- Recommend realistic aims for your carbon reduction target.
- Provide practical recommendations to enhance your sustainability programme and reduce your 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 (CO₂e). 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 ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆)	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 WCC to continue doing their bit by monitoring and reducing their emissions.

1.4. BS ISO 14064-1:2006

This GHG report has been prepared in accordance with Part 1 of BS ISO 14064: 2006. The GHG inventory, report, or assertion has not been verified.

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 WCC's footprint using the 2017 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

BEIS	Department for Business Energy & Industrial Strategy
CHP	Combined Heat and Power
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
Defra	Department for Environment, Food and Rural Affairs
EU	European Union
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standards Organisation
km	Kilometres
kWh	Kilowatt Hours
MPG	Miles Per Gallon
PR	Public Relations
UN	United Nations
WCC	Winchester City Council

2. Calculation Scope and Accuracy

2.1. Scope of this work

Carbon Footprint has assessed the GHG emissions from 1st April 2017 to 31st March 2018 resulting from the energy consumption at WCC’s facilities and its transport activities.

2.2. Organisational & operational boundaries

The organisation has accounted for all quantified GHG emissions and/or removals from facilities over which it has operational control. The assessment covers the following operational boundaries:

Figure 1: Assessment boundary

Scope 1 Direct Emissions	Scope 2 Energy Indirect	Scope 3 Other Indirect
<u>Fuel combustion</u> Natural gas, gas oil, petrol	<u>Consumption of purchased electricity, heat steam and cooling</u> Electricity	<u>Purchased materials and fuels</u> Water
<u>Owned Transport</u> Council-owned car and van travel		<u>Transmission and distribution of energy</u> Electricity
<u>Process emissions</u> None		<u>Leased assets outsourcing and franchising</u> Contractor emissions – van and lorry travel, Park & Ride service, leisure centres
<u>Fugitive emissions</u> Refrigerants		<u>Transport related activities</u> Rail travel, grey fleet & cash opt out car travel, flights
		<u>Sold goods and services</u> None
		<u>Waste Disposal</u> Residual & Recyclable

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.

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 WCC (Table 3). The majority of the data accuracy is very good. The data for the Park and Ride bus service is more accurate this year as the contractor provided an average mile per gallon (MPG), allowing the litres of fuel to be estimated. This highlighted that previous results had been significantly under-estimated and therefore the decision was made to use the current MPG to re-calculate fuel consumption (and associated GHG emissions) for the baseline and previous years.

Table 3: Assessment accuracy & materiality

Dataset	Source of data and comments	Accuracy	Materiality
Site electricity	Utility bills and meter readings. Significant deviations from the previous year were queried and comments provided by WCC.	Very Good	High (20% - <40%)
Site gas	Utility bills and meter readings. Significant deviations from the previous year were queried and comments provided by WCC.	Very Good	High (20% - <40%)
Depot contract lorry travel	Mileage figures provided per vehicle. Fuel consumption estimated using assumption of 4.96 mpg (as per previous years).	Very Good	Medium (5% -<20%)
Park & Ride Bus Service	Contracted mileage. Data accuracy has improved this year – used Stagecoach’s estimate of 7.85 mpg. Bus type is the Alexander Dennis Enviro200MMC.	Very Good	Medium (5% -<20%)
Depot contract car & van travel	Fuel and mileage figures provided per vehicle. For 5 vehicles, the same fuel/mileage figures as the previous year were used as it was not recorded by the contractor for the 2017/18 year.	Very Good	Low (1% - <5%)
Cash opt out car travel	Annual mileage, fuel type and engine size provided.	Excellent	Low (1% - <5%)
Council-owned van travel	Fleet mileage forms and fuel card data.	Very Good	Low (1% - <5%)
Council-owned car travel	Mileage records. Annual mileage, fuel type and vehicle size provided.	Excellent	Very Low (<1%)
Other fuel use (gas oil & petrol)	Annual litres provided.	Good	Very Low (<1%)
Refrigerants	Top ups of refrigerant gas obtained from service records.	Good	Very Low (<1%)
Employee-owned car travel (grey fleet)	Annual mileage, fuel type and vehicle size provided.	Excellent	Very Low (<1%)

Dataset	Source of data and comments	Accuracy	Materiality
Water (and wastewater)	Utility bills and meter readings. Wastewater was estimated assuming 95% of the water supplied is returned to the sewer.	Good	Very Low (<1%)
Rail travel	Journey details from expense claims. For entries with the same location for origin and destination, an average of 10km was assumed.	Good	Very Low (<1%)
Flights	Expenses.	Excellent	Very Low (<1%)

The Park and Ride bus service is contracted out to Stagecoach. This year the accuracy of the data has improved as the estimated miles per gallon was provided along with the contracted mileage, allowing us to estimate the amount of fuel consumed over the year. The accuracy would be further improved if Stagecoach recorded the amount of fuel used by each vehicle.

As with previous years, water data has only been provided for a small number of sites and these do not include any of the public conveniences or leisure centres. However, WCC have advised that water consumption is monitored across all sites. I recommend that for future carbon footprint assessments, a total water consumption figure is provided covering WCC's property portfolio. At the least, I recommend you include water consumption data for the leisure centres and public conveniences.



3. Carbon Footprint Results

3.1. Summary of results

The total carbon footprint for WCC for the period ending 31st March 2018 was 4,186.84 tonnes CO₂e. Table 4 provides a summary of results for WCC'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.

Table 4: Results of WCC's carbon footprint assessment by scope and source activity

Scope	Activity	Tonnes CO ₂ e
Scope 1	Natural gas consumption	470.26
	Council-owned van travel	43.40
	Council-owned car travel	22.65
	Petrol	21.14
	Refrigerants	11.69
	Gas oil	0.30
Scope 1 Sub Total		569.44
Scope 2	Electricity generation	1,091.29
Scope 2 Sub Total		1,091.29
Scope 3	Leisure centres - electricity & gas	991.98
	Depot contract lorry travel	824.39
	Park & Ride bus service	386.42
	Depot contract car & van travel	152.93
	Electricity transmission & distribution ¹	102.03
	Business car travel ²	56.34
	Water (and wastewater)	4.59
	Rail travel	6.57
Flights	0.86	
Scope 3 Sub Total		2,526.11
Total tonnes of CO₂e		4,186.84
Tonnes of CO₂e per employee		8.58
Tonnes of CO₂e per capita		0.034

Figures 2 and 3 show the breakdown of the total GHG emissions produced by WCC. It can be seen that 39.5% of the total emissions is produced through the use of electricity consumption. The other two significant factors are gas consumption and depot contract lorry travel, accounting for 24.0% and 19.7% of the total carbon footprint respectively. (Depot contract travel refers to travel that Biffa and the Landscape Group undertake for WCC-related work).

Within the following two graphs, the electricity and gas consumption categories include the energy GHG emissions for the externally-managed leisure centres combined with all WCC sites. The 'other' category in the following graphs includes: Council-owned & employee-owned car travel, petrol & gas oil use, refrigerants, water, rail travel and air travel.

¹ Excludes the leisure centres which are accounted for separately within 'leisure centres – electricity & gas'.

² Includes cash opt out car and grey fleet car travel.

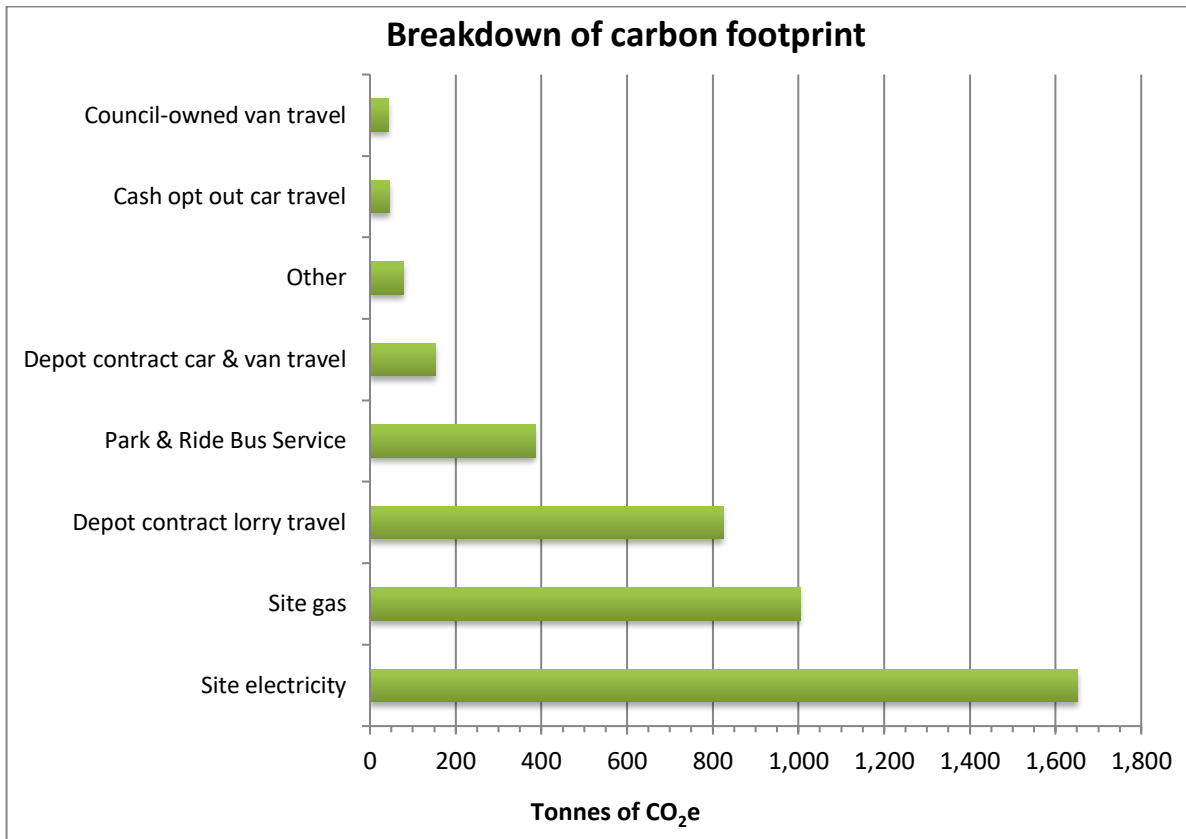


Figure 2: Contribution in tonnes of CO₂e of each element of WCC's carbon footprint

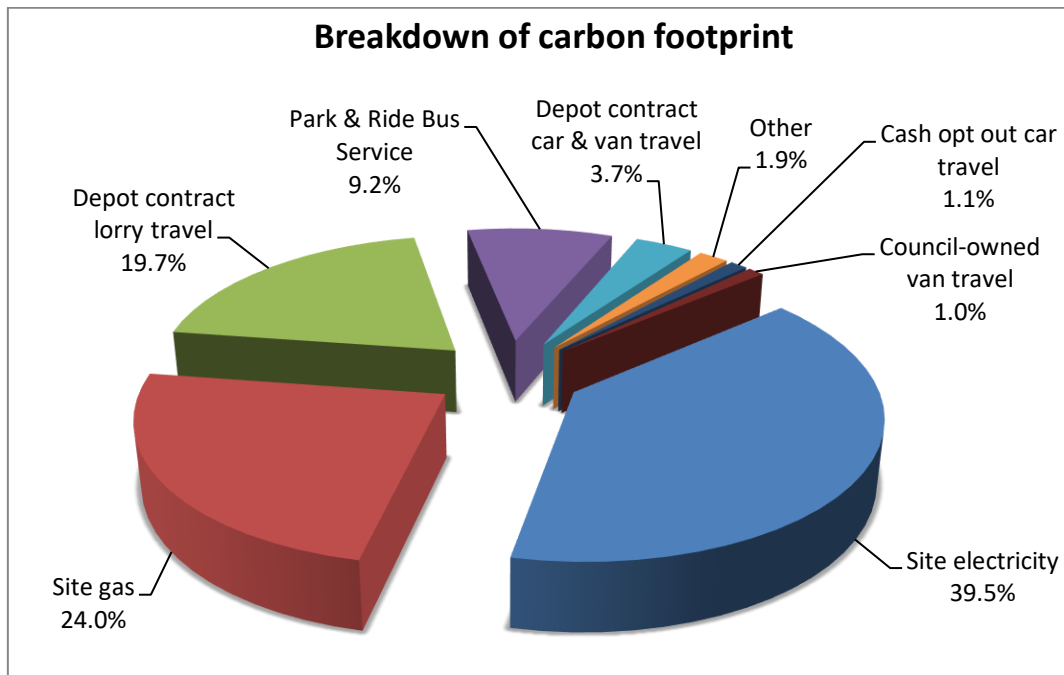


Figure 3: Percentage contribution of each element of WCC's carbon footprint

3.2. Emissions from energy usage at site facilities

Figure 4 below shows the breakdown of emissions from site energy usage by property type across WCC's assets. It can be seen that 'other council assets' (which includes properties such as the city offices, car parks and Guildhall) account for the highest total amount of emissions from electricity and gas consumption at 41.2%, whilst 'housing' (sheltered housing and communal areas) accounts for the lowest at 21.5%. It should be noted that there are only two leisure centres within the 'leisure centres' category (Meadowside and River Park), however these sites produce almost as many GHG emissions as the other council properties combined. I recommend that the primary focus for energy reduction should therefore be on the two leisure centres.

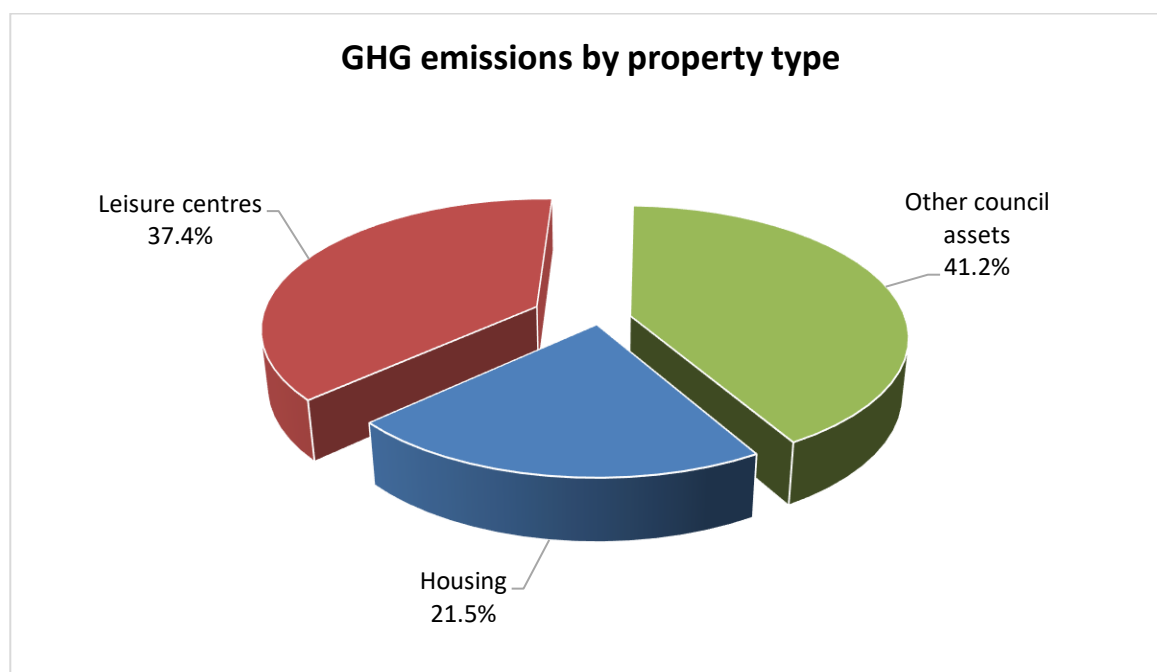


Figure 4: Breakdown of site CO₂e emissions by property type

From analysing the annual energy consumption of the Council's properties (excluding sheltered housing), it can be seen that River Park Leisure Centre and the Guildhall were the highest energy consuming sites in 2017/18 (Table 5).

Previously the Brooks car park was the second highest emitter, however this has changed due to a 6.3% (33,130 kWh) reduction in electricity consumption at the car park, along with the carbon intensity of the electricity grid reducing by 14.4% and the Guildhall's gas consumption increasing by 22.8% (60,938 kWh). The increase in the Guildhall's gas consumption is believed to be due to a new heating system being installed and the controls not properly adjusted. It is likely that a contributing factor was also that February and March 2018 were colder than average.

Approximately 55% of River Park Leisure Centre's GHG emissions is from gas consumption, which is significantly higher than the other council properties (Figure 5). This is because of swimming pool heating, specific heating requirements of fitness rooms, longer opening hours and higher occupancy rates. Whereas, car parks (of which three feature in the top 10 sites), have no requirement for heating

therefore no gas is consumed. Instead, electricity is required for running extract and supply air handling units (for underground car parks) and for lighting.

Table 5: CO₂e emissions as a result of site energy consumption for the top 10 sites (excluding sheltered housing)³

Site	Electricity tCO ₂ e	Gas tCO ₂ e	Total tCO ₂ e
River Park Leisure Centre	424.43	512.90	937.33
Guildhall	156.00	60.54	216.55
Car Park - Brooks	187.89	n/a	187.89
City Offices	82.18	43.46	125.64
Kings Court	77.23	9.27	86.50
Car Park - Chesil	60.26	n/a	60.26
Meadowside Leisure Centre	34.22	20.43	54.65
Car Park - Tower Street	50.54	n/a	50.54
Bar End Depot	16.72	19.10	35.83
Basepoint	21.55	n/a	21.55
Total	1,111.02	665.71	1,776.73

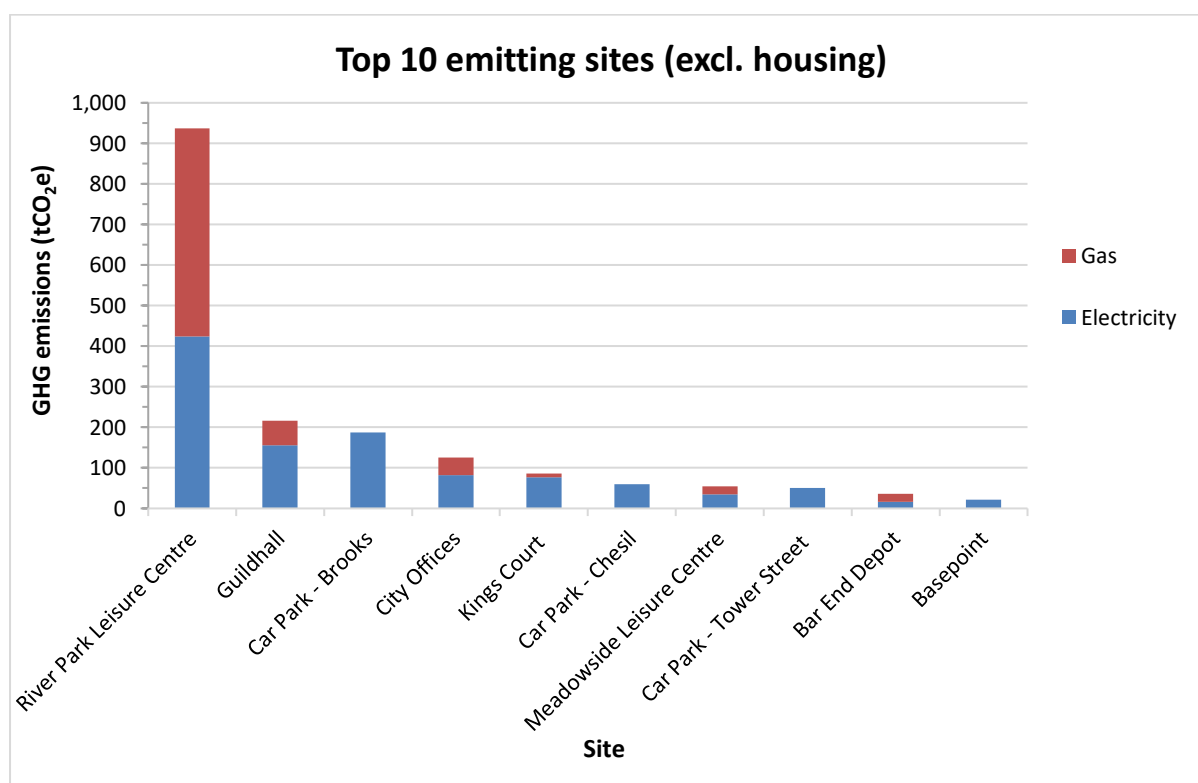


Figure 5: CO₂e emissions per site and energy type for the top 10 emitting sites (excl. sheltered housing)

For the sheltered housing and communal areas, Table 6 and Figure 6 shows that Makins Court and Whitewings House produce the largest amount of emissions, the majority of which is due to gas consumption. The reported housing GHG emissions vary year-on-year due to various reasons such as: whether properties/flats are tenanted during the data period, building occupancy, common rooms

³ Top 10 emitters shown – see Annex B for complete breakdown of energy consumption for all sites.

being converted into flats and therefore no longer within scope, heating system upgrades, lighting upgrades to LED etc.

Table 6: Top 10 emitting sheltered housing sites

Site	Electricity tCO ₂ e	Gas tCO ₂ e	Total tCO ₂ e
Makins Court	14.94	68.68	83.62
Whitewings House	27.38	50.34	77.71
Danemark Court	8.70	52.75	61.45
Normandy Court	6.65	47.16	53.81
Matilda Place	11.38	30.69	42.07
Eastacre	7.98	23.99	31.98
Richard Moss House	24.31	n/a	24.31
Sussex Street	15.68	n/a	15.68
King Harold Court	8.38	5.38	13.76
Godson House	10.61	3.04	13.65
Total	136.02	282.02	418.03

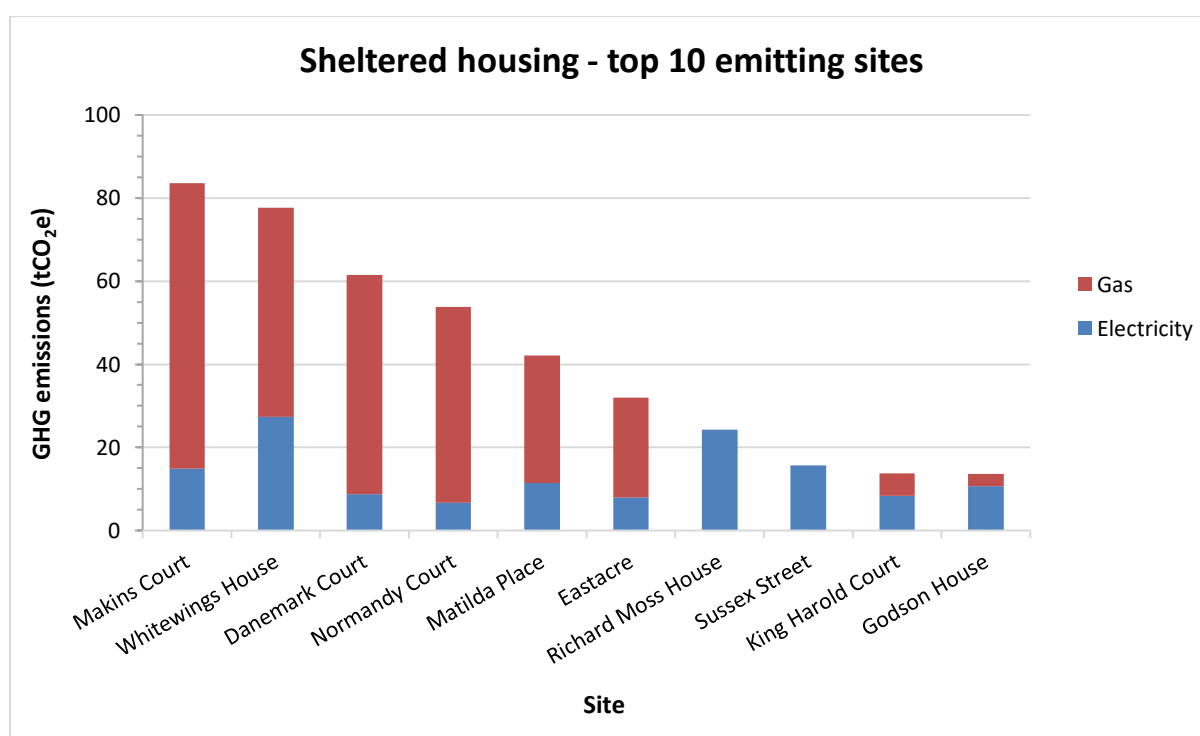


Figure 6: CO₂e emissions per site and energy type for the top 10 emitting sheltered housing sites

The detailed results are given in Annex B.

3.3. Emissions from transport and travel

For the GHG emissions resulting from travel, shown in Figure 7 and Table 7 below, it can be seen that the largest contributor is depot contract lorry travel (Biffa), accounting for 55.2% of the total transport emissions. In comparison, the amount of the CO₂e caused by grey fleet, rail and air travel combined is very low at 1.2% (represented as 'other' within Figure 7).

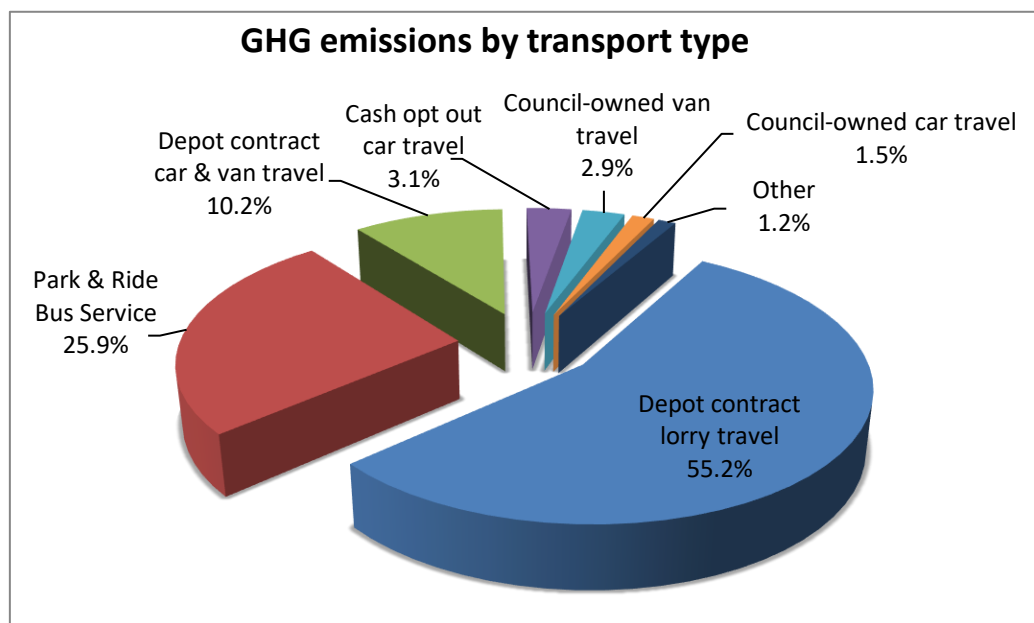


Figure 7: Percentage contribution of each element to transportation emissions

Table 7: CO₂e emissions due to transportation

Type of Travel / Transport	Tonnes of CO ₂ e
Depot contract lorry travel	824.39
Park & Ride bus service	386.42
Depot contract car & van travel	152.93
Cash opt out car travel	45.67
Council-owned van travel	43.40
Council-owned car travel	22.65
Employee owned car travel (grey fleet)	10.66
Rail travel	6.57
Flights	0.86
Total	1,493.56

The detailed results are given in Annex B.

3.4. Other emissions

Refrigerants

Service records are maintained for all sites. During the 2017/18 data period, only one site required refrigerant replenishment (Table 8).

Table 8: CO₂e emissions due to refrigerants

Location	Amount Refilled (kg)	Refrigerant type	GHG Emissions (tCO ₂ e)
West Wing VRV	4.0	R407C	7.10
West Wing Server Room	0.5	R410A	1.04
West Wing Server Room	1.7	R410A	3.55
Total	6.20		11.69

Fuel

Gas oil and petrol (Table 9) is used to power equipment such as large ride-on lawnmowers, strimmers and blowers etc.

Table 9: CO₂e emissions due to other fuel use

Type of fuel	Litres	Tonnes of CO ₂ e
Gas oil	100	0.30
Petrol	9,617	21.14
Total	9,717	21.44

Water

Water consumption data has been supplied for four sites, as seen in Table 10 below. The Guildhall continues to have the largest reported water usage; however, I expect the two leisure centres (Meadowside and River Park) would use significant amounts of water. These sites are currently not included within the assessment. I recommend that rather than including water data for just these four sites, that the total water usage figure across all sites should be included within the assessment (or at the very least large consumers like the leisure centres and possibly the public conveniences). This will make the emissions results for water consumption more accurate and representative of the impact it has compared with other emission sources. Once the emissions are calculated for the total water consumption, if the results are still immaterial to the total footprint, WCC can decide whether to keep it within scope of future assessments or exclude it.

Table 10: CO₂e emissions due to water usage

Site	Water supplied (m ³)	Tonnes of CO ₂ e
Guildhall	2,281	2.32
City Offices	1,752	1.78
West Wing	439	0.45
Abbey House	45	0.05
Totals	4,517	4.59



4. Comparison and Benchmarking

4.1. Comparison to base year emissions

This is the tenth carbon footprint assessment Winchester City Council has carried out. For the baseline year emission data please refer to the 2009/10 report.

During this assessment it was found that for previous years the GHG emissions for the Park & Ride bus service had been significantly under-estimated. To improve the accuracy and maintain consistency to enable comparison with previous results, it was decided to re-calculate the baseline year and previous years using the estimated mpg provided by Stagecoach. Table 11 shows the re-calculated results, as well as WCC's total carbon footprint and carbon intensity metrics (tonnes of CO₂e per employee and tonnes of CO₂e per capita) for the current data period.

Table 11: Winchester City Council's carbon footprint comparison and percentage change

Element	Tonnes of CO ₂ e for footprint year ending in					% change on baseline year (2009/10)	% change on previous year
	2010	2015	2016	2017	2018		
Site electricity	2,795.32	2,557.74	2,264.36	1,950.26	1,651.97	-40.9%	-15.3%
Site gas	1,290.79	1,222.98	1,208.10	1,227.42	1,003.59	-22.2%	-18.2%
Depot contract lorry travel	803.95	876.66	625.55	586.66	824.39	+2.5%	+40.5%
Park & Ride bus service	101.74	327.76	325.43	388.13	386.42	+279.8%	-0.4%
Depot contract car & van travel	n/a	50.27	255.63	249.19	152.93	n/a	-38.6%
Cash opt out car travel	0.00	47.29	32.82	41.39	45.67	n/a	+10.3%
Council-owned van travel	344.14	7.51	56.78	43.31	43.40	-87.4%	+0.2%
Council-owned car travel	39.61	38.19	31.52	20.80	22.65	-42.8%	+8.9%
Site petrol	0.00	25.42	29.10	6.35	21.14	n/a	+232.8%
Refrigerants	0.00	0.31	6.39	0.00	11.69	n/a	n/a
Grey fleet car travel	97.10	14.90	13.31	10.05	10.66	-89.0%	+6.1%
Rail travel	4.07	4.27	3.66	5.68	6.57	+61.4%	+15.8%
Other ⁴	0.17	87.20	81.01	19.95	5.74	+3292.0%	-71.2%
Total tonnes of CO₂e	5,476.89	5,260.51	4,933.67	4,549.19	4,186.84	-23.6%	-8.0%
tCO₂e per employee	9.61	10.42	10.17	9.34	8.58	-10.7%	-8.2%
tCO₂e per capita	0.048	0.044	0.041	0.038	0.03	-28.7%	-9.1%

⁴ 'Other' includes: water consumption, air travel, gas oil, motorbike travel and taxi travel.

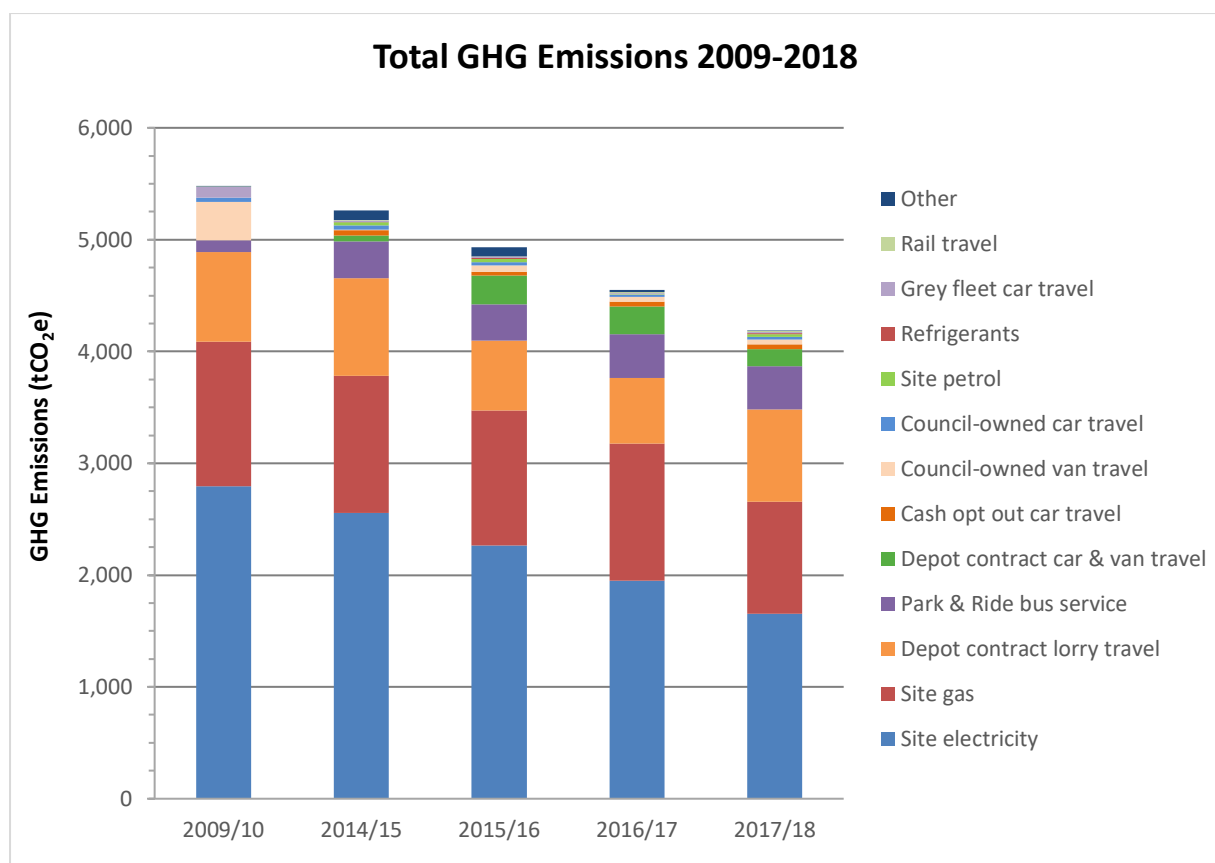


Figure 8: Detailed emissions comparison for the various aspects of WCC’s carbon footprint

Winchester City Council has decreased its total carbon footprint by 23.6% when compared to the baseline year and by 8% since the previous year. The change from last year (2016/17) has mainly been from electricity and gas GHG emissions which have reduced by 15.3% (298.3 tonnes of CO₂e) and 18.2% (223.8 tonnes of CO₂e) respectively.

Across WCC’s property portfolio, 2017/18 achieved a net reduction of 1.0% (43,292 kWh) in the annual electricity consumption. The majority of the GHG emissions reduction for electricity was due to the decarbonisation of the national grid leading to a 14.4% reduction in the carbon intensity of UK electricity generation. Tower Street car park reduced its electricity consumption by 50.7% (124,697 kWh) due to an upgrade of all the luminaires to LED, combined with the installation of presence detectors over parking bays. Several housing properties were also upgraded to LED and have shown reductions e.g. Danemark Court and Normandy Court.

With gas, on the other hand, the overall annual consumption reduced by 18.3% (1,221,446 kWh). There are many reasons for this reduction, including areas being tenanted and therefore no longer included within scope, upgrades to radiators and boiler systems, and improvements in data accuracy. Barnes House, for example, was based on estimated billing in previous years which meant that when an actual reading was taken during the previous data period (2016/17) it caused a spike to make up for previous under-estimations and explains why 2017/18 consumption appears lower. This highlights the importance of having accurate billing. River Park Leisure Centre had a 24.6% reduction in gas consumption compared to 2016/17, which is believed to be mainly due to a faulty CHP system. The City Offices and Guildhall saw an increase in gas consumption over the year by approximately 65% and

23% respectively due to an increase in the ambient room temperature set point for the City Offices and a new heating system installed at the Guildhall.

There was a 40.5% (237.7 tCO₂e) increase in emissions from depot contract lorry travel (i.e. Biffa) this year, as a result of an increase of 104,688 miles being travelled compared to 2016/17. The reason for the travel increase was not provided for this report, therefore I recommend that WCC investigate further and work with Biffa to determine where any efficiencies can be made. Alternative fuels could also be investigated.

Following the data improvements for the Park & Ride emissions, it is now the 4th largest element contributing to WCC’s carbon footprint. I recommend WCC continue to work with Stagecoach to improve the accuracy of the data provided (with litres of fuel being most accurate), as well as work towards using alternative sources of fuel (e.g. higher biofuel blends, biogas, LPG, electric etc.). For example, see what Nottingham City is doing – <https://www.nctx.co.uk/gasbus>.

Figure 9 below shows WCC’s emissions benchmarked against employee numbers and per capita. When normalised against number of employees and the population figure, WCC has seen a reduction in emissions of 8.2% and 9.1% respectively since the previous year.

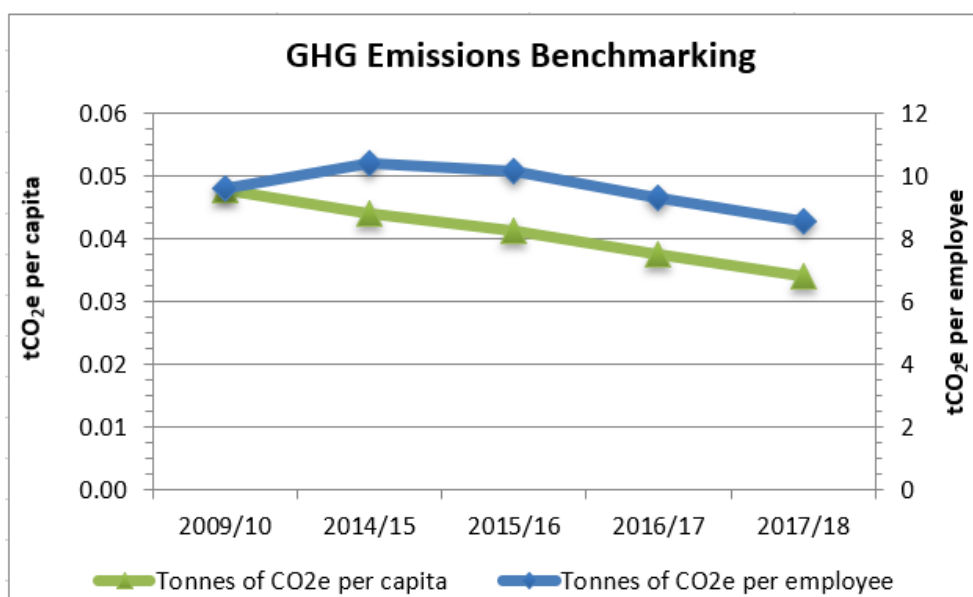


Figure 9: Carbon footprint of Winchester City Council for internal benchmarks

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 your commitment towards helping fight climate change.

5. Key Recommendations

The following recommendations are designed to help you build upon the results of the appraisal and your carbon management over the coming year.



Measure



Aim



Reduce



Offset



Communicate



Comply



5.1. Carbon & sustainability targets

5.1.1. Target setting

We advise you set targets based on carbon intensity (e.g. CO₂e/capita) and activity data (e.g. kWh/m² for buildings) against the baseline year. You can have a mix of short (interim) targets and long-term targets. These should be reviewed periodically.

A target date should also be set to become a Net Zero Carbon Council.

5.1.2. Improving the accuracy of future carbon footprint assessments

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

- Investigate whether a more accurate/up-to-date mpg figure or fuel data can be provided by Biffa for their lorry travel (we are currently using an average of 4.96 mpg to convert from miles to litres).
- Work with Stagecoach to determine if the Park & Ride bus data can be further improved, e.g. by recording litres of fuel consumed.
- Include water data for all sites, or at least those that account for the majority of consumption (e.g. the leisure centres).
- Report market-based scope 2 emissions (following GHG Protocol methodology) in future to reflect electricity purchasing decisions.



5.2. Reducing emissions

To reduce GHG emissions, we recommend WCC:

- Investigate the mileage increase and work with Biffa to determine where any efficiencies can be made, reducing any unnecessary travel.
- Investigate alternative fuels for the Park & Ride buses.
- Conduct energy audits at the leisure centres and Guildhall to determine where reductions and efficiencies can be made.

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 for more information).

We suggest starting by setting a price of £20-25 per tonne of CO₂e, as this typically relates to 1-6% of the cost of causing emissions (as shown in the table below). You 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 12: Carbon price compared to energy and travel costs

Emissions Source	Electricity	Natural Gas	Car Miles	Flights
1 tonne CO₂e is equivalent to	2400 kWh	5500 kWh	3300 miles	5200 km
Cost to produce 1 tonne CO₂e	£335	£220	£1485*	£400
£20 carbon price represents	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 you cannot reduce, by funding an equivalent carbon dioxide saving elsewhere.

On your journey towards carbon neutrality, the first focus should be on reducing your energy consumption/GHG emissions as much as possible by increasing efficiency and eliminating any unnecessary consumption/travel.

In parallel with these reduction activities, you may wish to partially offset the remaining unavoidable emissions (e.g. you could choose to offset just staff business travel). Until you are in a position to offset the total of your unavoidable emissions to become carbon neutral.

We can provide both UK-based and international projects for you 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>.

The cost of offsetting has reduced considerably over recent times. As a budgetary indication, your full emissions footprint can be offset **from approximately £8,500**. You may be able to fund this via an internal carbon pricing system (see section 5.2.1 for further details).

Example of Carbon Offsetting Projects:



Tree Planting in UK Schools



Avoided Deforestation in the Brazilian Amazon



Clean Water in Rwanda



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 23.6% 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. 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.

You should:

- Explain why climate change matters to you (for more information visit: www.carbonfootprint.com/warming.html)
- Tell the story of where you 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 2017)
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-CO₂ greenhouse gases to CO₂e 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 tCO₂e.

A.2 Biomass

There are no CO₂ 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

This annex shows the data that Winchester City Council has supplied Carbon Footprint Ltd for the calculation of its emissions. At the end of each table one or several columns have been added that display the emissions and calculations associated for each item of data provided by Winchester City Council. It should be noted that the latter has been calculated by Carbon Footprint Ltd, and not provided by Winchester City Council.

B.1 Data used for Scope 1 emissions assessment

This section contains the data related to the direct emissions attributable to Winchester City Council. These include the energy usage in Winchester City Council's buildings (excluding purchased electricity, since this corresponds to Scope 2, indirect emissions), any company owned vehicle transport and any of the other six greenhouse gases produced.

For gas data, please refer to accompanying spreadsheet “Annex – electricity and gas data 2017-18.xls”.

Table 13: Data supplied and emissions breakdown for refrigerant gas replenishment

Location	Amount Refilled (kg)	Refrigerant type	GWP (kgCO ₂ e)	GHG Emissions (tCO ₂ e)
WEST WING VRV	4	R407C	1774.00	7.10
WEST WING SERVER RM	0.5	R410A	2088.00	1.04
WEST WING SERVER RM	1.7	R410A	2088.00	3.55
Total	6.20			11.69

Table 14: Data supplied and emissions breakdown for other fuel use

Type of fuel	Litres	Tonnes of CO ₂ e
Gas oil	100	0.30
Petrol – ID Verde	9,342	20.54
Petrol – Special Maintenance	275	0.60
Total	9,717	21.44

**Table 15: Data supplied and emissions breakdown for Council-owned van travel**

ID	Registration Plate	Make	Model	Engine Size (cc)	Fuel Type	gCO ₂ /km	Travel Distance (miles)	Annual litres fuel	GHG Emissions (tCO ₂ e)
Special Maintenance	DN17 RSX	Mitsubishi	L200 Titan Di-D	2442	Diesel (retail)			919.55	2.39
Special Maintenance	DN17 RNJ	Mitsubishi	L200 Titan Di-D	2442	Diesel (retail)			738.29	1.92
Special Maintenance	AY12 XAW	Ford	Transit 155 T350 Rwd	2198	Diesel (retail)			3,818.24	9.93
Special Maintenance	BV04 VPC	Ford	Ranger 4X4 Turbo Diesel	2499	Diesel (retail)			254.65	0.66
Special Maintenance	AY12 XAZ	Ford	Transit 155 T350 Rwd	2198	Diesel (retail)			1,190.54	3.10
Special Maintenance	AY12 XBA	Ford	Transit 155 T350 Rwd	2198	Diesel (retail)			1,353.07	3.52
Special Maintenance	AV61 ZZX	Ford	Transit Connect 110 T230	1753	Diesel (retail)			695.00	1.81
Special Maintenance	BN61 MYK	Daf Trucks	N/A	6692	Diesel (retail)			6,217.46	16.17
Neighbourhood Services	LV15 VRF	Renault	Kangoo	1461	Diesel (retail)	123	3,631		0.86
Neighbourhood Services	HN12 OSO	Renault	Kangoo	1461	Diesel (retail)		2,443		1.01
Neighbourhood Services	HN12 CVU	Renault	Kangoo	1461	Diesel (retail)		3,440		1.43
Neighbourhood Services	EN17 MPZ	Ford	Transit Connect	998	Petrol (retail)	129	2,466		0.61
Neighbourhood Services	LS57 SRU	Peugeot	Partner	0	Electric		388		0.00
Total							12,368	15,187	43.40



Table 16: Data supplied and emissions breakdown for Council-owned car travel

ID	Registration Plate	Engine Size (cc)	Fuel Type	gCO ₂ /km	Annual Distance (miles)	Emissions (tCO ₂ e)
Parking Dept	HY65 XUF	1,560	Diesel (retail)	113	12,423	2.71
Parking Dept	LE16 LFX	1,560	Diesel (retail)	109	18,126	3.82
Parking Dept	LC17 LRK		Electric		5,162	0.00
Council Owned	HK15 FKF	1,500	Diesel (retail)		204	0.05
Council Owned	HK66 HMX	1,400	Petrol (retail)		565	0.18
Council Owned	HJ15 BYD	2,000	Diesel (retail)		684	0.19
Council Owned	HG17 GEU	1,800	Petrol (retail)		73	0.02
Council Owned	HJ15 HWL	2,000	Diesel (retail)		115	0.03
Council Owned	LS65 EXF	1,600	Diesel (retail)		653	0.15
Council Owned	HN15 OBZ	1,400	Diesel (retail)		1,284	0.30
Council Owned	WR66 VMJ	1,600	Diesel (retail)		100	0.02
Council Owned	HN65 HKM	1,600	Diesel (retail)		277	0.06
Council Owned	HK66 HNB	1,400	Petrol (retail)		947	0.30
Council Owned	LS15 XJJ	1,600	Diesel (retail)		1,666	0.39
Council Owned	HV67 UGF	1,250	Petrol (retail)		4,548	1.15
Council Owned	HJ17 ZZM	2,000	Petrol (retail)		1,898	0.60
Council Owned	HN64 LHH	900	Petrol (retail)		197	0.05
Council Owned	HG17 SYW	1,000	Petrol (retail)		748	0.19
Council Owned	HG65 FJV	1,600	Diesel (retail)		107	0.03
Council Owned	HX17 SZK	1,600	Petrol (retail)		3,349	1.05
Council Owned	HF14WWR	1,100	Diesel (retail)		790	0.18
Council Owned	HF17 KCY	1,400	Petrol (retail)		393	0.12
Council Owned	DL64 OPW	1,500	Diesel (retail)		1,384	0.32
Council Owned	DT65 LKM	1,500	Diesel (retail)		97	0.02
Council Owned	HN61 GWM	1,600	Diesel (retail)		266	0.06
Council Owned	LS14 UAA	1,600	Diesel (retail)		2,251	0.53
Council Owned	HG65 AOB	1,400	Diesel (retail)		62	0.01
Council Owned	HK67 EVJ	1,400	Petrol (retail)		560	0.18
Council Owned	HG16 VFR	2,000	Diesel (retail)		446	0.12



ID	Registration Plate	Engine Size (cc)	Fuel Type	gCO ₂ /km	Annual Distance (miles)	Emissions (tCO ₂ e)
Council Owned	HJ17 GZF	1,400	Petrol (retail)		1,335	0.42
Council Owned	HJ66 MZV	1,400	Petrol (retail)		1,088	0.34
Council Owned	HK65 VBU	2,000	Diesel (retail)		550	0.15
Council Owned	HY64 ZGM	1,500	Diesel (retail)		23	0.01
Council Owned	HY10 UDK	1,300	Diesel (retail)		834	0.20
Council Owned	HJ64 LGY	1,400	Diesel (retail)		964	0.23
Council Owned	HY10 UPX	2,000	Diesel (retail)		128	0.04
Council Owned	HS17CWK	1,600	Petrol (retail)		156	0.05
Council Owned	BU16 SFK	1,600	Diesel (retail)		831	0.19
Council Owned	HG15 CJE	2,000	Diesel (retail)		452	0.13
Council Owned	WM66 LPV	1,600	Diesel (retail)		1,595	0.37
Council Owned	VN1 11B	2,000	Diesel (retail)		64	0.02
Council Owned	BF14 KUT	1,700	Diesel (retail)		212	0.06
Council Owned	HJ66 GBX	1,600	Diesel (retail)		286	0.07
Council Owned	HX16 YXC	1,600	Diesel (retail)		659	0.15
Council Owned	HY66 HFX	1,461	Diesel (retail)		1,402	0.33
Council Owned	RE16 CJF	2,000	Petrol (retail)		329	0.10
Council Owned	AK66 WME	1,600	Diesel (retail)		2,747	0.64
Council Owned	HT65 PXR	1,198	Diesel (retail)		236	0.06
Council Owned	MM15 CHO	1,500	Diesel (retail)		382	0.09
Council Owned	HF16 CYW	1,400	Petrol (retail)		486	0.15
Council Owned	HN65 OZM	1,600	Diesel (retail)		2,227	0.52
Council Owned	HY15 NWK	1,600	Diesel (retail)		1,317	0.31
Council Owned	GX65 HHO	2,000	Diesel (retail)		612	0.17
Council Owned	LM64 AVZ	1,600	Diesel (retail)		444	0.10
Council Owned	LL64 NGE	1,500	Diesel (retail)		107	0.03
Council Owned	HJ66 UPL	1,600	Diesel (retail)		1,146	0.27
Council Owned	RV64 TMU	1,600	Diesel (retail)		483	0.11
Council Owned	WP64 EOX	1,500	Diesel (retail)		#####	2.50
Council Owned	DS17 FCL	1,600	Petrol (retail)		230	0.07



ID	Registration Plate	Engine Size (cc)	Fuel Type	gCO ₂ /km	Annual Distance (miles)	Emissions (tCO ₂ e)
Council Owned	LT12 VFU	1,600	Diesel (retail)		29	0.01
Council Owned	LY65 FXO	1,500	Diesel (retail)		1,011	0.24
Council Owned	HV15 FKB	1,500	Petrol (retail)		525	0.16
Council Owned	HK15 FOV	1,400	Diesel (retail)		538	0.13
Council Owned	HY66 EUR	2,000	Diesel (retail)		445	0.12
Council Owned	HV65 MXP	1,400	Diesel (retail)		886	0.21
Council Owned	HF67 KNZ	1,600	Petrol (retail)		1,528	0.48
Council Owned	RF17 CWY	1,200	Petrol (retail)		163	0.04
Council Owned	HF66 JJZ	1,400	Petrol (retail)		765	0.24
Council Owned	HN15 HZB	1,600	Petrol (retail)		484	0.15
Council Owned	HF16 CXG	1,600	Diesel (retail)		330	0.08
Council Owned	PY16 AOG	1,400	Diesel (retail)		381	0.09
Facilities			Electric		898	0
Staff Elec Pool Car			Electric		7,000	0
					106,345	22.65

B.2 Data used for Scope 2 emissions assessment

This section contains the data associated to the energy indirect emissions attributable to Winchester City Council. The table below shows the purchased electricity, heat or steam usage in Winchester City Council's buildings.

For electricity data (generation GHG emissions), please refer to accompanying spreadsheet "Annex – electricity and gas data 2017-18.xls".

B.3 Data used for Scope 3 emissions assessment

The tables below demonstrate the company's employee business travel (not including staff commuting), any outsourced transport, and emissions from the transmission and distribution of purchased energy.

Please refer to accompanying spreadsheet "Annex – electricity and gas data 2017-18.xls" for the following data:

- Electricity transmission and distribution (T&D) data and emissions (all sites)
- Electricity (generation and T&D) and gas data and emissions for the leisure centres

Table 17: Data supplied and emissions breakdown for staff business travel by employee owned car (grey fleet)

Registration Plate	Engine Size (cc)	Fuel Type	Annual Distance (miles)	Car Type	Emissions (tCO ₂ e)
VN07SYZ	2,200	Diesel (retail)	495	Large Diesel (>2.0l)	0.17
BU54DJO	1,600	Diesel (retail)	72	Small Diesel (<1.7l)	0.02
WN02UXA	1,900	Diesel (retail)	136	Medium Diesel (1.7l-2.0l)	0.04
HY63MDF	1,400	Petrol (retail)	265	Medium Petrol (1.4l-2.0l)	0.08
AF09VRP	1,198	Petrol (retail)	905	Small Petrol (<1.4l)	0.23
HY65VLA	1,000	Petrol (retail)	1,444	Small Petrol (<1.4l)	0.36
D3JXJ	2,000	Diesel (retail)	28	Medium Diesel (1.7l-2.0l)	0.01
HX60BVF	1,400	Petrol (retail)	149	Medium Petrol (1.4l-2.0l)	0.05
GJ61LGK	2,000	Petrol (retail)	63	Medium Petrol (1.4l-2.0l)	0.02
HG15RXM	2,000	Diesel (retail)	1,268	Medium Diesel (1.7l-2.0l)	0.35
HK60HDN	1,300	Petrol (retail)	29	Small Petrol (<1.4l)	0.01
CV58ZTX	1,300	Petrol (retail)	643	Small Petrol (<1.4l)	0.16
CU14ANE	1,800	Petrol (retail)	731	Medium Petrol (1.4l-2.0l)	0.23
HD05HVV	1,200	Petrol (retail)	1,852	Small Petrol (<1.4l)	0.47
ES11DAV	2,200	Diesel (retail)	342	Large Diesel (>2.0l)	0.12
HK62RKY	1,600	Diesel (retail)	542	Small Diesel (<1.7l)	0.13
KH59WRW	1,600	Diesel (retail)	249	Small Diesel (<1.7l)	0.06
HV15NJO	1,200	Petrol (retail)	2,273	Small Petrol (<1.4l)	0.57
KL04SGZ	1,800	Petrol (retail)	111	Medium Petrol (1.4l-2.0l)	0.03
OE53EGF	2,000	Petrol (retail)	64	Medium Petrol (1.4l-2.0l)	0.02



Registration Plate	Engine Size (cc)	Fuel Type	Annual Distance (miles)	Car Type	Emissions (tCO ₂ e)
GX13LXL	2,000	Diesel (retail)	169	Medium Diesel (1.7l-2.0l)	0.05
YG57ZNB	1,400	Petrol (retail)	260	Medium Petrol (1.4l-2.0l)	0.08
M192XCR	2,000	Petrol (retail)	211	Medium Petrol (1.4l-2.0l)	0.07
OV06UEJ	2,000	Petrol (retail)	849	Medium Petrol (1.4l-2.0l)	0.27
LA11DAV	2,000	Diesel (retail)	139	Medium Diesel (1.7l-2.0l)	0.04
B1AFH	1,698	Petrol (retail)	388	Medium Petrol (1.4l-2.0l)	0.12
KJ53VPV	1,800	Petrol (retail)	40	Medium Petrol (1.4l-2.0l)	0.01
WK60WMW	1,400	Diesel (retail)	370	Small Diesel (<1.7l)	0.09
HJ03PBY	1,590	Petrol (retail)	83	Medium Petrol (1.4l-2.0l)	0.03
RE16DAU	1,600	Diesel (retail)	323	Small Diesel (<1.7l)	0.08
HX52TBU	1,000	Petrol (retail)	432	Small Petrol (<1.4l)	0.11
NL07LFA	1,600	Petrol (retail)	57	Medium Petrol (1.4l-2.0l)	0.02
WV60VMP	1,600	Diesel (retail)	77	Small Diesel (<1.7l)	0.02
HK64NFY	2,000	Diesel (retail)	92	Medium Diesel (1.7l-2.0l)	0.03
RV09MYN	1,300	Petrol (retail)	255	Small Petrol (<1.4l)	0.06
KY60YXF	1,600	Petrol (retail)	166	Medium Petrol (1.4l-2.0l)	0.05
GK58UUL	1,600	Petrol (retail)	40	Medium Petrol (1.4l-2.0l)	0.01
SW15LDK	1,200	Petrol (retail)	84	Small Petrol (<1.4l)	0.02
LX10XZZ	1,200	Diesel (retail)	111	Small Diesel (<1.7l)	0.03
RK16YHR	1,400	Diesel (retail)	42	Small Diesel (<1.7l)	0.01
HY14KLU	1,400	Petrol (retail)	2	Medium Petrol (1.4l-2.0l)	0.00
WP11HFW	1,600	Diesel (retail)	256	Small Diesel (<1.7l)	0.06
HJ57VMF	1,200	Petrol (retail)	711	Small Petrol (<1.4l)	0.18
HY09XEC	1,200	Petrol (retail)	6	Small Petrol (<1.4l)	0.00
DK58YKS	1,600	Petrol (retail)	34	Medium Petrol (1.4l-2.0l)	0.01
SB08WEJ	1,500	Diesel (retail)	59	Small Diesel (<1.7l)	0.01
OU12WUT	999	Petrol (retail)	898	Small Petrol (<1.4l)	0.23
HV08EUU	1,400	Petrol (retail)	24	Medium Petrol (1.4l-2.0l)	0.01
OY66YNK	1,400	Diesel (retail)	8,042	Small Diesel (<1.7l)	1.88
DV08ULY	2,200	Diesel (retail)	616	Large Diesel (>2.0l)	0.22
HV14HMG	1,200	Petrol (retail)	648	Small Petrol (<1.4l)	0.16
AJ60AUH	1,595	Petrol (retail)	251	Medium Petrol (1.4l-2.0l)	0.08



Registration Plate	Engine Size (cc)	Fuel Type	Annual Distance (miles)	Car Type	Emissions (tCO ₂ e)
F2GDW	2,400	Diesel (retail)	271	Large Diesel (>2.0l)	0.10
99JXD	1,400	Petrol (retail)	532	Medium Petrol (1.4l-2.0l)	0.17
HN14 XVB	2,000	Petrol (retail)	420	Medium Petrol (1.4l-2.0l)	0.13
R11FEL	2,000	Petrol (retail)	157	Medium Petrol (1.4l-2.0l)	0.05
HK65 VOY	1,500	Diesel (retail)	3,664	Small Diesel (<1.7l)	0.86
HY66 FMP	2,200	Diesel (retail)	445	Large Diesel (>2.0l)	0.16
R25 DCM	2,700	Diesel (retail)	1,016	Large Diesel (>2.0l)	0.36
HJ58 CTF	2,700	Diesel (retail)	358	Large Diesel (>2.0l)	0.13
HN64 HJU	1,600	Petrol (retail)	985	Medium Petrol (1.4l-2.0l)	0.31
LG64 LSG	1,800	Petrol (retail)	608	Medium Petrol (1.4l-2.0l)	0.19
YK09 YNB	2,000	Diesel (retail)	1,045	Medium Diesel (1.7l-2.0l)	0.29
HV60 ONM	3,000	Diesel (retail)	224	Large Diesel (>2.0l)	0.08
HJ55 SGZ	2,000	Diesel (retail)	62	Medium Diesel (1.7l-2.0l)	0.02
HV13 UVO	1,200	Petrol (retail)	233	Small Petrol (<1.4l)	0.06
HN56 YXJ	1,999	Petrol (retail)	1,606	Medium Petrol (1.4l-2.0l)	0.50
HJ06 TVN	1,800	Petrol (retail)	400	Medium Petrol (1.4l-2.0l)	0.13
Total: 68			39,421		10.66

Table 18: Data supplied and emissions breakdown for depot contract car travel

ID	Registration Plate	Make	Model	Engine Size (cc)	Fuel Type	gCO ₂ /km	Annual Distance (miles)	Annual litres fuel	GHG Emissions (tCO ₂ e)
ID Verde	DT65 DHV	Mercedes	A180	1600	Diesel (retail)	102	22,436	4,589	11.93
ID Verde	DP16 VYU	Vauxhall	Astra	1600	Diesel (retail)	91	10,701	2,180	5.67
ID Verde	DE17 DVA	Volvo	V40	2000	Diesel (retail)	94	21,000	4,295	11.17
Total							54,137	11,064	28.77

Table 19: Data supplied and emissions breakdown for depot contract van travel

ID	Registration Plate	Make	Model	Engine Size (cc)	Fuel Type	gCO ₂ /km	Travel Distance (miles)	Annual litres fuel	GHG Emissions (tCO ₂ e)
Biffa	GK61 FKE	Fiat	Doblo	1900	Diesel (retail)	250	9,447	1,098	2.86
Biffa	MV54WRZ	Ford	Ranger	1900	Diesel (retail)	250	7,659	951	2.47
Biffa	NY14FJJ	Peugeot	Partner	1600	Diesel (retail)	147	24,512	3,408	8.86
Biffa	GF61 LLO	Mercedes	Sprinter	1600	Diesel (retail)	250	31,679	5,001	13.00
ID Verde	BK62 LVR	Fiesta	Van	1600	Diesel (retail)	104	12,480	2,551	6.63
ID Verde	BT61 HMV	Ford	Ranger	2600	Diesel (retail)		8,887	1,847	4.80
ID Verde	DX16 OTL	Ford	Transit	2200	Diesel (retail)	219	13,208	2,724	7.08
ID Verde	DN18 WOB	Vauxhall	Movano	2200	Diesel (retail)	250	1,953	403	1.05
ID Verde	DX16VXC	Vauxhall	Movano	2200	Diesel (retail)	250	5,460	1,127	2.93
ID Verde	DY17 WUB	Vauxhall	Movano	2200	Diesel (retail)	250	22,178	4,576	11.90
ID Verde	DY66 LKL	Vauxhall	Movano	2200	Diesel (retail)	250	6,006	1,239	3.22
ID Verde	DY66 LRZ	Vauxhall	Movano	2200	Diesel (retail)	250	20,254	4,235	11.01
ID Verde	DY18 DVB	Vauxhall	Movano	2200	Diesel (retail)	250	3,580	738	1.92
ID Verde	DL18 VUJ	Vauxhall	Movano	2200	Diesel (retail)	250	4,940	1,019	2.65
ID Verde	DN63 KTJ	Ford	Transit	2200	Diesel (retail)	219	10,050	2,160	5.62
ID Verde	DV67 LDN	Vauxhall	Movano	2200	Diesel (retail)	250	8,040	1,659	4.31
ID Verde	DX16 WBV	Vauxhall	Movano	2200	Diesel (retail)	250	14,825	3,055	7.94
ID Verde	DY66 LHT	Vauxhall	Movano	2200	Diesel (retail)	250	14,175	2,925	7.61
ID Verde	FH18 HMJ	Nissan	Navara	2300	Diesel (retail)	250	5,000	1,031	2.68
ID Verde	KN58 TFV	Peugeot	Blipper	1400	Diesel (retail)		6,273	1,294	3.36
ID Verde	MX66 XLU	Renault	Master	2200	Diesel (retail)	250	6,422	1,325	3.45
ID Verde	MV65 ZWW	Ford	Transit	2200	Diesel (retail)	219	6,273	1,294	3.36
ID Verde	SH15 WUE	Vauxhall	Movano	2200	Diesel (retail)	216	6,032	1,244	3.23
ID Verde	SH15 WYL	Vauxhall	Movano	2200	Diesel (retail)	216	4,100	846	2.20
Total							253,433	47,750	124.16

Table 20: Data supplied and emissions breakdown for depot contract lorry travel

ID	Registration Plate	Engine Size (cc)	Type of Lorry	Annual Travel Distance (miles)	Annual litres fuel ⁵	Vehicle Efficiency (UK MPG)	tCO ₂ e
Biffa	AY58FEO	6370	Rigid >17t	31,663	29,021	4.96	75.46
Biffa	GK12TYA	4250	Rigid >7.5-17t	19,473	17,848	4.96	46.41
Biffa	GK61XTC	2998	Rigid >3.5-7.5t	11,103	10,176	4.96	26.46
Biffa	GK61XTE	2998	Rigid >3.5-7.5t	20,203	18,517	4.96	48.15
Biffa	CL11 CPX	2998	Rigid >3.5-7.5t	13,631	12,493	4.96	32.48
Biffa	VU11HPO	7146	Rigid >17t	10,386	9,519	4.96	24.75
Biffa	VU61HKT	7146	Rigid >17t	14,875	13,634	4.96	35.45
Biffa	VU61HKV	7146	Rigid >17t	14,622	13,402	4.96	34.85
Biffa	VU61HKW	7146	Rigid >17t	9,865	9,041	4.96	23.51
Biffa	VU61HKX	7146	Rigid >17t	11,666	10,692	4.96	27.80
Biffa	VU61HKY	7146	Rigid >17t	10,869	9,962	4.96	25.90
Biffa	VU61HKZ	7146	Rigid >17t	9,991	9,157	4.96	23.81
Biffa	VU61HLA	7146	Rigid >17t	12,077	11,069	4.96	28.78
Biffa	VU61HLC	7146	Rigid >17t	9,596	8,795	4.96	22.87
Biffa	VU61HLD	7146	Rigid >17t	10,718	9,824	4.96	25.54
Biffa	VU61HLE	7146	Rigid >17t	10,299	9,440	4.96	24.54
Biffa	VU61HLF	7146	Rigid >17t	9,491	8,699	4.96	22.62
Biffa	VU61HLG	7146	Rigid >17t	9,198	8,430	4.96	21.92
Biffa	VU61HLH	7146	Rigid >17t	9,609	8,807	4.96	22.90
Biffa	VU61HLJ	7146	Rigid >17t	9,382	8,599	4.96	22.36
Biffa	VU61HLK	7146	Rigid >17t	9,008	8,256	4.96	21.47
Biffa	VU61HLM	7146	Rigid >17t	12,648	11,593	4.96	30.14
Biffa	VU61HLN	7146	Rigid >17t	10,837	9,933	4.96	25.83
Biffa	VU61HLO	7146	Rigid >17t	10,666	9,775	4.96	25.42
Biffa	VU61HLP	7146	Rigid >17t	9,574	8,775	4.96	22.82
Biffa	VU61HLR	7146	Rigid >17t	11,912	10,917	4.96	28.39
Biffa	VU61HLV	7146	Rigid >17t	11,294	10,352	4.96	26.92
Biffa	VU61HLW	7146	Rigid >17t	11,269	10,329	4.96	26.86
Total				345,920	317,053		824.39

⁵ An average mpg figure of 4.96 has been used to convert the mileage data provided by Biffa into litres of fuel. This method has been used for the previous two years.

Table 21: Data supplied and emissions breakdown for staff business travel by cash opt out car

Registration Plate	Engine Size (cc)	Fuel Type	Annual Distance (miles)	Emissions (tCO ₂ e)
RA07 FXC	1400	Diesel (retail)	214	0.05
HK12 BYU	1396	Petrol (retail)	51	0.01
HY15 AEE	1200	Petrol (retail)	1,151	0.29
YE05KZC	1400	Diesel (retail)	1,263	0.30
FV63ZKS	1200	Petrol (retail)	1,239	0.31
FL59XWG	1200	Petrol (retail)	1,972	0.50
HN57FLE	1200	Diesel (retail)	248	0.06
M5GNF	1500	Diesel (retail)	32	0.01
WF54PBZ	2000	Diesel (retail)	181	0.05
M5CPE	2000	Diesel (retail)	7,790	2.18
HG06PUJ	2100	Diesel (retail)	3,021	1.06
YT09FDN	1600	Petrol (retail)	4,580	1.44
HY13XCM	2000	Diesel (retail)	191	0.05
RJ17CNC	1200	Petrol (retail)	171	0.04
DN10NDJ	1400	Petrol (retail)	6	0.00
HV66NLU	1200	Petrol (retail)	1,055	0.27
HG080JJ	1600	Petrol (retail)	933	0.29
HY66YHE	1200	Petrol (retail)	203	0.05
DG59KOX	1400	Petrol (retail)	4,423	1.39
RE59UAU	1598	Diesel (retail)	3,627	0.85
RF14LZS	1500	Petrol (retail)	803	0.25
KN59WNW	1600	Diesel (retail)	92	0.02
HV12VKM	2200	Diesel (retail)	596	0.21
RJ60CKV	1200	Petrol (retail)	1,103	0.28
HN09OSC	2000	Diesel (retail)	903	0.25
YN56TUW	1900	Diesel (retail)	1,402	0.39



Registration Plate	Engine Size (cc)	Fuel Type	Annual Distance (miles)	Emissions (tCO ₂ e)
RV03VMG	2000	Petrol (retail)	74	0.02
YG60MXE	2000	Diesel (retail)	218	0.06
WP18EMF	1100	Petrol (retail)	437	0.11
HD53LSV	1242	Petrol (retail)	539	0.14
FY12LUA	1576	Diesel (retail)	22	0.01
RJ66XBR	1600	Diesel (retail)	2,142	0.50
LV56SVO	2000	Diesel (retail)	3,120	0.87
HG56HHW	1600	Petrol (retail)	130	0.04
HK64KXC	1796	Petrol (retail)	4,361	1.37
HS16JZG	1200	Petrol (retail)	780	0.20
GJ03VFE	1200	Petrol (retail)	492	0.12
HK54DRO	1600	Petrol (retail)	3,943	1.24
HW12 LVR	1300	Petrol (retail)	2,507	0.63
WF11YWL	1700	Diesel (retail)	3,295	0.92
RG07KFA	2700	Petrol (retail)	1,098	0.50
VN53DWZ	1600	Petrol (retail)	5,651	1.77
WK60WMW	1400	Diesel (retail)	459	0.11
HV15XWH	1500	Diesel (retail)	143	0.03
G3CDH	1998	Petrol (retail)	172	0.05
HN54ULF	1400	Petrol (retail)	1,010	0.32
VK62YXG	2000	Diesel (retail)	1,160	0.32
DV050NP	1800	Petrol (retail)	134	0.04
HN64GYV	1000	Petrol (retail)	373	0.09
HT66NFX	1400	Petrol (retail)	416	0.13
BK65SXU	2000	Diesel (retail)	1,595	0.45
X840 JOR	1200	Petrol (retail)	4,839	1.22
HS03 OCE	2500	Petrol (retail)	673	0.31
HY10OUS	1400	Diesel (retail)	1,966	0.46
GF06 PHV	1200	Petrol (retail)	1,129	0.28
YD06 DUP	1200	Petrol (retail)	1,692	0.43



Registration Plate	Engine Size (cc)	Fuel Type	Annual Distance (miles)	Emissions (tCO ₂ e)
VK54 WRG	1601	Petrol (retail)	33	0.01
HK60 LHX	1400	Diesel (retail)	176	0.04
VK58YMU	1400	Diesel (retail)	1,885	0.44
HY11 WEF	1200	Petrol (retail)	110	0.03
SW15 LDK	1200	Petrol (retail)	1,424	0.36
HY60 JDF	1300	Diesel (retail)	3,269	0.77
LX10 XZZ	1200	Diesel (retail)	111	0.03
OY02 NUK	2000	Petrol (retail)	754	0.24
HJ03BLF	1800	Petrol (retail)	358	0.11
HY14 KLU	1400	Petrol (retail)	2,672	0.84
DV56 NHO	1386	Petrol (retail)	196	0.05
AF56UNH	2200	Diesel (retail)	3,629	1.28
VK16 ZTN	1197	Petrol (retail)	328	0.08
HG60 DLK	1240	Petrol (retail)	1,145	0.29
EF61 CHZ	1600	Diesel (retail)	931	0.22
GJ60 NGN	1400	Petrol (retail)	598	0.19
CE59 OJR	1400	Diesel (retail)	712	0.17
MX57 YSN	2200	Petrol (retail)	272	0.12
LX67 WTG	1400	Petrol (retail)	2,189	0.69
RY04 UYC	2000	Petrol (retail)	644	0.20
PE11 KBX	1700	Diesel (retail)	4,525	1.27
MM13 DPO	999	Diesel (retail)	1,757	0.41
HN04 HTP	1000	Petrol (retail)	9,179	2.31
PX13 YOG	1600	Petrol (retail)	2,608	0.82
RA55HLR	1295	Petrol (retail)	44	0.01
HV67 UDH	1400	Petrol (retail)	777	0.24
HX16 LKM	2000	Diesel (retail)	1,058	0.30
KU11 GXM	2000	Petrol (retail)	775	0.24
HX66 ZYV	1200	Petrol (retail)	996	0.25
BV58NFC	1400	Petrol (retail)	348	0.11

Registration Plate	Engine Size (cc)	Fuel Type	Annual Distance (miles)	Emissions (tCO ₂ e)
RX65 VZU	1400	Petrol (retail)	430	0.13
YY11VPR	1461	Diesel (retail)	2,034	0.48
GX17 YUL	1965	Diesel (retail)	1,255	0.35
LR59 BPX	1800	Petrol (retail)	6,617	2.08
HF64 DFD	1400	Petrol (retail)	783	0.25
HN05 RZS	1800	Petrol (retail)	125	0.04
YT56XAH	1200	Petrol (retail)	250	0.06
FV56 SEY	1249	Petrol (retail)	2,047	0.52
VO52 ODC	1600	Petrol (retail)	782	0.25
LK09JNX	1400	Petrol (retail)	420	0.13
KG55GHZ	1600	Petrol (retail)	563	0.18
KM59 KWP	1500	Diesel (retail)	521	0.12
RA05 CCE	1200	Petrol (retail)	2,560	0.64
S297 BAA	1900	Diesel (retail)	6,213	1.74
HN17 PYH	1492	Petrol (retail)	3,092	0.97
HV12 RUR	1198	Petrol (retail)	284	0.07
OY13 VYW	999	Petrol (retail)	131	0.03
WV56 AHA	1900	Diesel (retail)	333	0.09
HN65 NVV	1000	Petrol (retail)	553	0.14
DF62 LJO	1400	Diesel (retail)	1,255	0.29
MA14 VFG	2000	Diesel (retail)	1,455	0.41
HY52 ZKN	1866	Petrol (retail)	1,866	0.59
HY65 VLE	1600	Diesel (retail)	2,865	0.67
Total: 109			161,757	45.67

Table 22: Data supplied and emissions breakdown for staff business travel by train

Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	passenger km	Emissions (tCO ₂ e)
National rail	4	Alton	London	Yes	80.0	640.00	0.03
National rail	1	Amersham	Loughborough	Yes	171.0	342.00	0.02



Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	passenger km	Emissions (tCO ₂ e)
National rail	1	Andover	Basingstoke	Yes	30.0	60.00	0.003
National rail	8	Andover	London	Yes	114.0	1,824.00	0.09
National rail	4	Basingstoke	Andover	Yes	30.0	240.00	0.01
National rail	1	Basingstoke	Croydon	Yes	146.0	292.00	0.01
National rail	1	Basingstoke	Farnborough	Yes	24.0	48.00	0.002
National rail	6	Basingstoke	London	Yes	77.6	931.20	0.04
National rail	1	Bedford	Chippenham	Yes	220.0	440.00	0.02
National rail	1	Bedwyn	London	Yes	117.0	234.00	0.01
National rail	1	Bexhill	Chippenham	Yes	256.0	512.00	0.02
National rail	2	Botley	Woking	Yes	87.0	348.00	0.02
National rail	2	Bournemouth	London	Yes	168.0	672.00	0.03
National rail	1	Bristol	Tiverton	Yes	100.0	200.00	0.01
National rail	1	Bromley	Grays	Yes	35.0	70.00	0.003
National rail	1	Chandlers Ford	Andover	Yes	40.4	80.80	0.004
National rail	1	Chandlers Ford	Basingstoke	Yes	45.0	90.00	0.004
National rail	1	Chandlers Ford	Bracknell	Yes	80.6	161.20	0.01
National rail	3	Chandlers Ford	London	Yes	121.0	726.00	0.03
National rail	1	Chippenham	Amersham	Yes	147.0	294.00	0.01
National rail	1	Chippenham	Bexhill	Yes	256.0	512.00	0.02
National rail	1	Chippenham	Birmingham	Yes	183.0	366.00	0.02
National rail	5	Chippenham	Bristol	Yes	45.9	459.00	0.02
National rail	1	Chippenham	Bromley	Yes	209.0	418.00	0.02
National rail	1	Chippenham	Ealing Broadway	Yes	151.0	302.00	0.01
National rail	1	Chippenham	Eastleigh	Yes	122.0	244.00	0.01
National rail	1	Chippenham	Esher	Yes	149.0	298.00	0.01
National rail	1	Chippenham	Exeter	Yes	177.0	354.00	0.02
National rail	1	Chippenham	Gloucester	Yes	91.5	183.00	0.01
National rail	1	Chippenham	Guildford	Yes	136.0	272.00	0.01



Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	passenger km	Emissions (tCO ₂ e)
National rail	1	Chippenham	Hounslow	Yes	143.0	286.00	0.01
National rail	1	Chippenham	Leicester	Yes	165.0	330.00	0.02
National rail	1	Chippenham	Llantwit Major	Yes	129.0	258.00	0.01
National rail	6	Chippenham	London	Yes	159.0	1,908.00	0.09
National rail	2	Chippenham	Luton	Yes	184.0	736.00	0.03
National rail	1	Chippenham	Lymington	Yes	103.0	206.00	0.01
National rail	1	Chippenham	Milton Keynes	Yes	144.0	288.00	0.01
National rail	1	Chippenham	Oxford	Yes	86.6	173.20	0.01
National rail	1	Chippenham	Southend	Yes	251.0	502.00	0.02
National rail	3	Chippenham	Swindon	Yes	33.0	198.00	0.01
National rail	1	Chippenham	Taunton	Yes	120.0	240.00	0.01
National rail	1	Chippenham	Wareham	Yes	103.0	206.00	0.01
National rail	1	Chippenham	Watford	Yes	162.0	324.00	0.02
National rail	1	Chippenham	Winchester	Yes	108.0	216.00	0.01
National rail	2	Chippenham	Worcester	Yes	127.0	508.00	0.02
National rail	1	Corby	Chippenham	Yes	191.0	382.00	0.02
National rail	2	Cosham	London	Yes	117.0	468.00	0.02
National rail	2	Cosham	Southampton	Yes	30.7	122.80	0.01
National rail	1	Dorchester	Bath	Yes	94.7	189.40	0.01
National rail	1	Dorking	London	Yes	47.6	95.20	0.004
National rail	1	Eastleigh	Bath	Yes	104.0	208.00	0.01
National rail	2	Eastleigh	Birmingham	Yes	224.0	896.00	0.04
National rail	2	Eastleigh	Cambridge	Yes	201.0	804.00	0.04
National rail	1	Eastleigh	Farnborough	Yes	68.6	137.20	0.01
National rail	24	Eastleigh	London	Yes	117.0	5,616.00	0.26
National rail	1	Eastleigh	London Waterloo	Yes	117.0	234.00	0.01
National rail	1	Eastleigh	Maidstone	Yes	173.0	346.00	0.02
National rail	1	Eastleigh	Northampton	Yes	210.0	420.00	0.02



Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	passenger km	Emissions (tCO ₂ e)
National rail	1	Eastleigh	Portsmouth	Yes	33.7	67.40	0.003
National rail	3	Eastleigh	Portsmouth & Southsea	Yes	33.7	202.20	0.01
National rail	40	Eastleigh	Winchester	Yes	14.1	1,128.00	0.05
National rail	1	Eastleigh	London	Yes	117.0	234.00	0.01
National rail	1	Epping	London	Yes	39.6	79.20	0.004
National rail	1	Esher	Chippenham	Yes	149.0	298.00	0.01
National rail	1	Fareham	Andover	Yes	69.1	138.20	0.01
National rail	1	Fareham	Bath	Yes	126.0	252.00	0.01
National rail	1	Fareham	Leeds	Yes	397.0	794.00	0.04
National rail	11	Fareham	London	Yes	126.0	2,772.00	0.13
National rail	1	Farnborough	Guildford	Yes	22.7	45.40	0.002
National rail	4	Farnborough	London	Yes	56.3	450.40	0.02
National rail	1	Farnborough	Winchester	Yes	56.0	112.00	0.01
National rail	3	Fratton	London	Yes	123.0	738.00	0.03
National rail	1	Grantham	Chippenham	Yes	218.0	436.00	0.02
National rail	1	Grays	Chippenham	Yes	220.0	440.00	0.02
National rail	4	Havant	London	Yes	114.0	912.00	0.04
National rail	1	Havant	London Waterloo	Yes	114.0	228.00	0.01
National rail	1	Havant	London	Yes	114.0	228.00	0.01
National rail	1	Hedge End	Andover	Yes	53.2	106.40	0.005
National rail	1	Hedge End	Canley	Yes	201.0	402.00	0.02
National rail	7	Hedge End	London	Yes	128.0	1,792.00	0.08
National rail	1	Hedge End	Worthing	Yes	77.7	155.40	0.01
National rail	1	Hereford	Chippenham	Yes	132.0	264.00	0.01
National rail	1	Highbury Islington	Chippenham	Yes	176.0	352.00	0.02
National rail	2	Hinton Admiral	London	Yes	161.0	644.00	0.03
National rail	1	Hook	London	Yes	26.4	52.80	0.002
National rail	2	Kensington & Olympia	London	Yes	6.5	26.00	0.001



Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	passenger km	Emissions (tCO ₂ e)
National rail	1	Leicester	Chippenham	Yes	164.0	328.00	0.02
National rail	1	Littlehampton	Chippenham	Yes	197.0	394.00	0.02
National rail	2	London	London	Yes	10.0	40.00	0.002
National rail	1	London	Welwyn Garden City	Yes	41.5	83.00	0.004
National rail	1	London Waterloo	Salisbury	Yes	141.0	282.00	0.01
National rail	1	Loughborough	Chippenham	Yes	237.0	474.00	0.02
National rail	1	Malton	Hereford	Yes	339.0	678.00	0.03
National rail	1	Manchester	Chippenham	Yes	297.0	594.00	0.03
National rail	1	Manchester Airport	Liverpool South Parkway	Yes	51.8	103.60	0.005
National rail	1	Manchester Airport	Manchester Central	Yes	14.7	29.40	0.001
National rail	15	Netley	Chichester	Yes	48.2	1,446.00	0.07
National rail	1	Nottingham	Grantham	Yes	40.1	80.20	0.004
National rail	1	Overton	London	Yes	101.0	202.00	0.01
National rail	1	Oxford	Chippenham	Yes	106.0	212.00	0.01
National rail	1	Parkstone	Basingstoke	Yes	100.0	200.00	0.01
National rail	1	Parkstone	Birmingham	Yes	280.0	560.00	0.03
National rail	1	Parkstone	Farnborough	Yes	124.0	248.00	0.01
National rail	4	Petersfield	London	Yes	92.1	736.80	0.03
National rail	1	Pewsey	London	Yes	137.0	274.00	0.01
National rail	1	Pewsey	Tunbridge Wells	Yes	188.0	376.00	0.02
National rail	2	Pokesdown	London	Yes	165.0	660.00	0.03
National rail	1	Pokesdown	Poole	Yes	14.4	28.80	0.001
National rail	1	Poole	London	Yes	179.0	358.00	0.02
National rail	1	Portsmouth	London	Yes	118.0	236.00	0.01
National rail	1	Portsmouth & Southsea	London Waterloo	Yes	118.0	236.00	0.01
National rail	1	Reading	London	Yes	67.4	134.80	0.01
National rail	1	Romsey	Bath	Yes	91.3	182.60	0.01
National rail	1	Romsey	Farnborough	Yes	81.1	162.20	0.01



Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	passenger km	Emissions (tCO ₂ e)
National rail	1	Romsey	London	Yes	133.0	266.00	0.01
National rail	1	Salisbury	Bath	Yes	63.6	127.20	0.01
National rail	12	Salisbury	London	Yes	137.0	3,288.00	0.15
National rail	1	Salisbury	Milton Keynes	Yes	173.0	346.00	0.02
National rail	1	Salisbury	Southampton	Yes	37.5	75.00	0.004
National rail	1	Southampton	Basingstoke	Yes	52.0	104.00	0.005
National rail	1	Southampton	Bristol	Yes	120.0	240.00	0.01
National rail	1	Southampton	Farnborough	Yes	74.5	149.00	0.01
National rail	24	Southampton	London	Yes	123.0	5,904.00	0.28
National rail	4	Southampton	London Waterloo	Yes	123.0	984.00	0.05
National rail	1	Southampton	Winchester	Yes	21.3	42.60	0.002
National rail	1	Southampton Airport	Andover	Yes	45.6	91.20	0.004
National rail	3	Southampton Airport	Basingstoke	Yes	49.3	295.80	0.01
National rail	1	Southampton Airport	Birmingham	Yes	229.0	458.00	0.02
National rail	1	Southampton Airport	Croydon	Yes	140.0	280.00	0.01
National rail	2	Southampton Airport	Farnborough	Yes	71.4	285.60	0.01
National rail	23	Southampton Airport	London	Yes	126.0	5,796.00	0.27
National rail	1	Southend	Esher	Yes	108.0	216.00	0.01
National rail	1	St Denys	Brighton	Yes	104.0	208.00	0.01
National rail	1	St Denys	Leeds	Yes	377.0	754.00	0.04
National rail	1	Swanwick	Woking	Yes	94.0	188.00	0.01
National rail	1	Swindon	Lewisham	Yes	189.0	378.00	0.02
National rail	1	Swindon	Reading	Yes	70.0	140.00	0.01
National rail	2	Theale	London	Yes	74.0	296.00	0.01
National rail	1	Tiverton	Chippenham	Yes	152.0	304.00	0.01
National rail	1	Wareham	Corby	Yes	272.0	544.00	0.03
National rail	3	Warminster	London	Yes	161.0	966.00	0.05
National rail	1	Warminster	Southampton Airport	Yes	73.0	146.00	0.01



Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	passenger km	Emissions (tCO ₂ e)
National rail	1	Welwyn Garden City	Chippenham	Yes	184.0	368.00	0.02
National rail	1	Westbury Wilts	London	Yes	177.0	354.00	0.02
National rail	1	Whitchurch	Bristol	Yes	222.0	444.00	0.02
National rail	2	Whitchurch	London	Yes	285.0	1,140.00	0.05
National rail	1	Whitchurch	Sheffield	Yes	292.0	584.00	0.03
National rail	2	Winchester	Aldershot	Yes	54.8	219.20	0.01
National rail	3	Winchester	Alton	Yes	30.8	184.80	0.01
National rail	2	Winchester	Andover	Yes	514.0	2,056.00	0.10
National rail	31	Winchester	Basingstoke	Yes	32.0	1,984.00	0.09
National rail	7	Winchester	Birmingham	Yes	210.0	2,940.00	0.14
National rail	1	Winchester	Bournemouth	Yes	64.8	129.60	0.01
National rail	1	Winchester	Bracknell	Yes	69.4	138.80	0.01
National rail	1	Winchester	Brighton	Yes	120.0	240.00	0.01
National rail	4	Winchester	Bristol	Yes	150.0	1,200.00	0.06
National rail	1	Winchester	Bromley	Yes	150.0	300.00	0.01
National rail	1	Winchester	Chandlers Ford	Yes	13.8	27.60	0.001
National rail	2	Winchester	Chester	Yes	184.0	736.00	0.03
National rail	1	Winchester	Coventry	Yes	178.0	356.00	0.02
National rail	1	Winchester	Deal	Yes	239.0	478.00	0.02
National rail	1	Winchester	Dorchester	Yes	98.7	197.40	0.01
National rail	16	Winchester	Eastleigh	Yes	14.4	460.80	0.02
National rail	1	Winchester	Epping	Yes	153.0	306.00	0.01
National rail	1	Winchester	Exeter	Yes	213.0	426.00	0.02
National rail	1	Winchester	Fareham	Yes	40.4	80.80	0.004
National rail	11	Winchester	Farnborough	Yes	56.6	1,245.20	0.06
National rail	1	Winchester	Gomshall	Yes	78.2	156.40	0.01
National rail	1	Winchester	Gosport	Yes	48.0	96.00	0.004
National rail	1	Winchester	Great Yarmouth	Yes	338.0	676.00	0.03



Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	passenger km	Emissions (tCO ₂ e)
National rail	2	Winchester	Guildford	Yes	61.4	245.60	0.01
National rail	2	Winchester	Havant	Yes	52.0	208.00	0.01
National rail	1	Winchester	Hemel Hempstead	Yes	119.0	238.00	0.01
National rail	1	Winchester	Hereford	Yes	177.0	354.00	0.02
National rail	1	Winchester	Hull	Yes	390.0	780.00	0.04
National rail	1	Winchester	Ipswich	Yes	254.0	508.00	0.02
National rail	1	Winchester	Leamington Spa	Yes	159.0	318.00	0.01
National rail	1	Winchester	Liskeard	Yes	286.0	572.00	0.03
National rail	1	Winchester	Liverpool	Yes	360.0	720.00	0.03
National rail	176	Winchester	London	Yes	110.0	38,720.00	1.81
National rail	2	Winchester	London Waterloo	Yes	110.0	440.00	0.02
National rail	1	Winchester	Norwich	Yes	335.0	670.00	0.03
National rail	1	Winchester	Nottingham	Yes	247.0	494.00	0.02
National rail	2	Winchester	Petersfield	Yes	33.8	135.20	0.01
National rail	1	Winchester	Plymouth	Yes	262.0	524.00	0.02
National rail	2	Winchester	Portchester	Yes	41.0	164.00	0.01
National rail	6	Winchester	Portsmouth	Yes	47.5	570.00	0.03
National rail	1	Winchester	Salisbury	Yes	195.0	390.00	0.02
National rail	17	Winchester	Southampton	Yes	21.9	744.60	0.03
National rail	1	Winchester	Southampton Airport	Yes	17.8	35.60	0.002
National rail	1	Winchester	St Austell	Yes	314.0	628.00	0.03
National rail	3	Winchester	St Denys	Yes	20.5	123.00	0.01
National rail	1	Winchester	Tunbridge Wells	Yes	155.0	310.00	0.01
National rail	1	Winchester	Twickenham	Yes	88.8	177.60	0.01
National rail	2	Winchester	Wandsworth Town	Yes	112.0	448.00	0.02
National rail	1	Winchester	Woking	Yes	71.6	143.20	0.01
National rail	1	Winchester	Worthing	Yes	101.0	202.00	0.01
National rail	1	Woolston	London	Yes	138.0	276.00	0.01



Train Type	No. of Passenger Trips	Origin	Destination	Return Trip?	Distance (km)	passenger km	Emissions (tCO ₂ e)
National rail	1	Worcester	Tiverton	Yes	189.0	378.00	0.02
Total	725				26,045	140,514	6.57

Table 23: Data supplied and emissions breakdown for staff business flights

No. of passenger trips	Type	Leg 1	Leg 2	Return Trip?	Leg 1 Airport Name	Leg 2 Airport Name	Leg 1 Country	Leg 2 Country	Passenger km	Total Emissions (tCO ₂ e)
1	Economy	SOU	MAN	Yes	Southampton	Manchester	UK	UK	549	0.15
1	Economy	SOU	LBA	No	Southampton	Leeds	UK	UK	325	0.09
1	Economy	SOU	LBA	No	Southampton	Leeds	UK	UK	325	0.09
1	Economy	SOU	MAN	Yes	Southampton	Manchester	UK	UK	549	0.15
1	Economy	SOU	MAN	Yes	Southampton	Manchester	UK	UK	549	0.15
1	Economy	SOU	NCL	Yes	Southampton	Newcastle	UK	UK	910	0.24
6									3206.73	0.86

Table 24: Data supplied and emissions breakdown for Park & Ride bus service

Type of Bus	Departure	Destination	Annual Distance (km)	Efficiency (mpg)	GHG Emissions (tCO ₂ e)
Local bus	Various	Various	413,161	7.85	386.42

Table 25: Data supplied and emissions breakdown for water consumption

Site	Water supply (m ³)	Water Supply (tCO ₂ e)	Estimated wastewater %	Wastewater treatment (tCO ₂ e)	Total emissions from water consumption (tCO ₂ e)
Guildhall	2,281	0.78	95%	1.53	2.32
City Offices	1,752	0.60	95%	1.18	1.78
West Wing	439	0.15	95%	0.30	0.45
Abbey House	45	0.02	95%	0.03	0.05
Totals	4,517	1.55		3.04	4.59

