Carbon Footprint Appraisal
for
Winchester City Council

Assessment Period:
1st April 2022 – 31st March 2023

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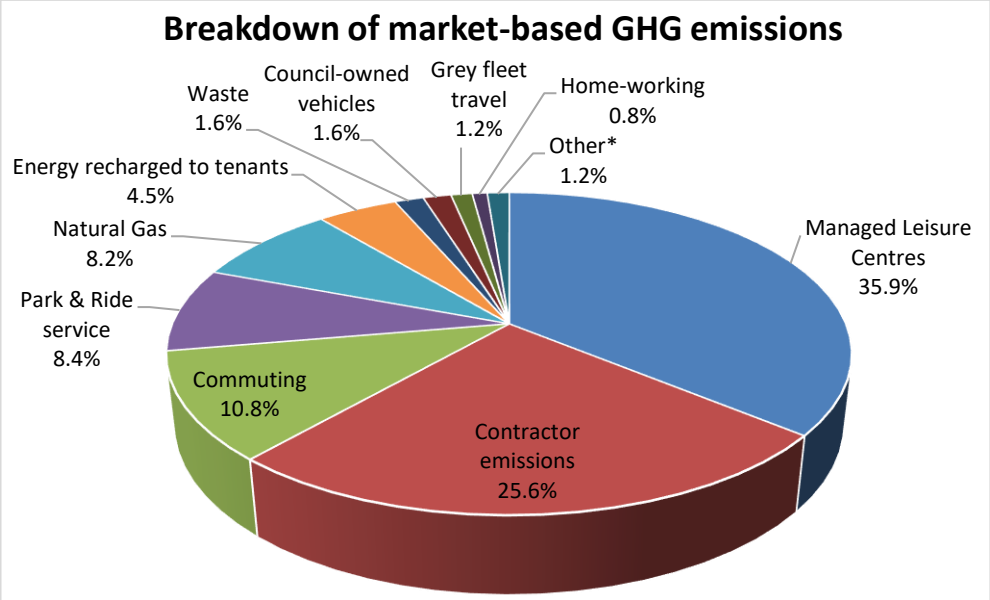
Executive Summary

Current Performance

- Winchester City Council's total market-based emissions for the period **1st April 2022 to 31st March 2023** are 3,837.16 tCO_2e (location-based emissions are 4,021.74 tCO_2e).
- The managed leisure centres are the most significant source of emissions, followed by contractor emissions (Biffa & ID Verde), accounting for 35.9% and 25.6% of the market-based emissions respectively.
- Total market-based emissions have reduced by 7.5% since the previous year, with scope 1 & 2 emissions reducing by 20.8%.

Recommendations

- Offset the GHG emissions created within this data period to compensate for emissions produced, and support projects that are working towards societal net zero carbon.
- Regularly monitor and analyse energy consumption data to ensure it is accurate by end of year.
- Conduct energy audits at Winchester Sport & Leisure Park, Chesil Lodge, Whitewings House, and Danemark Court to identify areas to reduce consumption and improve efficiency.
- Switch the Park & Ride buses to renewable HVO biofuel in the interim ahead of transitioning to electric.
- Expand the scope of the assessment to include emissions associated with the Council's supply chain.



*Other= electricity consumption (street lighting and sites under Council operational control), water, staff business travel (rail, taxi, bus), Council fuel use (petrol, LPG, diesel).

Metric	2017/18	2021/22	2022/23	% change from base year	% change from prev. year
Location-based: total tonnes CO_2e	4,186.84	4,383.23	4,021.74	-3.9%▼	-8.2%▼
Market-based: total tonnes CO_2e	4,251.12	4,148.21	3,837.16	-9.7%▼	-7.5%▼
Market-based: scope 1 & 2 total (tCO_2e) *	1,707.16	500.35	396.42	-76.8%▼	-20.8%▼
Market-based: tCO_2e per employee	8.71	10.64	8.74	0.3%▲	-17.8%▼
Market-based: tCO_2e per capita	0.035	0.033	0.030	-13.2%▼	-7.5%▼

* 2017/18 market-based emissions were estimated using the residual fuel mix for the UK for 2017.

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Quality Control

Report issue number:	1.0
Date:	09 October 2023
Calculations completed by:	Georgina Whitlock
Calculations reviewed by:	Jenny Webb
Report produced by:	Georgina Whitlock
Report reviewed by:	Zoe Rudge
Director approval:	Dr. Wendy Buckley

1. Introduction

1.1. Company Overview

The district of Winchester City Council (WCC) is in the south of England and covers 250 square miles. The Council began assessing its carbon footprint in 2008 (re-baselined in 2017/18) and continues to do so on an annual basis to monitor emissions and identify areas where reductions may be possible.

1.2. Goals & objectives

WCC has a target in place for becoming a carbon neutral authority by 2024 and the wider district by 2030. Carbon management is an area of importance for the council, as detailed in the *Council Plan 2020-2025*.

Many organisations are setting science-based targets, aiming for at least a 50% reduction in absolute emissions by 2030, and over 90% by 2050.

1.3. Data supplied for the Carbon Footprint Appraisal

A summary of the data supplied by WCC for the appraisal is provided in an accompanying annex: *"2023_09 Winchester City Council Carbon Footprint Annex 2022-23 v1.0.xlsx"*

1.4. Methodology for the Carbon Footprint Appraisal

The methodology document can be downloaded using this link:
https://www.carbonfootprint.com/docs/carbon_footprint_appraisal_-_methodology_document.pdf

1.5. Abbreviations

A/C	Air Conditioning
AMR	Automated Meter Reader
BEIS	Department for Business Energy & Industrial Strategy
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
Defra	Department for Environment, Food and Rural Affairs
EV	Electric Vehicle
GHG	Greenhouse Gas
ISO	International Standards Organisation
km	Kilometres
kWh	Kilowatt Hours
PG&S	Purchased Goods & Services
PR	Public Relations
T&D	Transmission & Distribution
UN	United Nations
WTT	Well-To-Tank

2. Calculation Scope and Accuracy

2.1. Scope of this work

Carbon Footprint has assessed the GHG emissions from **1st April 2022 to 31st March 2023** resulting from the energy consumption at WCC's facilities and its business transport activities. **WCC's base year is 2017/18.**

2.2. Organisational & reporting boundaries

Figure 1 shows the full boundaries of the *Greenhouse Gas Protocol Corporate and Value Chain Standards*. The organisation has accounted for all quantified GHG emissions and/or removals from facilities over which it has operational control. This assessment covers the reporting boundaries shown in Table 1, in line with the GHG Protocol Corporate Standard.

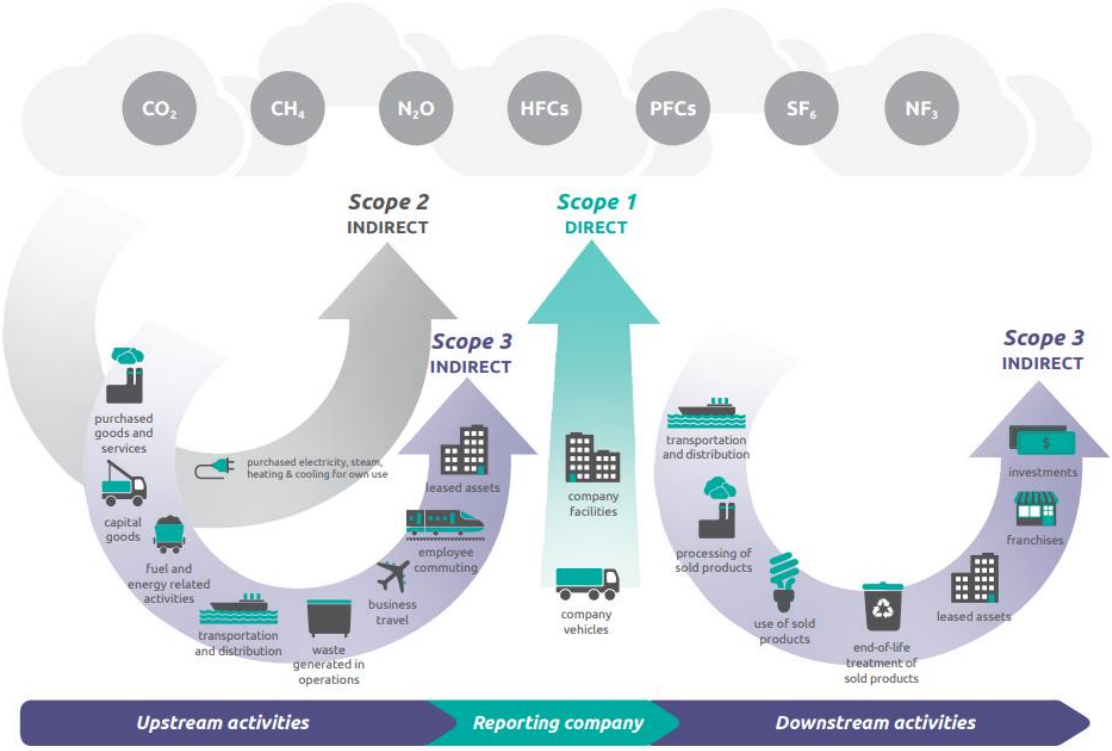

Figure 1: Overview of emissions scopes (GHG Protocol - Scope 3 Calculation Guidance v1.0 - 2013)

The following assumptions or exclusions have been made in accordance with the reporting boundary:

- Any energy consumption metered directly to tenants under their own energy contracts with suppliers has been excluded.
- Where third party tenants are recharged by WCC 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 inability to separate out the data.
- Where there is a central plant serving the whole property (flats and communal spaces), it has been agreed between WCC and Carbon Footprint that this is to be included under the Council's operational control (i.e., scope 1).

Table 1: WCC's GHG assessment boundary based on the GHG Protocol Corporate Standard

(All green rows have been included in this assessment; all grey rows are not applicable; orange rows have been excluded)

Scope	Activity	Completion status	Justification for exclusion
1	Electricity, heat, or steam generated on-site	Complete	
1	On-site fuel use	Complete	
1	Company owned vehicles	Complete	
1	Fugitive emissions (e.g. refrigerant gases)	Complete	
2	Generation of purchased electricity, heat, steam, and cooling	Complete	
3	1. Purchased goods and services (PG&S)	Partially complete	Emissions are currently assessed for purchased water and two suppliers (Biffa & ID Verde). A screening exercise is recommended to determine the relevance of other PG&S emissions.
3	2. Capital goods	Excluded	Not currently assessed. A screening exercise is recommended to determine the relevance.
3	3. Fuel- and energy related activities (not included in scope 1 or scope 2)	Partially complete	Transmission & distribution of electricity is included. Well-To-Tank emissions are currently excluded.
3	4. Upstream transportation and distribution	Partially complete	The Park & Ride bus service has been assessed. Other transport associated with PG&S is currently excluded. A screening exercise is recommended.
3	5. Waste generated in operations	Complete	
3	6. Business travel	Complete	
3	7. Employee commuting & home-working	Complete	
3	8. Upstream leased assets	Complete	
3	9. Downstream transportation and distribution	Not relevant	
3	10. Processing of sold products	Not relevant	
3	11. Use of sold products	Not relevant	
3	12. End-of-life treatment of sold products	Not relevant	
3	13.Downstream leased assets	Partially complete	Currently excludes sites where tenants are metered and billed directly by the energy supplier. We recommend this data is obtained or estimated in future.
3	14. Franchises	Not relevant	
3	15. Investments	Not relevant	

2.3. Calculation uncertainty assessment & 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. Materiality is determined by the percentage contribution of each element to the overall footprint. Based on the accuracy of the data provided (Table 2), a simple uncertainty analysis has been used to estimate the potential error margin for the appraisal results.

Table 2: Assessment accuracy, materiality, and simple error analysis

Emission source	Data source / comments	Materiality	Uncertainty	Market-based error margin (tCO_2e)
Commuting	Data obtained from staff survey. Results were extrapolated to account for response rate.	Medium (5-20%)	10%	41.45
Home-working	Data obtained from staff survey. Assumptions were made regarding average kWh used per day for a home-worker. Results were extrapolated to account for response rate.	Very Low (<1%)	50%	16.22
Natural Gas	Annual kWh data obtained from utility bills.	Medium (5-20%)	5%	15.78
Contractor lorries	Mileage and fuel data is provided from the suppliers (Biffa & ID Verde).	High (20-40%)	1%	8.41
Managed Leisure Centres - Natural Gas	Monthly kWh data obtained from Everyone Active.	High (20-40%)	1%	8.18
Energy recharged to tenants - Natural Gas	Annual kWh data obtained from utility bills/energy supplier.	Low (1-5%)	5%	8.02
Contractor fuel use	Fuel for equipment was not separated from vehicle fuel data this year, therefore last year's data was used as proxy.	Very Low (<1%)	50%	5.66
Managed Leisure Centres - Electricity (market-based)	Monthly kWh data obtained from Everyone Active.	Very Low (<1%)	1%	5.53
Park & Ride service	Total litres of diesel consumed is obtained from the Transport department.	Medium (5-20%)	1%	3.24
Waste	Type and weight of waste obtained from waste transfer notes and suppliers.	Low (1-5%)	5%	3.13
Wastewater	Assumed 100% of water supplied is returned as wastewater. Many bills are based on estimated readings.	Very Low (<1%)	50%	2.46
Water	Water usage data has been obtained from bills and internal records. Many bills are based on estimated readings.	Very Low (<1%)	50%	1.35
Contractor vans	Mileage and vehicle data has been provided from the suppliers.	Low (1-5%)	1%	1.18

Emission source	Data source / comments	Materiality	Uncertainty	Market-based error margin (tCO_2e)
Electricity (market-based)	Annual kWh data obtained from energy supplier and automated meter reader (AMR) data.	Very Low (<1%)	5%	1.04
Energy recharged to tenants - Electricity (market-based)	Annual kWh data obtained from energy supplier and AMR data.	Very Low (<1%)	5%	0.69
Council-owned vans	Vehicle details, annual mileage and fuel consumption provided. Electric vans are assumed to be predominately charged at WCC sites.	Low (1-5%)	1%	0.58
Contractor cars	**Biffa** – fuel, mileage and MPG data has been provided. The fuel and MPG data did not seem to match well with the mileage data, therefore the mileage data has been used for the calculations. **ID Verde** – mileage data has been provided.	Very Low (<1%)	5%	0.53
Grey fleet travel	Vehicles details and annual mileage obtained from expense records and DVLA. It has been assumed that staff's personal electric vehicles are predominately charged at their homes.	Low (1-5%)	1%	0.46
Managed Leisure Centres - Wastewater	Wastewater has been assumed to be 100% of supply.	Very Low (<1%)	5%	0.26
Upstream leased assets – street lighting (market-based)	Annual consumption data in kWh obtained from Hampshire County Council.	Very Low (<1%)	1%	0.18
Other fuel use (petrol, LPG, diesel)	Invoices/internal records.	Very Low (<1%)	5%	0.03
Council-owned cars	Vehicle details, annual mileage and fuel consumption provided. Electric cars are assumed to be predominately charged at WCC sites.	Very Low (<1%)	1%	0.03
Managed Leisure Centres - Water	Water usage data has been provided by Everyone Active, from monthly monitoring records.	Very Low (<1%)	1%	0.03
Taxi	Expense records.	Very Low (<1%)	1%	<0.01
Rail	Expense records.	Very Low (<1%)	1%	<0.01
Bus travel	Expense records.	Very Low (<1%)	1%	<0.01
Refrigerants	Contractor records. Zero top ups required at all sites.	Very Low (<1%)	1%	<0.01
Total			**+/- 3.2%**	**+/- 124.42**

3. Carbon Footprint Results

3.1. Summary of results

The total location-based carbon footprint for WCC for the period ending 31st March 2023 is 4,021.74 tonnes CO_2e, and the market-based total is 3,837.16 tonnes CO_2e.

Table 3: Results of WCC's carbon footprint assessment by scope and GHG Protocol emission categories

Scope	Emission Source	Location-Based (tCO_2e)	Market-Based (tCO_2e)
1	Natural Gas	315.53	315.53
	Council-owned vehicle travel	60.50	60.50
	Petrol	0.31	0.31
	LPG	0.11	0.11
	Diesel	0.09	0.09
	Refrigerants	0	0
1	**Scope 1 Total**	**376.53**	**376.53**
2	Electricity	422.55	19.89
2	**Scope 2 Total**	**422.55**	**19.89**
3.1	Contractor emissions[1]	980.70	980.70
3.1	Water	2.69	2.69
3.3	Transmission & Distribution	38.65	0.92
3.4	Park & Ride bus service	324.06	324.06
3.5	Waste	62.57	62.57
3.5	Wastewater	4.92	4.92
3.6	Grey fleet travel	45.84	45.84
3.6	Rail	0.48	0.48
3.6	Taxi	0.01	0.01
3.6	Bus travel	<0.01	<0.01
3.7	Commuting	414.53	414.53
3.7	Home-working	32.45	32.45
3.8	Upstream leased assets – street lighting	9.61	18.24
3.13	Managed Leisure Centres[2]	1,130.91	1,379.19
3.13	Energy recharged to tenants[3]	175.23	174.14
3	**Scope 3 Total**	**3,222.65**	**3,440.74**
All	**Tonnes of CO_2e**	**4,021.74**	**3,837.16**
All	**Tonnes of CO_2e per employee**	**9.16**	**8.74**
All	**Tonnes of CO_2e per capita**	**0.03**	**0.03**

[1] Includes emissions from contractors car, van, lorry and other fuel use.

[2] Includes natural gas, electricity (including transmission & distribution) and refrigerants for Winchester Sports and Leisure Park and Meadowside Leisure Centre.

[3] Excluding the managed leisure centres which are reported separately. Refer to section 2.2 for information on the boundary for inclusion of sites in scope 3.

A full breakdown of emissions by source has been provided in Annex A.

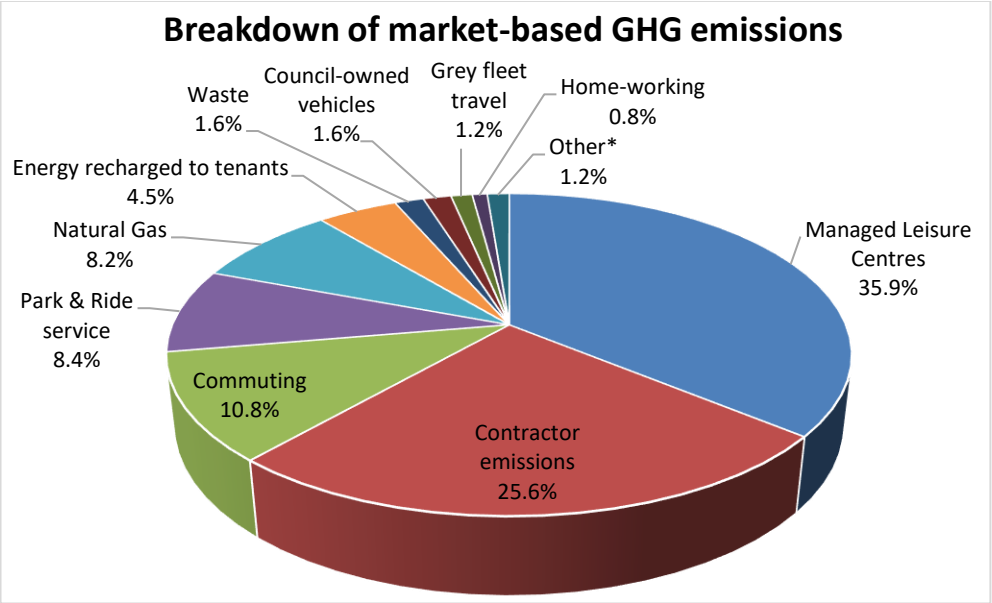

Figure 2: Percentage contribution of each element of WCC's market-based carbon footprint

*Other= electricity consumption (street lighting and sites under Council operational control), water, staff business travel (rail, taxi, bus), Council fuel use (petrol, LPG, diesel).

3.1. Emissions from energy usage at site facilities

The emissions from site energy use account for 49.5% of the Council's total market-based emissions. Over 70% of the total energy use emissions is associated with leisure centres (Figure 3). The majority of WCC's controlled sites are on 100% renewable electricity supplies, so the market-based emissions are generally reflecting gas usage (Table 4 & 5).

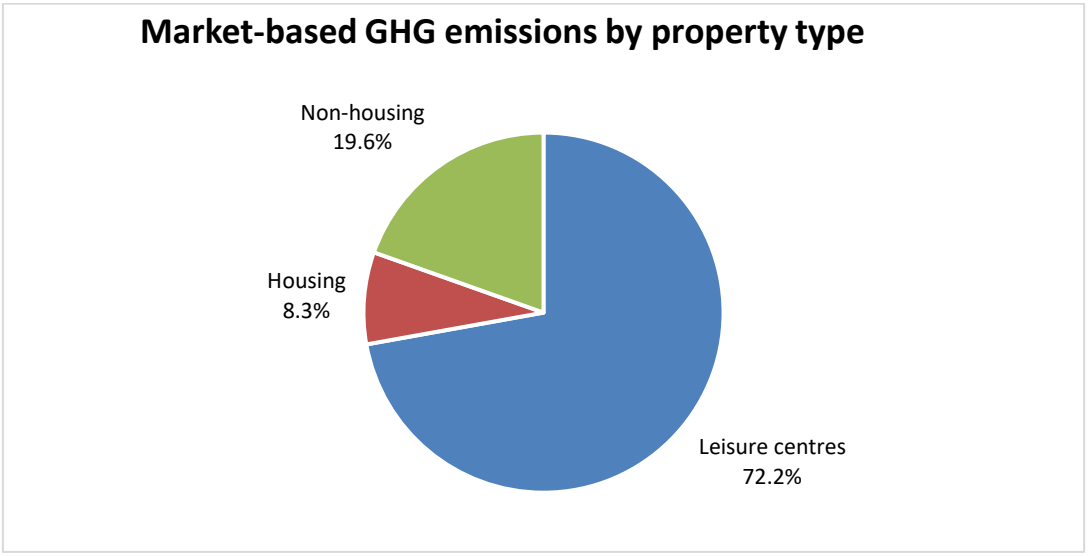

Figure 3: Breakdown of GHG emissions from energy use by property type

The most energy-consuming "housing" site is Chesil Lodge, followed by Whitewings House and Danemark Court (Table 4). These properties have high gas consumption, therefore I recommend WCC undertake energy audits at these properties to identify opportunities to improve energy efficiency and reduce wastage (e.g. insulation, draughts, settings for heating/boiler controls etc.).

Table 4: Top 10 energy-using housing sites

Site - Housing	Electricity (kWh)	Gas (kWh)	Total kWh	Market-Based GHG Emissions (tCO_2e)
Chesil Lodge	157,414	496,089	653,503	90.56
Whitewings House	57,066	234,303	291,369	42.77
Danemark Court	23,596	250,727	274,323	45.77
Makins Court	77,893	116,971	194,864	21.35
Matilda Place	31,811	152,033	183,844	27.75
Milford House	34,373	124,476	158,849	36.49
Eastacre	18,022	126,327	144,349	23.06
Gordon Watson House		124,476	124,476	22.72
Barnes House	12,451	90,454	102,905	21.50
Richard Moss House	58,454		58,454	-
Total (top 10)	**471,080**	**1,715,855**	**2,186,935**	**331.97**
Total (all housing sites)	**874,811**	**1,871,433**	**2,746,244**	**371.72**

The Winchester Sport & Leisure Park is WCC's largest energy-consuming site. I recommend at energy audit is carried out to identify opportunities to improve energy efficiency and reduce any wastage. **As a newly constructed site, the audit should focus on controls & settings (heating, lighting etc.), policies and behaviours.**

Table 5: Top 10 energy-using non-housing sites

Site: Non-housing	Electricity (kWh)	Gas (kWh)	Total kWh	Market-Based Total Emissions (tCO_2e)
Winchester Sport & Leisure Park	1,363,275	4,379,760	5,743,035	1,321.40
Guildhall / City Offices	452,098	327,452	779,550	59.77
West Wing / Kings Court	119,390	84,738	204,128	15.47
Meadowside Leisure Centre	82,153	99,932	182,085	49.69
Car Park Chesil Multi Storey	102,610		102,610	-
Cipher House	5,177	87,479	92,656	18.04
Abbey House	5,069	76,690	81,759	14.00
Central Depot, Bar End Road	3,612	73,983	77,595	13.50
Street Lighting	45,516		45,516	18.24
Museum, City Museum, The Square	13,882	31,423	45,305	5.74
Total (top 10)	**2,192,782**	**5,161,456**	**7,354,238**	**1,515.85**
Total (all non-housing sites)	**2,871,649**	**5,215,310**	**8,086,959**	**1,528.08**

3.2. Emissions from contractors

The emissions associated with contractor (ID Verde & Biffa) activities accounts for 25.6% of total market-based emissions. This includes emissions from contractor car, van, and lorry travel as well as any other fuel use (Figure 4 & Table 6). Biffa accounted for 84.5% (828.42 tCO_2e) of these emissions, with ID Verde accounting for the remaining 15.5%. The bulk of emissions from ID Verde is from vans, and Biffa is from lorries.

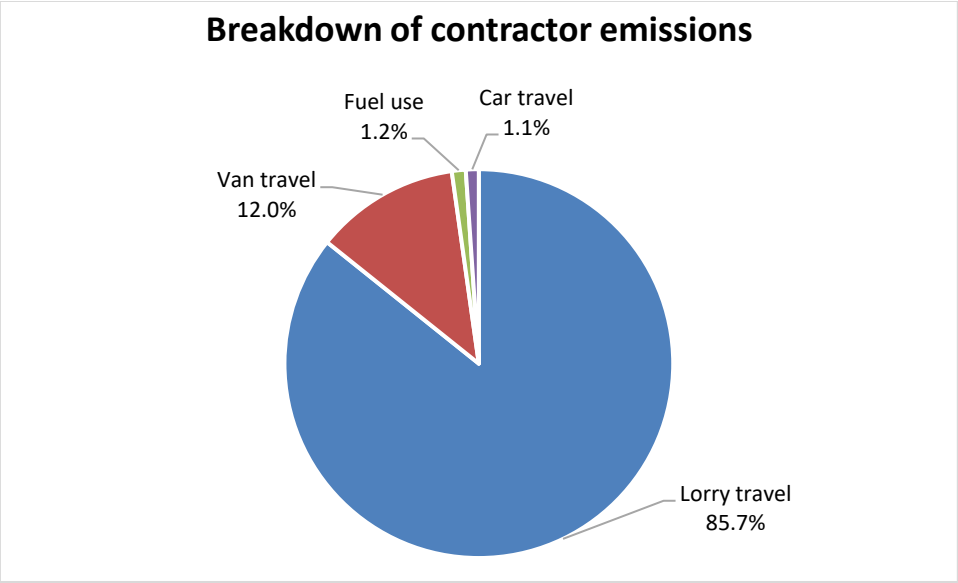

Figure 4: Breakdown of GHG emissions from contractors by activity

Table 6: Winchester City Council's contractor GHG emissions

Source	Total tCO_2e
Lorry travel	840.86
Van travel	117.99
Fuel use	11.32
Car travel	10.54
Total	**980.70**

3.3. Emissions from commuting

The commuting survey got a response rate of over 55% providing reasonable coverage. The survey identified that commuting by car is still the most popular mode of travel (Figure 5). Only 4.4% of annual commuting mileage by car is with an electric or hybrid vehicle.

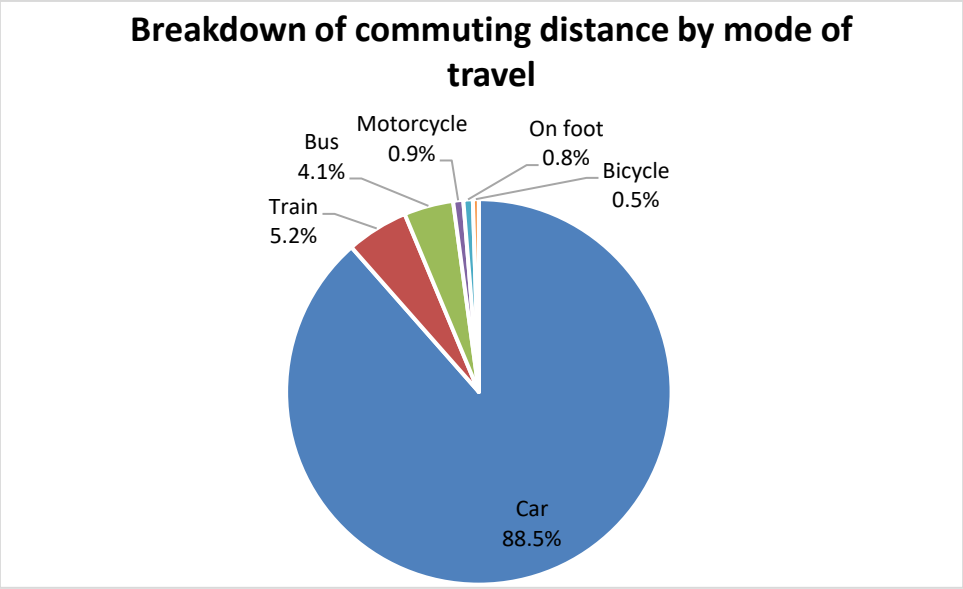

Figure 5: Breakdown of GHG emissions from contractors by activity

From the survey, it appears staff are willing to use public transport but a barrier to this is the necessity of a car for site visits. I recommend evaluating whether an electric pool car for these staff would be suitable (i.e. identify the number of staff this applies to and the average daily mileage required for site visits to determine how many pool cars would be required to meet demand). To begin with, I suggest targeting the pool car towards staff that have the ability to pre-plan site visits so that a booking system can be used. The survey identified that 53.6% of respondents would choose to use an electric pool car if it were an option, with only 9.7% saying they would not (with the remaining respondents unsure, or question was not relevant to them).

Recommendations for improving the survey have been summarised in section 6.

3.1. Emissions from Park & Ride Bus Service

The Park & Ride bus service consumed approximately 126,700 litres of diesel during 2022-23, producing 324 tonnes CO_2e. If this were to be switched to Hydrotreated Vegetable Oil (HVO) fuel, derived from waste oils, WCC would reduce emissions by 98.6% and avoid emitting 320 tCO_2e.

As well as reducing GHG emissions, other benefits include:

- It is a renewable source of fuel.
- It significantly reduces tailpipe emissions of nitrogen oxide (NOx), particulate matter and carbon monoxide, which are the main pollutants causing poor air quality in cities.
- It provides a market for waste oils, promoting circular economy and reducing waste.
- It is a drop-in alternative to diesel, which means no engine or vehicle modification is required. No capital expense is required for new vehicles, however the price per litre is higher than fossil diesel.

I recommend the Council switches to HVO fuel as soon as possible, even if it is a temporary measure until electric buses are implemented.

3.2. Solar energy generation

Winchester City Council has been increasing the amount of renewable solar energy generated within its estate. During 2022/23, the amount of electricity generated from various solar energy installations totalled **592,631 kWh**. This is equivalent to the **avoidance of 115 tonnes CO_2e**.

The total electricity demand and proportion met by on-site solar generation was modelled for several sites (Table 7). However, the amount of energy exported was unknown, therefore the total demand may be over-estimated.

Table 7: Historical comparison of WCC's market-based scope 1 & 2 GHG emissions

Site name	Purchased grid electricity (kWh)	kWh generated by on-site solar	Estimated total electricity demand (kWh)	% met by on-site solar generation
City Offices	452,098	41,910	**494,008**	8%
Barfield 2 Multi-storey Car Park	4,944	70,886	**75,830**	93%
Winchester Sport & Leisure Park	1,363,275	127,277	**1,490,552**	9%
Cipher House	5,177	6,600	**11,777**	56%

4. Comparison and Benchmarking

4.1. Comparison to base year emissions

Winchester City Council's base year is 2017/18. The scope 1 & 2 GHG emissions have reduced by 76.8% since the base year (Table 8), largely due to the transition to 100% renewable electricity supplies. All supplies that the Council controls will be on 100% renewable electricity for FY24.

Table 8: Historical comparison of WCC's market-based scope 1 & 2 GHG emissions

Scope	2017/18	2020/21	2021/22	2022/23	% change base year	% change previous year
Scope 1	569.44	381.8	439.76	376.53	-33.9%▼	-14.4%▼
Scope 2	1,137.72	492.8	60.59	19.89	-98.3%▼	-67.2%▼
Total tCO_2e	**1,707.16**	**874.60**	**500.35**	**396.42**	**-76.8%▼**	**-20.8%▼**

Table 9: WCC's carbon footprint comparison and percentage change

Element	2017/18 Base year	2018/19	2019/20	2020/21	2021/22	2022/23	% change on base year	% change on prev. year
Site gas*	1,003.59	1,107.08	1,009.30	956.74	1,487.56	1,293.61	28.9%▲	-13.0%▼
Contractor emissions ***(Biffa & ID Verde)***	998.15	1,034.04	927.67	892.59	1,036.63	980.70	-1.7%▼	-5.4%▼
Site electricity* ***(Location-based)***	1,651.97	1,300.65	1,107.24	801.53	919.95	790.77	-52.1%▼	-14.0%▼
Site electricity* ***(Market-based)***	1,716.25	†	991.93	384.73	684.93	606.18	-64.7%▼	-11.5%▼
Commuting	†	†	656.55	19.16	286.51	414.53	n/a	44.7%▲
Park and Ride	386.42	409.29	404.04	396.68	371.36	324.06	-16.1%▼	-12.7%▼
Waste	†	†	3.80	†	102.62	62.57	n/a	-39.0%▼
Council-owned van travel	43.40	53.62	52.41	42.90	59.75	57.61	32.7%▲	-3.6%▼
Grey fleet travel	56.34	60.60	54.65	38.45	39.26	45.84	-18.6%▼	16.8%▲
Home-working	†	†	†	52.31	23.16	32.45	n/a	40.1%▲
Water (and wastewater)	4.59	3.91	21.73	15.51	11.02	15.71	242.3%▲	42.6%▲
Council-owned car travel	22.65	23.53	12.86	6.52	7.17	2.89	-87.3%▼	-59.7%▼
Other fuel use ***(petrol, LPG etc.)***	0.60	0.50	0.87	0.63	0.64	0.50	-16.6%▼	-21.0%▼
Other staff business travel ***(bus, taxi, rail, flights)***	7.43	7.51	4.76	0.01	0.56	0.50	-93.3%▼	-11.1%▼
Kerosene	0	4.45	4.46	3.82	2.54	0	n/a	-100%▼
Refrigerants	11.69	0	122.68	0	34.49**	0	-100%▼	-100%▼
Location-Based: Total tonnes CO_2e	**4,186.84**	**4,005.19**	**4,383.02**	**3,226.84**	**4,383.23**	**4,021.74**	**-3.9%▼**	**-8.2%▼**
Tonnes CO_2e per employee	**8.58**	**8.21**	**9.39**	**7.92**	**11.24**	**9.16**	**6.8%▲**	**-18.5%▼**
Tonnes CO_2e per capita	**0.034**	**0.032**	**0.034**	**0.026**	**0.034**	**0.032**	**-7.6%▼**	**-8.2%▼**
Market-Based: Total Tonnes CO_2e	**4,251.12**	†	**4,267.71**	**2,810.04**	**4,148.21**	**3,837.16**	**-9.7%▼**	**-7.5%▼**
Tonnes CO_2e per employee	**8.71**	†	**9.14**	**6.89**	**10.64**	**8.74**	**0.3%▲**	**-17.8%▼**
Tonnes CO_2e per capita	**0.035**	†	**0.034**	**0.022**	**0.033**	**0.030**	**-13.2%▼**	**-7.5%▼**

* Includes: Council sites, energy recharged to tenants, and externally managed supplies (leisure centres and street lighting).

** Based on estimates (equipment capacity and average leak rates).

† Not assessed.

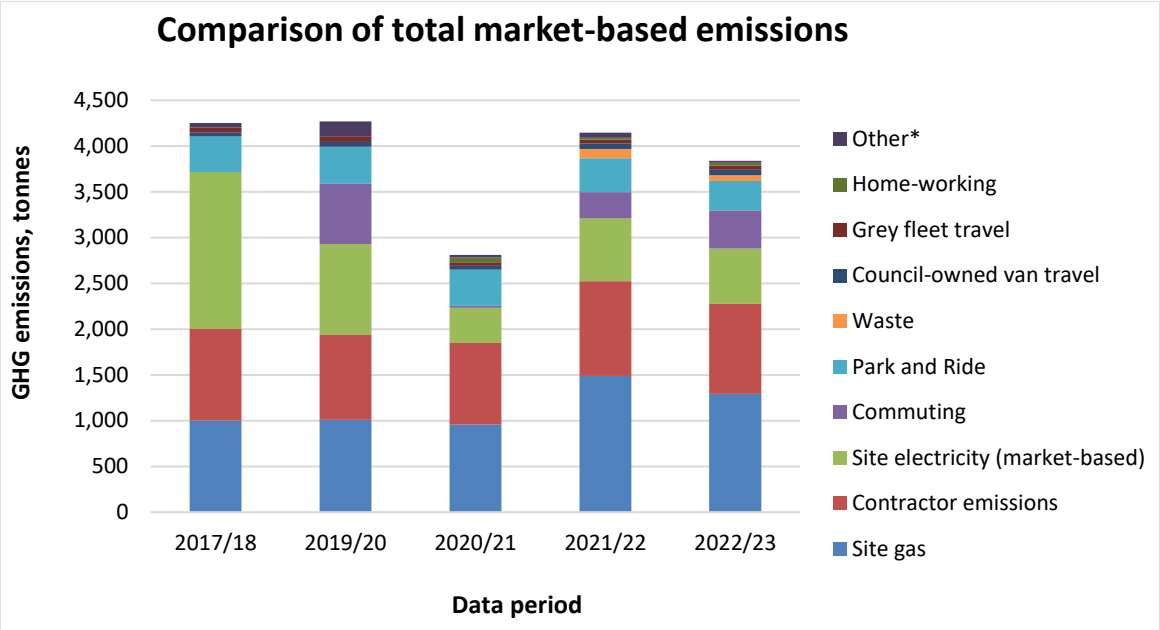

Figure 6: Detailed emissions comparison for the various aspects of WCC's emissions

** Other includes: water, council-owned car travel, other fuel use (petrol, LPG), staff business travel (bus, taxi, rail, flights), kerosene, and refrigerants.*

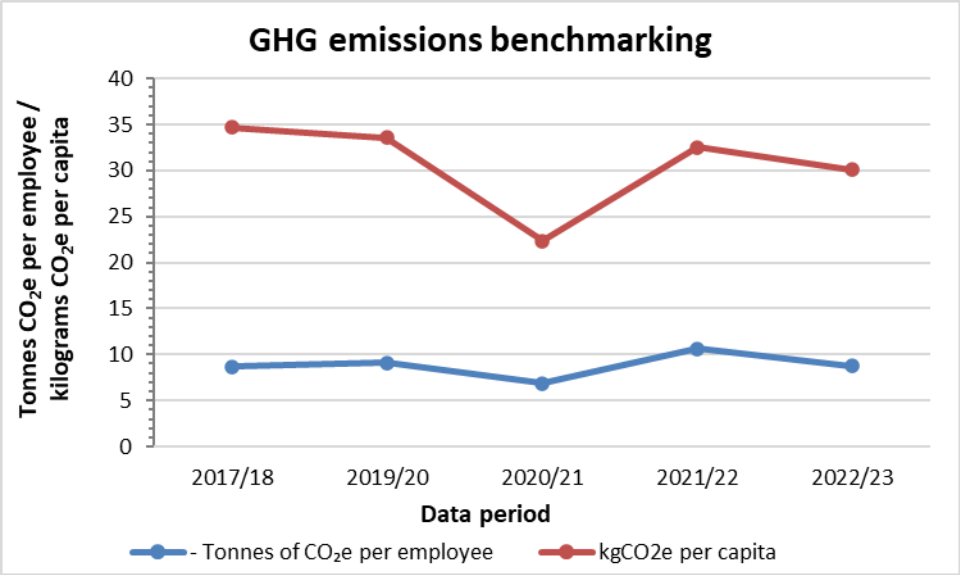

Figure 7: Market-based intensity metrics for WCC's internal benchmarking

4.2. External benchmarking

Companies often find it useful to benchmark themselves against similar organisation in their sector. Carbon Footprint Ltd has an online tool you can use to find publicly available information on other organisations that have reported their emission.

The Carbon Benchmarking Tool is free to use and can be found online at:
https://www.carbonfootprint.com/carbon_benchmark.html

Many companies report Scope 1 & 2 emissions for comparison against others as elements included in Scope 3 can vary greatly. The table below summarises the emissions across these scopes, along with metrics showing emissions per unit turnover and per employee, to help your benchmarking.

Table 10: WCC's benchmarked GHG emissions

Year/Element	Location based	Market based
Total number of employees	439	
Capita population	127,444	
Tonnes of CO_2e	4,021.74	3,837.16
Tonnes of CO_2e per employee	9.16	8.74
Tonnes of CO_2e per capita	0.032	0.030
Scope 1 & 2 Emissions		
Tonnes of CO_2e	799.08	396.42
Tonnes of CO_2e per employee	1.82	0.90
Tonnes of CO_2e per capita	0.006	0.003

5. Conclusion

WCC, in conjunction with Carbon Footprint Ltd, has assessed its carbon footprint and has achieved a 7.5% reduction on market-based emissions against the base year.

By achieving this WCC 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.

6. Recommendations

6.1. Carbon & sustainability targets

6.1.1. Target setting

WCC has set GHG reduction targets within its Carbon Neutrality Action Plan. This includes making its activities carbon neutral (via carbon offsetting) by 2024 and becoming a carbon neutral district by 2030.

As well as targets based on GHG emissions, I recommend WCC sets targets based on activity data (e.g. energy consumption in kWh, fuel consumption in litres, water usage, waste produced etc.).

6.1.2. Expand the Scope of the Assessment

We recommend that the scope of the assessment is expanded to include the aspects that are identified as excluded in Table 1. This will allow the Council to understand its full impact across its supply chain.

6.1.3. Improving the accuracy of future carbon footprint assessments

The estimated overall error margin is +/- 3.2%. To improve the accuracy of future assessments, we recommend the following:

- Obtain electricity supplier details for sites not contracted by WCC (e.g. the managed leisure centres).
- Regularly monitor and analyse energy consumption data to ensure it is correct by the end of the data period.
- Develop an internal GHG accounting schedule detailing when to request data and from who. Include information such as key contact details, secondary contact details, and any specific instructions relevant to certain emission sources/people. Engage with contractors to develop a reporting schedule with them (e.g. twice a year so data can be estimated on 6 months if there are delays at end of year) and build this into contracts.
- Request refrigerant service engineers to provide reports detailing any refrigerant gas removal or addition during servicing or repair.
- Keep a record of dates when properties are vacated (e.g. tenant vacates and it comes back under WCC's operational control).
- Obtain floor area data for sites which have only one gas meter and tenants/landlord have individual boilers (e.g. Danemark Court, Milford House, Gordon Watson House etc.).
- Shorten and simplify the commuting survey.
    - Restrict data entry to "numbers only" where appropriate (e.g. distance question).
    - Change question on "contracted hours" to "average number of contracted days".
    - Group questions together to prevent inconsistency (e.g. ask for average number of contracted days per week, WFH days per week and commute to office days per week alongside each other to avoid numbers not matching up).

6.2. Reducing emissions

To reduce GHG emissions, we recommend the following:

- Compensate for the emissions produced by supporting carbon offset projects.
- Investigate opportunities to reduce site energy consumption across WCC's sites. This could be through conducting on-site energy audits at the most energy intensive sites.
    - Housing: focus on **Chesil Lodge, Whitewings House and Danemark Court**.
    - Non-housing: focus on **Winchester Sport & Leisure Park**. As a new site the audit should be on controls & settings (heating, lighting etc.), policies and behaviours.
- Investigate transitioning Council-owned sites from gas-powered heating to sustainable alternatives such as electric, hydrogen, solar thermal, and air-source heat pumps.
- Switch the Park & Ride buses to HVO fuel in the interim ahead of implementing electric buses.
- Obtain electric pool cars and a booking system, targeting staff that are reliant on the flexibility of a car for site visits etc.
- Identify WCC's key suppliers and ensure they all have GHG reduction targets and plans in place.

6.3. Carbon offsetting

Carbon offsetting is a pragmatic way to compensate for the emissions that you cannot reduce, by funding an equivalent carbon dioxide saving elsewhere. We note that Science Based Targets supports this as what they call Beyond Value Chain Mitigation (BVCM) and that it provides an urgently needed way for companies to cut emissions outside of their value chains in line with societal net-zero (see link - Net-Zero: Urgent Beyond Value Chain Mitigation Is Essential - Science Based Targets**).**

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.

Example of Carbon Offsetting Projects:

Tree Planting in UK Schools

Avoided Deforestation in the Brazilian Amazon

Clean Water in Rwanda

Annex A

A full breakdown of WCC's emission sources is given below. This aligns with the GHG Protocol classification methodology and provides each associated emission source. Note: it does not include well-to-tank emissions.

Scope	GHG Protocol Emission Category	Emission Source	Location-Based (tCO_2e)	Market-Based (tCO_2e)
1	On-site fuel use	Natural Gas	315.53	315.53
1	On-site fuel use	Petrol	0.31	0.31
1	On-site fuel use	LPG	0.11	0.11
1	On-site fuel use	Diesel	0.09	0.09
1	On-site fuel use	Kerosene	0	0
1	Company owned vehicles	Council-owned vans	57.61	57.61
1	Company owned vehicles	Council-owned cars	2.89	2.89
1	Fugitive emissions	Refrigerants	0	0
1	**Scope 1 Total**		**376.53**	**376.53**
2	Generation of purchased electricity, heat steam & cooling	Electricity	422.55	19.89
2	**Scope 2 Total**		**422.55**	**19.89**
3.1	1. Purchased goods and services	Contractor lorries	840.86	840.86
3.1	1. Purchased goods and services	Contractor vans	117.99	117.99
3.1	1. Purchased goods and services	Contractor fuel use	11.32	11.32
3.1	1. Purchased goods and services	Contractor cars	10.54	10.54
3.1	1. Purchased goods and services	Water	2.69	2.69
3.3	3. Fuel- and energy related activities (not included in scope 1 or scope 2)	Transmission & Distribution	38.65	0.92
3.4	4. Upstream transportation and distribution	Park & Ride service	324.06	324.06
3.5	5. Waste generated in operation	Waste	62.57	62.57
3.5	5. Waste generated in operation	Wastewater	4.92	4.92
3.6	6. Business travel	Grey Fleet (employee-owned vehicles)	45.84	45.84
3.6	6. Business travel	Rail	0.48	0.48
3.6	6. Business travel	Taxi	0.01	0.01
3.6	6. Business travel	Bus travel	<0.01	<0.01
3.7	7. Employee commuting	Commuting	414.53	414.53
3.7	7. Employee commuting	Home-working	32.45	32.45
3.8	8. Upstream leased assets	Upstream leased assets - street lighting	9.61	18.24
3.13	13.Downstream leased assets	Managed Leisure Centres - Natural Gas	817.72	817.72
3.13	13.Downstream leased assets	Managed Leisure Centres - Electricity	305.09	553.37
3.13	13.Downstream leased assets	Managed Leisure Centres - Wastewater	5.23	5.23
3.13	13.Downstream leased assets	Managed Leisure Centres - Water	2.87	2.87
3.13	13.Downstream leased assets	Managed Leisure Centres - Refrigerants	0	0
3.13	13.Downstream leased assets	Energy recharged to tenants - Natural Gas	160.36	160.36
3.13	13.Downstream leased assets	Energy recharged to tenants - Electricity	14.86	13.77
3	**Scope 3 Total**		**3,222.65**	**3,440.74**
All	**Tonnes of CO_2e**		**4,021.74**	**3,837.16**
All	**Tonnes of CO_2e per employee**		**9.16**	**8.74**
All	**Tonnes of CO_2e per capita**		**0.032**	**0.030**