

Greenhouse Gas Emissions Report for 2022-23

Worcester City Council

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Introduction

This report explores and analyses the sources and scope of carbon emissions of Worcester City Council City in the year 2022-23.

Carbon Neutral City Council

The vision for a carbon neutral City Council is expressed in the Environmental Sustainability Strategy:

Worcester's zero emission refuse trucks serve the city with all council vehicles now electric or hybrid options. Building heating requirements are reduced through improved energy efficiency, and green gas is purchased for the remaining use. All electricity used by buildings and operations is green. Staff are encouraged to consider their need for travel, with effective video conferencing facilities available. When travel is required, many staff walk or cycle to work, with others driving electric vehicles they have been able to purchase through a salary sacrifice scheme or the council's own electric pool cars.

Target

The Environmental Sustainability Strategy aims towards carbon neutrality for City Council operations by 2030. Carbon neutrality or 'net zero' recognises that it may not be possible to eliminate emissions completely, but instead some residual emissions may need to be offset. There are various ways of doing this, including planting trees, generating excess renewable energy or taking part in a carbon offset scheme.

Calculation of Greenhouse Gas Emissions

The Government publishes carbon conversion factors for each emission releasing activity – how much greenhouse gas is released by each mile driven, each kWh of energy used, even quantities of certain material used.

Emissions are expressed in tonnes of carbon dioxide equivalent (tCO₂e). This is a term to describe the calculation of emissions of all greenhouse gases, not just carbon dioxide. All other greenhouse gases included are expressed as an amount of CO₂ which would have the same global warming impact. The other main greenhouse gases taken into account are methane and nitrous oxides.

Reporting of Greenhouse Gas Emissions

The Council's carbon footprint has been included in the performance scorecard for the Environment Committee as an annual key performance indicator.

Sources of emissions

The Council's emissions profile is currently comprised of gas and electricity usage in buildings, fuel use in vehicles, business travel and emissions from outsourced services (these are classed as scope 3 emissions). Inclusion of other emissions, such as those from procured supplies and services, waste and water use is being considered for future years.

Scopes

Carbon emissions are commonly reported within "scopes". Full information is available via the [UK Government GHG Conversion Factors for Company Reporting](#). In brief, Scope 1 is direct emissions from activities owned or controlled by the organisation, including emissions from combustion in boilers and vehicles. Scope 2 is indirect emissions, which are a consequence of energy use by the organisation, but occurring at a source not owned or controlled by the organisation. For example, the consumption of purchased electricity is a scope 2 emission source. Scope 3 emissions are a consequence of the organisation but occur at sources not owned or controlled by the organisation. Examples are business travel in employees own vehicles, water usage and emissions from buildings housing outsourced or commissioned services.

Emissions from baseline year 2019/20

2019-20 is being used as our baseline year, recognising that the Council's declaration of a climate emergency and pledge to work towards carbon neutrality was in July 2019.

Total calculated emissions in the baseline year of 2019/20 were 1662tCO₂e. This does not include emissions from outsourced services.

Green Tariffs

The Council started purchasing renewable electricity through its existing provider, West Mercia Energy, in April 2020 and has continued to do this since. This renewable electricity is certified zero carbon and therefore the Council's use of electricity no longer contributes to its carbon footprint. Government guidance recommends reporting emissions according to 'location-based grid factors' alongside the 'market-based' reporting. The Council does still have to account for emissions from the transmission and distribution (T&D) losses of electricity. This occurs on the distribution network between electricity entering and leaving the distribution network.

Summary Table of emissions in 2022-23

Scope	Emissions Type	Emissions (tCO ₂ e)	% of Total Emissions
Scope 1	Heating	491.68	27.6%
Scope 1	Authority's Fleet	748.32	42%
Scope 2	Electricity	0.00	0.0%
Scope 3	Staff Business Travel	4.64	0.3%
Scope 3	T&D Losses	24.25	1.4%
Scope 3	Outsourced Scope 3	514.07	28.8%
Total Emissions	-	1782.96	100%

Table 1. GHG Emissions in 2022-23 – Summary

Council Emissions 2022-23

- Crematorium
- Guildhall
- Museum and Art Gallery
- Leisure Centres (Outsourced Scope 3)
- Other (inc. Sons of Rest and Supported Accommodation)
- Fleet
- T&D Losses
- Staff Business Travel

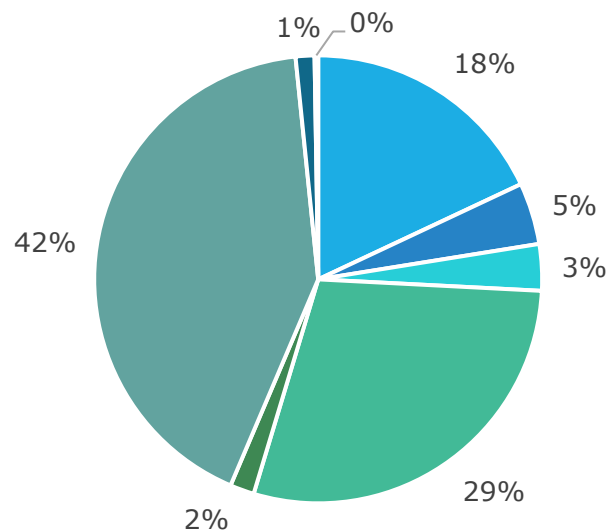


Figure 1: Total emissions breakdown 2022-3

Figure 1 shows the emissions profile for the city council in 2022-23, including all City Council buildings. For the leisure centres, these emissions are from both electricity and gas, as renewable electricity is not yet being purchased by the operator for these sites. For the other buildings, the use of renewable electricity means the emissions are from gas use only.

Emissions by Building 2022-23

- Crematorium
- Guildhall
- Museum and Art Gallery
- Sons of Rest - Community Parks Building
- Supported Accomodation
- Perdiswell - Leisure Centre
- St Johns - Leisure Centre
- Nunnery Wood - Leisure Centre

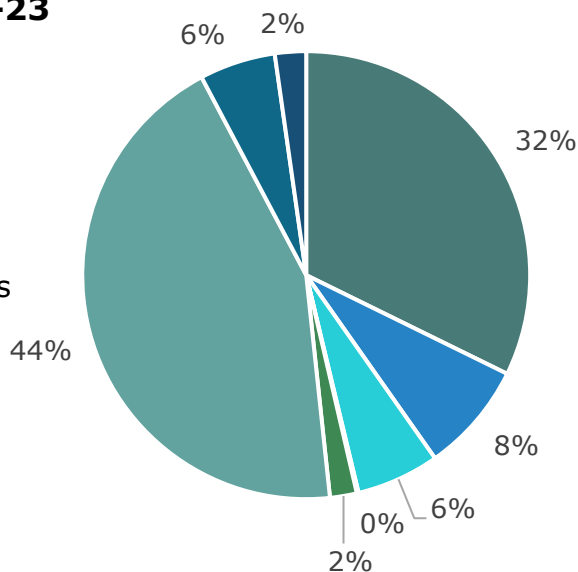


Figure 2: Breakdown of City Council emissions by building

Figure 2 breaks down the proportion of emissions from buildings to display it on a building-by-building basis for all major Council buildings in 2022-23. For the leisure centres, these emissions are from both electricity and gas, as renewable electricity is not yet being purchased by the operator for these sites. For the other buildings, the use of renewable electricity means the emissions are from gas use only.

Gas is only supplied to five City Council operated buildings: Museum and Art Gallery, Guildhall, Crematorium, Gheulvelt Park Sons of Rest, Park House. As shown by figure 2, the Crematorium accounts for 49% of the total gas usage, with 392tCO₂e.

Gas Usage by Building 2022-23

- Crematorium
- Guildhall
- Museum and Art Gallery
- Sons of Rest - Community Parks Building
- Supported Accomodation
- Perdiswell - Leisure Centre
- St Johns - Leisure Centre
- Nunnery Wood - Leisure Centre

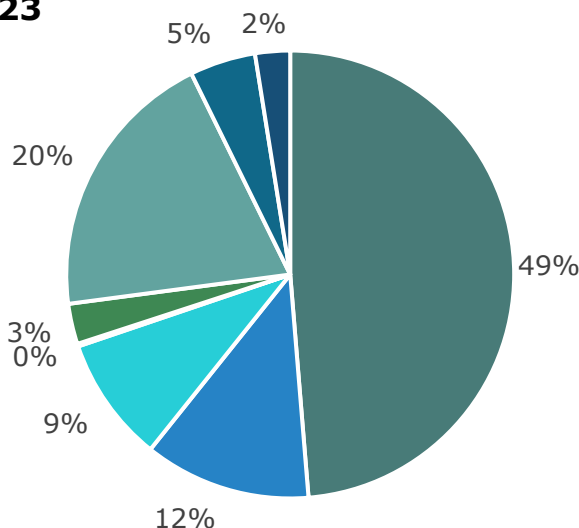


Figure 3: Breakdown of City Council gas usage by building

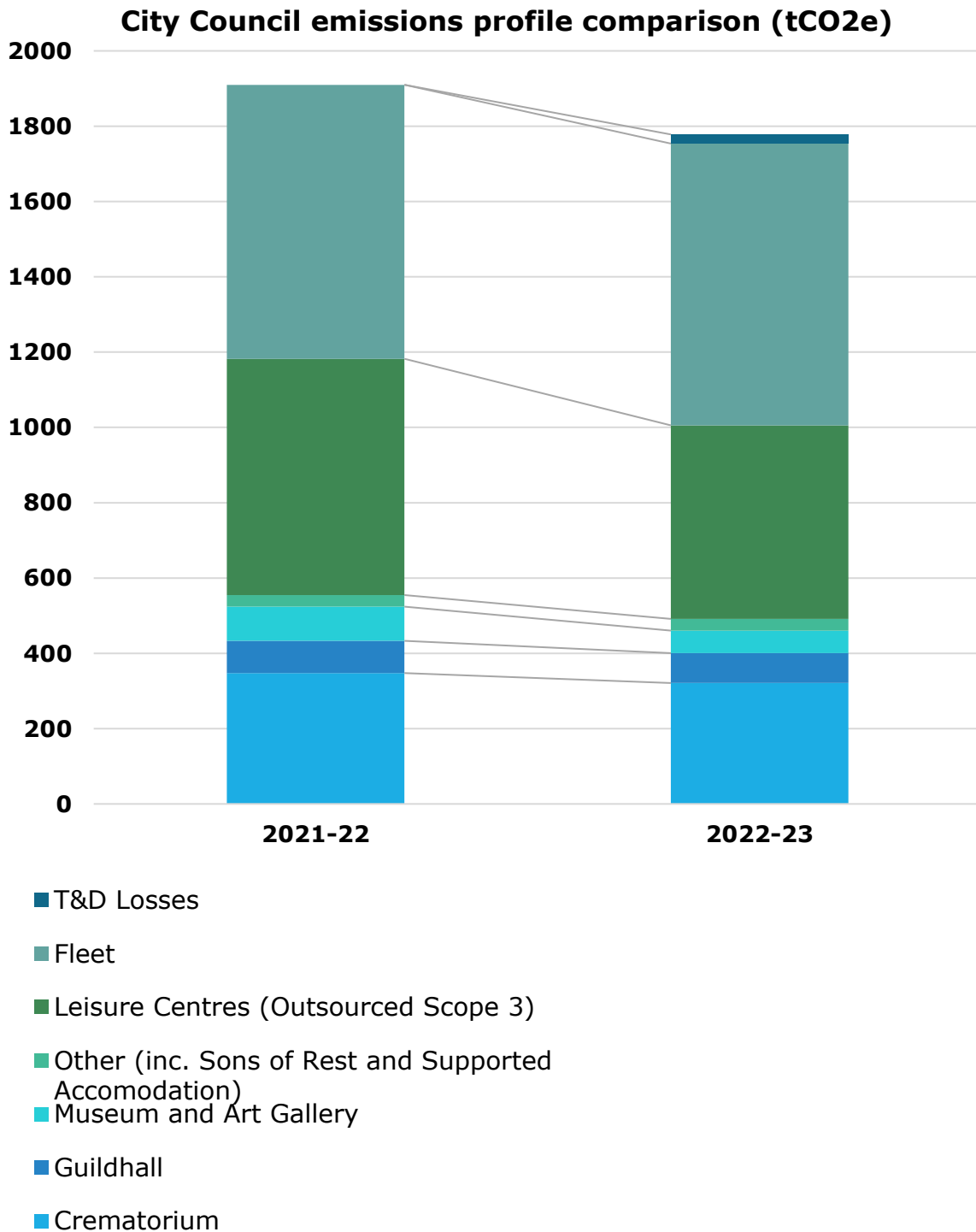


Figure 4: Comparison of total emissions broken down by emissions type and building

Total emissions fell between 2021-22 and 2022-23, from 1,912tCO₂e to 1,783tCO₂e. In 2021-22 T&D emissions were not included by omission but have been included for 2022-23.

The biggest emissions reduction has been from the leisure centres falling from 627.52CO₂e to 514.07CO₂e.

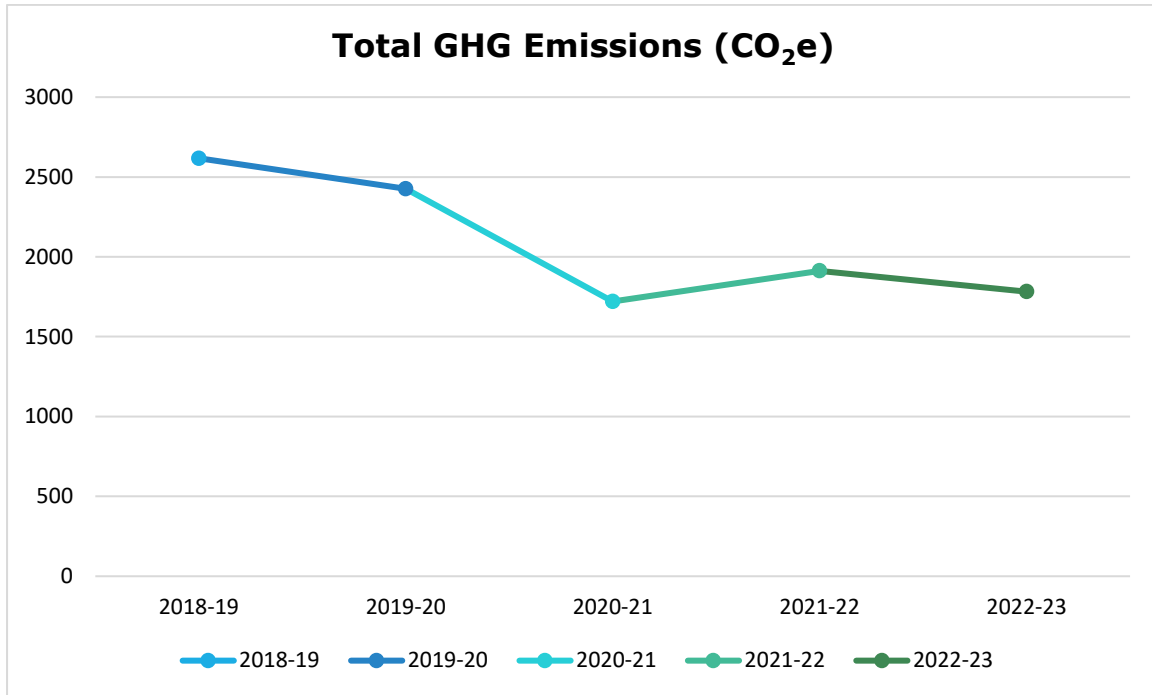


Figure 5: City Council greenhouse gas emissions from 2018-19 to 2022-23

Overall, the City Council's greenhouse gas emissions have reduced since 2018-19. Total emissions for each financial year include emissions from the City Council's leisure centres (outsourced scope 3) however 2018-19, 2019-20 and 2020-21 do not include emissions from Nunnery Wood leisure centre due to complexities with metering. The reduction in 2020-21 can be attributed to the Covid-19 pandemic which significantly reduced energy demand across City Council sites.

What isn't included in the Council's emission calculations?

Due to a lack of data or usage not being within the Council's control, a number of buildings and sources of emissions are not currently included. These could be considered for inclusion as 'scope 3' emissions in the future.

Water

As can be seen in Table 1, there are no recorded emissions from water usage. This is due to the lack of data available. The Council does not have smart or automated water meters recording usage, and the invoices are normally based on estimates. This is an area already identified to be improved by the Property Service. In future years therefore, it is hoped that emissions from water usage can be calculated. It is not expected that this will be a significant source of emissions.

Trinity Street, Sixways Depot and the Community Centres

The Council agreed a lease on a building in Trinity Street in 2020 to house the housing advice service. This building is not included on West Mercia Energy's reporting software as the electricity is sub metered from the landlord's supply and was not included within the 2022-23 emission figures.

The buildings used by Environmental Operations at the depot near Sixways are also not included as data has been difficult to obtain due to the shared site arrangements with the County Council which provide for power usage to be apportioned between the site users.

The community centres run by Worcester Community Trust on behalf of the Council are also not included.

With all of these buildings, renewed efforts are being made to include these figure within the 2023-24 calculations.

Staff commuting

We currently do not report emissions from staff commuting. We are currently exploring how we could do this for future reporting.

Other procured services

No emissions have been included from other services being provided by external partners on behalf of the Council, e.g. ICT, Regulatory Services and Revenues and Benefits services based in Pershore.

Future emissions reduction

Bereavement Services

As Figure 1 shows, the crematorium (including heating the whole building as well as the operation of the cremators) accounts for 18% of the Council's carbon footprint.

It should be noted that gas usage will fluctuate depending on the number of cremations each year and therefore, rather than measuring overall gas usage, a figure of average kWh used per cremation may be helpful to analyse.

Reducing and seeking to eliminate emissions from the operation of the crematorium will be essential to decarbonising the Council. Electric cremators are being considered as part of the overall considerations for Astwood Crematorium.

Fleet – refuse trucks, other vehicles

Electric alternatives for much of the fleet are slowly becoming available. A fleet review being led by the Energy Saving Trust for the Council gave information on what options are currently available and what options may be available in the medium term.

Replacing one refuse truck with a zero-emission electric alternative will reduce the Council's carbon footprint by approximately 50tCO₂e.

Whilst the trial of an electric refuse truck in 2022 showed that the range on these vehicles is not yet adequate, it is hoped that these will be a viable option in a few years' time. The Environmental Sustainability Strategy Action Plan for 2021-2022 has a specific action around consideration of electric alternatives within the vehicle replacement / procurement strategy, and work is underway to prepare for this including investigation of the required infrastructure.

Leisure Centres

In February 2023, a capital allocation was agreed in order to fund energy efficiency improvements and renewable energy installations on all three leisure centres. Freedom Leisure have produced a list of recommended measures which would reduce the carbon footprint of the leisure centres by around 10%. Solar PV on all three leisure centres, along with replacement lighting and variable speed drives, are part of the recommendations.

Gas usage from buildings

Decarbonisation Plans for each of the Council's major buildings have been produced. Reducing gas usage through energy efficiency measures is a priority.

A number of small projects are underway to improve pipe lagging, replace pumps and install sensors to reduce gas usage in the Museum and Art Gallery and the Guildhall.

Once usage is reduced, then alternatives to the use of natural gas should be considered. Unfortunately for many of the Council's buildings, the options here are limited due to the nature of the buildings.

The Council has been awarded grant funding for the detailed project development stage of a Heat Network. The project envisages drawing heat from

the River Severn using a heat exchanger and distributing this across a number of major consumers that could include the Guildhall and the Museum and Art Gallery. This could therefore be the best option to eliminate emissions from heating these buildings, along with many other public sector buildings in the city.

An alternative is to assess the possibility of air or water source heat pumps based in each individual building. However, these can require significant changes to a building such as increased radiator size and good insulation, and may therefore have their own challenges.

A longer-term option is the possibility of hydrogen to be used for heating, although this technology is still under development.

Business travel

The remaining source of emissions is from business travel. The Council's Active Travel Action Plan includes a project to reduce emissions from business travel in a number of ways, including the use of the Council's electric bikes, ensuring effective video conferencing options under the Council's Hybrid working policy, and consideration of the use of electric pool vehicles.

Contact

For information relating to the figures or development of this report, please contact the Sustainability Team at sustainability@worcester.gov.uk.