

**Colchester City  
Council  
Greenhouse Gas  
Report (April 2023-  
March 2024)**

# Greenhouse Gas Emissions Report – April 2023 to March 2024

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## Executive Summary

The Council publishes its emissions calculations on an annual basis in order to help monitor progress on its target to become carbon neutral in its operations by 2030. The Council uses the Greenhouse Gas Protocol methodology and Greenhouse Gas Accounting tool produced by Local Partnerships in order to do this.

The Council's emissions for financial year 2023/24 are recorded as 5,379.83 tonnes, decreasing by 167.45 tonnes (3%) since financial year 2022/23. Building on the emission reduction brought about partly by the introduction of electric vehicles in 2022/23, a further 8 electric vehicles were introduced to the fleet in 2023/24 delivering further emissions reductions. The Council is taking further action to deliver emissions savings, including installing pool covers, smart motors and a water filtration system at Leisure World, the Council's biggest greenhouse gas emitter.

## Introduction

This report provides a comprehensive carbon footprint for Colchester City Council operations in financial year 2023/24 (i.e. 1<sup>st</sup> April 2023 – 31<sup>st</sup> March 2024). It provides background detail on the trajectory of Greenhouse Gas (GHG) emissions since the establishment of a baseline in financial year 2018/19 and provides supporting information for policy making and action planning to enable the Council to respond to the declaration of a Climate Emergency and the commitment to be carbon neutral by 2030.

## Methodology and scope of reporting

This 2023/24 Greenhouse Gas Report covers emissions from Colchester City Council's own estate and operations, considering electricity and gas consumption, fuel used in vehicle fleet, staff commuting and business travel, emissions involved in waste disposal, water supply and treatment and working from home.

This reporting has utilised guidance outlined in '[The Greenhouse Gas Protocol](#)', specifically the '[Corporate Standard](#)' methodology, which is a recognised standard methodology used for greenhouse gas reporting by many organisations.

To prepare the calculations of greenhouse gas emissions for this report, the Council has used the '[Greenhouse Gas Accounting Tool](#)' produced by [Local Partnerships](#), in collaboration with the [Local Government Association](#). The tool was developed by Local Partnerships to be used by local authorities for reporting of their greenhouse gas emissions. The tool utilises the emission conversion factors produced by the UK Government that reflect the carbon intensity of a range of activities that produce greenhouse gas emissions. These conversion factors can be found at <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>. The 2023 Emission conversion factors have been used in this report.

The report is based on emissions of the 'basket of six' GHGs as defined by the Kyoto Protocol and include: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), F-gases (hydrofluorocarbons and perfluorocarbons) and sulphur hexafluoride (SF<sub>6</sub>). The GHG emissions of the Council also include the refrigerants R410A, R417A, R407C, R22, R32 and R33 which are used as refrigerants in air conditioning and chiller units. GHG emissions are expressed as tonnes of CO<sub>2</sub> equivalents (tCO<sub>2</sub>e). This is a unit of measurement used to indicate the global warming potential of a greenhouse gas, expressed in terms of the global warming potential of one unit of carbon dioxide. This is standard practice and better reflects the climate impact of the Councils' emissions.

## **Organisational boundary and scopes**

The Greenhouse Gas Protocol sets out two approaches for reporting emissions; equity share or control approach. The Council is reporting under the 'control' approach, specifically 'operational control'. This means we report sources of emissions which we have operation of, meaning any that we only have an interest in are not reported.

As outlined in the Greenhouse Gas Protocol, emissions are categorised into three scopes according to the activity taking place that produces emissions; scope 1, scope 2 and scope 3. The activities included within each are outlined below:

Scope 1: These are direct emissions arising from activities of an organisation, including fuel consumption on site (such as that used in gas boilers and fuels used in fleet vehicles) and refrigerant gases used in air conditioning and chiller units (often referred to as 'fugitive emissions').

Scope 2: These are indirect emissions produced from electricity that is purchased and used by the organisation. The emissions are generated during the production of this electricity which is then used by the organisation.

Scope 3: These are all other indirect emissions from activities of the organisation, but that occur from sources which the organisation does not own or control. Activities included in this scope of the GHG report are staff commuting and business travel, water supply and disposal, waste production, emissions from staff working from home and transmission and distribution losses of electricity from the National Grid.

Communal heating and staircase lighting of sheltered housing blocks are included within the scope of the report. This is because the Council pays for the energy usage in these buildings, and thus has been judged to be in control of operating the shared heating and lighting. However, electricity and gas consumption used throughout the Council's wider housing stock that is managed by Colchester Borough Homes is outside of the scope of this report.

## **Data gaps and reliability**

Data for scope 1 and 2 emissions has been verified and checked as far as possible and has been based on metered data or records of fuel usage. There was one building which we could not get gas meter readings for, alongside several buildings where accurate electricity meter readings were not able to be recorded. Where possible, assumptions and estimated readings were made as to usage for these gaps by looking at previous financial year usage or extrapolating available data from the same financial year. Therefore, it would be reasonable to assume an error margin of +/-5% on all values within this report.

Much of the scope 3 emissions calculations use assumptions to estimate emissions when we don't know exact figures, for example, when estimating the emissions attributed from home working. However, we have used best practice methodologies for calculating emissions from these sources.

There are emission sources associated with Council operations not included in this report due to lack of data. One of the main areas is emissions associated with the Council's procured goods and services. However, this is an area the Council would like to collect data on in the future once a suitable and affordable standard reporting mechanism for this is provided.

## Overall Emissions Summary

Table 1.1 and figure 1.1 show a summary of the Council's emissions, broken down by the Greenhouse Gas Protocol as well as by sector.

Table 1.1: Summary of Colchester City Council's emissions in financial year 2023/24

Reporting Period 2023/24	Units	Consumption	Greenhouse gas emissions (tonnes CO <sub>2</sub> e)
<b>Scope 1</b>			
Natural Gas	kWh	13,288,908	2,430.93
Liquefied Natural gas	kWh	193,942.44	41.60
Petrol	Litres	1792.12	3.76
Diesel	Litres	514,339.7	1289.14
Refrigerant gases <sup>1</sup>	kg	11.55	22.31
<b>Scope 2</b>			
Electricity <sup>2</sup>	kWh	4,483,284	905.99
<b>Scope 3</b>			
Electricity (T and D)	kWh	4,483,284	78.38
Working from Home <sup>3</sup>	Per FTE working hour	514,916	171.87
Staff commuting <sup>4</sup>	Miles	216,124	55.33
Staff business travel <sup>4</sup>	Miles	71,456	18.79
Waste	tonnes	781	343.98
Water	Meters cubed (m <sup>3</sup> )	88,731	17.75
<b>Total gross emissions</b>			<b>5,379.83</b>
Carbon offsets			0
<b>Total net emissions</b>			<b>5,379.83</b>
Intensity measurements <sup>5</sup>			
Tonnes of CO <sub>2</sub> e per FTE staff member			6.14

<sup>1</sup>GHG emissions from air conditioning units are calculated using an average 3% leakage rate and appropriate refrigerant emissions factor.

<sup>2</sup>Electricity consumption relates to that used in buildings and in electric and hybrid vehicles.

<sup>3</sup>Standard emission conversion factor applied to this as given in Government emission conversion factors.

<sup>4</sup>This takes into account miles travelled using various means of transport including car, bus, train.

<sup>5</sup>We are required to define a result using an 'intensity measurement', which is a ratio of GHG impact per unit of activity or other business metric. We have selected CO<sub>2</sub>e per FTE staff at the Council. This varies throughout the year, but a figure was taken in May 2024 which was 876.17 of FTE staff.

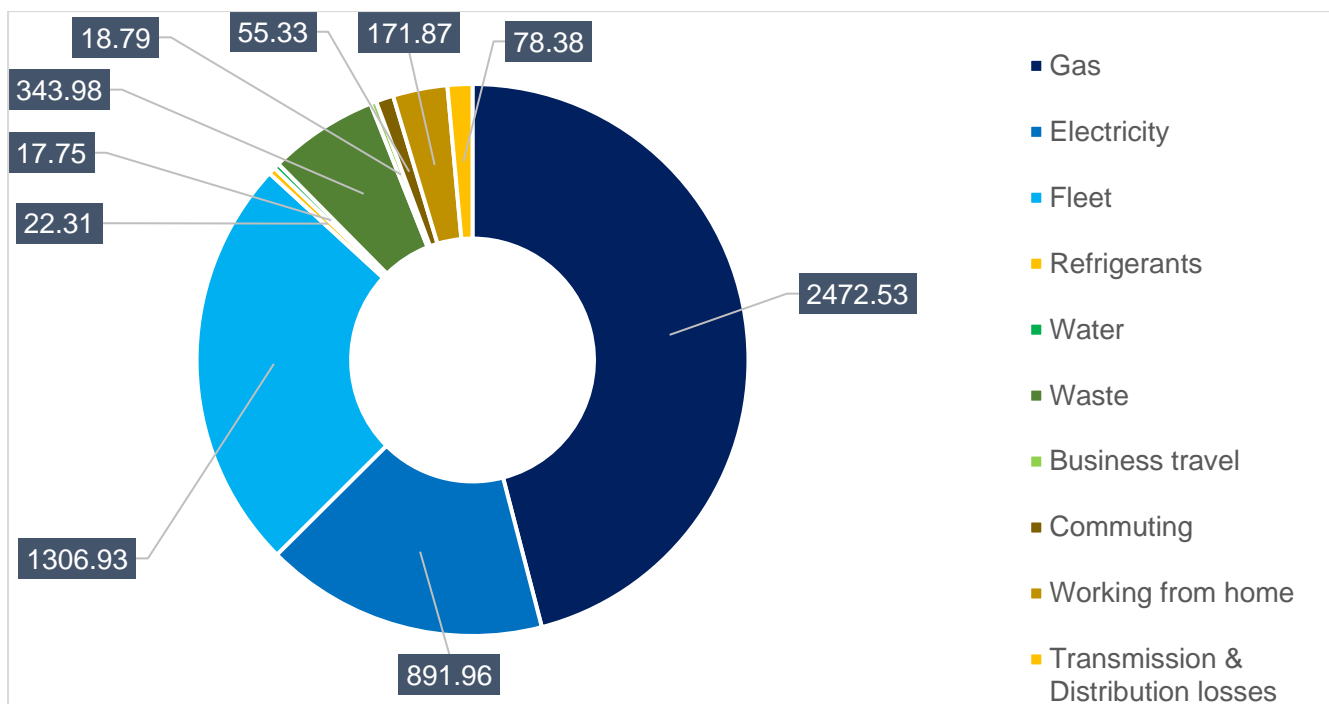


Figure 1.1: Overall Council emissions split by sector

## Major Emission Sources

### Leisure World

By far, the Council's biggest user of energy and water is the Leisure World Colchester facility. It contributes to approximately 42% of the Council's emissions from its buildings (see figure 1.2) and used 7,170,466 kWh of gas and 655,574 kWh of electricity in financial year 2023/2024.

In 2024, the Council secured just over £170,000 of grant funding to improve the energy efficiency of Leisure World Colchester, including the installation of pool covers on the Fitness Pool, Diving Pool and Teaching Pool as well as 'smart' energy efficient motors that have been installed on air handling units to improve the control of ventilation around the building. Energy (and thus emissions) and cost savings from these measures will be observed where possible. The Council has also approved for capital spend of £45,500 on an innovative water filtration system for the Fitness Pool. The system uses an electrochemical reaction to remove wastes and ultraviolet radiation to treat the water. The system will help reduce water use, whilst also reducing energy use as the reused pool water will require less heating than if fresh top up water was used.

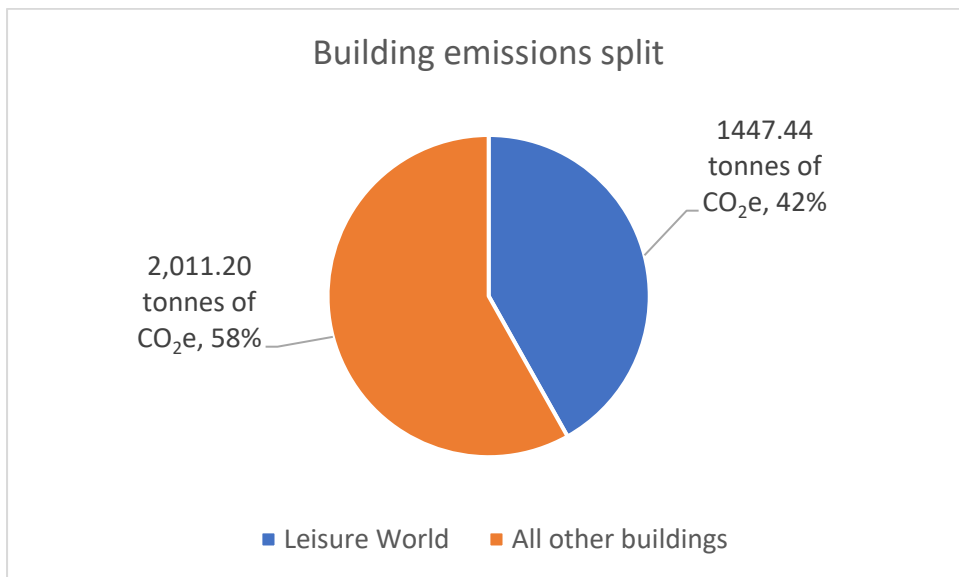


Figure 1.2: Total Emissions from the Council’s buildings, split by Leisure World and all other buildings

### Top 10 highest users

Outside of Leisure World, the 10 buildings using the most electricity and gas are displayed in figures 1.3 and 1.4. The stark difference between the usage of gas and electricity consumption in these buildings compared to Leisure World is clear. For gas, the biggest users are mostly for communal heating of the sheltered housing schemes (Grymes Dyke Court, Heathfields House, The Cannons, Mary Frank House, Worsnop House, Enoch House, John Lampon Court, Winstree Court). For electricity, there is a mix of buildings included such as the Town Hall, Colchester SportsPark and multi storey car parks.

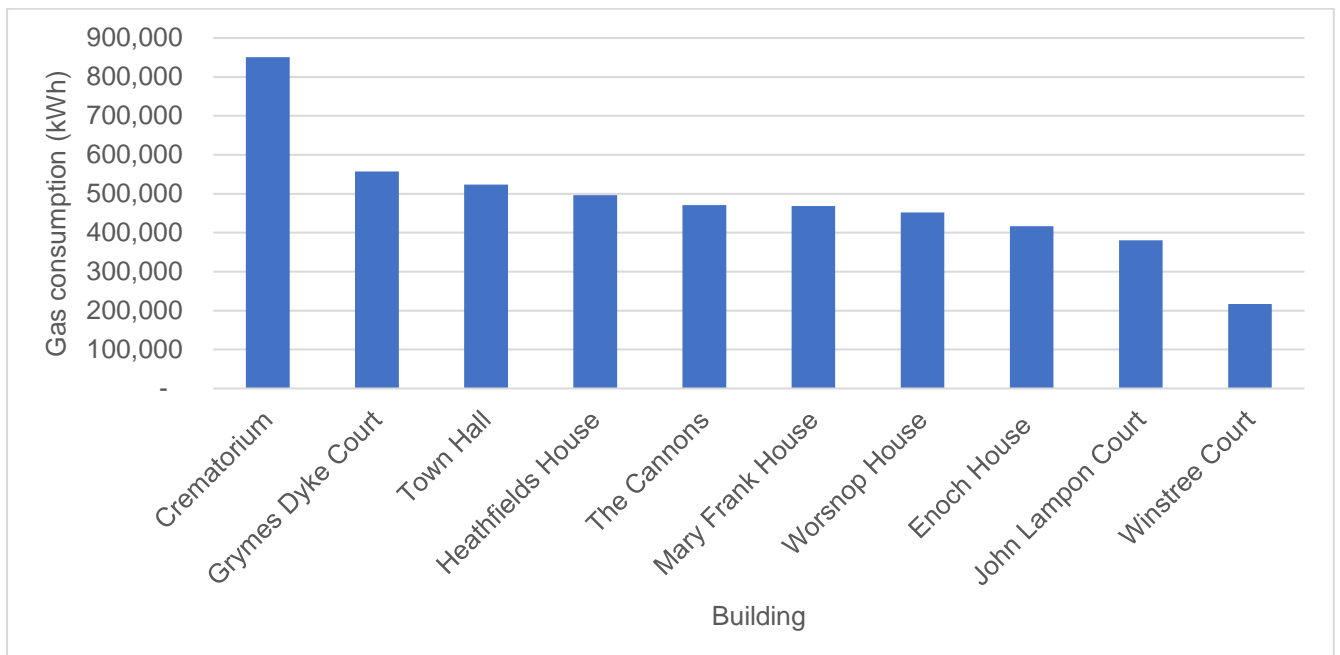


Figure 1.3: Top 10 buildings with the highest gas consumption across the Council estate (excluding Leisure World)

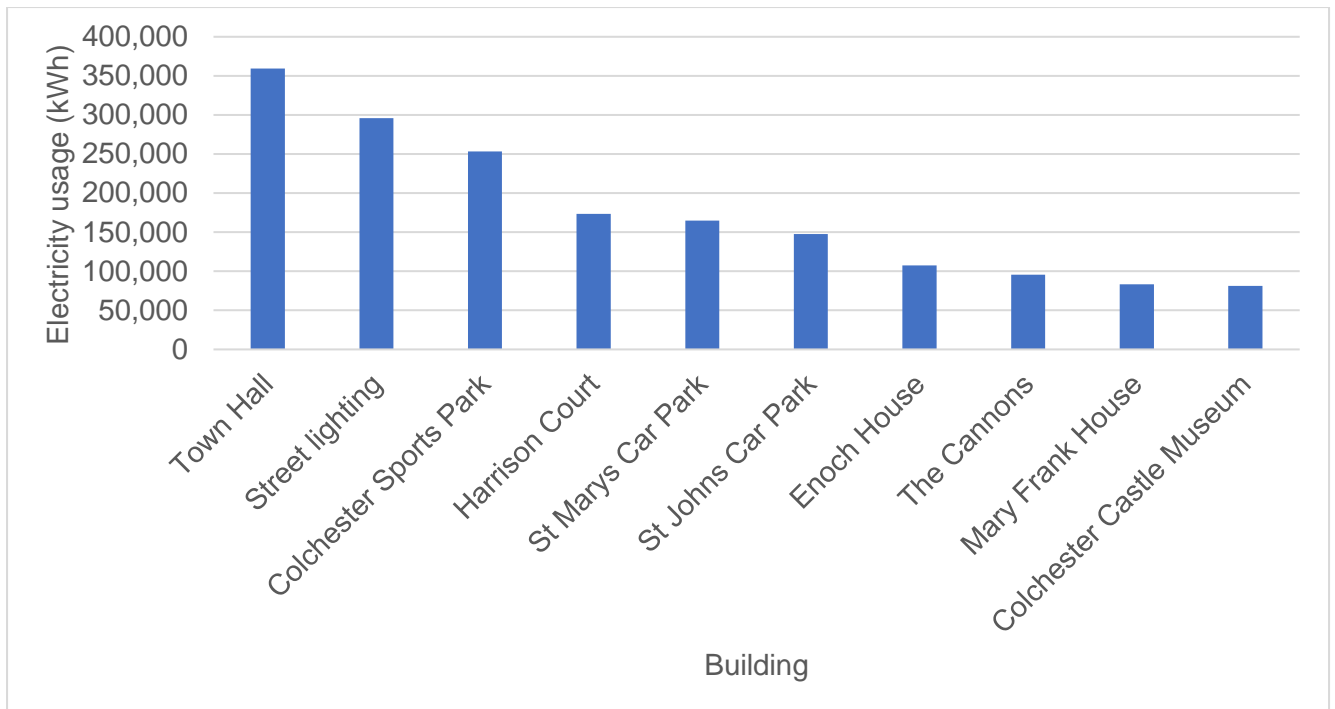


Figure 1.4: Top 10 buildings with the highest electricity consumption across the Council estate (excluding Leisure World)

## Fleet

The Council's fleet contributes to 24.3% of the Council's overall emissions, with this mainly driven by emissions produced from the refuse collection fleet (72% of overall total emissions from fleet).

As detailed on page 9, the Council is taking action to transition its fleet away from fossil fuels. Options for decarbonising heavy fleet that have been trialled and that are financially viable are currently in short supply. However, decarbonising these fleet will bring about the greatest reductions in fleet emissions. The Council has trialled the use of hydrotreated vegetable oil (HVO) in some vehicles including refuse collection vehicles which could be a fuel used in the short term to save emissions, with Government emission conversion factors showing a delivered 90-95% emission saving over diesel. However, the evidence base on this saving has been questioned along with concerns about how HVO is sourced. Therefore, the Council will not be rushing to switch to this fuel without due research into the true sustainability credentials involved in the sourcing of this fuel and the outcomes from other local authority pilots.

## Other emissions

Staff commuting mileage has increased since 2022/23 as more staff returned to offices, particularly Rowan House, the Council's main office, which reopened in July 2023. Commuting mileage increased by 53,289 miles (32.7% increase) whilst business travel mileage reduced by 26,541 miles (27% reduction) when compared to financial year 2022/23 mileages.

However, there was an increase in commuting by public transport, most of which can be attributed to the introduction of a free park and ride service for staff to use for most of 2023/24.



Estimates for emissions associated with staff working from home have been calculated since financial year 2020/21 when the covid pandemic meant most staff had to work from home. As mentioned, with the Council's main office Rowan House reopening this did lead to an increase in staff spending a greater of work time in the office. In 2023/24, the average percentage of staff time spent in the office/in the field each week was 29.2% compared with 23.7% in 2022/23. Therefore, a reduction in emissions from staff working from home was seen, decreasing from 233.18 tCO<sub>2</sub>e to 171.87 tCO<sub>2</sub>e.

Another area which has seen an increase in emissions is from waste production. This is mainly because the opening of Rowan House has led to an increase in waste produced. Ultimately this might be displacing some waste which was previously produced at home and not accounted for in the Council's calculations. Additionally, waste production calculations are estimated and are based on the size of bins put out for collection from Council buildings and the frequency with which they are collected. Therefore, emissions associated with waste are difficult to compare between years.

### **Notable actions and considerations for 23/24**

In September 2023, the Council purchased 8 electric cars for its fleet, extending the number of electric vehicles in the fleet to 20 out of a total of 128 fleet vehicles. It is calculated that in 2023/24, the electric vehicles produced an emission saving of 47.66 tCO<sub>2</sub>e when compared to if the usage had been done in diesel vehicles.

The Council reopened its main office building, Rowan House in July 2023, after a refurbishment which included improvements to the energy performance of the building. Gas boilers were replaced with air source heat pumps, LED lighting was installed throughout the building and mechanical ventilation and heat recovery system was installed. It is difficult to compare energy consumption between the 'new' and 'old' building as Rowan House has not been fully open since March 2020, and there have been issues with getting actual meter readings from the electricity meter in Rowan House since it reopened.

There were no other significant changes or improvements to the operation of the Council's buildings and fleet that occurred in 2023/24. As explained above, there are planned works at Leisure World, alongside feasibility studies for reducing greenhouse gas emissions at other key buildings including the Town Hall.

Although emissions associated with electricity consumption from buildings have increased, the absolute consumption values from buildings have decreased. The emissions increase is due to the greenhouse gas conversion factor associated with electricity use as provided by Government increasing from 2022. The factor increased due to an increase in natural gas usage for generating electricity in 2023 when compared to in 2022 when a greater proportion of electricity came from renewable sources.

### **Renewable energy**

The Council have solar photovoltaic (PV) arrays on 12 of its owned buildings. Under the Government's standard reporting guidelines, the emissions saved are not reportable as an offset against wider Council emissions because they are claimed by the electricity companies as part of the purchase transaction. Also, the electricity generated by the solar panels is not paid for by the Council, and hence doesn't appear in energy invoices which are used to calculate the electricity emissions for the Greenhouse Gas report. This means that by having this electricity consumption in essence 'omitted' from the report, we are naturally considering the impact that the solar PV has on the Council's electricity emissions. However, it's important to note the contribution this does make to the degree to which the Council is

using renewable electricity as well as the costs it is saving on this generated electricity compared with buying this from the Grid.

Total Solar PV generation from the Council’s solar photovoltaic panels on its owned buildings for all financial years since the baseline are shown below.

Table 1.2: Electricity generation from solar PV on Council buildings

<b>Financial year</b>	<b>Unit</b>	<b>Generation</b>
2018/19	kWh	368,577
2019/20	kWh	283,596
2020/21	kWh	212,335
2021/22	kWh	240,214
2022/23	kWh	281,641
2023/24	kWh	264,021

There is scope for further PV on rooftops of Council owned buildings and car parks, particularly given costs of grid electricity staying high which makes business case and payback for PV more economically viable. This will be considered, and funding streams accessed for this where appropriate. The Council is also exploring the possibility of creating a solar farm on land it owns to support local renewable electricity generation.

## Overall progress

Table 1.3 and figure 1.5 show how the Council’s emissions have changed since the declaration of a climate emergency and an emissions baseline was set. The 2020/21 financial year can be treated as something of an anomaly due to the impact of covid-19 on the standard operation of Council services. Since 2018/19, emissions have been steadily decreasing, till the most recent financial year which reflects a 13.2% reduction in emissions since the baseline.

Table 1.3: Council emissions produced in each financial year

Financial year	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
<b>Total emissions (tCO<sub>2</sub>e)</b>	6196.26	5828.23	5234.09	5695.60	5547.28	5379.83

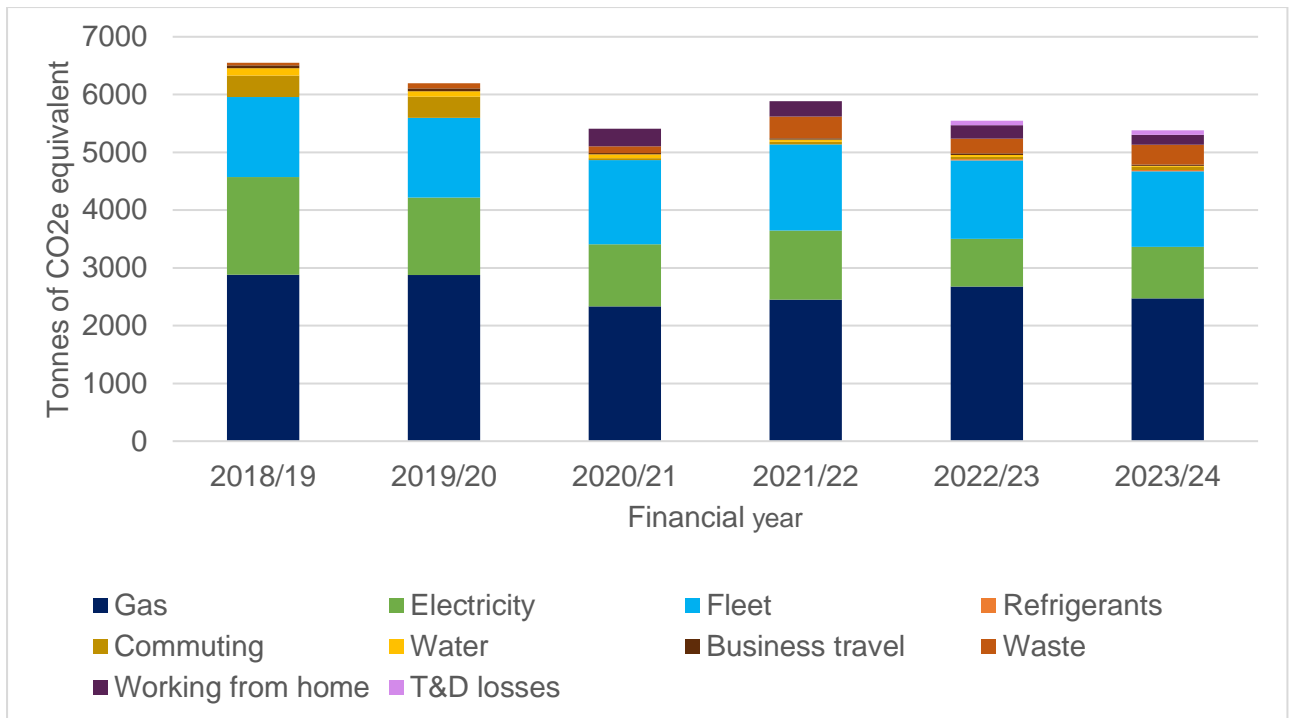


Figure 1.5: Council emissions broken down by sector for each financial year

## Future Action

If following a linear reduction in emissions each year from our baseline year to 2030, then emissions would follow the orange line in figure 1.6. However, change does not occur equally each year and certain actions such as decarbonising heating sources will reduce emissions disproportionately for a particular financial year. Although the blue line suggest the Council is 'off track' to meet its carbon neutral target, there are still several actions that will produce significant decreases in our greenhouse gas emissions including further decarbonisation of our fleet and Leisure World.

However, the Council has done work to estimate how and when further emission reductions can be delivered from the buildings and fleet. It has been identified that there will still be a significant challenge in reducing these emissions, and even with offsetting, reaching the 2030 target will be challenging.

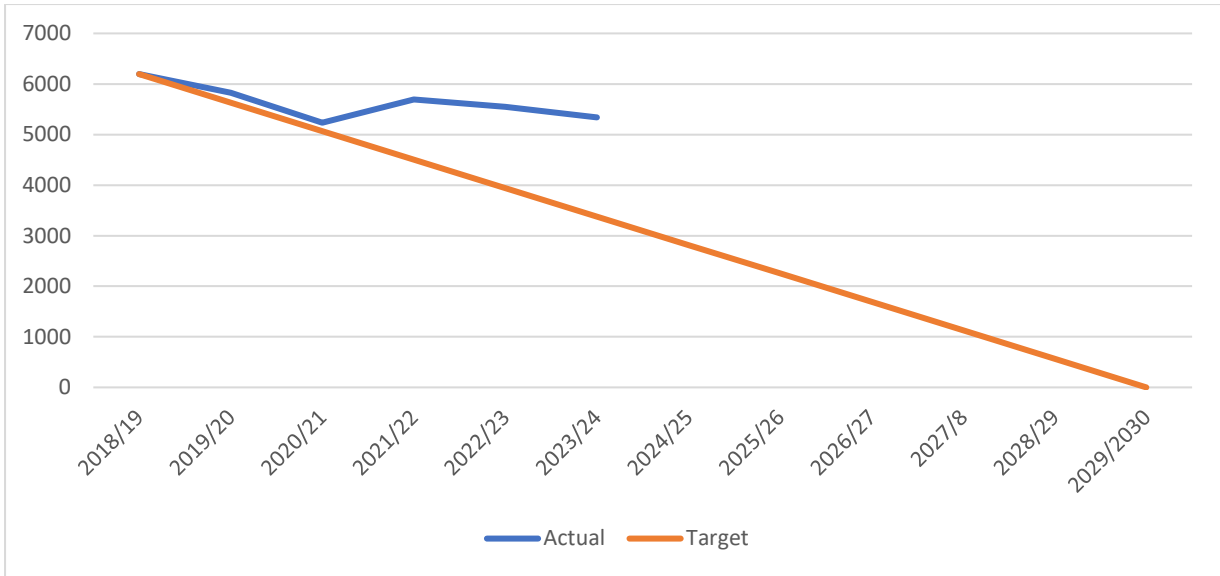


Figure 1.6: Council's emissions since 2018/19 (blue line), compared to a linear target reduction in emissions to reach carbon neutral target (orange line)