Colchester City Council

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Place and Prosperity

Colchester City Council Greenhouse Gas Report (April 2022-March 2023)

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Greenhouse Gas Emissions Report – April 2022 to March 2023

Contents

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 2022/23 are recorded as 5547.28 tonnes, decreasing by 148.32 tonnes (2.6%) since financial year 2021/22. Notable projects this year to reduce emissions include the introduction of 11 electric vehicles and 4 hybrid vehicles to the Council fleet which have helped produced a 31.1 tonne reduction in emissions. To stay on course to reach the carbon neutral target, the Council will be introducing a Carbon Reduction Management Plan in 2024 which will help identify actions that can bring around emission reductions in the coming years, largely focussing on improvements at Leisure World Colchester as the Council's biggest producer of greenhouse gas emissions.

Introduction

This report provides a comprehensive carbon footprint for Colchester City Council operations in financial year 2022/23 (i.e. 1st April 2022 – 31st March 2023). 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 2022/23 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 2022 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_2), methane (CH_4), nitrous oxide (N_2O), F-gases (hydrofluorocarbons and perfluorocarbons) and sulphur hexafluoride (SF_6). 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_2 equivalents (tCO_2e). 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. One notable gap in the data is estimating the fuel used in our 4 hybrid vehicles as mileage readings have only been used for calculating alongside the relevant emission conversion factor. The aim is to collect this data to be able to report on this in financial year 2023/24. Additionally, there was 1 building in which we could not get full gas meter readings for, alongside 2 buildings without full electricity meter readings for the financial year. Where possible, assumptions 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 2022/23

Reporting Period 2022/2023	**Units**	**Consumption**	**Greenhouse gas emissions (tonnes CO_2e)**
Scope 1			
Natural Gas	kWh	14,425,688.51	2,633.27
Liquefied Natural gas	kWh	193,942.44	41.60
Petrol	Litres	419	0.90
Diesel	Litres	525,946	1,345.29
Refrigerant gases[1]	kg	11.48	23.46
Scope 2			
Electricity[2]	kWh	4,450,289	837.72
Scope 3			
Electricity (T and D)	kWh	4,450,289	76.63
Working from Home[3]	Per FTE working hour	684,309	233.18
Staff commuting[4]	Miles	162,835	41.62
Staff business travel[4]	Miles	97,997	26.66
Waste	kg	615	254.63
Water	Meters cubed (m^3)	117,468	32.32
Total gross emissions			5,547.28
Carbon offsets			0
Total net emissions			5,547.28
Intensity measurements[5]			
Tonnes of CO_2e per FTE staff member			7.24

[1]GHG emissions from air conditioning units are calculated using an average 3% leakage rate and appropriate refrigerant emissions factor.

[2]Electricity consumption relates to that used in buildings and in electric and hybrid vehicles.

[3]Standard emission conversion factor applied to this as given in Government emission conversion factors.

[4]This takes into account miles travelled using various means of transport including car, bus, train.

[5]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_2e per FTE staff at the Council. This varies throughout the year, but a figure was taken in January 2023 which was 765.95.

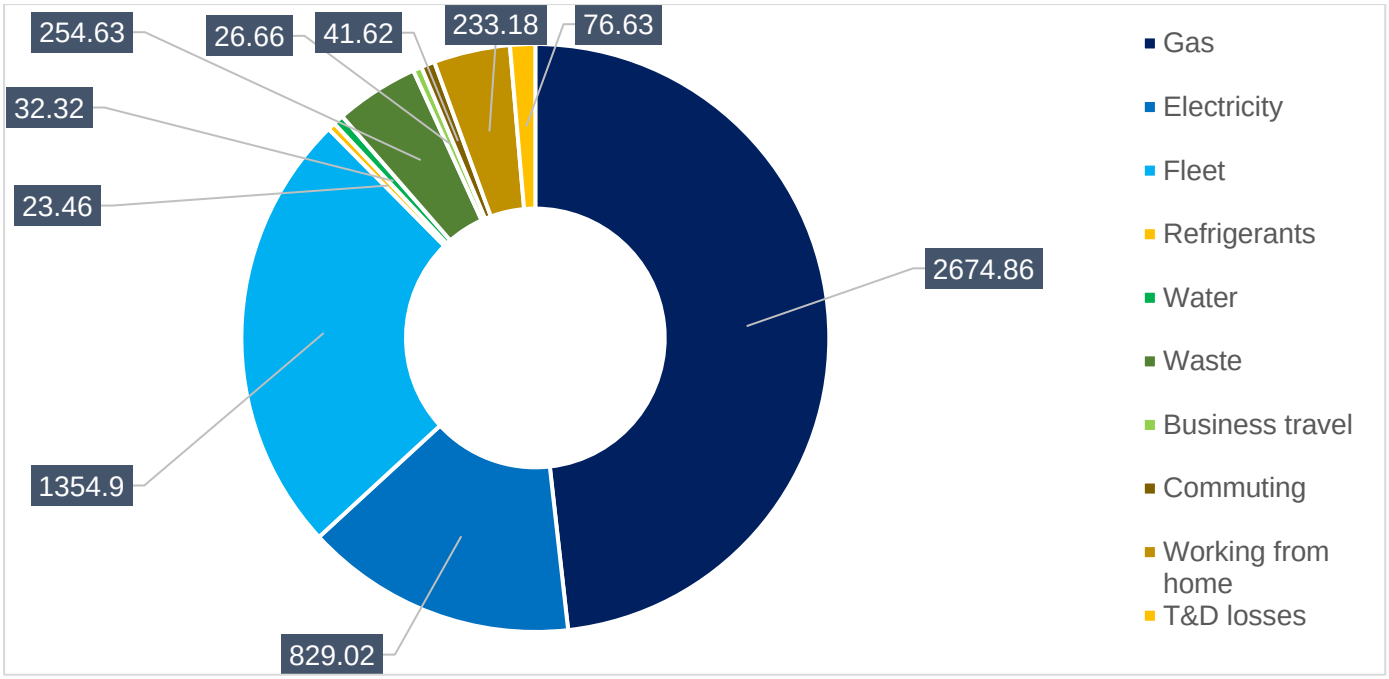

Figure 1.1: Overall Council emissions split by sector

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 46% of the Council's emissions from its buildings (see figure 1.2) and uses 7,910,509.82 kWh of gas and 826,507.60 kWh of electricity.

The Council has commissioned technical surveys in order to identify further opportunities to increase the energy efficiency of this facility and reduce emissions associated with its operation. This will feed into the Council's Carbon Reduction Management Plan to attempt to reduce emissions across the whole Council estate (see page 12).

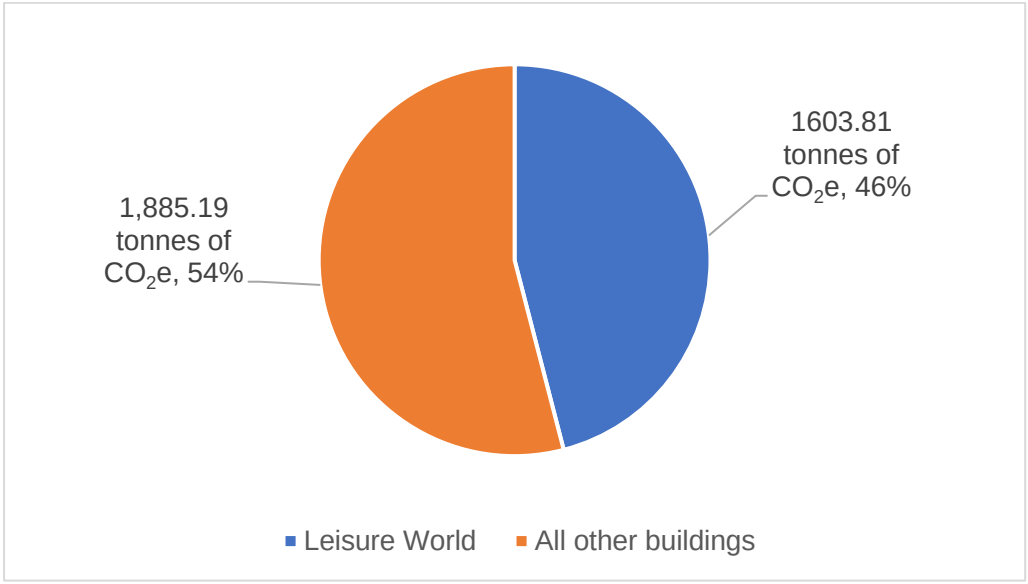

Figure 1.2: Total Emissions from the Council's buildings, split by Leisure World and all other buildings.

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, Worsnop House, Heathfields House, Mary Frank House, Enoch House, The Cannons, John Lampon Court, Charles Smith House). For electricity, there is a mix of buildings included such as the Town Hall, Colchester SportsPark and multi storey car parks.

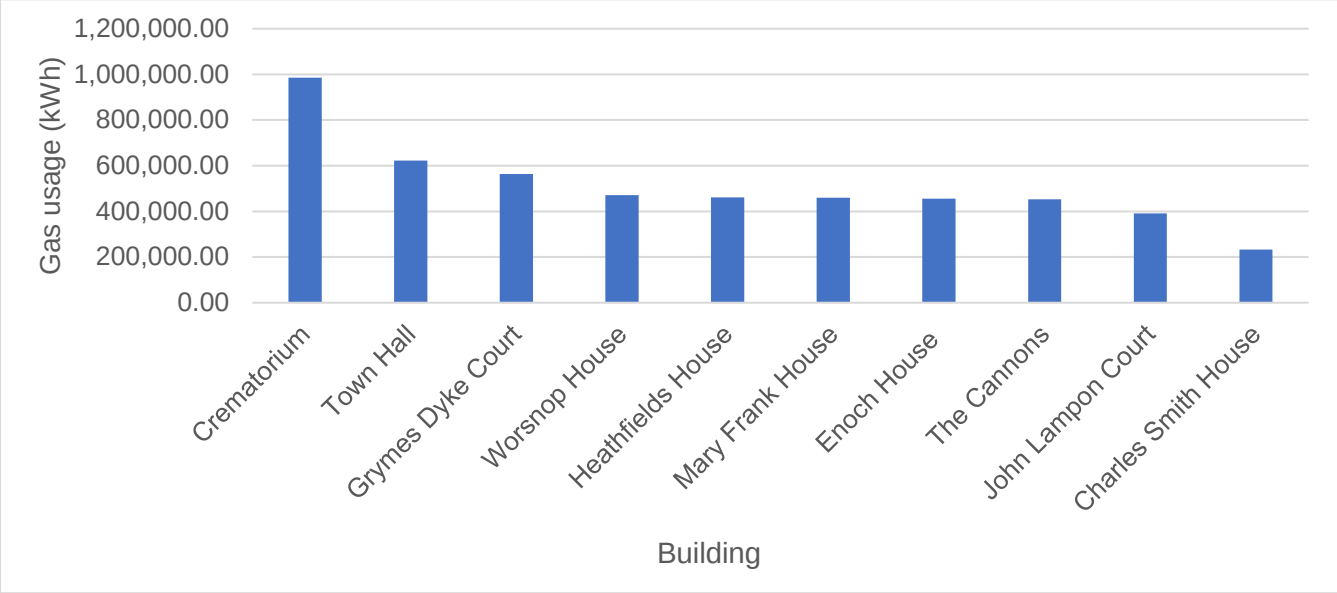

Figure 1.3: Top 10 buildings with the highest gas consumption across the Council estate (excluding Leisure World)

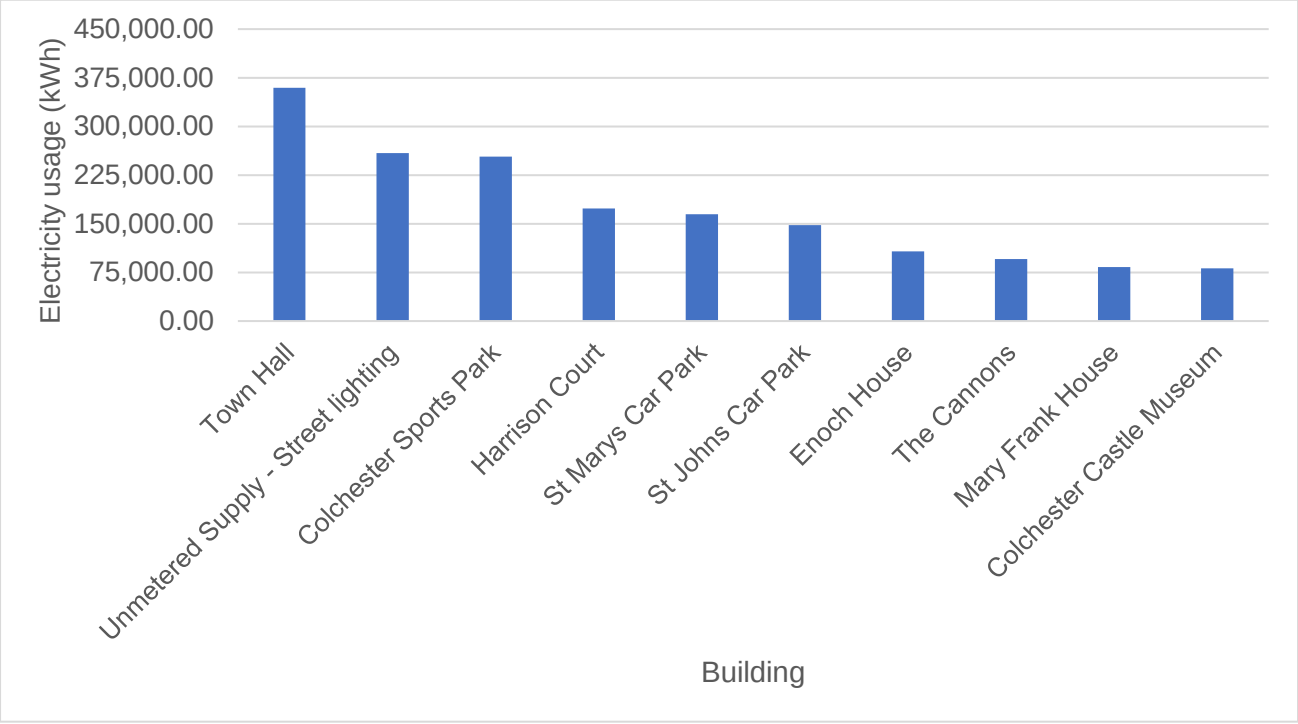

Figure 1.4: Top 10 buildings with the highest electricity consumption across the Council estate (excluding Leisure World)

Fleet

The Council's fleet contributes to 24.4% of the Council's overall emissions, with this mainly driven by emissions produced from the refuse collection fleet (61.8% of overall total).

As detailed on page 12, the Council is taking action to transition its fleet away from fossil fuels. Options for decarbonising heavy fleet that have been trialled extensively 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% emission saving over diesel. However, the evidence base on this saving has been questioned and the Council will not be rushing to switch to this fuel without due research into its true sustainability credential involved in the sourcing of this fuel.

Other emissions

Whilst most of the highest gas consumption users are from communal heating in the sheltered housing schemes, other high sources of gas consumption come from the Council's museums (Colchester Castle Museum, Natural History Museum, Hollytrees Museum). These sites, alongside other historical assets like the Town Hall, will be difficult to decarbonise due to the buildings being historically listed making it difficult to make building fabric improvements to improve energy efficiency that would then facilitate a switch to low carbon heating systems.

Staff commuting mileage has increased since 2021/22 as more staff returned to an office basis as recovery from the Covid pandemic continued with 172,583 miles recorded in 22/23 compared to 163,131 miles in 21/22. However, there was a reduction in car mileage and increase in journeys by public transport. Staff business travel also increased from 80,559 miles in 21/22 to 97,997 miles in 22/23, which again can be partly attributed to opening up with the covid recovery and staff attending more meetings and site visits that may previously have been avoided.

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. Over time, more offices and places of work opened but there has been a significant shift to working from home for a lot of staff, with many still working from home 5 days a week. However, emissions associated with working from home decreased by 34 tonnes between 21/22 and 22/23, with more people returning to the office, especially with the provision of a temporary office opening whilst Rowan House was being refurbished.

Notable actions and considerations for 22/23

In early 2022, the Council purchased 6 electric vans, 5 electric cars and 4 hybrid cars for its fleet. Therefore, this is the first year we could measure the impact of these vehicles on our fleet emissions. It was calculated that their introduction produced an estimated emission saving of 31.1 tonnes of CO_2e, when compared with the same mileage being completed by diesel vehicles.

However, there are a few buildings that have been closed and opened during this financial year that would have impacted on emissions. Rowan House, the Council's main office was closed for refurbishment from early 2022 and did not reopen till July 2023 so limited gas and electricity usage occurred in this building. During this period, the Council did occupy a smaller temporary office on Gosbecks Road which did contribute to emissions. The

Colchester Sportspark was also open for the first full financial year in 2022/2023, since opening in 2021 and has added approximately 90 tonnes to the Council's ongoing greenhouse gas emissions.

The Council has also started on reporting emissions associated with refrigerants used in air conditioning and chiller units in buildings for the first time. Although the gas leaks associated with the use of the refrigerant in the units is small, the refrigerant gases have a much higher global warming potential than CO_2 meaning they have a greater impact on climate per unit of gas. Therefore, this is an additional 23.46 tonnes of CO_2e to add to the Council's total not previously accounted for.

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. 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

Financial year	Unit	Generation
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

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.

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 10.5% 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
Total emissions (tCO_2e)	6196.26	5828.23	5234.09	5695.60	5547.28

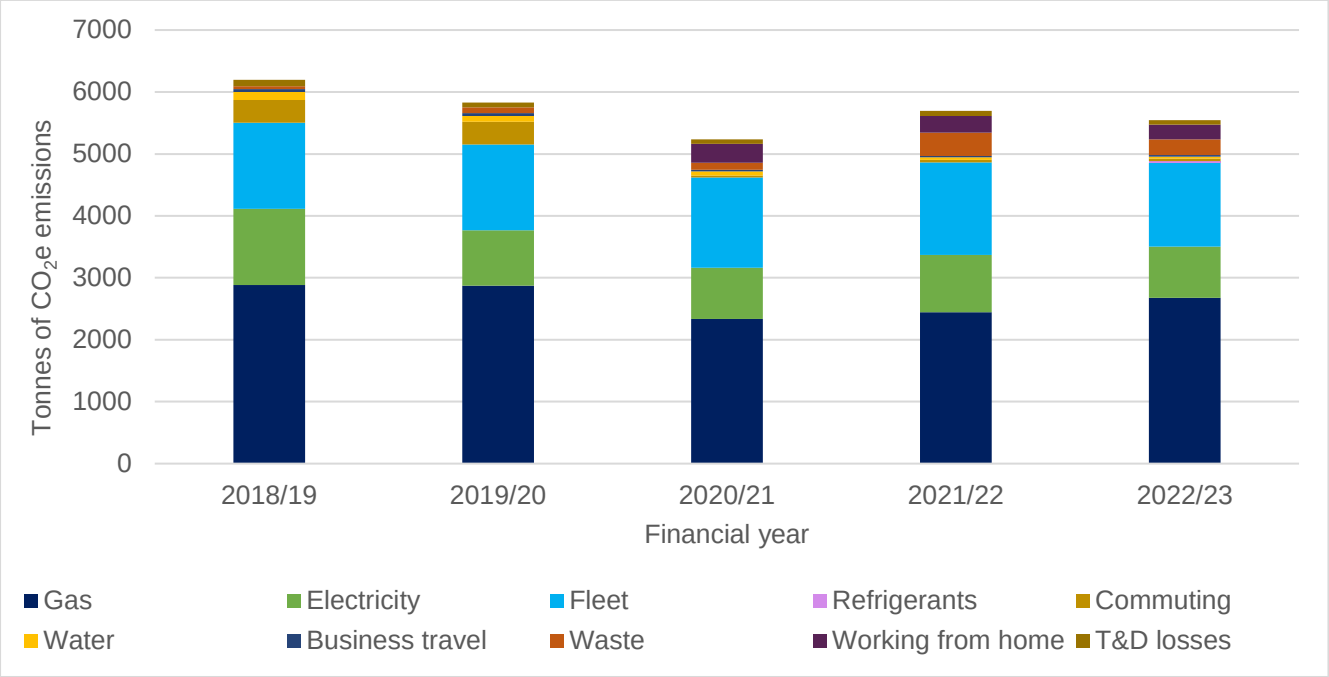

Figure 1.5: Council emissions broken down by sector for each financial year

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, it does illustrate the need for the Council to start implementing further projects to reduce its emissions which is being planned as part of the production of a new Carbon Reduction Management Plan. In order to help meet the carbon neutral target, the Council does anticipate the need for offsetting as there are some buildings that will be very hard to decarbonise for financial and technical reasons. The Council is keen to ensure that any offsetting that is completed is undertaken locally, in order for any benefits, both environmental and non-environmental to be delivered as close to Colchester as possible.

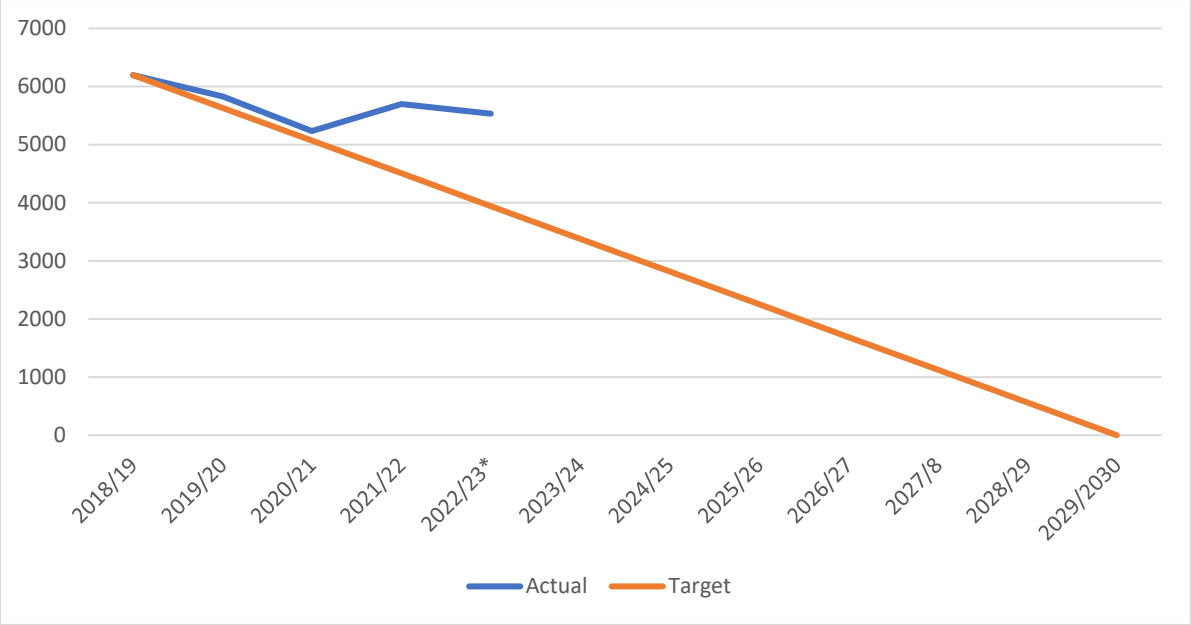

Figure 1.6: Council's emissions since 2018/19 (blue line), compared to a linear target reduction in emissions in order to reach carbon neutral target (orange line)