

Colchester City Council Greenhouse Gas Report

April 2024 to March 2025

Greenhouse Gas Emissions Report – April 2024 to March 2025

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Executive Summary

The Council publishes its emissions calculations on an annual basis 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 to do this.

The Council's emissions for the financial year 2024/25 were 5,353.1 tonnes CO₂e, decreasing by 26.7 tonnes (0.5%) since financial year 2023/24. The Council implemented several initiatives in 2024/25 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 2024/25. 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 2024/25 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](#). Local Partnerships developed the tool to be used by local authorities for reporting of their greenhouse gas emissions. The tool uses 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 2024 Emission conversion factors have been used in this report as they are most closely aligned with the 2024/25 report period for the Council.

The report is based on emissions of the 'basket of six' GHGs as defined by the Kyoto Protocol and include: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), F-gases (hydrofluorocarbons and perfluorocarbons) and sulphur hexafluoride (SF₆). 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 CO₂ equivalents (tCO₂e). 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. Where possible, assumptions and estimated readings were made to record 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.

It should be noted that some of the scope 3 emissions calculations use assumptions to estimate emissions when we do not 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 principal 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 1.0 and figure 1.0 show a summary of the Council's emissions, broken down by scope as well as by sector.

Table 1.0: Summary of Colchester City Council's emissions in financial year 2024/25.

Reporting period 2024/25	Units	Consumption	Greenhouse Gas Emissions (tonnes CO ₂ e)
Scope 1			
Natural gas	kWh	13,679,720	2,502.8
Liquefied Natural gas	kWh	14,763	3.2
Petrol	Litres		2.0
Diesel (waste fleet)	Litres	495,221	1,273.1
Refrigerant gases ¹	kg	11.6	21.7
Scope 2			
Electricity ²	kWh	4,306,145	891.6
Scope 3			
Electricity (T and D)	kWh	4,306,145	79.8
Homeworking ³	Hours (FTE)	686,370	220.7
Staff commuting	Miles	241,135	21.8
Business travel ⁴	Miles	78,092	64.9
Waste	tonnes	652	243.0
Water	m ³	88,570	28.4
Total Gross Emissions			5,353.1
Offset emissions			0.0
Total Net Emissions			5,353.1
Intensity measurements			
Tonnes of CO ₂ e per occupant ⁵	FTE staff	770.6	6.9

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 factors applied to this as given in Government emission conversion factors.

⁴ This considers 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 CO₂e per FTE staff at the Council. This varies throughout the year, but a figure was taken in May 2024 which was 770.6 FTE staff.

Scope 1 represents the largest source of CO₂e emissions at 71%, followed by Scope 2 at 17% and Scope 3 emissions at 12%. Figure 1.0 represents the proportion of emissions by scope.

Figure 1.0: Overall Council emissions (tonnes CO₂e) split by scope for the financial year 2024/25.

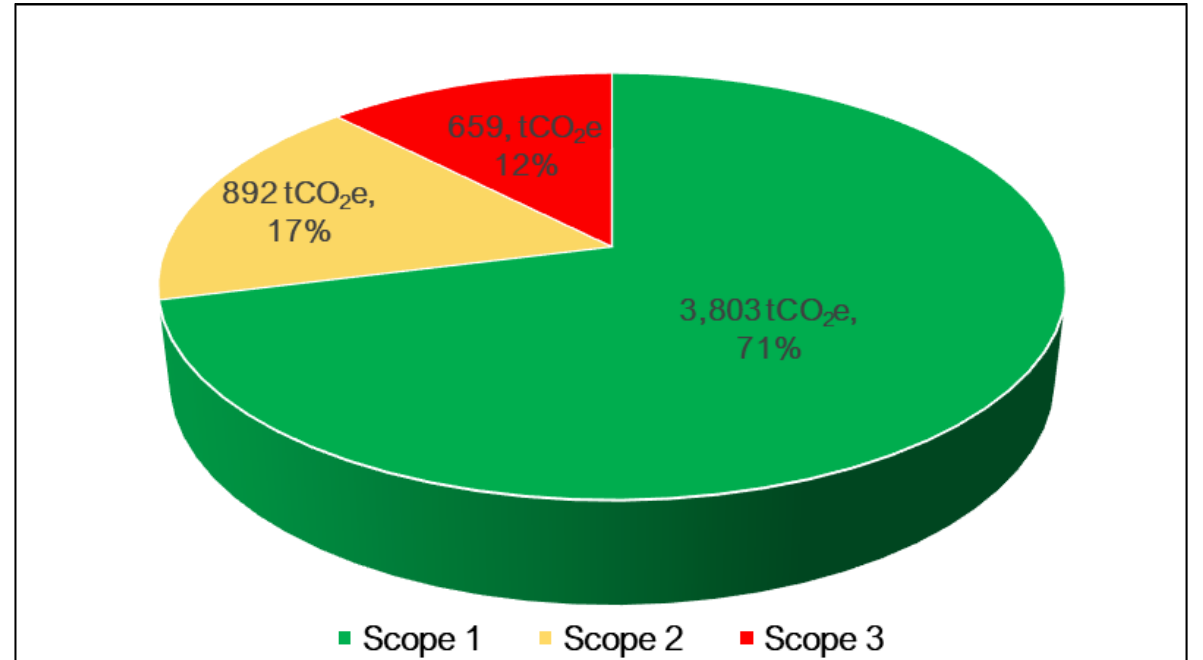
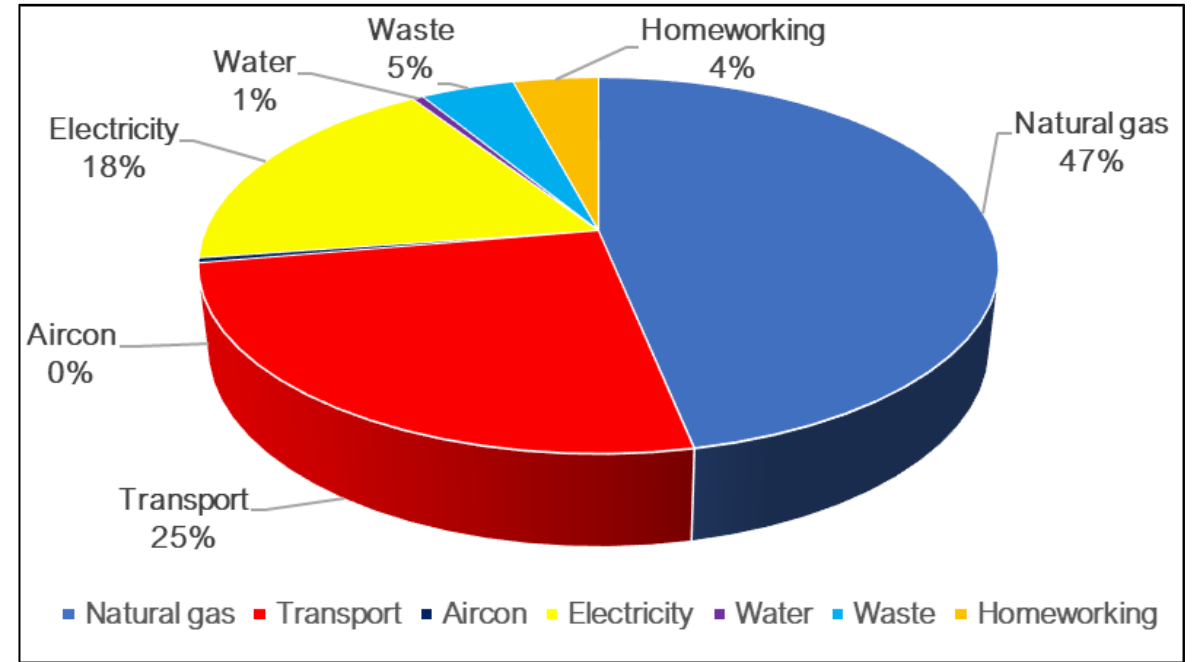


Figure 1.1 provides a summary of emissions by sector and identifies that the use of natural gas represents the largest emissions source, followed by transport emissions and the use of grid electricity.

Figure 1.1: Percentage of overall Council emissions (tonnes CO₂e) split by sector for the financial year 2024/25.

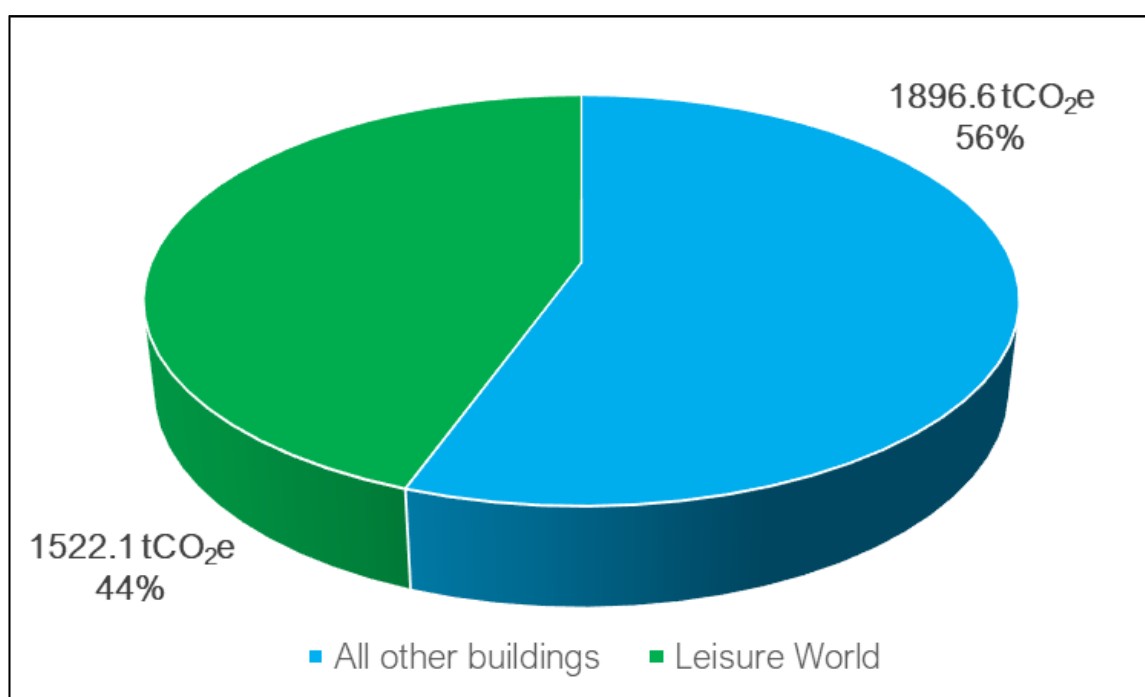


Major Emission Sources

Leisure World

By far, the Council's biggest user of energy and water is the Leisure World Colchester facility. It contributes to approximately 44% of the Council's emissions from its buildings (see figure 1.2) and 28% of overall emissions. During the financial year 2024/25 the facility used 7,626,917 kWh of gas and 2,104,230 kWh of electricity, of which 561,641 kWh was from grid electricity and the remaining 1,542,589 kWh was generated by the combined heat and power (CHP) system, which is a turbine that burns gas to generate electricity at source, with the heat from the process being used to supplement space heating and heating the swimming pools.

Figure 1.2: Total GHG emissions from the Council's buildings, split by Leisure World and all other buildings for the financial year 2024/25.



In 2024, the Council implemented several energy efficiency measures at the centre. A £170,000 grant from Sport England was used to install pool covers on the Fitness Pool, Diving Pool and Teaching Pool as well the installation of 'smart' energy efficient motors, used to drive air handling units and improve the control of ventilation around the building. The Council has also invested £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 helps to 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. A performance evaluation of the various initiatives will be conducted in December 2025, once the systems have been in place for a year.

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 highest consumers of gas are the Crematorium, then the Town Hall, closely followed by the sheltered housing schemes (Grymes Dyke

Court, Heathfields House, The Cannons, Mary Frank House, Worsnop House, Enoch House, John Lampon Court, Winstree Court) which use gas for communal heating. The highest consumers of electricity are Rowan House, then the Town Hall, followed by mix of buildings including Colchester Sports Park and multi storey car parks.

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

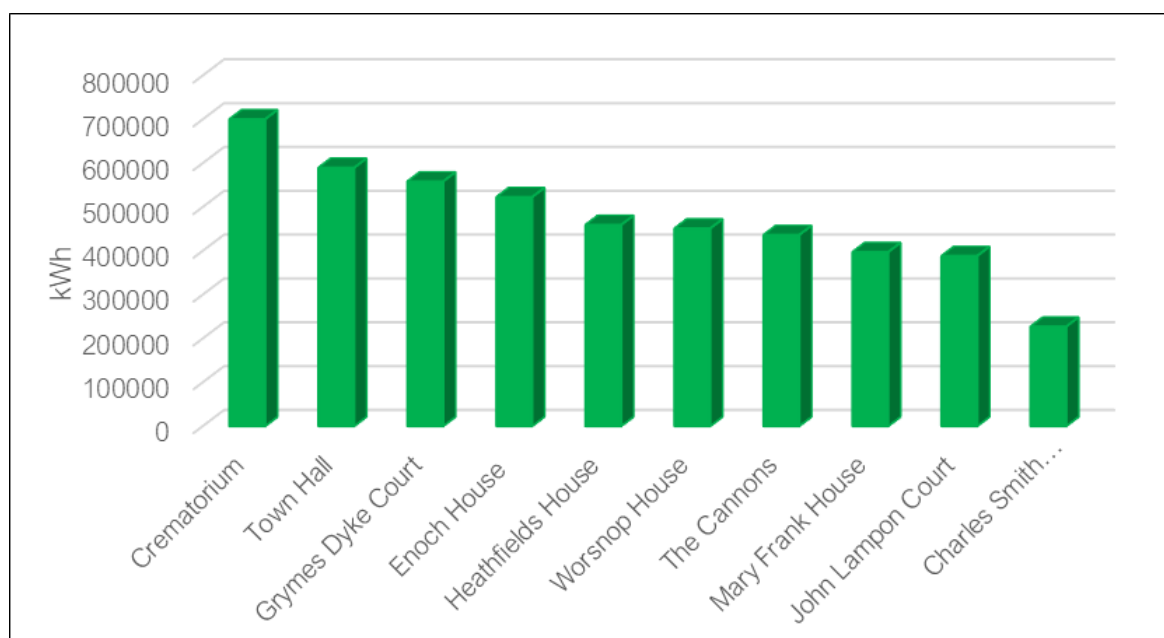
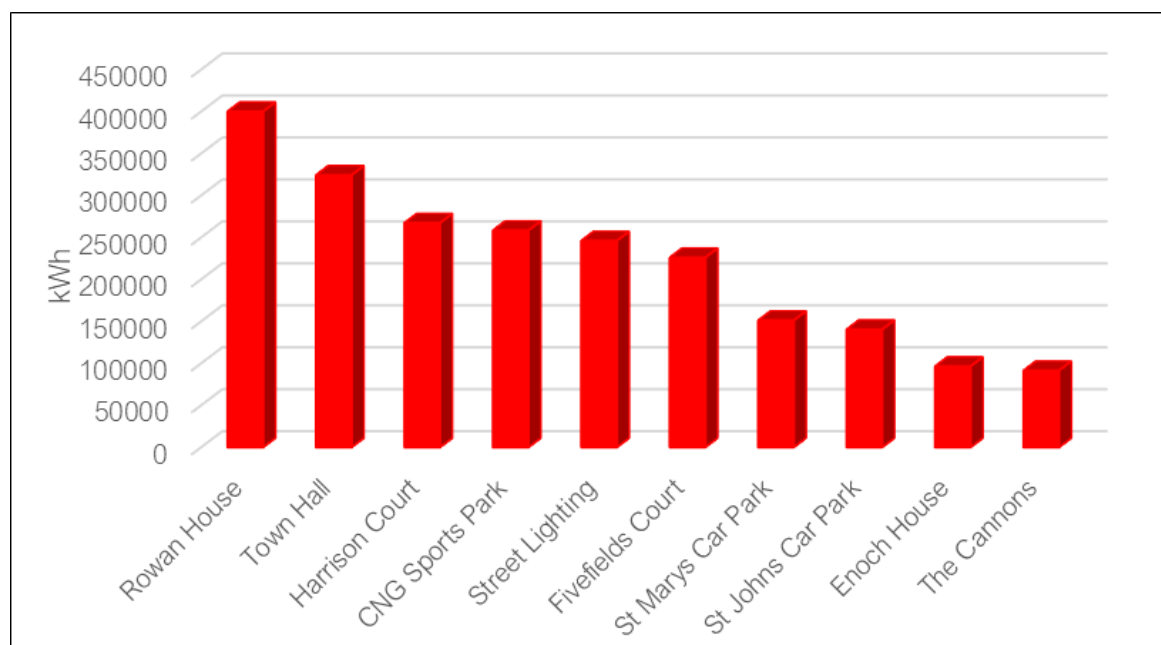


Figure 1.4: Top 10 buildings with the highest electricity consumption across the Council estate (excluding Leisure World).



Transport and fleet

CO₂e emissions from transport represent 25% of the Council's overall emissions, with emissions from the refuse collection fleet accounting for 92% of transport emissions. Therefore, to reduce transport emissions the focus should be primarily on reducing emissions

associated with the waste fleet. An options paper was published in 2024 which explored in detail the financial cost and environmental benefits of several options available to the Council. The two main options were the introduction of hydrotreated vegetable oil (HVO) as a 'drop-in' replacement for diesel, which could deliver 90-95% emissions saving over diesel. However, the evidence base on this saving has been questioned along with concerns about how HVO is sourced. Furthermore, the use of HVO would require a significant increase in operational costs. The second option explored the costs of electrifying the fleet over time however this option was deemed to be too expensive with electric waste vehicles costing significantly more than diesel counterparts. This option can be reviewed in the future as the cost disparity between electric and diesel vehicles reduces.

Emissions changes over the last year

Table 1.1 compares the emissions for the financial year 2024/25 with the previous year and identifies some notable variances over the year which are discussed hereafter.

Table 1.1: Comparing CO₂e emissions by scope and sector for the financial year 2024/25 with the previous year.

Reporting period 2024/25	Units	Emissions: tCO ₂ e 2023/24	Emissions: tCO ₂ e 2024/25	Variance
Scope 1				
Natural gas	kWh	2,430.9	2,502.8	3.0%
Liquefied Natural gas	kWh	41.6	3.2	-92.4%
Petrol	Litres	3.8	2.0	-45.9%
Diesel (waste fleet)	Litres	1,289.1	1,273.1	-1.2%
Refrigerant gases	kg	22.3	21.7	-2.8%
Scope 2		0.00	0.0	0.0%
Electricity	kWh	906.0	891.6	-1.6%
Scope 3		0.00	0.0	0.0%
Electricity (T and D)	kWh	78.4	79.8	1.8%
Homeworking	Hours (FTE)	171.9	220.8	28.4%
Staff commuting	Miles	55.3	64.9	17.3%
Business travel	Miles	18.8	21.8	16.1%
Waste	tonnes	344.0	243.0	-29.3%
Water	m ³	28.4	28.4	0.0%
Total Gross Emissions		5,379.8	5,353.1	-0.5%
Offset emissions		0.00	0.0	0.0%
Total Net Emissions		5,379.8	5,353.1	-0.5%
Intensity measurements		0.00	0.0	0.0%
Tonnes of CO ₂ e per occupant	FTE staff	6.1	6.9	13.1%

Table 1.1 identifies that emissions from liquefied natural gas show a reduction of 92.4% on the previous year and the reason for this is being investigated. Staff commuting mileage has increased by 17% since 2023/24 which appears to show that more people are working from offices and council buildings however Table 1.1 also show an increase in homeworking of 28.4% from the previous year however this may be due to improved accuracy of data collection. Table 1.1. also shows an increase in business travel emissions of 16.1% since the previous year.

Table 1.1 also shows a reduction in emissions from waste of 29.3% and analysis of the data shows that there has been an increase in recycled waste matched by a decrease in waste going to landfill, which has a higher emissions factor than recycling. It should be noted that 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 have a low degree of accuracy, which could be addressed by weighing collected waste.

The emission per FTE worker has also increased by 13.1% from last year however this is due to a reduction in staff numbers from 876 in 2023/24 to 770 in 2024/25 thus increasing the carbon intensity per FTE worker.

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 therefore does not 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 is 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 since 2018/19.

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
2023/24	kWh	264,021
2024/25	kWh	210,510

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.

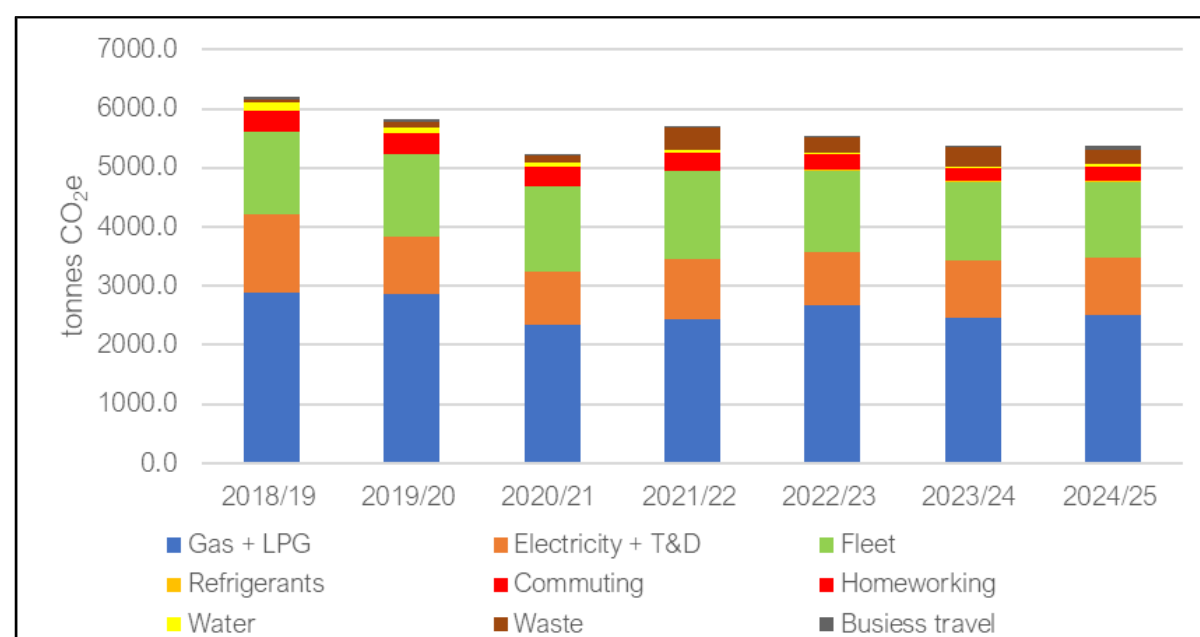
Overall progress

Table 1.3 shows 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 13.6% reduction in emissions since the baseline. Figure 1.5 provides an overview of emissions by type since the baseline year.

Table 1.3: Council emissions produced in each financial year form 2018/19.

Year	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Emissions: tCO ₂ e	6,196.3	5,828.2	5,234.1	5,695.6	5,547.3	5,379.8	5,353.1

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



Future Action

Figure 1.6. shows the trajectory of actual emissions (red line) since the baseline year and compares this to a linear trajectory (blue line) to achieve the target of being carbon neutral by 2030. It is clear in Figure 1.6 that since the financial year 2021/22 the council is no longer on track to meet the 2030 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, even if these actions were implemented, there will still be a significant challenge in reducing the remaining emissions, and even with offsetting, reaching the 2030 target will be challenging and would require significant investment.

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

