

Greenhouse gas report - 2023/2024

This report

This report covers greenhouse gas emissions (GHG) from Council operations for the financial year 2023/24. It has been prepared with reference to the GHG Protocol and the Australian Government's Climate Active Carbon Neutral Standard for Organisations. The greenhouse gases included are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF₃) and sulphur hexafluoride (SF₆) sources.

Emissions summary

For the period 2023/24, Council's greenhouse gas emissions total was 9,912 tCO₂e (tonnes of carbon dioxide equivalent). Emissions have decreased by almost 30 percent from 2022/23 and 57% from the baseline year of 2015/16 (Table 1).

Table 1. Greenhouse gas emissions compared to 2015/16 base year (tCO₂e)

Scope	Base year 2015/16	2021/22	2022/23	2023/24
Council operations (excluding sewage treatment)				
1	2,810	2,446	2,408	2,531
2	9,039	8,641	4,209	692
3	3,485	2,463	1,442	759
Sub Total	15,334	13,551	8,059	3,982
Sewage treatment fugitive emissions				
1	7,761	14,517	5,969	5,930
Total	23,095	28,068	14,028	9,912

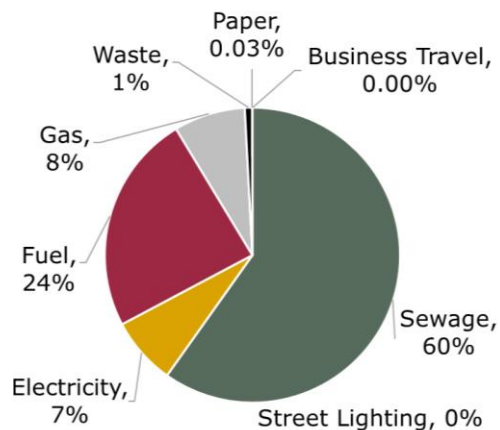
Scope 1 – direct combustion e.g. fuel, gas, waste, fugitive emissions (gases lost through valves, seals etc. and through other releases)

Scope 2 – grid electricity

Scope 3 – street lighting, upstream/downstream sources e.g. waste & paper

Figure 1 shows the breakdown of Council's sources of emissions.

Figure 1. 2023/24 WSC GHG emissions



Wastewater treatment and fuel were the highest sources of greenhouse gas emissions (Table 2 shows the emissions of water and sewerage services (60% of total emissions) versus all other operations.

Table 2. 2023/24 emissions (tCO₂e)

Contributing activity	tCO ₂ e
Water and Sewerage services – electricity, fuels & fugitive emissions	6,505
All other operations	3,407

Table 3 (on the last page) provides a detailed breakdown of sources.

Impacts to 2023/24 reporting

Fugitive emissions from sewage treatment plants remained lower in 2023/24 than prior to 2022/23 due to improved monitoring. This was achieved by monitoring chemical oxygen demand at each of the plants. Fugitive emissions from sewage treatment plants were calculated as 5,930 tCO₂e, consistent with the previous year's figures.

Emission reduction actions

This year was the first full year that most of Council's electricity usage was 100% renewable energy through the RED Energy Power Purchase Agreement. Under this agreement, we purchase 100% renewable electricity over a 10-year period in a consortium with 6 other NSW Councils. The contract commenced on 1/1/2023, which means Council used renewable electricity for most of its sites and streetlighting in 2023/24. This saw a significant reduction of emissions from electricity.

The replacement of older less efficient streetlighting with energy-saving LED lights has seen a 48% reduction in energy demand since the baseline year of 2015/16. Even though Council uses 100% renewable energy, reducing our consumption of energy reduces the overall demand on the electricity grid.

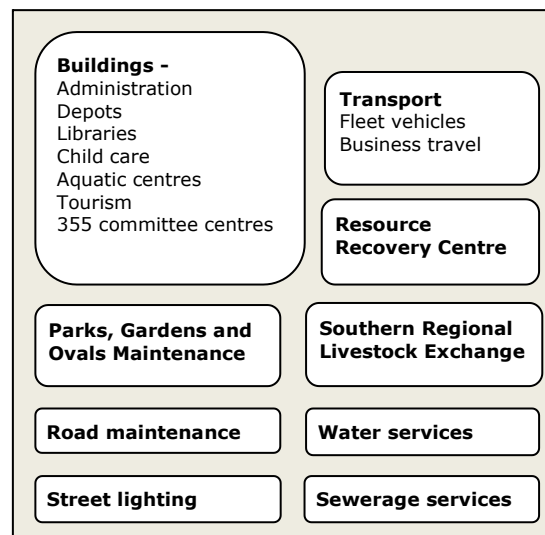
Reporting boundary

Council's organisational greenhouse gas boundary has been established in line with the international Greenhouse Gas Protocol standard, using an operational control test for business unit activities and facilities. Figure 2 shows the activities and assets within the organisational reporting boundary. Facilities owned by Council but wholly leased to third parties are not included. Community emissions, such as emissions from household waste in landfill, are beyond the scope of Council's reporting of greenhouse gas emissions from its operations.

Complete activity data for all the emission sources within the reporting

boundary is not currently available. Data quality management plans are in place for priority sources identified. Sources will progressively be included based on their relevance, materiality, and measurability.

Figure 2. Reporting boundary



Sources not quantified

The following relevant sources have not been quantified, as this is not currently technically feasible, practicable or cost effective relative to its significance:

- Catering and events
- Road making materials
- Fuel use from outsourced works
- Staff commuting to work in personal vehicles or public transport
- Outsourced printing other than rate notices

The following relevant sources are estimated to not be material and are not quantified in line with the Climate Active Carbon Neutral Standard for Organisations:

- Refrigerants from heating and cooling
- Embodied emission of equipment
- Business taxis, rental vehicles, public transport and accommodation
- Freight and couriers

Table 3. Breakdown of sources of greenhouse gases in 2023/24

Source	Activity	tCO2e
Scope 1		
Fleet vehicles –diesel	517 (KL)	1407
Fleet vehicles –petrol	233 (KL)	503
Gas	11,995 (GJ)	618
Oils	940 (L)	2.55
Scope 2		
Electricity*	13,141,180 (kWh)	692
Scope 3		
Fleet vehicles –diesel	517 (KL)	346
Fleet vehicles –petrol	233 (KL)	131
Natural Gas	11,995 (GJ)	157
Electricity *	13,141,180 (kWh)	42
Oils	940 (L)	0.63
Street lighting	1,015,067 (kWh)	0
Paper ^	4.81 (T)	0.38
Waste to landfill	542 (T)	79
Business travel -flights	640 (km)	0.06
Sub total		3,979
Wastewater treatment (Scope 1)		5,930
Total		9,912
<p>*Includes 383,068 kWh (equivalent to 81 tCO2e avoided) from solar generation used on site, and 11,743,044 kWh (equivalent to 2,493 tCO2e avoided) from 100% renewable electricity from Red Energy.</p> <p>^ 4.46 tonnes of paper were NCOS carbon neutral certified paper and treated as 0 emissions (equivalent to 2.66 tCO2e avoided). Differences in total is due to rounding.</p>		



Greenhouse gases

The energy from sunlight is absorbed into the earth and reradiated as infrared waves, which we feel as heat. Greenhouse gases act like a blanket that traps some of the waves that normally escape back to space.

The following gases contribute to total global GHG emissions (Figure 3 shows the proportion of each group):

Carbon dioxide (CO₂): Carbon dioxide is mostly emitted through the combustion of fossil fuels but can also be released when land 'holding' carbon is cleared of vegetation. Carbon dioxide remains in the atmosphere for hundreds to thousands of years.

Methane (CH₄): Methane is principally produced by domestic livestock as part of their digestive process, but also results from organic material breaking down and from the production of gas and crude oil. Methane also contributes to the formation of ground-level ozone, which is the main ingredient of 'smog'. Methane has 28 times more impact than carbon dioxide and breaks down in about a decade.

Nitrous oxide (N₂O): A compound emitted by the production and application of chemicals, fuel combustion, and the treatment of domestic wastewater. It has 265 times more impact than CO₂ at trapping heat in the atmosphere and stays in the atmosphere for an average 121 years.

Fluorinated gases (HFCs, PFCs, NF₃ and SF₆): These synthetic compounds are used as refrigerants, in foams and solvents used for tasks like fire protection, and in the manufacture of aluminium and semiconductors. They remain in the atmosphere from 270 (eg. HFCs) to 50,000 (eg. PFCs like PFAS) years and all have over 10,000 times more impact than CO₂.

Figure 3. Proportion of individual greenhouse gases in global greenhouse gas emissions.

