Carterton from Mt Dick. Credit Lucia Zanmonti/CDC

Carterton District Council 2024 Greenhouse Gas emissions report

Landscape. Credit Lucia Zanmonti/CDC

What is this report?

This report is a summary of the greenhouse gas (GHG) emissions and carbon capture for Carterton District Council (CDC) over the 2024 calendar year. It is put together to understand how our GHG emissions and any reductions compare to previous years.

CDC is expected to contribute to the goal of net-zero New Zealand greenhouse gas emissions (other than biogenic methane) by 2050, and have regard to various emission reduction plans and commitments.

Wastewater treatment plant. Credit Lucia Zanmonti/CDC

Greenhouse gases

Emissions refer to greenhouse gasses released into the atmosphere. Greenhouse gases are atmospheric components that trap heat, preventing it from escaping Earth and contributing to a warming effect.

The dominant cause of our rapidly changing climate over recent decades is human-caused global warming as a result of greenhouse gas emissions into the atmosphere. Global emissions are continuing to rise.

We measure seven GHGs, and convert them to a common measure of 'tonnes of Carbon Dioxide equivalent' (tCO_2e).

- Carbon dioxide: CO_2
- Methane: CH_4
- Nitrous oxide: N_2O
- Hydrofluorocarbons: HFCs
- Perfluorocarbons: PFCs
- Sulphur hexafluoride: SF_6
- Nitrogen trifluoride: NF_3

Note that this inventory does not contain information on our refrigerant use. We will update and re-publish our 2022 report once we have the refrigerant material.

Park Road towards Tararua ranges. Credit Lucia Zanmonti/CDC

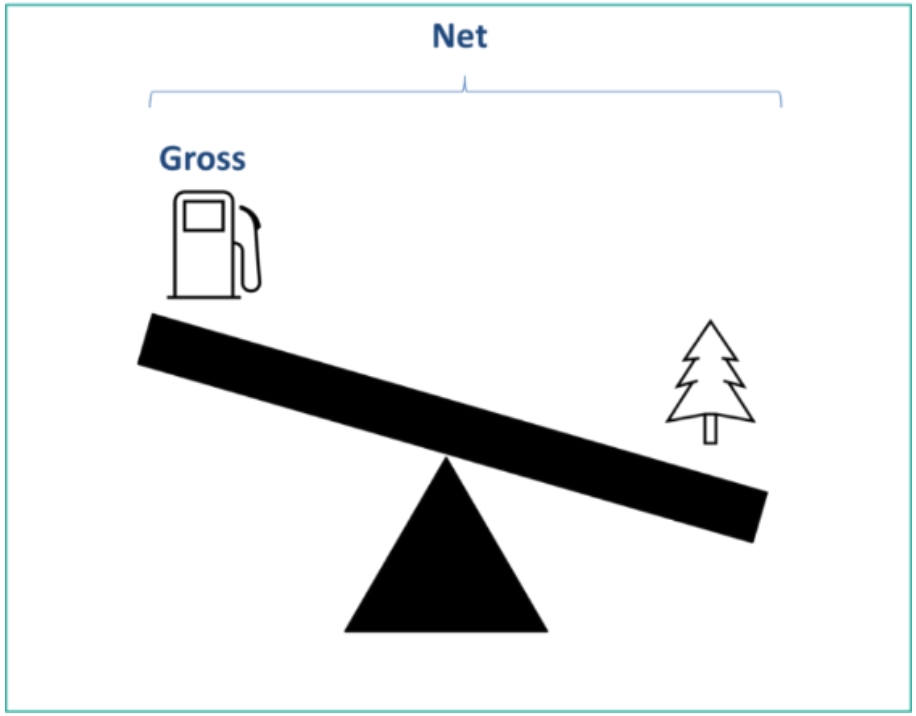
2024 GHG emissions summary (Exec Summary)

This inventory report covers a period from January 2024 to December 2024.

CDC has been undertaking greenhouse gas (GHG) emissions inventories and reports since 2018 (which is our baseline year for comparison). Our inventories are developed to meet the ISO 14064-1 international standard for GHG quantification and reporting, and use emissions factors supplied by the Ministry for the Environment (MfE) to calculate our GHG emissions based on the volumes of different emissions or sequestration (carbon capture) sources in the year. The standard gives us a formalised, but consistent, way to measure GHG emissions year on year. Wastewater is treated (pun intended) in accordance with the *Carbon accounting guidelines for wastewater treatment: CH_4 and N_20*.

We use an operational control approach to account for emissions, as we have done in previous inventories. It means we only count the emissions we have some direct control over, rather than including everything we out-source or have a financial interest in.

Throughout the report we talk about gross and net emissions. Gross emissions are the quantity of greenhouse gas emissions created by CDC in a year as it goes about its operations. It does not include any GHG captured such as in growing forests. Net emissions are the gross emissions created by CDC in a year, less any emissions captured and removed such as trees growing in our forest (the forest absorbs carbon).



This report forms part of Carterton District Council's commitment to measure and manage our emissions.

This report has not been verified by an external party. There is no requirement for CDC to do so.

2024 GHG emissions summary (Exec Summary)

Carterton District Council (CDC) remains GHG emissions negative, due to the offset of our forest growth in our Kaipaitangata forest.

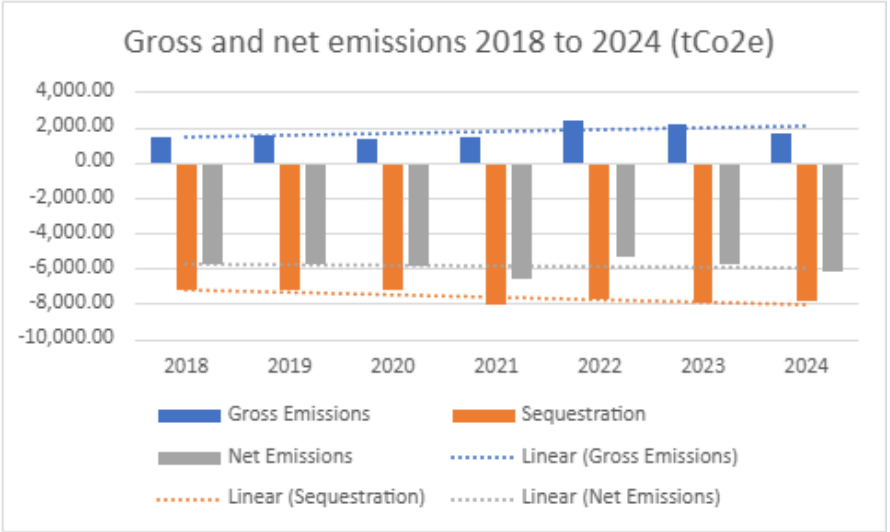
Our gross emissions (not taking the forest growth into account) are slightly lower than the previous two years (2022 and 2023). The two years prior to that (2020 and 2021), were low emission years, due to reduced activity due to the Covid 19 pandemic.

Gross emissions are slightly higher than our baseline year of 2018. The population of the Carterton district grew by 860 people, and the CDC organisation grew from 59.8 full-time-equivalents in 2018 to 72.13 in 2024.

Our highest emitter remains wastewater treatment with over 80% of gross emissions. Changes in wastewater volumes have a big impact on our gross emissions. 2024 wastewater volumes were lower than the previous two years.

Our next highest emitters are fuel (7.7%) and electricity (7.36%). Fuel use reduced compared to the previous two years. Our electricity providers both state they generate energy from renewable sources. Fuel and electricity prices continue to rise.

Figure 1: Gross and Net emissions over time (tCO2e)



What do we count in this report?

We are counting the greenhouse gas emissions generated by Carterton District Council (CDC) that can be directly attributed to the organisation's operations within the 2024 calendar year.

CDC is the territorial authority for the Carterton District, which is located in the heart of the Wairarapa. As at the 30th of June 2024, CDC employed 72.13 FTEs[2] (Full Time-Equivalent) and is responsible for water, stormwater and wastewater, waste, local roads (excluding State Highway), streetlighting, parks and reserves, community facilities and events, and performing statutory duties such as regulatory compliance.

At the time the council was organised as shown below:

Figure 3: Organisational structure

This inventory report counts emissions related to:

- Electricity
- Transport and distribution losses
- Transport – Diesel
- Transport – Petrol (91 and 95)
- Transport – Flights
- Travel – accommodation (not counted in previous emissions reports)
- Waste
- Refrigerant
- Water supply
- Wastewater treatment
- Green waste

Regulatory team's well-loved hybrid. Credit CDC

Solar array Gallon Road. Credit ? <take new photo or get higher resolution>

This inventory report excludes

Only direct sources are included in this inventory. It excludes the areas shown in the table below:

Table 1: GHG sources excluded from this inventory

Business unit	GHG emission source	Scope	Reason for exclusion
Community services - Properties	Electricity	Scope 2	Tenants pay their own power accounts
Infrastructure Services - Waste management	Waste from the community	Scope 3	Outside of CDC operational control Contractor: EarthCare
Infrastructure Services - Roading	Emissions from road maintenance	Scope 3	Outside of CDC operational control Contractor: Fulton Hogan

GHG removals (sequestration) are restricted in this inventory only to the Council owned forest. Other removal sources such as recent planting in reserves have not been included. New plantings or growing forest over 1 hectare can be included in inventories.

We also haven't included private vehicle use for work, which is estimated to be relatively small, as this is currently difficult for us to disaggregate this from our records. We are changing the way we do this so we can capture it in future.

We are also looking into including any electricity we generate from our solar array in Gallon Road, and return to the national grid, in future inventory reports. This array came on-line late 2024 and no electricity was returned in the 2024 calendar year.

Although not a direct emission from CDC, events in Carterton also generate emissions. For example, the heritage steam train that brings people to Carterton for the Daffodil Festival is estimated as generating approximately 6.24 tonnes of CO_2e for the return trip from Wellington.

Wastewater treatment plant ponds. Credit Lucia Zanmonti/CDC

Carterton District Council's emissions

Wastewater emissions accounted for the highest proportion of CDC emissions by far (over 80%).

Wastewater treatment results in methane, nitrous oxide and carbon dioxide emissions. These emission levels are lower than the high wastewater flows of 2022 and 2023. In 2025/26 we'll incorporate the sludge removals from the Dalefield Road wastewater treatment plant into our emissions inventory reporting.

Our electricity emissions are at higher levels, mainly due to changes in the emissions factors (provided by MFE). Our actual electricity use is similar to previous years. Other than electricity and office waste, changes to the emissions factors do not have a major impact on figures this year.

Our fuel use is down, and office waste, and green waste emissions are at consistent levels to previous years.

Figure 4: 2024 CDC gross emissions breakdown

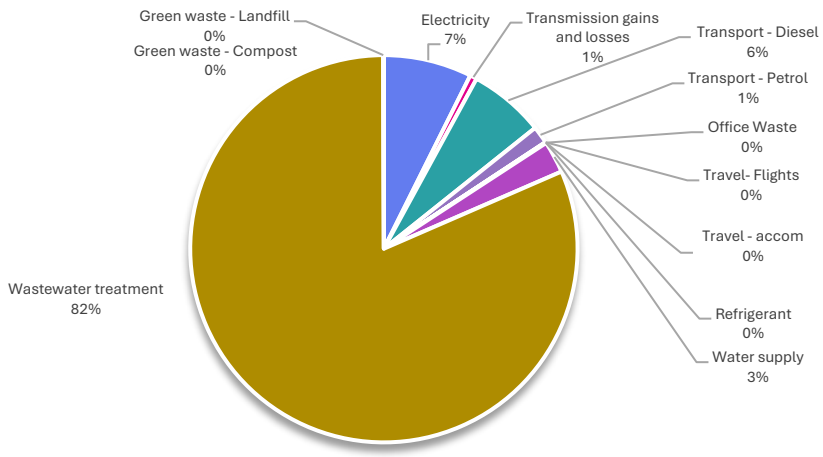


Table 2: Organisation emissions over last seven years by source and scope

		2018	2019	2020	2021	2022	2023	2024
Electricity	Scope 2	182.24	201.37	76.41	88.97	87.01	85.78	124.53
Transmission gains and losses	Scope 3	13.8	17.27	6.55	8.08	10.08	6.27	9.86
Transport - Diesel	Scope 1	127.25	130.47	113.02	119.19	131.01	135.64	106.95
Transport - Petrol	Scope 1	21.87	27.27	23.86	21.75	133.28	135.08	24.49
Travel- Flights	Scope 3	0.6	0.75	0.83	0.87	1.59	1.17	0.58
Travel - accommodation								0.40
Office Waste	Scope 3	0.48	0.61	0.78	0.95	1.07	0.37	0.93
Refrigerant	Scope 1	0	0	0	0	0	0	0.00
Water supply	Scope 1	21.64	24.97	25.55	25.71	18.28	27.41	45.15
Wastewater treatment	Scope 1	1,092.83	1,117.08	1,134.95	1,140.91	2002.42	1754.59	1378.06
Green waste - Landfill	Scope 3	1.55	1.99	0	0	0	0	0.00
Green waste - Compost	Scope 3	0	0	0.86	0.86	0.88	0.88	0.88
Gross Emissions		**1,462.27**	**1,521.78**	**1,382.82**	**1,407.29**	**2,385.62**	**2,147.18**	**1,691.84**
Sequestration		-7,249.14	-7,237.39	-7,237.39	-8,039.83	-7,729.08	-7,949.80	-7,893.02
Net Emissions		**-5,786.88**	**-5,715.61**	**-5,854.57**	**-6,632.54**	**-5,343.46**	**-5,802.62**	**-6,201.17**

See our earlier note on refrigerant levels not being included in this report yet.

The scope's indicated in the second column in the table on the previous page refers to the categories in the ISO14064-1:2018 standard:

- **Direct GHG emissions (Scope 1):** emissions from sources that are owned or controlled by CDC (emissions from vehicles, refrigerant leaks)
- **Electricity indirect GHG emissions (Scope 2):** emissions from the generation of purchased electricity consumed CDC.
- **Other indirect GHG emissions (Scope 3):** emissions that occur as a consequence of CDC's activities but from sources not owned or controlled by us (waste, flights and electricity distribution losses).

Table 3: scope changes since 2018

	t Co_2e - 2018	t Co_2e - 2019	t Co_2e - 2020	t Co_2e - 2021	t Co_2e - 2022	t Co_2e - 2023	t Co_2e - 2024
Scope 1	1,263.60	1,299.79	1,297.39	1,307.56	2284.99	2052.71	1554.65
Scope 2	182.24	201.37	76.41	88.97	87.01	85.78	124.53
Scope 3	16.43	20.62	9.02	10.76	13.62	8.69	12.66
GROSS EMISSIONS	1,426.27	1,521.78	1,382.82	1,407.29	2385.62	2147.18	1691.84

There has been a decrease in Full Time Equivalent employees (FTE) from 2023, and a continued rise in the estimated number of Carterton residents (Infometrics data). Gross emissions per FTE and per capita have both dropped from the previous two years. The gross emissions are almost back at pre-Covid levels.

Table 4: Changes for the emissions per FTE and per capita since 2018 (gross and net)

	2018	2019	2020	2021	2022	2023	2024
Gross emissions per FTE (t CO_2e) 2018: 59.8 FTE 2019: 61.2 FTE 2020: 66.3 FTE 2021: 65.6 FTE 2022: 69.4 FTE 2023: 76.8 FTE 2024: 72.1 FTE	24.45	24.87	20.36	21.45	34.37	27.97	23.45
Gross emissions per capita (kg CO_2e) 2018: 9,440 2019: 9,690 2020: 9,888 2021: 9,987 2022: 10,200 2023: 10,250 2024 10,300 (infometrics)	154.90	157.05	139.85	140.91	233.88	209.48	164.22

Kaipaitangata forest. Credit Forest Enterprises

Sequestration

Carbon sequestration from Council's forest continues to be the reason for net emissions to be negative.

CDC owns a 350-ha forest in the Tararua Range which contains 261.6 ha of plantation plantings. The forest consists mainly of Radiata Pine (208.8ha), with smaller areas of Manuka (24.5 ha) and Cypress (2.1 ha). Part of the forest is classified as pre-1990 forest (24.9 ha) and unable to be counted due to it being mature and not continuing to sequester additional carbon. The forest is included in the New Zealand Emissions Trading Scheme and CDC holds carbon credits for it.

There was no harvesting in 2024. The first blocks are planned to be harvested in 2032, and CDC will need to account for carbon removals at that time (the harvest years will push CDC into being carbon positive).

Once trees in our forest reach a certain age, we can no longer count additional growth in our emissions inventories. For pines this is 23 years. The first of our growing pine stands was planted in 2004 and will be 23 years old in 2027 when we will no longer be able to count the sequestration from that stand. Even if the forest is not harvested, we will become emissions positive from 2036 at the current rate of gross emissions.

Discussion has started on the future use of the forest site, and the various options for its use.

Table 5: Total CO2 sequestered and emitted by forestry in 2024

		Units	t CO_2e	t CO_2	t CH_4	t N_2O
Carbon sequestration	Native forest	24.5 ha	-195.34	-195.34	n/a	n/a
	Planted forest	210.9 ha	-7,697.68	-7,697.68	n/a	n/a
Harvest emissions	Planted forest	0 ha	0	0	n/a	n/a
	Native forest	0 ha	0	0	n/a	n/a
TOTAL			-7,893.02	-7,893.02	n/a	n/a

Flat point. Credit Lucia Zanmonti/CDC

Major suppliers

CDC purchases electricity from two providers: Mercury and Meridian. Both these companies are gentailers (both generate and retail electricity)

Mercury's website states that its “generation assets produce electricity from 100% renewable sources: hydro, geothermal and wind”. Mercury have a sustainability programme and produce annual emissions inventory reports (the 2023 report is here). The majority of their gross emissions are from their geothermal power generation, and these have been reducing year-on-year since their initial inventory in 2015. They actively offset via the Emissions Trading Scheme (ETS).

Meridian's website states that “All the energy we generate comes from 100% renewable sources – wind, water and sun". Meridian also have a sustainability approach and a climate action plan. Meridian's latest emissions inventory/report is here and is a comprehensive summary document that also includes emissions from one-time construction, investments, purchased goods, employee commuting, and working from home. They have a low level of gross emissions, the majority from transportation and purchased products and services. They actively offset their emissions via various schemes (and report to ETS) and they show this clearly in their inventory. They also show their net carboNZero certified suppliers.

Both suppliers contribute and draw from the national grid. This supply includes fossil fuel generated electricity to manage shortfalls in supply.

CDC's local roads are maintained under the combined roading maintenance contract that covers South Wairarapa District Council and Carterton District Council and is run by Fulton Hogan.

Fulton Hogan's work is inherently emissions intensive. They have a sustainability framework that combines environment, social and business sustainability. They are also exploring multiple pathways to lowering their emissions. They have both a sustainability policy and an environmental policy on their website, but no emissions inventory report there.

CDC's kerbside recycling, refuse collection, and the transfer station is undertaken by WaiRecycle, provided by Earthcare Environmental a part of Smart Environmental. They provide a similar service to South Wairarapa and Masterton.

Earthcare Environmental aim is to reduce the amount of waste that ends up in our landfills. There is no emissions information on their website. Any waste not recycled is moved to Bonny Glen landfill in Rangatikei. There is no emissions information on their website.

Carterton District Council offices. Credit Lucia Zanmonti/CDC

What is CDC doing?

CDC adopted a new climate change strategy (2025-2030) in April 2025 and the first of its annual implementation plans soon after. The strategy contains a number of actions for council to help manage its emissions and adapt to a changing climate. Actions include:

- We use the land we manage to minimise emissions and adapt to the impacts of climate change
- We minimise our methane impact at landfill through reducing food waste
- We invest in alternatively powered options over fossil fuel powered options where possible
- We employ renewable electricity to ensure our operations are powered sustainably
- We source goods and services from suppliers that are also committed to addressing climate change

Our staff are empowered to take climate action in their roles

Carterton Event Centre e-van. Credit CDC

Appendix A: uncertainty assessment description and results

Table 6: GHG emission sources, data collection and uncertainty

GHG emission source	Scope	Data source	Data collection unit	Uncertainty (description)
Electricity	Scope 2	Electricity company	kWh	Low It is assumed that the meter readings were done correctly. Allocation to Council unit was unable to be done using the data collected.
Transport and distribution losses	Scope 3			
Transport - Diesel	Scope 1	Fuel company	L	Low It is assumed that the supplier reports are complete and accurate. Allocation to Council unit was unable to be done using the data collected.
Transport - Petrol	Scope 1			
Transport - Flights	Scope 3	Finance team	Km	Low/Moderate It is assumed that the employees' reports are complete and accurate
Waste	Scope 3	Council officer	Kg	Moderate Estimation made by the staff in charge of the waste collection. Consistent with earlier reports.
Refrigerant	Scope 1	A/C company	Kg	Low It is assumed that the supplier data is complete and accurate
Water supply	Scope 1	Council systems	m3	Low System data cross checked. It is assumed that the data source is an appropriate representation of activities
Wastewater treatment	Scope 1	Council systems	DBO Nitrogen	Low System data cross checked. It is assumed that the data source is an appropriate representation of activities Note that a new standardised approach for wastewater measurement will be used in the 2024/25 financial year report. Effectively resetting its baseline.
Green waste	Scope 3	Council officer	Kg	Moderate Estimation made by the staff in charge of the green waste. Consistent with earlier reports.

Appendix 2: Biogenic CO_2 emissions

The inventory report has been prepared in accordance with the requirements of the *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004)* and *ISO 14064-1:2018 Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*.

Emissions factors have been sourced from The Ministry for the Environment's (MfE) 2025 suite of documents for measuring emissions, and the *carbon accounting guidelines for wastewater treatment: CH_4 and N_20*.

Refer to the lines in Table 2 relating to wastewater and green waste.

Table 7: Biogenic emissions

	t CO2e	t CO2	kg CH4	kg N2O
Wastewater treatment	1,378.06	216.32	550,154.53	608,908.90
Green waste - Landfill	0.00	0.00	0.00	0.00
Green waste - Compost	0.88	0.00	560.00	320.00
Total	**1378.06**	**216.32**	**550154.53**	**608908.90**

Kokotau. Credit Lucia Zanmonti/CDC