

Greenhouse Gas Emissions Inventory

Christchurch City Council

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Date: 01/12/2023

This report has been prepared in accordance with ISO 14064-1:2018.

Verification Status: Reasonable and Limited

Measurement period: 01/07/2022 to 30/6/2023

Base year period: 01/07/2022 to 30/6/2023

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Introduction

This report is the annual greenhouse gas (GHG) emissions inventory report for Christchurch City Council. The purpose of this report is to quantify the GHG emissions that can be attributed to Christchurch City Council's operations within the declared boundary and scope for the July 2022 to June 2023 period.

This report has been prepared in accordance with ISO 14064-1:2018.

Organisation Description

The Christchurch City Council is a New Zealand Territorial Authority. It provides a variety of public services in line with its responsibilities under the Local Government Act 2002. Key activities undertaken by the Christchurch City Council include: water supply; waste water collection and treatment; storm water management; solid waste management; provision of transportation infrastructure, street lighting; arts and cultural facilities; parks, recreation and community facilities; and the provision of regulatory services.

The Council acknowledges its operations can have a direct impact on the environment, and it considers climate impacts as part of its decision-making. The Council is committed to measuring, managing, and reducing its operational greenhouse gas emissions.

1. Statement of intent

This inventory forms part of the Council's commitment to measure and manage down its greenhouse gas emissions. The intended uses of this inventory are:

- To transparently record the council's operational greenhouse gas emissions.
- To ensure compliance with the requirements of the ISO-14064:2018 greenhouse gas emissions reporting standard.
- To assist with emissions reduction planning for Council's operations.
- To monitor progress against our organisational target of 'being net carbon neutral by 2030' for our operations.

Intended users of this report include, but are not limited to:

- Council staff
- Council's Executive Leadership Team
- Christchurch residents

2. Person Responsible / Author

Carey Graydon, Principal Policy Advisor, Climate Resilience, has responsibility for authoring this report. David Griffith Head of Strategic Policy and Resilience, reporting to Lynn McClelland - Assistant Chief Executive, Strategic Policy and Performance, is responsible for overseeing the Council's emission inventory monitoring and reduction performance, as well as reporting results to the Executive Leadership Team.

The Executive Leadership Team has collective responsibility for managing budgets and resourcing across the organisation to meet its greenhouse gas emissions targets. The Executive Leadership Team report progress annually to Elected Members.

The Climate Resilience Team provides advice to the organisation on emissions reduction and offsetting opportunities.

3. Reporting Period

Measurement period of this report: 01/07/2022 – 30/06/2023

Base year measurement period: 01/07/2022 – 30/06/2023

Frequency of reporting will be annual.

This base year period was selected because it represents the first year in which we have access to a materially complete set of data records for forming the inventory for the Toitū audit. The Local Government financial year was selected to best align to our financial reporting cycles.

The Council has previously reported emissions inventories under the CEMARS and carboNZero programme for the financial years 2015/16 – 2018/19. As the methodology has changed significantly in the way we measure emissions from our wastewater treatment processing (our largest source of emissions), and a wider set of emissions have been captured for this inventory, it was determined that using the 2022/23 period as a base year for future reporting and emissions reduction planning would be most appropriate.

4. Organisational boundary and consolidation approach

Organisational boundaries are set with reference to the methodology described in the ISO 14064-1:2018. The standard allows two distinct approaches to be used to consolidate GHG emissions: the equity share or control (either financial or operational) approaches¹

The Christchurch City Council uses the ‘operational control’ consolidation approach to defining its boundaries. The Council’s emissions inventory applies to all business units in the Council itself, including those in the following Groups: Executive Office, Citizens and Community, Infrastructure Planning and Regulatory, Resources group, Strategic Policy and Performance.

All Council owned and operated facilities are included in this scope. Council premises leased to third parties, such as cafes at Council’s pools and libraries, are intended to be excluded from the scope. However, unless such premises have their own dedicated electricity supply (ICP), at this time Council’s BraveGen ESP dashboard will include their electricity use together with that of the Council facility that the premises are part of, as they are unable to be separated at this stage.

Any third parties, including Council Controlled Organisations (CCO), Council Controlled Trading Organisations (CCTO), and related Trusts are excluded from the scope, as the Council does not have day to day operational control of those organisations. CCOs, CCTOs and Trusts have their own sustainability policies and are responsible for reporting and managing their own emissions.

Table 1. below shows an overview of those companies and trusts.

Table 2. provides an overview of Council Groups and key services and activities they provide.

¹ Control: the organisation accounts for all GHG emissions and/or removals from facilities over which it has financial or operational control.

Equity share: the organisation accounts for its portion of GHG emissions and/or removals from respective facilities.

Table 1. Organisational boundary

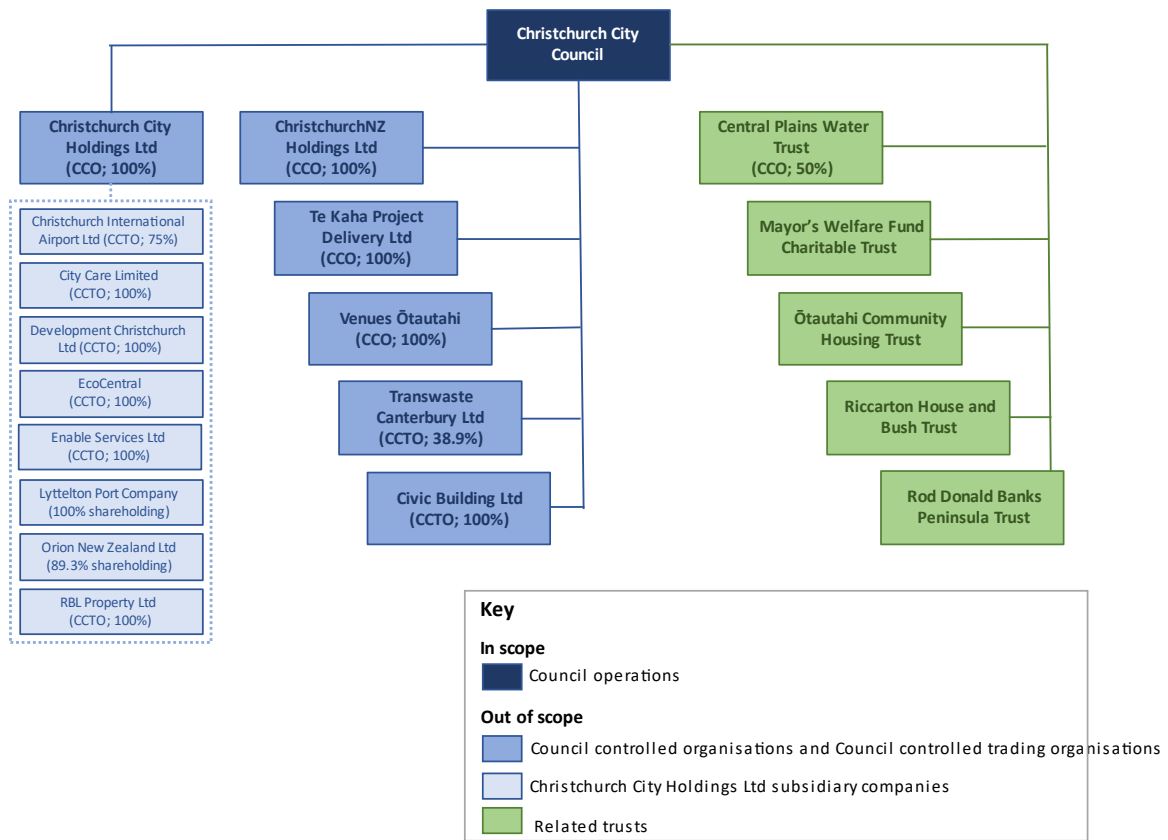


Table 2. Council Groups and key activities

Council Group	Unit	Key Functions and Activities
Chief Executive	Treaty Relationships, Executive Support	Mana whenua and Te Tiriti relationships, Administrative support.
Greater Christchurch Partnership		Greater Christchurch programme leadership and support, Inter-council urban development programme.

Council Group	Unit	Key Functions and Activities
Strategic Policy and Performance Group	Communications & Engagement, Corporate Planning & Performance, Legal and Democratic Services, Office of Mayor and Chief Executive, Programme Management Office, Strategic Policy & Resilience	Media response and advice, Marketing, Community engagement, Public and internal communications, Long Term Plan, Annual Plan processes, Research & monitoring, Legal advice, Council and committee support, Advisors to CE and Mayor, LGOIMA/official information requests, Civic & international relations, Capital programme management, Climate change policy development and advice, Strategic asset management planning & advice, Policy and strategy development and advice, and Bylaw reviews.
Citizens and Community Group	Art Gallery, Customer Services, Parks, Recreations, Sports & Events, Vertical Capital Delivery, Libraries & Information, Community Support & Partnerships.	Christchurch Art Gallery and Akaroa Museum, Customer services, including Call centre; Walk-in customer services, payments etc. Regional and community park operations-planting & maintenance, Biodiversity, Botanic Gardens, Hagley Park planning, operations and maintenance, Nursery planning and operations, Sports facilities planning, operations & maintenance, Sports programmes, Project management for major facilities projects, Tūranga (central Library) and community libraries, Community board governance support, Community development and engagement, Community partnerships and funding, Civil defence & emergency management.
Infrastructure, Planning and Regulation Group	Building Consenting, City Growth & Property, Planning and Consents, Regulatory Compliance, Technical Services & Design, Three Waters, Transport & Waste Management	Residential and commercial building consents and inspections, Code compliance with building consent conditions. Urban regeneration projects & programmes, Acquisitions and disposals of Council property, District planning; coastal hazards planning. Urban design, Reviewing/granting resource consents per District Plan, Transport policy & planning, Environmental health officers, Animal control, LIMs and PIMs, Land surveying, Road transport design, Architectural design, structural engineering, Geotechnical and natural hazards advice, Water supply planning and delivery, Wastewater planning and delivery, Stormwater and flood management, Freshwater ecology – water quality and ecology monitoring and reporting, Water investigations and advice, including backflow prevention and trade waste, Transport asset planning, Roding projects management, maintenance renewals, Contract management for Kerbside waste collection, Recycling, Transfer stations, and Organics processing. Monitoring Burwood landfill and closed landfills, Waste minimisation projects.

Council Group	Unit	Key Functions and Activities
	Wastewater Treatment (Part of Three Waters Unit)	Treatment of the district’s wastewater. The majority of the district’s wastewater is treated at the Christchurch Wastewater Treatment Plant (CWTP) located at 230 Pages Rd. There are also several smaller plants serving communities in Banks Peninsula, which treat wastewater using various processes. These are located at: Wainui – 1R Warnerville Rd, Duvauchelle – 6141 Christchurch Akaroa Rd Akaroa – 301 Beach Rd Tikao Bay – 2 Tikao Bay Rd Lyttelton - noting the Lyttelton Wastewater Treatment Plant ceased operations as of 31 January 2023, and now Lyttelton’s wastewater is sent to the centralised CWTP for treatment.
Resources Group	Digital, Finance, People & Culture, Procurement & Contracts, Risk & Assurance, Water Reform, Facilities & Asset Planning, Smart Christchurch.	Internal corporate services; IT, Cyber security, GIS services, Corporate financial planning, Accounting, CCO performance monitoring and reporting, Human resources, Procurement and contract support, Health, safety & wellbeing, Facilities planning, Contract management including facilities maintenance and repairs; facilities operations. Business support, Continuous improvement, Smart Christchurch project management.

Excluded emissions sources

Emissions from activities on land leased from Council, including grazing on Council land are currently excluded from scope. We do not currently collect information on staff working from home, or staff commuting, so they are both excluded from scope for this year’s inventory. Consideration will be given to including them in future inventories.

For this inventory, stationary lubricant data has only been collected for two of our largest facilities, the Christchurch Wastewater Treatment Plant, and the Civic building. We have included chemical usage for water supply and are looking to further improve the way we collect that data in the future. There are likely to be changes in the future if rules change with the proposed new water entity.

We have not counted any chemicals or fertilisers used in our parks in this inventory but will consider ways to collect this information in the future.

This inventory also excludes water supply consumption and the usage of wastewater services under Category 4. This is to avoid double counting of the emissions that are produced by Council, and therefore included in Category 1 and 2. This categorisation may also need to change depending on decisions around the new water entity and future ownership of the network.

The only freight transportation included in this inventory is the supply of water (via water tankers) in the case of supply disruption, and the transportation of chemicals such as chlorine salt used in

pools. All other sources of freight are excluded as we do not have sufficient information currently available, and those sources are likely to be small compared to the Council’s total emissions.

Gross emissions

This report focuses on the Council’s gross emissions only – in future years we will likely include direct removals from sources such as sequestration from trees, to provide our net emissions for each year. This will enable us to measure progress against our organisational goal of being net carbon neutral for our operations by 2030.

Table 3. Summary of excluded emission sources

Excluded emissions	GHG emissions ISO category	Rationale
Emissions from agricultural leases on Council land	Category 4	We do not have enough data to estimate emissions, and this is unlikely to be a significant source compared to Council’s total inventory.
Staff working from home	Category 4	Insufficient data, highly flexible workforce would make it difficult to even do estimates for the current period. Will investigate opportunities to gather data in future years to be able to include these emissions.
Staff commute	Category 3	Insufficient data. Will consider opportunities to capture data through surveys or other means to include in future inventories.
Freight transport	Category 3	We currently do not hold comprehensive data outside of water tankers for water supply and chemical transportation. Data could potentially be collected in \$ spent, but tkm was not readily available. Given the likely small impact on the total emissions, we have chosen to exclude other freight on a de minimis basis.
Water supply and wastewater services (category 4)	Category 4	We have excluded this source from Category 4 as the Council directly supplies these services for the community and already accounts for those emissions in Category 1 and 2. The exception is that we do include chemicals used in this process under Category 4 (as they are not captured in Category 1).

Reporting Boundaries

The GHG emissions sources included in this inventory were identified with reference to the methodology described in the ISO 14064-1:2018 standard.

To identify emissions sources from Council activities, Council staff used the previous list of sources collected for its Resource Efficiency Greenhouse Gas Emissions (REGGE) data and prior emissions inventories as a starting point, and reviewed asset data to ensure all Council facilities and sites were included. Finance staff assisted with identifying invoices from relevant suppliers, which could be used to identify emissions sources. Staff also held discussions with teams across Council to sense check the existing data sources, consider any new Council activities which may have any potential new sources, and then determine which additional sources should be included in this inventory. Council staff also received guidance from BraveGen ESP staff (who have expertise in carbon inventories and are supplying our new emissions inventory software), to ensure the Council was collecting sufficient sources of emissions data to comply with the ISO 14064-1:2018 standard.

As Three Waters is such a large component of the Council's overall emissions, a greater focus has been applied to that area. The Three Waters Unit has a new position focused on climate resilience, and that staff member gave advice on the wastewater treatment process. Consultants have provided a much more detailed breakdown of emissions from wastewater treatment and additional related sources such as overflow estimates, allowing for greater confidence on that data.

The emissions sources deemed significant for inclusion in this inventory were classified into the following categories, as defined under ISO14064-1:2018:

- Direct GHG emissions (Category 1): GHG emissions from sources that are owned or controlled by the company.
- Indirect GHG emissions (Category 2): GHG emissions from the generation of purchased electricity, heat and steam consumed by the company.
- Limited sources of indirect GHG emissions (Categories 3-4): GHG emissions that occur as a consequence of the activities of the company, but occur from sources not owned or controlled by the company.

Methodology

Quantification approaches

A calculation methodology has been used for quantifying the emissions inventory based on the following calculation approach, unless otherwise stated below:

- Emissions = activity data x emissions factor

All emissions were calculated using externally verified emissions factor sources such as those provided by the Ministry for the Environment or based on Intergovernmental Panel on Climate Change (IPCC) guidance. The intent has been to use the most specific and relevant factor for the activity type being quantified.

Global Warming Potential (GWP) values used for the inventory

When compiling this inventory, the Council primarily used the emissions factors built into the BraveGen platform (based on the IPCC's 'AR5 no climate-carbon feedback', unless otherwise stated). This system multiplied the tonnes of various GHG emissions entered with the corresponding emissions factors for the relevant Global Warming Potential - to provide total emissions in a carbon dioxide equivalent (CO₂-e), unless otherwise specified. The emissions factors used for each type of emission is listed in the Council's BraveGen ESP platform. The emissions factors used are from the Ministry for the Environment's Te ine tukunga: He tohutohu pakihi Measuring emissions: A guide for organisations: 2023 emission factors summary,² and are based on the IPCC guidance unless otherwise stated. For various categories of Recycled Waste, BraveGen ESP use the United Kingdom's Department for Environment, Food and Rural Affairs (DEFRA) emissions factors. See Appendix A for a full list of emissions factors used in this inventory.

One notable exception is the calculation of emissions from the wastewater treatment plants (Christchurch Wastewater Treatment Plant (CWTP) and the Banks Peninsula Wastewater Treatment Plants) and Biosolids Disposal from CWTP. Unlike previous inventories which used IPCC guidance for wastewater calculations, for this new inventory the Council followed the Water New Zealand 'Carbon accounting guidelines for wastewater treatment: CH₄ and N₂O' guidance to calculate those emissions (published August 2021).

The Banks Peninsula Wastewater Treatment Plants include a number of smaller wastewater treatment plants, where emissions have been calculated individually for each plant based on a population basis - Wainui, Duvauchelle, Akaroa, Tikao Bay, and Lyttelton (noting the Lyttelton Wastewater Treatment Plant ceased operations as of 31 January 2023). Calculations for the larger CWTP were based on plant specific data where available, rather than the more simplified population basis. Additionally, emissions associated with wastewater network overflows were estimated using equations adopted from the Water New Zealand guidelines as a basis.

The new methodology adopted for calculating the emissions from treating wastewater is primarily responsible for a significant increase in the emissions attributed to the Council's wastewater operations. As wastewater treatment is its largest emission source, this also resulted in a large increase to the Council's overall emissions footprint.

The refrigerant losses data recorded is the total amount of various refrigerants purchased for the Council by our suppliers, with the exception of the Council's Taiora QEII facility, which was captured separately. Refrigerant liability is mapped by facility. The production of chlorine for Council pools was included in Category 4, as it was mixed on site from imported ingredients. Transportation to other pools is recorded under fuel use in Category 1.

There is some uncertainty around the way woodchips are accounted for in the production of energy at one facility, due to multiple inputs, such as electricity and landfill gas, also being used to produce the energy - some of which the Council supplies itself, or purchases on behalf of a third party, who then creates the energy which is supplied back to us. The Council has reasonable confidence that the overall emissions from this process will have been accounted for but requires further guidance on appropriate categorisation.

² <https://environment.govt.nz/publications/measuring-emissions-a-guide-for-organisations-2023-emission-factors-summary/>

Information management procedures

The Council uses the BraveGen ESP platform to hold all its emissions information in one place. The improved level of data management will enable the Council and individual units to make more informed emissions reduction decisions. The emissions data is manually entered into the BraveGen ESP system, and the original invoices or spreadsheets are also stored in the system.

Some parts of this process may become more automated in the future if suppliers are able to supply the invoices or data in a compatible form to be automatically uploaded.

Historical recalculations

No historical recalculations have been undertaken as part of this inventory.

Data Selection and collection used for quantification

Table 4. Data collection methodology and assumptions for included emission sources.

GHG emissions category (ISO 14064-1:2018)	GHG emissions source subcategory	Overview of Activity source data	Explanation of uncertainties or assumptions around data and evidence	Use of default and average emissions factors
Category 1: <i>Direct emissions and removals</i>	Direct emissions from stationary combustion	-Diesel (stationary) -Stationary LPG -Landfill gas -Lubricants stationary engines	It is assumed the data sources are complete and accurate. All source data is derived from supplier records.	The most accurate emissions factors were selected for all sources.
	Direct emissions from mobile combustion	-Fleet Fuel – Diesel -Fleet Fuel – Petrol -Fleet lubricants	It is assumed the data sources are complete and accurate. All source data is derived from supplier records.	The most accurate emissions factors were selected for all sources.
	Wastewater treatment emissions	-Wastewater treatment	Water NZ methodology used at Christchurch Wastewater Treatment Plant, with estimates used for smaller Banks Peninsula Treatment Plants.	Average emissions factors were used for Banks Peninsula treatment plants based on population.
	Direct fugitive emissions arising from the release of GHGs in anthropogenic Systems	-Refrigerants (heating and cooling)	It is assumed the data sources are complete and accurate. All source data is derived from maintenance records.	The most accurate emissions factors were selected for all sources, as all refrigerant types are directly correlated to the available GWP of the gas type.
	Direct emissions and removals from land use, land use change and forestry	-Fertiliser -Land use change / forestry	We have not found data on fertiliser use, so this needs further investigation for future inventories. No significant land use change has occurred.	n/a

Overall assessment of uncertainty for category 1	<i>Medium. We have high confidence in data from stationary and mobile fuel use, and wastewater treatments, but there is greater uncertainty around, refrigerants, lubricants, and potential fertiliser and woodchip use.</i>			
GHG emissions category	GHG emissions source or sink subcategory	Overview of Activity data and evidence	Explanation of uncertainties or assumptions around data and evidence	Use of default and average emissions factors
Category 2: <i>Indirect GHG emissions from imported energy</i>	Indirect emissions from imported electricity	-Electricity -Energy generated by woodchips, landfill gas.	It is assumed the data sources are complete and accurate. All source data is derived from supplier records.	Average emissions factors were used for electricity and energy production (noting difficulty in categorising woodchip usage)
Overall assessment of uncertainty for Category 2 emissions	<i>Medium. There is high confidence that the volume of imported energy is correct. There is some uncertainty over the categorisation of energy generated from woodchips, as landfill gas (from Council) and electricity purchased by Council were also used in the production of the energy. However, this represents a small portion of overall emissions.</i>			
GHG emissions category	GHG emissions source or sink subcategory	Overview of Activity data and evidence	Explanation of uncertainties or assumptions around data and evidence	Use of default and average emissions factors
Category 3: <i>Indirect GHG emissions from transportation</i>	Emissions from Business travel	-Air travel (domestic, long and short haul, business/economy), -Hotels -Rental cars -Private cars -Taxis	It is assumed the data sources are complete and accurate. All source data is derived from supplier customer activity reports.	The most accurate emissions factors were selected from the available data – e.g., air travel split by type of flight and class, hotels by country etc.
	Emissions from upstream transport and distribution for goods	-Freight transport	We currently do not hold comprehensive data outside of water tankers for water supply and chemical transportation. Data could potentially be collected in \$ spent, but tkm was not readily available. Given the likely small impact on the total emissions, we have chosen to exclude other freight on a de minimis basis	The most accurate emissions factors were selected from the available data.
	Emissions from staff commute	Out of scope – we currently do not collect suitable data.		
Overall assessment of uncertainty for Category 3 emissions	<i>Medium. Some uncertainty around staff business travel (e.g. size of rental cars, hotel averages etc.) and freight. Further work is needed to monitor additional sources of freight use in the future.</i>			

GHG emissions category	GHG emissions source or sink subcategory	Overview of Activity data and evidence	Explanation of uncertainties or assumptions around data and evidence	Use of default and average emissions factors
Category 4: <i>Indirect GHG emissions from products used by an organisation</i>	Transmission and distribution losses	-Electricity - Transmission and Distribution Losses	It is assumed the data sources are complete and accurate. All source data is derived from supplier customer activity reports.	Average T&D factors used
	Staff working from home	Out of scope – we currently do not collect suitable data.		
	Materials and Waste	-Waste to landfill -Recycled waste	Local MfE factors used for landfill waste, some uncertainty around using UK based recycling factors.	DEFRA factors used for various categories of recycling
	Water Supply and wastewater treatment	-Chemicals (water treatment)	Data from water supply and wastewater. Pool chemicals recorded elsewhere.	Note - other category 4 emissions from water supply and wastewater have been excluded from this inventory to avoid double counting – Council accounts for them in category 1 and 2.
	Chemicals	-Chlorine for pools	Mixed at QEII facility, internal transportation to other council pools captured in category 1.	The most accurate emissions factors were selected from the available data.
Overall assessment of uncertainty for Category 4 emissions	<i>Medium. Good information on Transmission and Distribution Losses, however full chemical dataset is potentially incomplete, and is an area the Council could focus on in future inventories. There is confidence in the accuracy of the volumes of various types of recycling, but some uncertainty around accuracy of recycling factors.</i>			
Category 5: <i>Indirect emissions associated with the use of products from the organisation</i>	Out of scope			
Category 6: <i>indirect emissions (other sources)</i>	Out of scope			

EMISSIONS INVENTORY RESULTS

Inventory Summary

Table 5. GHG emissions summary for period 01 July 2022 to 30 June 2023

Category	Total emissions (tCO₂-e)
Category 1: Direct emissions	24,279.25
Category 2: Indirect emissions (<i>imported energy</i>)	5,413.60
Category 3: Indirect GHG emissions (<i>transportation</i>)	331.57
Category 4: Indirect emissions (<i>products used by organisation</i>)	3,702.62
Category 5: Indirect emissions (<i>use of products from the organisation</i>)	n/a
Category 6: Indirect GHG emissions (<i>other sources</i>)	n/a
Total direct emissions	24,279.25
Total indirect emissions	9,447.79
Total gross emissions	33,727.04

Table 6. GHG emissions summary by source: 01 July 2022 to 30 June 2023

Category (ISO 14064-1:2018)	Scope (prior ISO 14064-1:2006)	Emission Source	Emissions (tCO ₂ -e)
Category 1: Direct emissions	1	Diesel (stationary)	970.53
		LPG (stationary)	44.21
		Landfill Gas	1,886.56
		Lubricants (stationary engines)	30.58
		Fleet Fuel - Diesel	691.46
		Fleet Fuel - Petrol	221.98
		Wastewater Treatment (and network overflows)	19,918.72
		Refrigerants	515.20
		Fertiliser	0
		Land use change / forestry	0
		Total Emissions CATEGORY 1	24,279.25
Category 2: Indirect emissions (<i>imported energy</i>)	2	Electricity	5,315.52
		Energy generated by wood chips	90.61
		Energy generated by wood pellets	7.46
		Total Emissions CATEGORY 2	5,413.60
Category 3: Indirect GHG emissions (<i>transportation</i>)	3	Air Travel (combined)	153.77
		Hotels	8.77
		Rental Cars	5.20
		Private Cars	79.38
		Taxis	0.89
		Freight transport distribution	83.55
		Staff Commute (out of scope)	n/a
		Total Emissions CATEGORY 3	331.57
Category 4: Indirect emissions (<i>products used by organisation</i>)	3	Electricity - T&D losses	616.39
		Waste to landfill	164.68
		Recycled waste	4.51
		Chemicals (Water)	50.17
		Landfill gas to Pioneer	1,449.73
		Biosolid disposal to land application	1,417.15
		Staff working from home (out of scope)	n/a
		Total Emissions CATEGORY 4	3,702.62
Category 5: Indirect emissions associated with the use of products from the organisation	3	Out of scope	n/a
Category 6: Indirect emissions from other sources	3	Out of scope	n/a
TOTAL EMISSIONS			33,727.04

Table 7. Direct Category 1 emissions by gas.

Category 1 Emission source	Emissions by gas (converted to CO2-e)							
	CO2	CH4	N2O	HFCs	PFCs	SF6	other	Total (CO2-e)
Stationary fuel ³	995.22	3.73	2.16	-	-	-	-	1,001.11
LPG	44.18	0.02	0.02	-	-	-	-	44.21
Landfill gas ⁴	-	1,886.56	-	-	-	-	-	1,886.56
Mobile fuel ⁵	893.59	3.81	16.04	-	-	-	-	913.44
Refrigerants	-	-	-	515.20	-	-	-	515.20
Wastewater (treatment plant process & effluent, and network overflows) ⁶	-	7,824.85	12,093.87	-	-	-	-	19,918.72
Total Category 1	1,932.99	9,718.97	12,112.09	515.20	-	-	-	24,279.25

Performance Monitoring

The Council will monitor its greenhouse gas emissions in an ongoing basis through its new BraveGen ESP platform, with key staff across the organisation to receive training. The Council will report on its results annually, after verification has occurred.

Staff in key units across the Council will be responsible for identifying emissions reduction opportunities within their units, relevant to their activities.

An organisational Emissions Reduction Plan will be developed in the next reporting period, with key reduction opportunities identified and targets for the organisation. Annual emissions results will then be compared against targets.

³ Includes stationary lubricants burnt as fuel.

⁴ Includes flaring. Excludes Pioneer energy centre boiler (as scope 4), excludes biogenic landfill CO2.

⁵ Includes fleet lubricants.

⁶ Excludes biogenic CO2.

Significance Criteria

Council's intention is to include all available sources of emissions under Category 1 and 2.

When considering additional sources for inclusion in Category 3 and 4, key considerations were available data sources (e.g., what we could collect for the eligible period), the estimated magnitude of emissions (size of the source compared to organisational total), and the degree of influence the Council has on the emissions. As a public sector organisation, staff also reviewed guidance in the Carbon Neutral Government Programme (CNGP) on what should be considered a significant source for inclusion (noting this was to inform thinking only, and that Councils are not required to comply with that programme). In general, where information was readily available, we included it within scope if it aligned with our reporting boundary.

For example, staff business travel was included in Category 3 as the decision for that travel was made within the organisation, and we hold receipts for the different emissions sources involved, such as airfares, taxis, and hotels etc., and could reasonably influence those emissions by varying business travel policy. We also hold good information on waste and recycling across council sites, so included that data under Category 4. Likewise, data on Transmission and Distribution Losses was readily available and included in scope.

However, two sources recommended under the Carbon Neutral Government Programme, staff commuting, and working from home were excluded from our scope as we do not currently collect suitable data on them. Insufficient data also meant we excluded emissions from livestock on land leased from Council, and limited the reporting on freight.

See Table 8 below for a summary of the significance criteria used.

Table 8. Significance criteria

Emissions source	Likely magnitude of emissions (compared to overall inventory)	Data availability	Public sector guidance	Level of influence	Include in inventory?	Key determinant for decision
Staff commute	unknown	no	If practicable	moderate	no	No data
Staff working from home	unknown	no	If practicable	moderate	no	No data
Staff business travel	low	yes	yes	high	yes	Good data, high influence
T&D losses	moderate	yes	yes	low	yes	Good data, moderate magnitude
Freight	low	limited	If practicable	moderate	Yes, noting limited data	Limited data, but sufficient to include.
Agricultural Leases	moderate	no	If practicable	high	no	No data.
Waste and Recycling	moderate	yes	yes	high	yes	Available data, high influence.
Water Supply and Wastewater services (Category 4)	low	yes	yes	moderate	no	Double counting - if included - as Council supplies those services it already counts these in Category 1 & 2

References

International Organization for Standardization, 2018. ISO 14064-1:2018. Greenhouse gases Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals. ISO: Geneva, Switzerland.

Te ine tukunga: He tohutohu pakihi Measuring emissions: A guide for organisations: 2023 emission factors summary. Ministry for the Environment, New Zealand.

<https://environment.govt.nz/publications/measuring-emissions-a-guide-for-organisations-2023-emission-factors-summary/>

APPENDIX A: Emissions Factors Used for Inventory

1	Emission Factor Group (EFG)	Category (EFG)	UoM	Region	Effective	Factor tCO ₂ e	Factor Source
2	Air Travel - Domestic Business (km) MFE	Business Travel	km	New Zealand	30/06/2025	0.000305893198	MFE Measuring-Emissions-Guidance 2023
3	Air Travel - Domestic Economy (km) MFE	Business Travel	km	New Zealand	30/06/2025	0.000305893198	MFE Measuring-Emissions-Guidance 2023
4	Air Travel - Domestic Premium Economy (km) MFE	Business Travel	km	New Zealand	30/06/2025	0.000305893198	MFE Measuring-Emissions-Guidance 2023
5	Air Travel - International Long Haul Business (km) MFE	Business Travel	km	New Zealand	30/06/2025	0.000428820000	MFE Measuring-Emissions-Guidance 2023
6	Air Travel - International Long Haul Economy (km) MFE	Business Travel	km	New Zealand	30/06/2025	0.000147870000	MFE Measuring-Emissions-Guidance 2023
7	Air Travel - International Long Haul Premium Economy (km) MFE	Business Travel	km	New Zealand	30/06/2025	0.000236590000	MFE Measuring-Emissions-Guidance 2023
8	Air Travel - International Short Haul Business (km) MFE	Business Travel	km	New Zealand	30/06/2025	0.000226520000	MFE Measuring-Emissions-Guidance 2023
9	Air Travel - International Short Haul Economy (km) MFE	Business Travel	km	New Zealand	30/06/2025	0.000153530000	MFE Measuring-Emissions-Guidance 2023
10	Air Travel - International Short Haul Premium Economy (km) MFE	Business Travel	km	New Zealand	30/06/2025	0.000151020000	MFE Measuring-Emissions-Guidance 2023
11	Chlorine production - Chlorine Gas (kg)	Chemical production	kg	New Zealand	30/06/2025	0.000800000000	2023 EuroChlor Data - 2022 Report
12	Chlorine production - Sodium Hypochlorite (kg)	Chemical production	kg	New Zealand	30/06/2025	0.000740000000	2022 EuroChlor Data - 2022 Report
13	Diesel (L) MFE	Fuel	L	New Zealand	30/06/2025	0.002714872238	MFE Measuring-Emissions-Guidance 2023
14	Diesel stationary (L) MFE	Fuel	L	New Zealand	30/06/2025	0.002689139697	MFE Measuring-Emissions-Guidance 2023
15	Electricity (kWh) MFE	Electricity	kWh	New Zealand	30/06/2025	0.000074177653	MFE Measuring-Emissions-Guidance 2023
16	Electricity T&D Losses (kWh) MFE	Electricity	kWh	New Zealand	30/06/2025	0.000008601523	MFE Measuring-Emissions-Guidance 2023
17	Hotel Stay - AU (room night) MFE	Business Travel	room nig	New Zealand	30/06/2025	0.038900000000	MFE Measuring-Emissions-Guidance 2023
18	Hotel Stay - JP (room night) MFE	Business Travel	room nig	New Zealand	30/06/2025	0.054700000000	MFE Measuring-Emissions-Guidance 2023
19	Hotel Stay - NZ (room night) MFE	Business Travel	room nig	New Zealand	30/06/2025	0.009400000000	MFE Measuring-Emissions-Guidance 2023
20	Hotel Stay - SG (room night) MFE	Business Travel	room nig	New Zealand	30/06/2025	0.028500000000	MFE Measuring-Emissions-Guidance 2023
21	Hotel Stay - SK (room night) MFE	Business Travel	room nig	New Zealand	30/06/2025	0.056500000000	MFE Measuring-Emissions-Guidance 2023
22	Hotel Stay - US (room night) MFE	Business Travel	room nig	New Zealand	30/06/2025	0.019800000000	MFE Measuring-Emissions-Guidance 2023
23	Landfill gas (m ³)	Landfill Gas	m ³	UK	30/06/2025	0.000323077350	UKBEIS 2023
24	Landfill Waste - Bio Sludge (t) MFE	Waste	t	New Zealand	30/06/2025	0.153216000000	MFE Measuring-Emissions-Guidance 2023
25	Landfill Waste - Contaminated Recycling (t) DEFRA	Waste	t	UK	30/06/2025	0.520334743463	UK Government GHG Conversion Factors for Company Reporting, 2023
26	Landfill Waste - General Mixed Commercial (t) MFE	Waste	t	New Zealand	30/06/2025	0.000231771555	MFE Measuring-Emissions-Guidance 2023
27	LPG (kg) MFE	Fuel	kg	New Zealand	30/06/2025	0.002966000000	MFE Measuring-Emissions-Guidance 2023
28	LPG (t) MFE	Fuel	t	New Zealand	30/06/2025	2.966000000000	MFE Measuring-Emissions-Guidance 2023
29	Non-emission (None)	Non-emission	None	None	30/06/2025	0.000000000000	No Source, Place holder for zero usage inventory or out of scope inventory
30	Petrol Premium (L) MFE	Fuel	L	New Zealand	30/06/2025	0.002457195026	MFE Measuring-Emissions-Guidance 2023
31	Petrol Unleaded (L) MFE	Fuel	L	New Zealand	30/06/2025	0.002455170950	MFE Measuring-Emissions-Guidance 2023
32	Private car mileage (km) MFE (Average private car - petrol)	Business Travel	km	New Zealand	30/06/2025	0.000251755922	MFE Measuring-Emissions-Guidance 2023
33	Recycled Waste - Cardboard (t) DEFRA	Waste	t	UK	30/06/2025	0.021280807237	UK Government GHG Conversion Factors for Company Reporting, 2023
34	Recycled Waste - Comingle Materials (t) DEFRA	Waste	t	UK	30/06/2025	0.021280807237	UK Government GHG Conversion Factors for Company Reporting, 2023
35	Recycled Waste - Food Waste (t) DEFRA	Waste	t	UK	30/06/2025	0.008912421711	UK Government GHG Conversion Factors for Company Reporting, 2023
36	Recycled Waste - Glass Mixed (t) DEFRA	Waste	t	UK	30/06/2025	0.021280807237	UK Government GHG Conversion Factors for Company Reporting, 2023
37	Recycled Waste - Green Waste (t) DEFRA	Waste	t	UK	30/06/2025	0.008912421711	UK Government GHG Conversion Factors for Company Reporting, 2023
38	Recycled Waste - Paper & Cardboard (t) DEFRA	Waste	t	UK	30/06/2025	0.021280807237	UK Government GHG Conversion Factors for Company Reporting, 2023
39	Recycled Waste - Paper (t) DEFRA	Waste	t	UK	30/06/2025	0.021280807237	UK Government GHG Conversion Factors for Company Reporting, 2023
40	Recycled Waste - Plastic (t) DEFRA	Waste	t	UK	30/06/2025	2.322224249019	UK Government GHG Conversion Factors for Company Reporting, 2023
41	Recycled Waste - Polystyrene (t) DEFRA	Waste	t	UK	30/06/2025	0.021280807237	UK Government GHG Conversion Factors for Company Reporting, 2023
42	Recycled Waste - Recycle Mixed Commercial (t) DEFRA	Waste	t	UK	30/06/2025	0.021280807237	UK Government GHG Conversion Factors for Company Reporting, 2023
43	Recycled Waste - Tyres & Rubber Products (t) DEFRA	Waste	t	UK	30/06/2025	0.021281000000	UK Government GHG Conversion Factors for Company Reporting, 2023
44	Refrigerant 134a (kg)	Fugitive Emissions	kg	New Zealand	31/12/2024	1.300000000000	MFE Measuring-Emissions-Guidance 2023
45	Refrigerant R22 (kg)	Fugitive Emissions	kg	New Zealand	30/06/2025	1.760000000000	MFE Measuring-Emissions-Guidance 2023
46	Refrigerant R32 (kg)	Fugitive Emissions	kg	New Zealand	31/12/2024	0.677000000000	MFE Measuring-Emissions-Guidance 2023
47	Refrigerant R407c (kg)	Fugitive Emissions	kg	New Zealand	31/12/2024	1.624210000000	MFE Measuring-Emissions-Guidance 2023
48	Refrigerant R410a (kg)	Fugitive Emissions	kg	New Zealand	31/12/2024	1.923500000000	MFE Measuring-Emissions-Guidance 2023
49	Refrigerant R417a (kg)	Fugitive Emissions	kg	New Zealand	31/12/2024	2.127322000000	MFE Measuring-Emissions-Guidance 2023
50	Rental Car - Compact (days) MFE	Business Travel	days	New Zealand	30/06/2025	0.007967452980	MFE Measuring-Emissions-Guidance 2023
51	Rental Car - Economy (days) MFE	Business Travel	days	New Zealand	30/06/2025	0.008245885480	MFE Measuring-Emissions-Guidance 2023
52	Rental Car - Electric (km) MFE	Business Travel	km	New Zealand	30/06/2025	0.000016986190	MFE Measuring-Emissions-Guidance 2023
53	Rental Car - Full Size (days) MFE	Business Travel	days	New Zealand	30/06/2025	0.012336701395	MFE Measuring-Emissions-Guidance 2023
54	Rental Car - Intermediate (days) MFE	Business Travel	days	New Zealand	30/06/2025	0.009284652870	MFE Measuring-Emissions-Guidance 2023
55	Rental Car - Standard (days) MFE	Business Travel	days	New Zealand	30/06/2025	0.010312711320	MFE Measuring-Emissions-Guidance 2023
56	Road Freight - HGV Diesel >= 30000kg	Road Freight	km	New Zealand	30/06/2025	0.001512998299	MFE Measuring-Emissions-Guidance 2023
57	Sea freight - container ship (tKm)	Freight	tKm	New Zealand	30/12/2023	0.000016122000	MFE Measuring-Emissions-Guidance 2023
58	Stationary Lubricants (L) MFE	Fuel	L	New Zealand	30/06/2025	0.002963348410	MFE Measuring-Emissions-Guidance 2023
59	Taxis (km) MFE	Business Travel	km	New Zealand	30/06/2025	0.000164369882	MFE Measuring-Emissions-Guidance 2023
60	Tonnes CO ₂ e	Tonnes CO ₂ e	tCO ₂ e	New Zealand	30/06/2025	1.000000000000	External Calculation to tCO ₂ e with methodology
61	Tonnes CO ₂ e - Carbon Dioxide	Tonnes CO ₂ e - Carbon Di	tCO ₂ e	New Zealand	30/06/2030	1.000000000000	External Calculation to tCO ₂ e with methodology
62	Tonnes CO ₂ e - Methane	Tonnes CO ₂ e - Methane	tCO ₂ e	New Zealand	30/06/2030	1.000000000000	External Calculation to tCO ₂ e with methodology
63	Tonnes CO ₂ e - Nitrous Oxide	Tonnes CO ₂ e - Nitrous Ox	tCO ₂ e	New Zealand	30/06/2030	1.000000000000	External Calculation to tCO ₂ e with methodology
64	Vehicle Lubricants (L) MFE	Fuel	L	New Zealand	30/06/2025	0.002981910743	MFE Measuring-Emissions-Guidance 2023
65	Wood Chip - Biogenic CO ₂ (GJ)	Wood chip	GJ	UK	30/06/2025	0.097222300000	UKBEIS 2023
66	Wood Chip (GJ)	Wood chip	GJ	UK	30/06/2025	0.002983340000	UKBEIS 2023
67	Wood Pellets - Biogenic CO ₂ (t) MFE	Fuel	t	New Zealand	30/06/2025	0.861564000000	MFE Measuring-Emissions-Guidance 2023
68	Wood Pellets (t) MFE	Fuel	t	New Zealand	30/06/2025	0.014637600000	MFE Measuring-Emissions-Guidance 2023