GREENHOUSE GAS EMISSIONS INVENTORY AND MANAGEMENT REPORT

Toitū carbonreduce programme

Prepared in accordance with ISO 14064-1:2018 and the Technical Requirements of the Programme

Kāpiti Coast District Council

Prepared by (lead author): Matthew Nabney (Advisor Sustainability)

Dated: 18 December 2024

Verification status: Reasonable for all mandatory categories of programme and Limited for non-mandatory

Measurement period: 01 July 2023 to 30 June 2024

Base year period: 01 July 2009 to 30 June 2010

Approved for release by:

Brendan Owens

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AVAILABILITY

Council does not have a policy on availability and methods of dissemination of this report, however this report will be made publicly available on the council's website and the elected members will be updated on the outcome of the Carbon audit 2023/2024.

REPORT STRUCTURE

The Inventory Summary contains a high-level summary of this year's results and from year 2 onwards a brief comparison to historical inventories.

Chapter 1, the Emissions Inventory Report, includes the inventory details and forms the measure step of the organisation's application for Programme certification. The inventory is a complete and accurate quantification of the amount of GHG emissions and removals that can be directly attributed to the organisation's operations within the declared boundary and scope for the specified reporting period. The inventory has been prepared in accordance with the requirements of the Programme[1], which is based on the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004) and ISO 14064-1:2018 Specification with Guidance at the Organization Level for

[1] Programme refers to the Toitū carbonreduce, Toitū net carbonzero and the Toitū climate positive programmes.

Quantification and Reporting of Greenhouse Gas Emissions and Removals[2]. Where relevant, the inventory is aligned with industry or sector best practice for emissions measurement and reporting.

Chapter 2, the reduction plan and progress report, forms the manage step part of the organisation's application for Programme certification.

See Appendix 1 and the related Spreadsheet for detailed emissions inventory results, including a breakdown of emissions by source and sink, emissions by greenhouse gas type, and non-biogenic and bio-genic emissions. Appendix 1 also contains detailed context on the inventory boundaries, inclusions and exclusions, calculation methodology, liabilities, and supplementary results.

This overall report provides emissions information that is of interest to most users but must be read in conjunction with the inventory workbook for covering all of the requirements of ISO 14064-1:2018.

[2] Throughout this document 'GHG Protocol' means the *GHG Protocol Corporate Accounting and Reporting Standard* and 'ISO 14064-1:2018' means the international standard *Specification with Guidance at the Organizational Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*.

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EXECUTIVE SUMMARY

This is the annual greenhouse gas (GHG) emissions inventory and management report for Kāpiti Coast District Council covering the measurement period 01 July 2023 to 30 June 2024.[3]

Kāpiti Coast District Council (Council) has measured and verified its emissions since the year 2009/10 under Toitū's Carbonreduce Programme.

In 2009/10 a target was set to reduce emissions from Council's operations by 80% by July 2022 (measured against the baseline year of 2009/10). At that time, emissions from wastewater processing were excluded. In 2019, Council was required to include wastewater processing which significantly increased its GHG emissions footprint. Had those emissions not been included, Council would have reduced emissions by 77%. In the 2019/20 and 20/21 inventories, wastewater emissions were estimated and included for the first time, significantly increasing Council's gross total emissions. As a result of backdating these wastewater emission estimates to 2009/10, Council has reduced its emissions 64% between 2009/10 and 21/22, still a significant achievement.

In June 2023, (with approval from Toitū) Council set two new emission reduction targets:

- an aspirational target to be net zero emissions by 2040, and
- a 'further' emissions reduction target of 15.5% for emission categories 1 and 2 measured against a baseline year of 2022, to be met by 2032.

Council is now developing initiatives to meet this target. This is on top of the emission reductions of 64% already achieved between 2009/10 and 2022.

Emissions from Water and Wastewater treatment (category 1 – direct) remains the largest contributor to Council's gross emissions. Council has undertaken several improvements to wastewater processing which has led to a reduction in the amount of biosolid generated by the Ōtaki and Paraparaumu Wastewater Treatment Plants, and emissions generated by wastewater processing from both plants. These improvements include:

- the installation of new aerators at the Paraparaumu Wastewater Treatment Plant (Paraparaumu WWTP) at the end of the 22/23FY – this was reported in the previous inventory report, but this system has also reduced biosolid production from the plant,
- the refurbishment of the clarifiers improving operational performance at the Paraparaumu WWTP, and
- the identification and remediation of groundwater leakage into the Ōtaki Wastewater Treatment Plant.

It is important to note that disposal of screenings and biosolids (sludge) (from the wastewater treatment plants in Paraparaumu and Ōtaki) to landfill emissions is now the sixth largest source for Council (category 4 - indirect) – fifth last year. This change is driven by an improvement to the calculation methodology to determine emissions produced by sludge disposal at the Silverstream landfill.

Emissions from imported energy (category 2 – indirect) remains the second largest emissions source. Calculated emissions from electricity have increased slightly due in large part to the 2024 emissions factor for energy (provided by the Ministry for the Environment) and that Council used up to 1% more electricity compared to the 22/23FY.

Natural Gas usage (category 1 - direct) is the third largest emissions source, of which the majority is used in the three swimming pools that Council operates.

[3] Throughout this document "emissions" means "GHG emissions". Unless otherwise stated, emissions are reported as tonnes of carbon dioxide equivalent (tCO_2e).

Diesel usage across Council is the fourth largest emissions source.

Taken together, for the 23/24FY Council reduced its category 1 and 2 emissions by 24.7% (compared to the 2022 baseline) which means Council has met the 15.5% 'further' emissions reduction target. This progress highlights Council's commitment to continuously improve practice and is driven by improvements to Council's wastewater treatment plants, as well as a reduction in emissions from electricity consumption and a refinement of how Council calculates emissions from sludge to landfill. It is likely that emissions from electricity use will increase in future years (as Council expands electricity demand, and future weather variability impacts electricity emissions factors), and it is unlikely that further improvements to wastewater treatment will continue to significantly reduce emissions. To 'lock in' this emissions reduction, Council will undertake several key projects to ensure it sustains future emissions reductions and continues to meet its 2032 target and progress towards its 2040 target.

For the 2023/24 FY audit, Council included two new significant sources of emissions (category 3 – indirect emissions). The first are emissions produced by the transportation of wood pellets used in the driers at the Paraparaumu WWTP, and the second are emissions produced by Council staff commuting. Emissions from staff commuting sit outside Council's mandatory emissions monitoring and reporting boundary so will not be used to determine performance against Council's existing reduction targets. However, Council is committed to monitoring, reporting, and addressing its scope 3 (indirect) emissions, including setting a category 3-6 emission reduction target in 2025. These emissions have been included in this report as part of Council's efforts to expand monitoring and reporting its category 3-6 emissions. We anticipate the increase of these scope 3-6 emissions as we capture more information on them.

Although Council does not currently report any category 5 to 6 emissions sources, it intends to do so. This is a complex work programme to implement which Council is in the process of developing. This audit report also includes several sources of diesel liabilities not previously reported.

Note that in the 23/24 audit, Council in collaboration with Toitū amended the categorisation of 'Treatment of wastewater' emissions. In previous years, these emissions were incorrectly categorised as 'Leakage of refrigerants' and should have been 'Treatment of wastewater'. Also, in previous years emissions from 'Waste to landfill sludge' were incorrectly labelled as category 4 emissions and should have been category 1, which has been corrected. Neither change has affected Council's total GHG emissions footprint.

Table 1: Inventory summary

Category **(ISO 14064-1:2018)**	**Scopes** **(ISO 14064-1:2006)**	**2010**	**2023**	**2024**
Category 1: Direct emissions (tCO_2e)	Scope 1	10,670.63	3,126.59	2,534.09
Category 2: Indirect emissions from imported energy (location-based method*) (tCO_2e)	Scope 2	1,749.59	623.56	767.78
Category 3: Indirect emissions from transportation (tCO_2e)	Scope 3	20.54	43.11	450.36
Category 4: Indirect emissions from products used by organisation (tCO_2e)		29.70	143.69	109.63
Category 5: Indirect emissions associated with the use of products from the organisation (tCO_2e)		0.00	0.00	0.00
Category 6: Indirect emissions from other sources (tCO_2e)		0.00	0.00	0.00
Total direct emissions (tCO_2e)		**10,670.63**	**3,126.59**	**2,534.09**
Total indirect emissions* (tCO_2e)		**1,799.83**	**810.35**	**1,327.77**
Total gross emissions* (tCO_2e)		**12,470.46**	**3,936.94**	**3,861.86**

Category (ISO 14064-1:2018)	Scopes (ISO 14064-1:2006)	2010	2023	2024
Category 1 direct removals (tCO_2e)		0.00	0.00	0.00
Purchased emission reductions (tCO_2e)		0.00	0.00	0.00
Total net emissions (tCO_2e)		**12,470.46**	**3,936.94**	**3,861.86**

*Emissions are reported using a location-based methodology. See section 1.2.1 for details.

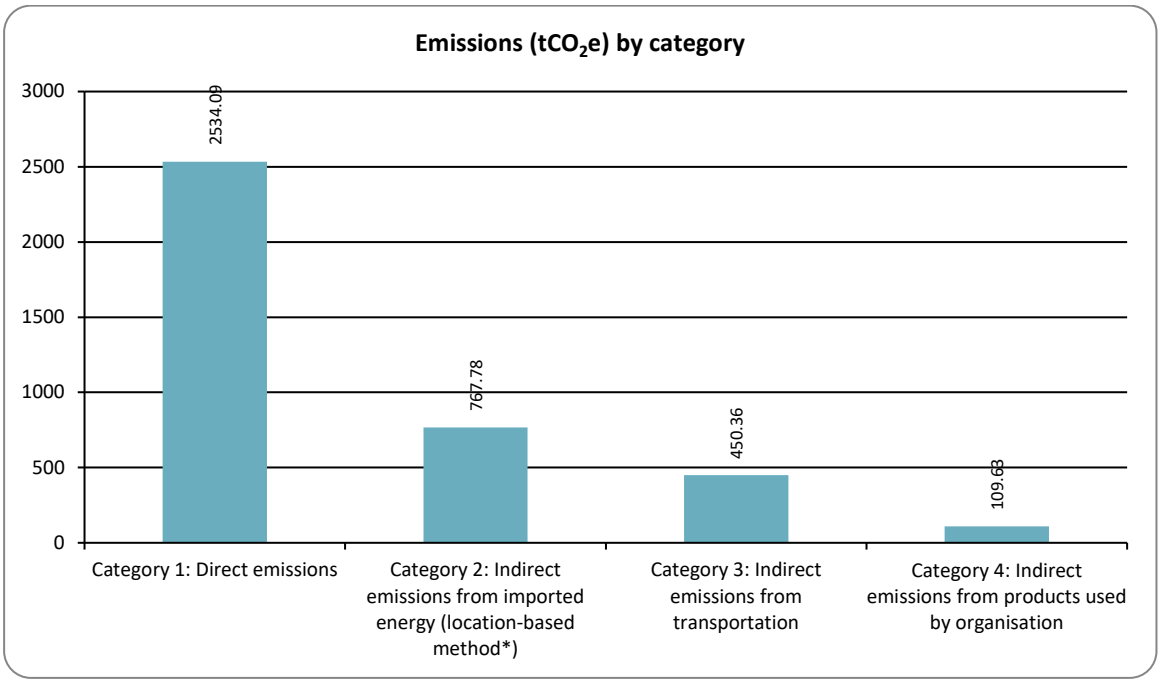


Figure 1: Emissions (tCO_2e) by Category for this measurement period

CHAPTER 1: EMISSIONS INVENTORY REPORT

1.1. INTRODUCTION

This report is the annual greenhouse gas (GHG) emissions inventory and management report for Kāpiti Coast District Council.

The inventory is a complete and accurate quantification of the amount of GHG emissions that can be directly attributed to the organisation's operations within the declared boundary and scope for the specified reporting period. The inventory has been prepared in accordance with the requirements of the measure-step of the Programme, which is based on the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2018) and ISO 14064-1:2018 Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals. Where relevant, the inventory is aligned with industry or sector best practice for emissions measurement and reporting.

This is the third year that the inventory report uses the ISO 14064:2018 category 1 to 6 instead of the ISO 12064:2006 scope 1 to 3. Council currently does not report any category 5 and 6 emission sources, but Council intends to monitor and report these emissions in the future.

Council estimated its category 3-6 indirect emissions for the second year using a value-based model provided by Toitū. The 50 highest value contracts were again used and translated into estimated emissions using New Zealand emissions factors. The second estimate resulted in 11,851tCO_2e (rounded). Council is not required to report this figure in its inventory against Council's baseline reduction targets. A work programme is underway to improve data gathering through contracts for services and products, and to develop a robust data capture system which will enable target setting for categories 3-6 emissions, by the end of 2025.

The inventory report and any GHG assertions are expected to be verified by a Programme-approved, third-party verifier. The level of assurance is reported in a separate Assurance Statement provided to the directors of the certification entity.

1.2. EMISSIONS INVENTORY RESULTS

Table 2: Emissions inventory summary for this measurement period

Measurement period: 01 July 2023 to 30 June 2024.

Category	Toitū carbon mandatory boundary (tCO_2e)	Additional emissions (tCO_2e)	Total emissions (tCO_2e)
Category 1: Direct emissions	2,534.09 Diesel, CO_2, Natural Gas distributed commercial, Petrol regular, R-407C, Petrol premium, Fertiliser use Nitrogen, Waste to Landfill Sludge (tCO_2), Wastewater precalculated (tCO_2e), Wood industry	0.00	2,534.09
Category 2: Indirect emissions from imported energy (location-based method*)	767.78 Electricity	0.00	767.78
Category 3: Indirect emissions from transportation	77.97	372.39	450.36

Category	Toitū carbon mandatory boundary (tCO_2e)	Additional emissions (tCO_2e)	Total emissions (tCO_2e)
	Air travel domestic (average), Private Car default (petrol), Rail travel (national), Taxi (regular), Freight Rigid and Articulated trucks, Freight Road rigid truck (>17t)	Accommodation hotel/lodge/motor inn, Pre-calculated (tCO_2-e) - Employee commuting	
Category 4: Indirect emissions from products used by organisation	109.63 Electricity distributed T&D losses, Natural Gas distributed T&D losses, Waste to Landfill Municipal solid waste (tCO_2e), Waste landfilled screenings (tCO_2e)	0.00	109.63
Category 5: Indirect emissions associated with the use of products from the organisation	0.00	0.00	0.00
Category 6: Indirect emissions from other sources	0.00	0.00	0.00
Total direct emissions	**2,534.09**	**0.00**	**2,534.09**
Total indirect emissions*	**955.38**	**372.39**	**1,327.77**
Total gross emissions*	**3,489.47**	**372.39**	**3,861.86**
Category 1 direct removals	0.00	0.00	0.00
Purchased emission reductions	0.00	0.00	0.00
Total net emissions	**3,489.47**	**372.39**	**3,861.86**
Emissions intensity		**Mandatory emissions**	**Total emissions**
Ratepayer (gross tCO_2e / unit)		0.13	0.15
Operating revenue (gross tCO_2e / $Millions)		17.06	18.88

*Emissions are reported using a location-based methodology. See section 1.2.1 for details.

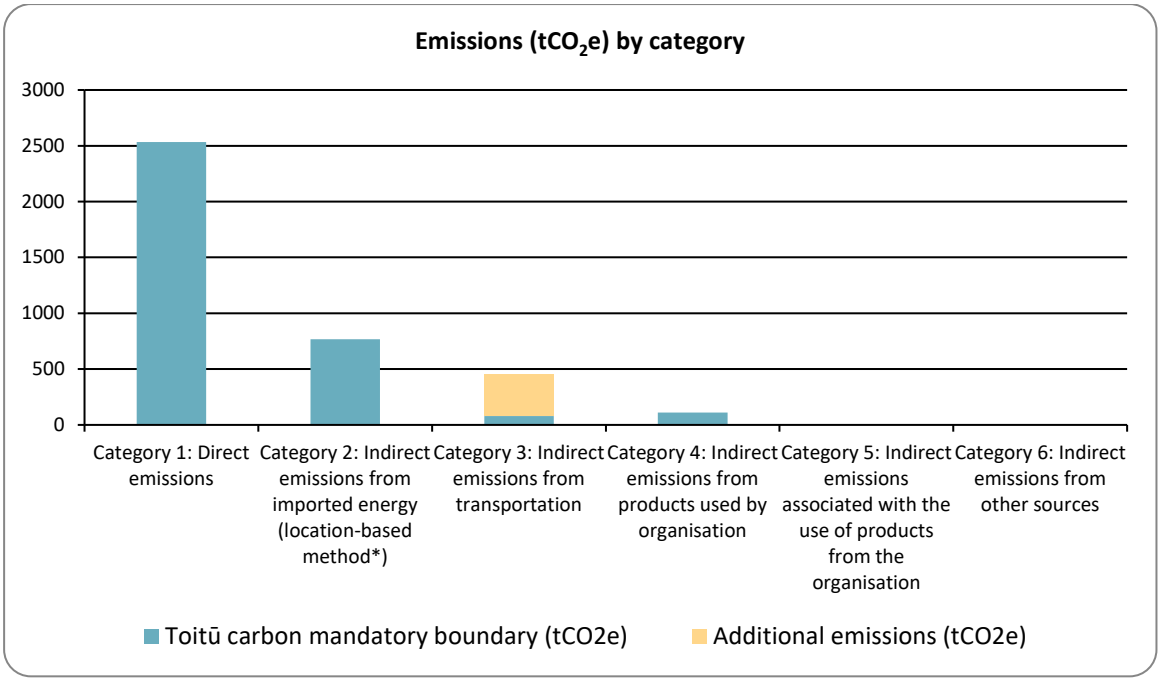


Figure 2: Emissions (tCO_2e) by category

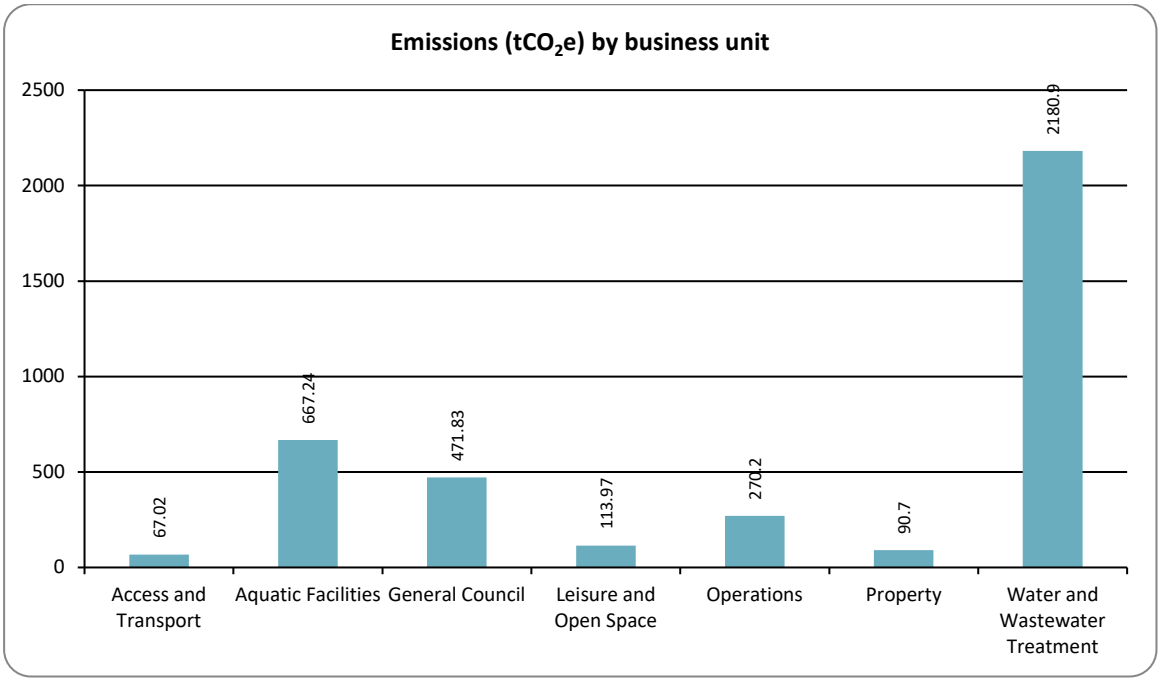


Figure 3: Emissions (tCO_2e) by business unit

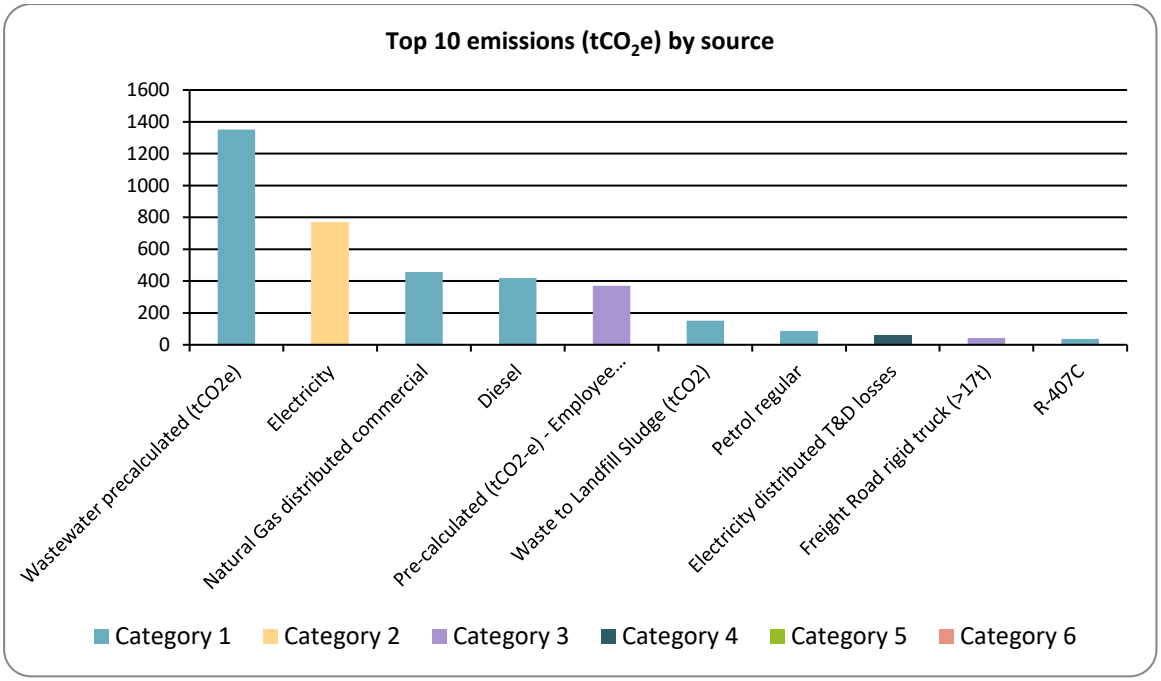


Figure 4: Top 10 emissions (tCO_2e) by source

1.2.1. Dual reporting of indirect emissions from purchased and generated energy

All purchased and generated energy emissions are dual reported using both the location-based method and market-based method. Dual reporting illustrates the role of supplier choice, onsite renewable energy generation and contractual instruments in managing indirect emissions from energy alongside any ongoing energy efficiency and reduction efforts.

In July 2021 the Council entered a new electricity supply contract with Meridian. Council recently renegotiated the NHH portion of the energy contract and will re-negotiate both TOU and NHH portions by June 2026. Switching providers to Meridian, as well as outsourcing management of carbon related data, has allowed for improved and more granular energy usage data.

This information assists with energy efficiency discussions with all Council's activity managers.

As noted in the 22/23FY audit, Council received two solar feasibility studies in October 2022. One study investigated the feasibility of installing a 'Solar Hub' on Council buildings in the Civic Centre, the other study assessed the feasibility of developing a solar farm in Ōtaki. The Solar Hub project at the Civic Centre has been included in the Long-Term Plan 2024 budget which was adopted by Council in June 2024. Council will continue to explore options to install solar panels on the Civic Solar Hub and larger solar arrays across the Kāpiti District.

Council already generates some on-site renewable electricity at several sites. The Council benefits from the following on-site electricity generation systems:

- 107 kWp Solar PV system at the Ōtaki Wastewater Treatment Plant, commissioned in September 2020 - this solar farm is not council owned and is discussed further in the contractual instruments below.
- 32.0 kWp solar photovoltaic system located at Paraparaumu Wastewater Treatment Plant, commissioned in June 2015 – this site was temporarily disestablished to allow for improvements to the Paraparaumu Wastewater Treatment Plant but has been re-installed.
- 5.1 kWp solar photovoltaic system located at 2 Ake Ake Place, Ōtaki, commissioned in December 2013

- 3.8 kWp wind turbine located at 2 Ake Ake Place, Ōtaki, commissioned in December 2013
- 1.2 kWp solar photovoltaic system at Paekākāriki reservoir (for telemetry)
- 0.56 kWp solar photovoltaic system at Hautere reservoir (for telemetry)
- 0.7 kWp solar photovoltaic system at Otaihanga reservoir (3 separate systems for telemetry, flow meter, wide area network radios)
- 0.2 kWp solar photovoltaic system at Ngārara bush, Tini bush wetland monitoring sites and Upper Muaūpoko stream site (for telemetry).

In 2020, Council entered into a solar energy supply agreement with Energise Ōtaki whereby they would own and maintain the solar farm on land adjacent to the Ōtaki Wastewater Treatment Plant (Ōtaki WWTP). Council entered a land lease agreement with Energise Ōtaki for the land to support this project. In the 2023/24 FY, the solar farm produced 142,193.71kWH of electricity and the Ōtaki WWTP used 98,841.52kWh (70% - rounded) of this. The energy supplied by Energise Ōtaki makes up about 40% of the electricity used in the Ōtaki WWTP.

The previous error in the calculation regarding the kWh's produced by the solar farm and energy imported from the main grid to the Ōtaki WWTP has been resolved.

Council has decided to not off-set emissions via Meridian Renewable Energy Certificates (RECs) at this time. Although offsetting may in future enable Council to meet the aspirational target to be net-zero by 2040, Council's focus is to reduce gross corporate carbon emissions at source.

Table 3. Dual reporting of indirect emissions from imported energy

Category	Location-based methodology (tCO_2e)	Market-based methodology (tCO_2e)
Category 1: Direct emissions	2,534.09	2,534.09
Category 2: Indirect emissions from imported energy	767.78	823.43
Category 3: Indirect emissions from transportation	450.36	450.36
Category 4: Indirect emissions from products used by organisation	109.63	109.63
Category 5: Indirect emissions associated with the use of products from the organisation	0.00	0.00
Category 6: Indirect emissions from other sources	0.00	0.00
Total direct emissions	**2,534.09**	**2,534.09**
Total indirect emissions	**1,327.77**	**1,383.42**
Total gross emissions	**3,861.86**	**3,917.50**
Category 1 direct removals	0.00	0.00
Total net emissions	**3,861.86**	**3,917.50**

1.3. ORGANISATIONAL CONTEXT

1.3.1. Organisation description

Kāpiti Coast District Council is the territorial authority for its area. It employed 410.5 full time equivalent employees in the 2023/24 FY and is responsible for water and wastewater, local roads (including streetlighting), stormwater management, parks and open spaces, aquatic facilities, libraries, and other community facilities. Council is also a regulator, performing statutory duties such as regulatory compliance, animal management and issuing building and resource consents. Council influences the development of the district through its democratic and strategic planning functions. Council has declared a Climate Change emergency and is embedding climate change planning (emissions reduction and adaptation) throughout its services delivery. Council seeks to measure and reduce its carbon footprint as part of its services delivery.

Commitment to certification

Council has been committed to measuring and reducing its carbon footprint since 2009. In 2019, when Council declared a Climate Change emergency this reinforced the Council's position on continuing to reduce its carbon emissions. The Council is now guided by the Climate Emergency Action Framework that was adopted by Council on 29th July 2021. The framework includes key principles such as, to be strong and effective leaders regarding climate change and to use best practice approaches in all services delivery. This framework will become part of the new Climate and Resilience Strategy (strategy), alongside the Long-Term Plan 2024.

That strategy will have a district focus and will include a districtwide emissions target. Council has also co-developed a Regional Emissions Reduction Plan together with councils in the Wellington region and Greater Wellington Regional Council, as part of the Wellington Region Growth Framework. This signals Council's continued commitment to acting on climate change which includes measuring and reducing its operational carbon emissions.

GHG Reporting

This report delivers on the Council's commitments in the Long-Term Plan (LTP) regarding monitoring and reporting on emissions sources and achieving reductions. It is also delivering on Council's emissions reduction plan.

Climate Change Impacts

Without a global reduction in GHG emissions, global heating will continue to increase leading to a changing climate (e.g., severe storm events, flooding, coastal erosion, sea-level rise, and changes to local biodiversity). These changes will intensify further as heating continues, putting natural and built environments and communities under increasing pressure and risk.

Climate change projections for the Kāpiti District include increases in mean temperature, annual rainfall, of the mean sea level, and inundation, as well as significant increases in the frequency and intensity of storm surge events, causing more surface water flooding and impacting the district's groundwater levels. While there is still some uncertainty about the nature and significance of these impacts, including how quickly they will happen, Council is incorporating these projections into its planning processes to provide suitable infrastructure and appropriate regulatory frameworks for this changing future.

1.3.2. Statement of intent

This inventory forms part of the organisation's commitment to gain Toitū carbonreduce certification. The intended uses of this inventory are:

Intended use and users

The inventory report is intended to give an accurate update overview of the operational GHG emissions produced by the Council. The report will be used by officers to understand what the biggest emitting actives

are and where efforts should focus to reduce emissions in future years. The report is also publicly available and shared with Councils elected members as an update as well to help inform their governance decisions.

Given that Council has achieved significant reductions since 2010, conversations with elected members and staff have focused on planning further reduction options/projects and resetting the reduction targets to reflect what is achievable as well as current best practice. This resulted in Council adopting a new aspirational long-term target of being net zero emissions by 2040, and a further medium-term emissions reduction target for categories 1 and 2 emissions of 15.5% by 2032 (measured against 2022 as the baseline year). This means reducing category 1 and 2 emissions further by up to 661 tCO_2-e. This further emissions reduction target will be achieved by delivering five key projects and business-as-usual services delivery. These projects are discussed in section 2.4. of this report.

Council is committed to monitoring, reporting, and addressing its scope 3 (indirect) emissions, including setting a scope 3 emission reduction target in 2025. Although Council does not currently report any category 5 to 6 emissions sources, it intends to do so. This is a complex work programme to implement which Council is in the process of developing.

Other schemes and requirements

This inventory forms part of the organisation's commitment to gain programme certification. This inventory reports into the Toitū carbonreduce programme.

1.3.3. Person responsible

Brendan Owens (General Manager Customer and Community) is responsible for overall emission inventory measurement and reduction performance, as well as reporting results to top management. Brendan Owens (General Manager Customer and Community) in consultation with relevant members from the senior leadership team has the authority to represent top management and has financial authority to authorise budget for the programme, including management projects and mitigation objectives.

State any other people/entities involved

Matt Nabney (Advisor Sustainability, Kāpiti Coast District Council):

This is the Advisor's second carbon audit.

Robb Morison (Data Services Manager, Carbon EES):

Additional data is prepared by Carbon EES who are contracted to provide this service to the Council.

Top management commitment

Council management is committed to the having the organisational carbon audited each year. This is demonstrated though LTP allocation of funding to support the cost of auditing and carbon reduction projects as well as the employment of a dedicated staff member to carry out auditing and project management work for emissions reduction.

Management involvement

The collection of data and preparation of audit materials is done by Carbon EES in collaboration with Council officers. Some data are provided by third party contractors but managed by Council staff. The Manager Climate Action and Connected Communities has approved the report before it is submitted to Toitū for certification.

1.3.4. Reporting period

Base year measurement period: 01 July 2009 to 30 June 2010

For Council's overall gross emissions, the baseline of 2009/10 will remain as agreed with Toitū Envirocare. The further reduction target of 15.5% (661 tCO_2e) by 2032 for categories 1 and 2, is measured against a base year of 2022. Gross emission reductions at 1 July 2022 with backdated estimated wastewater-emissions to 2010 were 64%.

Measurement period of this report: 01 July 2023 to 30 June 2024

Reporting will be done annually.

The reporting period for this inventory report is July 2023 - June 2024 to align with the Council's financial year and other reporting cycle that the council undertakes.

1.3.5. Organisational boundary and consolidation approach

An operational control consolidation approach was used to account for emissions.[4]

Organisational boundaries were set with reference to the methodology described in the GHG Protocol and ISO 14064-1:2018 standards.

Justification of consolidation approach

The GHG Protocol allows two distinct approaches to be used to consolidate GHG emissions: the equity share and control (financial or operational) approaches. The Toitū Programme specifies that the operational control consolidation approach should be used unless otherwise agreed with the Programme.

Organisational structure

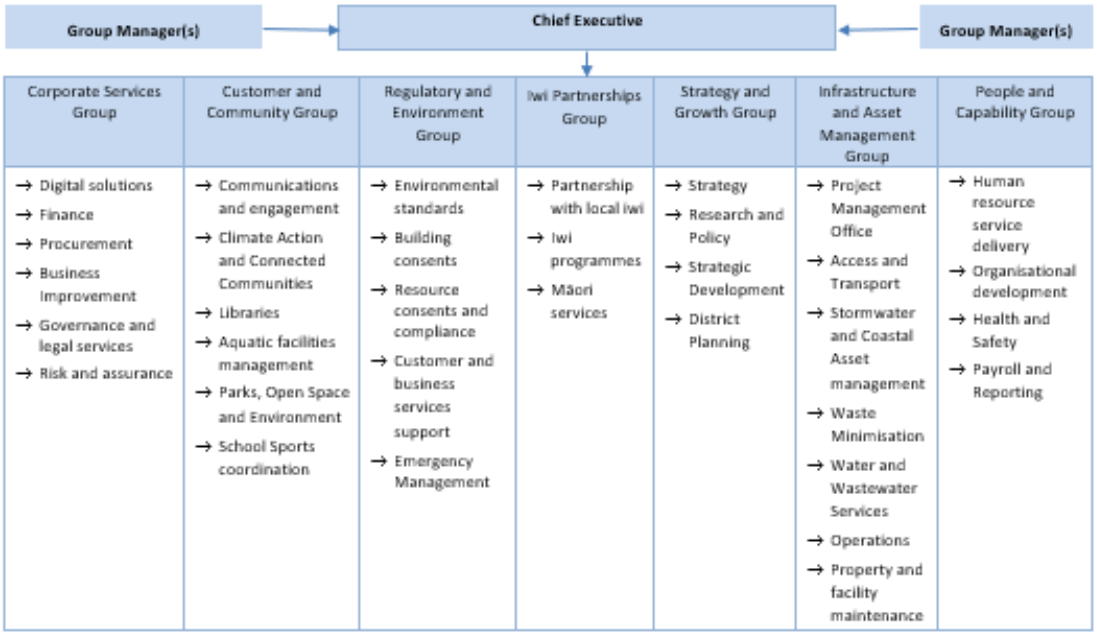
Figure 5 shows what has been included in the context of the overall structure.

The first section in Figure 5 below shows the organisational structure. The council has no separate organisational entities or subsidiaries. For the purposes of emissions reporting, the organisation has been divided into units that manage key emissions sources as shown in the second section of Figure 5. For emissions sources that are not managed by one group (e.g., air travel) these have been ascribed to 'General Council'. The emissions sources highlighted in green have been identified as being within full operational control of the Council and part of the operational emissions inventory. The emissions sources in dark green are liabilities and are reported but are not part of operational emissions. Council recently updated its organisational structure which has been reflected in the updated Table 4 and Figure 5.

Table 4 provides an overview of the purpose and key contacts within each of the business units.

[4]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.

Organisational structure



Organisation Chart

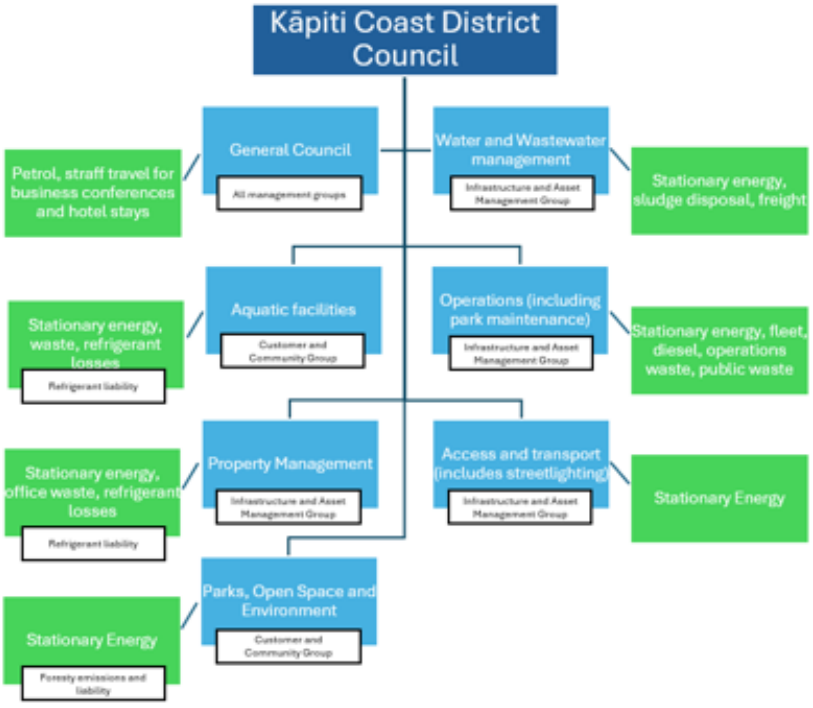


Figure 5: Organisational structure

Table 4. Brief description of business units, sites and locations included in this emissions inventory

Company/Business unit/Facility	Description
Water and Wastewater Treatment	Purpose: Water supply and treatment, treatment and disposal of sewage, management of all associated assets. Contacts: Manager Water and Wastewater Services
Operations	Management of council operations such as public litter bin waste collection, parks maintenance, leak detection and repairs and all water, wastewater and stormwater pumping station maintenance and repairs. Includes management of landfill sites. Contact: Operations Manager.
Property	Purpose: Manages the majority of council-owned buildings including offices, libraries and community halls. Contact: Manager Property and Facilities
Leisure and Open Space	Purpose: Manages sports facilities, parks and reserves. Contact: Manager, Parks, Open Space and Environment.
Access and Transport	Purpose: Manages development and maintenance of local roads, plus streetlighting. Contact: Manager Access and Transport.
Aquatic Facilities	Purpose: Manages the council's three swimming pools. Contact: Manager Aquatics.
General Council	Purpose: Catch-all reporting unit for emissions sources that cut across Council groups and are generally not linked to a specific site – e.g., pool vehicles, flights, taxis etc. Contact: Advisor Sustainability.

1.3.6. Excluded business units

None.

CHAPTER 2: EMISSIONS MANAGEMENT AND REDUCTION REPORT

2.1. EMISSIONS REDUCTION RESULTS

In the 2023/24-year, Council's total gross emissions were 3,489tCO_2-e which is a 11.3% reduction (-446tCO_2-e) in gross emissions compared to the 2022/23FY. This decrease can largely be explained by the reduction in the pre-calculated emissions from sludge to landfill, wastewater processing, refrigerant leakage, and emissions from electricity T&D losses. In the 2023/24-year, Council undertook a staff commuting survey to expand data capture to its category 3-6 emissions sources. However, these emissions do not fall within Council's mandatory emissions reporting boundary. If these emissions were included then Council's gross emissions would be 3,861tCO_2-e.

There were increases in direct emissions from several sources which in part offset Council's potential emissions reduction, including:

- Electricity (+144tCO_2-e),
- Freight Road rigid trucks (+43tCO_2-e) – reported for the first time in the 23/24FY audit,
- Natural Gas (+41tCO_2-e),
- Diesel (+10tCO_2-e), and
- Fertiliser (+8tCO_2-e).

These increases resulted in an additional 246tCO_2-e emissions from these sources compared to the 2022/23FY.

Emissions from wastewater processing have reduced by 16.7% (-271tCO_2-e) compared to when they were last calculated during the 2020/21FY. Note: data from the 2022/23FY was used to update the calculation because it was calculated in April 2024, as data was not yet available for the 2023/2024FY. The updated calculation indicates these emissions have steadily reduced between the 2020/21 and 2022/23 financial years. This is due to several upgrades to both the Paraparaumu and Ōtaki Wastewater Treatment Plants (Paraparaumu WWTP and Ōtaki WWTP respectively).

These upgrades include:

- the installation of new aerators, refurbished clarifiers and replacement of the sand filter at the Paraparaumu WWTP, and
- the repair of a groundwater entry point to the Ōtaki WWTP.

The other significant change is a 60% (-231tCO_2-e) reduction in emissions from sludge to landfill, compared to the 2022/23FY. This is due to an improvement to the calculation methodology to determine these emissions. Following feedback received during the Toitū audit, Council updated the calculation methodology (which now utilises the Silverstream Landfill unique emissions factor) and has corrected an error in the previous calculation. It is important to highlight that Council does not currently include emissions produced by the 26,391 tonnes of districtwide municipal waste transferred to the Silverstream and Spicer landfills within its corporate organisational reporting boundary. Council is dependent on out of district landfills and therefore has no influence over landfill processes.

Compared to the 22/23FY carbon emissions from refrigerant losses reduced by -80% (149tCO_2-e). This was due to a significantly smaller refrigerant leakage at the Coastlands Aquatic Centre.

There was a further 3.7% (-3tCO_2-e) reduction in emissions from petrol use which can largely be explained by the on-going replacement of Council fleet vehicles with electric vehicles.

Overall energy use across Council increased by 1% compared to 2022/23FY and is expected to increase as more EVs and other electric machinery and services are utilised across Council. To mitigate further electricity increases, Council is in the process of developing an energy efficiency work programme to identify assets that consume the highest proportion of electricity to then undertake energy efficiency audits and subsequent energy improvements.

Further detailed information on the emission results can be found in section 2.2.

Council will continue to work on further emissions reductions and will expand efforts to consider sequestration opportunities, data gathering and reduction options development for category 3-6 emissions. Council has started to receive category 3-6 emissions data from suppliers. This work programme is still in development so this data will not be included in the 23/24FY audit.

Table 5: Comparison of historical GHG inventories

Category	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Category 1: Direct emissions (tCO_2e)	10,670.63	9,561.83	8,343.61	5,701.36	4,409.98	5,120.92	3,140.20	1,174.70	1,176.32	1,264.43	3,389.79	3,300.32	3,156.14	3,126.59	2,534.09
Category 2: Indirect emissions from imported energy (location-based method*) (tCO_2e)	1,749.59	1,613.95	1,743.71	1,797.63	1,683.47	1,454.64	1,202.71	1,079.02	1,131.17	1,166.38	1,211.67	1,226.74	1,225.99	623.56	767.78
Category 3: Indirect emissions from transportation (tCO_2e)	20.54	25.47	36.32	30.67	31.67	30.62	35.42	50.06	41.10	48.46	45.58	37.85	28.36	43.11	450.36
Category 4: Indirect emissions from products used by organisation (tCO_2e)	29.70	29.69	406.38	317.91	427.27	478.20	553.11	467.38	403.60	435.37	452.22	385.88	130.79	143.69	109.63

Category	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Category 5: Indirect emissions associated with the use of products from the organisation (tCO_2e)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Category 6: Indirect emissions from other sources (tCO_2e)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total direct emissions (tCO_2e)	**10,670.63**	**9,561.83**	**8,343.61**	**5,701.36**	**4,409.98**	**5,120.92**	**3,140.20**	**1,174.70**	**1,176.32**	**1,264.43**	**3,389.79**	**3,300.32**	**3,156.14**	**3,126.59**	**2,534.09**
Total indirect emissions* (tCO_2e)	**1,799.83**	**1,669.11**	**2,186.41**	**2,146.21**	**2,142.41**	**1,963.46**	**1,791.25**	**1,596.46**	**1,575.86**	**1,650.21**	**1,709.47**	**1,650.47**	**1,385.13**	**810.35**	**1,327.77**
Total gross emissions* (tCO_2e)	**12,470.46**	**11,230.94**	**10,530.01**	**7,847.57**	**6,552.39**	**7,084.38**	**4,931.44**	**2,771.15**	**2,752.18**	**2,914.64**	**5,099.26**	**4,950.79**	**4,541.27**	**3,936.94**	**3,861.86**
Category 1 direct removals (tCO_2e)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased emission reductions (tCO_2e)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total net emissions (tCO_2e)	**12,470.46**	**11,230.94**	**10,530.01**	**7,847.57**	**6,552.39**	**7,084.38**	**4,931.44**	**2,771.15**	**2,752.18**	**2,914.64**	**5,099.26**	**4,950.79**	**4,541.27**	**3,936.94**	**3,861.86**
Emissions intensity															
Ratepayer (gross tCO_2e / unit)	0.52	0.46	0.43	0.32	0.27	0.29	0.20	0.11	0.11	0.12	0.20	0.20	0.18	0.15	0.15
Ratepayer (gross mandatory tCO_2e / unit)	0.52	0.46	0.43	0.32	0.27	0.29	0.20	0.11	0.11	0.12	0.20	0.20	0.18	0.15	0.13

Category	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Operating revenue (gross tCO_2e / $Millions)	222.29	203.75	170.03	118.40	93.07	104.04	70.45	38.04	32.80	35.40	47.77	50.47	43.32	33.71	18.88
Operating revenue (gross mandatory tCO_2e / $Millions)	222.28	203.74	170.01	118.38	93.06	104.02	70.43	38.02	32.79	35.37	47.76	50.45	43.32	33.69	17.06

*Emissions are reported using a location-based methodology. See section 1.2.1 for details.1.2.1

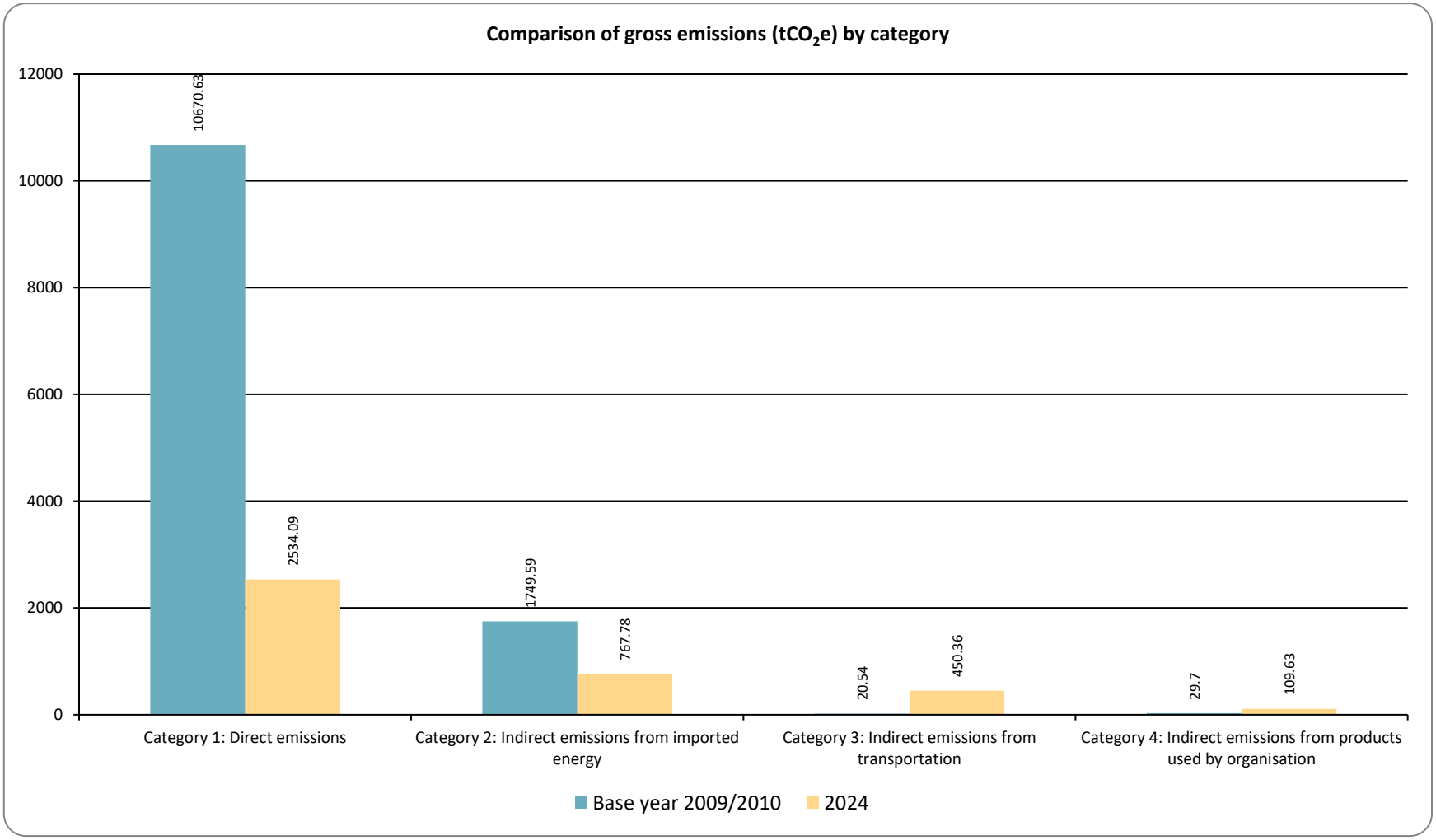


Figure 6: Comparison of gross emissions (tCO_2e) by category between the reporting periods

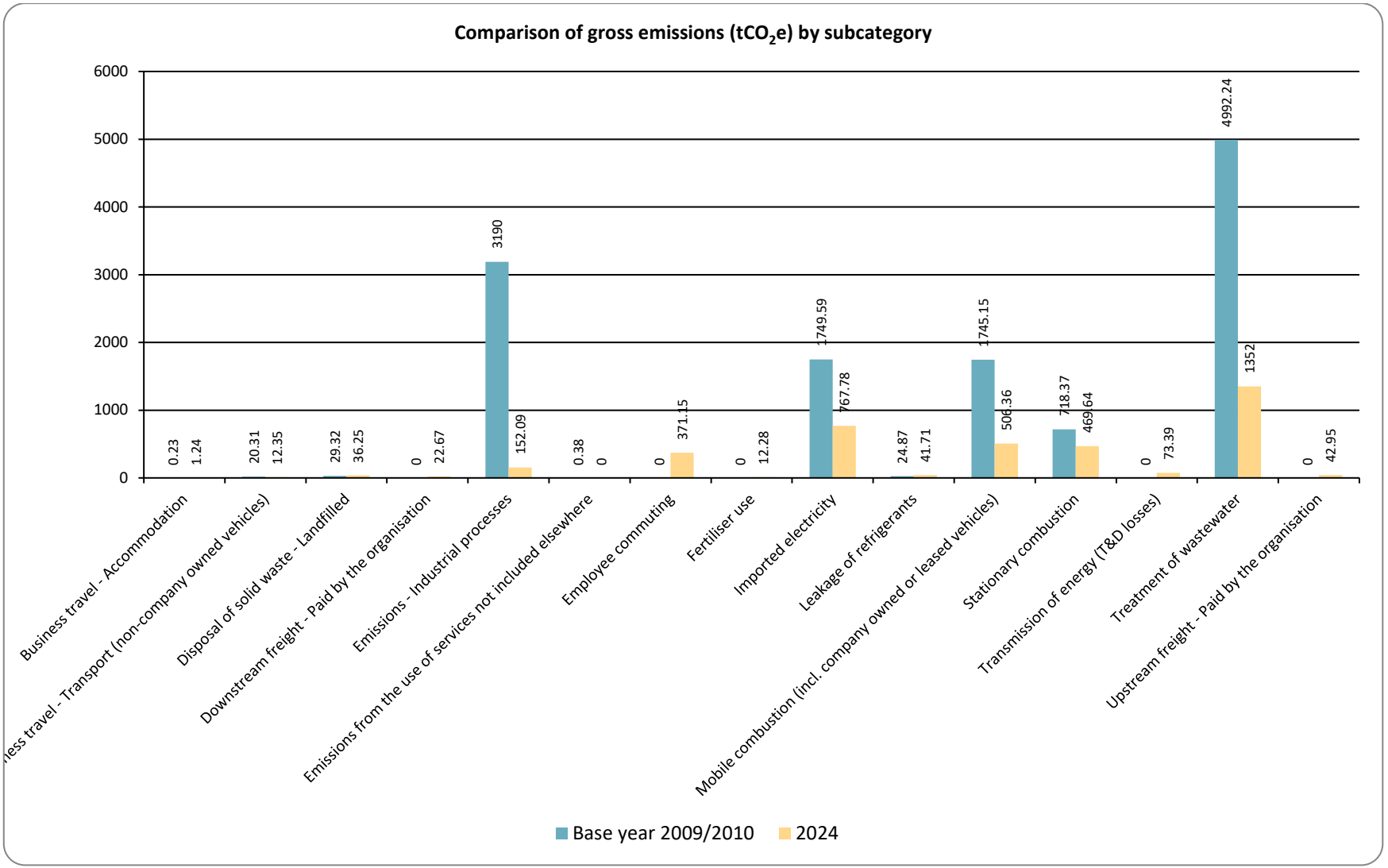


Figure 7: Comparison of gross emissions (tCO_2e) by subcategory between the reporting periods

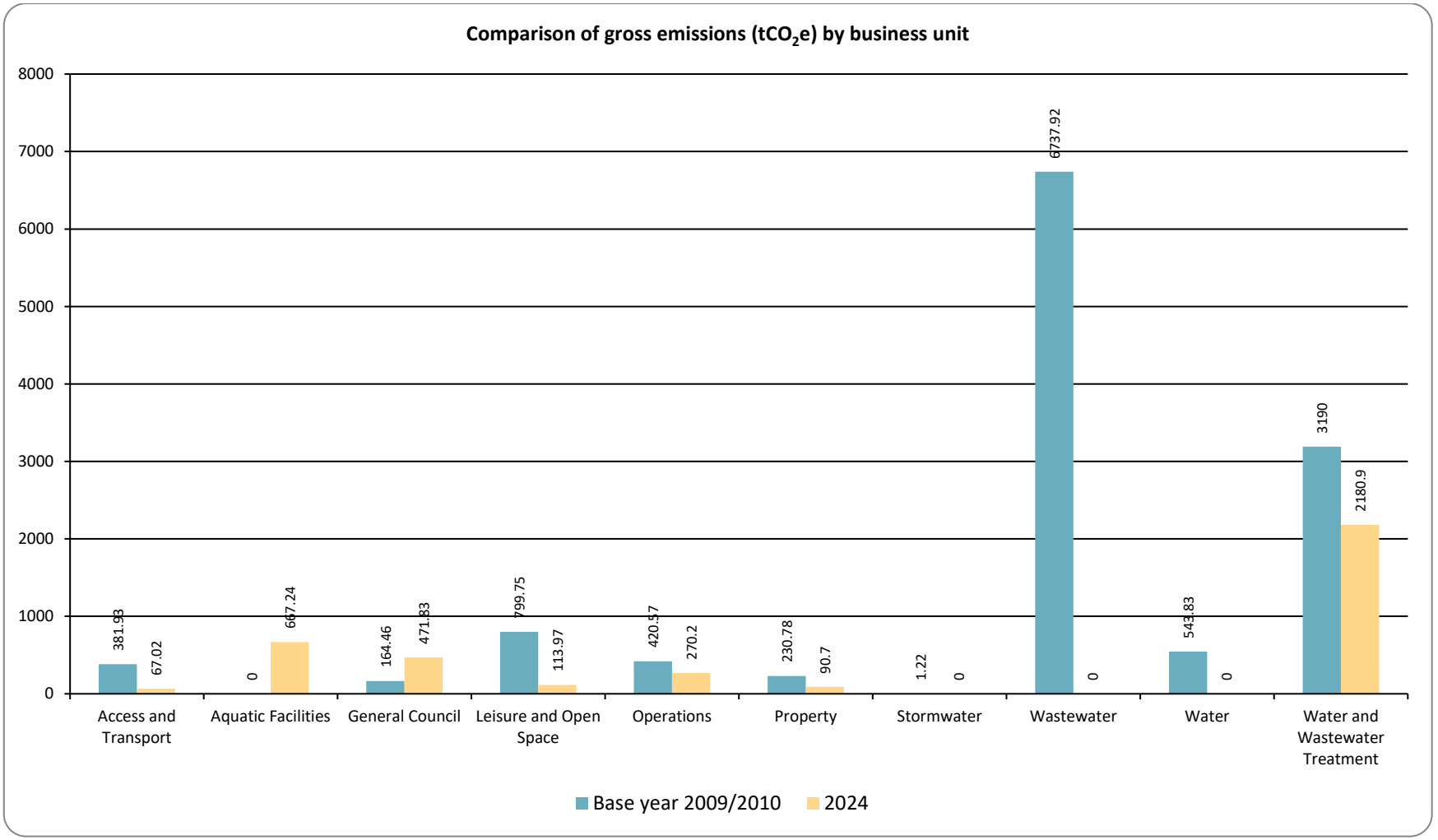


Figure 8: Comparison of gross emissions (tCO_2e) by business unit between the reporting periods

NOTE: Council's water and wastewater emissions are now consolidated under the Water and Wastewater Treatment label. In 2009/10, water-related emissions were differentiated by stormwater, wastewater, water, and water and wastewater treatment.

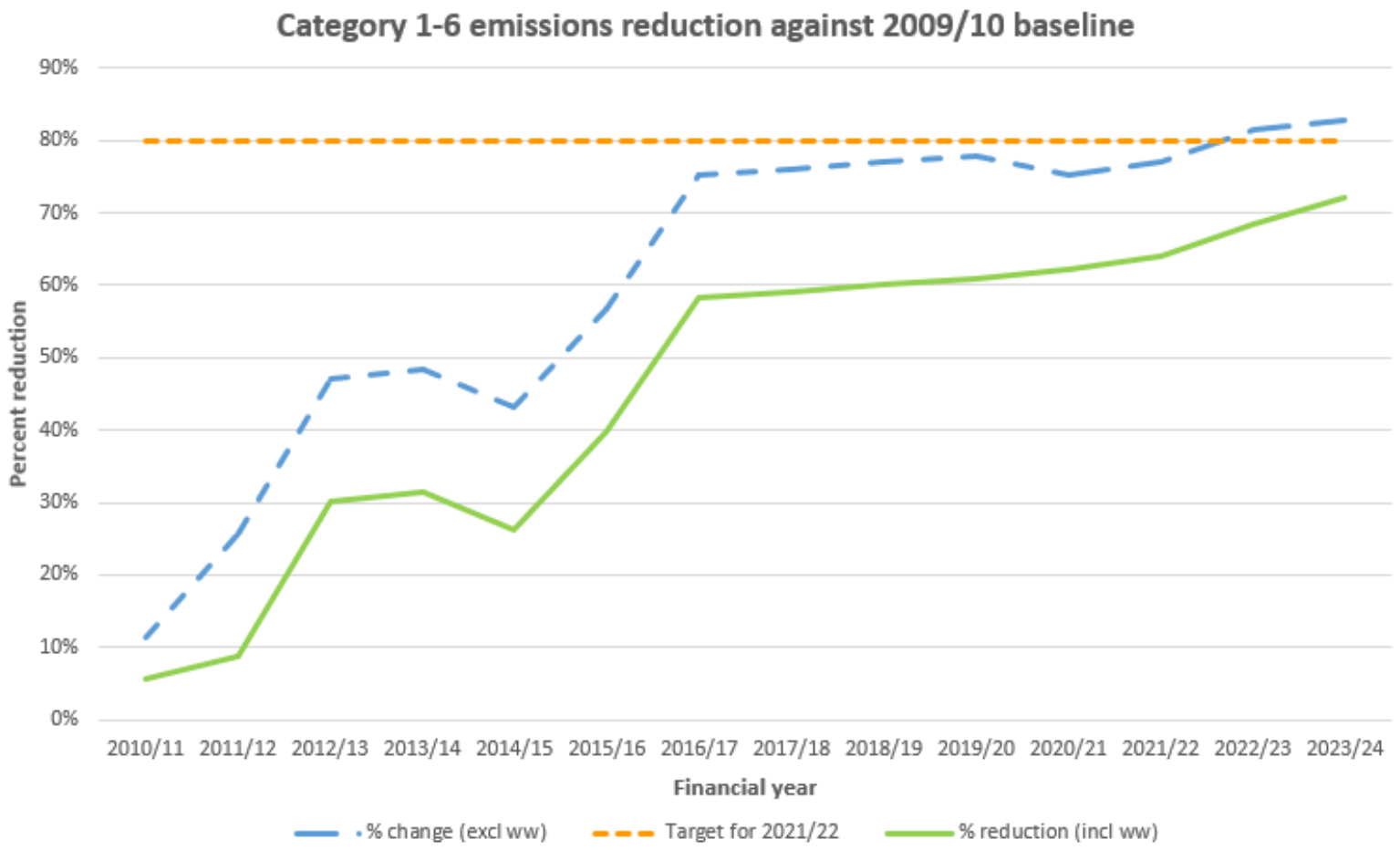


Figure 9: Performance against target since base year

Table 6. Performance against plan

Target name	Baseline period	Target date	Type of target (intensity or absolute)	Current performance (tCO_2e)	Current performance (%)	Comments
80% reductions of emissions from the 2009/10 baseline year (12,470.46tCO_2-e) by 2021/22	2009/10 Financial year.	2021/22	Absolute	3,489.5 tCO_2-e	82.8% (excluding ww) 72% (including ww)	This target is reported excluding wastewater process emissions as they are not included in the baseline year when this target was set. Wastewater emissions are included in the inventory report and are only excluded when measuring against this target.
Further 15.5% reduction of category 1 and 2 emissions from 2022 baseline year	2022	2032	Absolute	3,301.9 tCO_2-e	24.7%	This further emissions reduction target was adopted in June 2023. This is the second reporting period that the target has been included in the audit report. For the 23/24FY, Council achieved a 24.7% reduction against this target. However, this is highly dependent on the calculated emissions from electricity and the works at the wastewater treatment plants, both of which are unlikely to contribute to sustained future emissions reductions. Delivering the five key projects discussed in this report will ensure future category 1 and 2 emissions reductions.

2.2. SIGNIFICANT EMISSIONS SOURCES

Significant sources

Water and wastewater treatment

Council's most significant emissions source is the treatment of water and wastewater at 1,352tCO_2-e which is 38.7% of its total gross emissions.

Emissions reported from our Wastewater Treatment Plants (WWTP) include:

- Electricity use
- Wood pellets for drying biosolids
- Freight of sludge, dried biosolids and screenings
- Emissions for disposal to landfill, and
- Pre-calculated emission from the biological wastewater treatment process.

Water NZ collaborated with local councils and treatment experts to develop a model to estimate Methane and Nitrous Oxide process emissions more accurately and that would be acceptable for all local councils to use to estimate these emissions. This model was released late September 2021 and was updated in 2023. Using the new Water NZ model, the estimated emissions from wastewater treatment in the 2022/23 year were 1,352 tCO_2e. This figure was calculated in April 2024 using data from the 2022/23FY but was used for the 23/24 FY audit.

Electricity:

Indirect emissions from electricity use are 768tCO_2-e which is 21.9% of Council's gross emissions and is the second highest emissions source for Council. This is a 23% increase compared to 2022/23FY. This increase can be explained by the change in the 2024 emissions factor (published by the Ministry for the Environment) which reflects how electricity is generated in New Zealand year-on-year, and a 1% increase in Council's overall electricity use.

Natural gas:

Natural gas is Council's third highest emissions source at 456tCO_2-e which is 13.1% of Council's total gross emissions.

Diesel:

Diesel is Council's fourth highest emissions source at 418tCO_2-e which is 11.9% of Council's total gross emissions.

Waste sludge to landfill:

Sludge and screening disposal is Council's fifth highest emissions source at 152tCO_2-e which is 4.3% of Council's total gross emissions. This reduction is due to a change to Council's calculation methodology which now uses a Silverstream Landfill unique emissions factor, and the correction of an error in the previous calculation methodology.

Activities responsible for generating significant emissions

Wastewater treatment activity is Council's highest emitting activity, it includes both the treatment process and the disposal of sludge and screening to landfill.

Of the total electricity emissions, 61.4% (471tCO_2-e) are related to energy used in drinking water and wastewater treatment. Aquatics also accounts as a large energy user with 19.6% of total energy emissions (150tCO_2-e).

Aquatics accounts for the majority of natural gas use and is as such responsible for 97% (442tCO_2-e) of total gas usage emissions.

Influences over the activities

As further discussed in section 2.4, Council will implement five key projects by 2032 to further reduce category 1 and 2 emissions by 15.5%. Several of these projects have been funded in the 2024 long term plan (LTP) or are planned for future LTPs:

- the replacement of the gas condensing boilers at the Ōtaki (funded) and Waikanae (planned) pools with electric heat pumps,
- the continued renewal of the Council vehicle fleet with EVs (funded),
- the Civic Solar Hub Project – installing Solar PV panels on the buildings in the civic precinct (funded), and
- the introduction of an electric rubbish truck for public bin collections (planned).

A capital project is included in the 2021 LTP and 2024 LTP budget to improve the building envelope for the Ōtaki pool changing rooms and install heat recovery, exchanging the heating source will form part of this project. The 2024 LTP also includes budget to continue the replacement of vehicles with EVs, the installation of the Civic Hub solar array and other business as usual improvements.

Council will continue to improve energy efficiency in its services delivery. However, as Council has continued to grow as an organisation and added a further three electric vehicles to its fleet, electricity usage has increased accordingly.

Significant sources that cannot be influenced

Waste sludge to landfill:

Council will continue to maintain and renew its assets to improve energy efficiency and to reduce emissions from wastewater processing. This is occurring and has led to the reduction in the sludge volume (by weight) and wastewater process emissions.

The landfill of choice for disposal of sludge and screenings also influences Council's emissions from this activity, as gas capture rates at the landfills are different and as such directly influence Council's emissions. Council is dependent on out of district landfills for disposal and has for that reason no influence over the gas capture rate efficiencies. However, it is expected that population growth and consequently increased volumes of wastewater that require treatment could be the largest driver behind increasing emissions into the future from this activity.

2.3. EMISSIONS REDUCTION TARGETS

The organisation is committed to managing and reducing its emissions in accordance with the Programme requirements. Table 7 provides details of the emission reduction targets to be implemented. These are 'SMART' targets (specific, measurable, achievable, realistic, and time-constrained).

The organisation is committed to managing and reducing its emissions in accordance with the Programme requirements. Table 7 provides details of the emission reduction targets to be implemented. These are 'SMART' targets (specific, measurable, achievable, realistic, and time-constrained).

As discussed earlier in this report, the 80% target deadline lapsed in July 2022 and Council set new reduction targets in June 2023, which are now the targets that this inventory is reporting against. The two new targets are:

- an aspirational target to be net zero emissions by 2040, and
- a 'further' emissions reduction target of 15.5% by 2032 for emission categories 1 and 2 measured against a baseline year of 2022.

Both targets are based on services delivery, in collaboration with Toitū.

By 2021/2022, Council had achieved a 77.1% reduction against the previous 2009/2010 baseline (wastewater emissions excluded).

Although the original target of an 80% reduction was not met, this is a significant reduction of 9,640 tCO_2-e from the base year and remains a relevant component of Council's journey to reduce gross carbon emissions. With wastewater emission estimates backdated, Council achieved emissions reductions of 64% between 2009/10 and 21/22, still a significant achievement.

For the 23/24 FY, Council has achieved a carbon emissions reduction of 72% since 2010, which was calculated by back dating the estimated wastewater-emissions to 2010.

This is the second inventory report to include the further reductions target of 15.5% (by 2032), measured against a baseline year of 2022. For the 23/24FY, Council met this target by reducing these emissions by 24.7%. However, this is highly dependent on the calculated emissions from electricity and the improvements made to the WWTP's which are both unlikely to contribute to sustained future emissions reductions. Council will undertake several key projects (discussed in this report) to ensure it sustains future emissions reductions.

Table 7. Emission reduction targets

Target name	Baseline period	Target date	Type of target (intensity or absolute)	Categories covered	Target		KPI	Responsibility	Rationale
To reduce total gross emissions by 80% from baseline year	2009/10 Financial year	2022	Absolute	Categories 1, 2,3 and 4	80%	12,470.46 tCO_2-e is the baseline year amount, an 80% reduction from baseline is 2,494.09 tCO_2-e	9,976tCO_2-e reduction	Sustainability Advisor	The target was calculated into 2009/10 based on services delivery in collaboration with Toitū.
To achieve a further mid-term target to further reduce gross emissions by 15.5% from new baseline year	2022	2032	Absolute	Categories 1 and 2	15.5%	4,382.1 tCO_2-e is the baseline year amount. A 15.5% reduction from baseline is 3,721.12 tCO_2-e.	661 tCO_2-e reduction	Sustainability Advisor	The target was calculated based in 2021/22-year services delivery and audit outcome, in collaboration with Toitū.

2.4. EMISSIONS REDUCTION PROJECTS

In order to achieve the reduction targets identified in Table 7, specific projects have been identified to achieve these targets, and are detailed in Table 8 below.

Table 8. Projects to reduce emissions

Objective	Project	Responsibility	Completion date	Potential co-benefits	Potential unintended consequences	Actions to minimise unintended consequence
Reduce natural gas use and improve heating efficiency	Progress the Ōtaki pool fuel switch to a heat pump and energy efficiency improvements project (currently in the 2024 Long Term Plan), achieved by 2032. Plan for a similar project for the 2027 Long Term Plan period, for the Waikanae pool.	Aquatics Manager, PMO Manager	2025-2031	Eliminating or reducing gas used in the pools, gas prices are expected to rise so this will help to keep operational cost lower in the pools in the longer term.	Heat pumps present a refrigerant liability, if maintenance is not carried out regularly there is a risk that losses could occur.	Maintenance schedules will be reviewed and carried out in line with guidance from professionals.

Objective	Project	Responsibility	Completion date	Potential co-benefits	Potential unintended consequences	Actions to minimise unintended consequence
Expand renewable energy generation	Create a 'Solar Hub' by installing solar panels on the roofs of council-owned buildings at the Civic centre. This project is funded as part of the 2024 and 2027 Long Term Plans.	Advisor Sustainability, PMO officer	2025-2031	Energy use savings and power supply resilience.	None anticipated	n/a
Reduce vehicle fleet emissions	Continue to decarbonise the Council fleet (KPI is 12 EV/PHEV vehicles by end of 23/24 year which has been met). The Council vehicle fleet includes 10 EV's and 3 plug-in hybrids.	Advisor Sustainability, Operations Manager	Ongoing	Fuel budget savings	None anticipated	n/a
Reduce vehicle fleet emissions	Purchase an EV Truck for public rubbish bin collections.	Advisor Sustainability, Operations Manager	2025-2031	Fuel budget savings	None anticipated	n/a
Other reductions through business-as-usual delivery	Continue the process to update various aspects of Council's business-as-usual service delivery such as, the renewal of non-LED streetlights with LED's, use different fertilisers, consider electric lawnmowers, undertake a review of the staff travel policy to minimise flights and to maximise the use of public transport wherever possible. Data from the recent staff commuting and working from survey will help inform this work.	Advisor Sustainability and Activity Managers	Ongoing	Result in financial savings and fuel budget/ electricity use savings	None anticipated	n/a
Reduce company-wide electricity usage and Energy Efficiency projects	Use the Carbon EES data management system to get better insights into electricity use and where savings can be made. Provide energy efficiency studies to building managers to implement further energy saving measures. Council now has a 'Council Energy Team' which meets regularly to discuss projects such as, the Solar Hub and other energy efficiency projects.	Advisor Sustainability and Activity Managers	Ongoing	This will also result in financial savings	None anticipated	n/a

Table 9 highlights emission sources that have been identified as key areas for improving the data quality in future inventories.

Table 9. Projects to improve data quality

Emissions source	Actions to improve data quality	Responsibility	Completion date
Category 3-6 emissions	Council is implementing a work programme to establish data requirements through contracts and procurement to start measuring and reporting category 3-6 emissions. Council must start reporting and setting a reduction target for these emissions by 2025. Council has started to receive some data from suppliers.	Property Manager, Aquatics Manager, Operations Manager	2025/ Ongoing
Review Council's carbon audit procedure handbook	Advisor Sustainability to review Council's carbon audit procedure handbook to ensure it is fit for purpose and to identify existing gaps in reporting processes to ensure future consistent carbon reporting.	Advisor Sustainability	30/06/2025
Electricity use	Council will continue to monitor electricity use for further changes to power consumption.	Property Manager, Advisor Sustainability	Ongoing
Staff commuting data	Council undertook the first commuting and working from home survey during the 23/24FY. The Advisor Sustainability will continue to improve the survey to ensure consistent data collection and reporting.	Advisor Sustainability	30/06/2025

The emissions inventory chapter identified various emissions liabilities (see GHG Storage and liabilities section). Table 10 details the actions that will be taken to prevent GHG emissions from these potential emissions sources.

Table 10. Projects to prevent emissions from liabilities

Liability source	Actions to prevent emissions	Responsibility	Completion date
Refrigerants	Review maintenance schedule and renewals plan to reduce leak risks.	Property Manager, Aquatics Manager	Ongoing
Forestry	N/A Council owned forests are not commercial, they are mostly native planted forests or rejuvenating areas. There is very little that can be done to reduce risk of loss.	Team Leader Environment and Ecological Services	Ongoing
Diesel	Review maintenance schedule to reduce leakage risks.	Operations Manager, Water and Wastewater treatment manager	Ongoing

2.5. STAFF ENGAGEMENT

Council's carbon reduction commitments are communicated to staff through annual reporting, the intranet and internal staff education programmes. Key staff and operational business units are engaged by the Climate Action and Connected Communities Team to work on projects to help reduce council's emissions. The inventory report is used to inform and support project planning discussions.

2.6. KEY PERFORMANCE INDICATORS

The Council monitors its progress on emissions reduction through the two KPIs below:

1. Emissions per ratepayer unit: The total number of ratepayer units this financial year 23/24 was 25,860 and the emissions per ratepayer unit were 0.13tCO_2-e.
2. Emissions per million of Operating Revenue: This year's operating revenue was $204.6 million and the emissions per million of Operating Revenue was 17.1tCO_2-e.

2.7. MONITORING AND REPORTING

The council's Advisor Sustainability is primarily responsible for monitoring and reporting on council's targets however, the work involved in achieving the emission reduction requires input from activity managers and staff across the organisation.

Reporting is done annually through completing an emissions inventory report and the emissions reduction plan is updated every three years.

APPENDIX 1: DETAILED GREENHOUSE GAS INVENTORY

Additional inventory details are disclosed in the tables below, and further GHG emissions data is available on the accompanying spreadsheet to this report (Appendix1-Data Summary Kāpiti Coast District Council.xls).

Note: emissions from the 'Treatment of wastewater' were previously incorrectly categorised as 'Leakage of refrigerants'. These emissions have been correctly allocated to the 'Treatment of wastewater' category.

Table 11. Direct GHG emissions and removals, quantified separately for each applicable gas

Category	CO_2	CH_4	N_2O	NF_3	SF_6	HFC	PFC	Desflurane	Sevoflurane	Isoflurane	Emissions total (tCO_2e)
Stationary combustion	455.24	6.87	7.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	469.64
Mobile combustion (incl. company owned or leased vehicles)	496.20	1.74	8.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	506.36
Emissions - Industrial processes	152.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	152.09
Removals - Industrial processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leakage of refrigerants	4.36	0.00	0.00	0.00	0.00	37.36	0.00	0.00	0.00	0.00	41.71
Treatment of waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Emissions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Treatment of wastewater	1,352.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,352.00
Emissions - Land use, land-use change and forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Removals - Land use, land-use change and forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertiliser use	0.00	0.00	12.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.28
Addition of livestock waste to soils	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Addition of crop residue to soils	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Addition of lime to soils	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Enteric fermentation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Open burning of organic matter	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity generated and consumed onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medical gases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Exported electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total net emissions	2,459.89	8.61	28.23	0.00	0.00	37.36	0.00	0.00	0.00	0.00	2,534.09

Table 12. Non-biogenic, biogenic anthropogenic and biogenic non-anthropogenic CO_2 emissions and removals by category

Category	Anthropogenic biogenic CO_2 emissions	Anthropogenic biogenic (CH_4 and N_2O) emissions (tCO_2e)	Non-anthropogenic biogenic (tCO_2e)
Category 1: Direct emissions	772.57	13.13	0.00
Category 2: Indirect emissions from imported energy	0.00	0.00	0.00
Category 3: Indirect emissions from transportation	0.00	0.00	0.00
Category 4: Indirect emissions from products used by organisation	0.00	0.00	0.00
Category 5: Indirect emissions associated with the use of products from the organisation	0.00	0.00	0.00
Category 6: Indirect emissions from other sources	0.00	0.00	0.00
Total gross emissions	**772.57**	**13.13**	**0.00**

A1.1 REPORTING BOUNDARIES

A1.1.1 Emission source identification method and significance criteria

The GHG emissions sources included in this inventory are those required for Programme certification and were identified with reference to the methodology described in the GHG Protocol and ISO 14064-1:2018 standards as well as the Programme Technical Requirements.

There is a mix of ways Council will identify new emissions sources. Communications with staff and activity managers is the keyway that emissions sources and sinks are identified and understood. Operational expenditure records, energy reporting and site visits are also used for identification of sources.

Significance of emissions sources within the organisational boundaries has been considered in the design of this inventory. The significance criteria used comprise:

- All direct emissions sources that contribute more than 1% of total Category 1 and 2 emissions
- All indirect emissions sources that are required by the Programme.

No changes to the significance criteria have been made since this inventory was initially developed in the base year.

A1.1.2 Included sources and activity data management

As adapted from ISO 14064-1, the emissions sources deemed significant for inclusion in this inventory were classified into the following categories:

- **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.
- **Indirect GHG emissions (Categories 3-6):** GHG emissions that occur as a consequence of the activities of the company but occur from sources not owned or controlled by the company.

Table 13 provides detail on the categories of emissions included in the GHG emissions inventory, an overview of how activity data were collected for each emissions source, and an explanation of any uncertainties or assumptions made based on the source of activity data. Detail on estimated numerical uncertainties are reported in Appendix 1.

Activity data collection is managed via a list of emissions sources for inventory reporting that is kept updated with the locations the data can be found. This list guides the Advisor Sustainability and supporting staff to the locations of these data sources (mostly invoicing).

Invoicing data is translated into excel spreadsheets to carry out data analysis and some conversions into tCO_2-e for some source such as waste before data is uploaded into E-Manage.

Table 13. GHG emissions activity data collection methods and inherent uncertainties and assumptions

Business unit	GHG emissions source	GHG emissions level scope	Data Source	Data collection unit	Uncertainty (description)
Kāpiti Coast District Council/Access and Transport	Electricity - default	Category 2	Invoice data via Carbon EES	kWh	Low - invoice data.
Kāpiti Coast District Council/Aquatic Facilities	Electricity - default	Category 2	Invoice data via Carbon EES	kWh	Low - invoice data.
Kāpiti Coast District Council/Aquatic Facilities	Natural Gas - distributed commercial [Energy]	Category 2	Invoice data via Carbon EES	kWh	Low - invoice data.
Kāpiti Coast District Council/Aquatic Facilities	Waste landfilled - MSW, unique EF	Category 4	Pool waste - Frequency of bin collection, waste audit, LFGC rate calculated	CO_2e	Low/Moderate - invoice data updated waste audit completed for 23/24FY (mass calculated from bin volume, waste density determined by waste audit and number of removals).
Kāpiti Coast District Council/Aquatic Facilities	CO_2 held in bottles at pools	Category 1	CO_2 bottles used by pools to manage Ph in water	kg	Moderate - use total kgs purchased against kgs held at the pools to calculate kgs used. Use provided in annual report from gas supplier.
Kāpiti Coast District Council/General Council	Public transport - air travel domestic (average)	Category 3	Report from Air NZ Direct Connect Portal/Travelcard transactions	p/km	Low/Moderate - Air NZ provides a transaction report on request which now clarifies when there are flight changes rather than additional flights. There is a risk that some contractor/consultant air travel is booked privately and reimbursed later as expenses.
Kāpiti Coast District Council/General Council	Accommodation	Category 3	Inferred from flights (Air NZ report)	visitor-nights	High - inferred from flight bookings.
Kāpiti Coast District Council/General Council	Public Transport - Taxi (NZ$)	Category 3	Finance system search	$ (NZD)	Moderate - data source does not include taxi fares paid by staff and reimbursed by Council (but that is picked up under 'staff travel reimbursements' as private car use and, if identified correctly, can be added to this item).
Kāpiti Coast District Council/General Council	Petrol - transport, premium	Category 1	Invoice/BP fuel card data via Carbon EES	L	Low - measured at pump.

Business unit	GHG emissions source	GHG emissions level scope	Data Source	Data collection unit	Uncertainty (description)
Kāpiti Coast District Council/General Council	Petrol - transport, regular	Category 1	Invoice/BP fuel card data via Carbon EES	L	Low - measured at pump.
Kāpiti Coast District Council/General Council	Private Car - default (petrol)	Category 3	Staff vehicle claims - Expense claims/Finance system search	km	Low to moderate - from accounting system, but data entry is not always clear on what is a travel reimbursement, what is a taxi fare reimbursement and what is a parking reimbursement, so staff travel is possibly overstated at times.
Kāpiti Coast District Council/General Council	Rail travel (national) - Rail car (electric)	Category 3	Train ticket log	p/km	Low to moderate - train ticket log maintained in a spreadsheet for all tickets distributed to staff for use.
Kāpiti Coast District Council/Leisure and Open Space	Electricity - default	Category 2	Invoice data via Carbon EES	kWh	Low - invoice data.
Kāpiti Coast District Council/Leisure and Open Space	Natural Gas - distributed commercial [Energy]	Category 1	Invoice data via Carbon EES	kWh	Low - invoice data.
Kāpiti Coast District Council/Operations	Electricity - default	Category 2	Invoice data via Carbon EES	kWh	Low - Invoice data is now managed by Carbon EES in E-Bench.
Kāpiti Coast District Council/Operations	Diesel - transport [Volume]	Category 1	Invoice/BP fuel card data via Carbon EES	L	Low - measured at pump.
Kāpiti Coast District Council/Operations	Waste landfilled - MSW, unique EF	Category 4	Invoice data via Carbon EES. Emission Factor LFGC rate	kg	Low/moderate - invoice based on weighbridge data and average weight for waste delivered in car, ute or bags. Improved certainty with gas capture rates as 100% on waste goes to Bonny Glen and improved gas capture rate at Silverstream landfill.
Kāpiti Coast District Council/Property	Electricity - default	Category 2	Invoice data via Carbon EES	kWh	Low - meter data captured in E-Bench.
Kāpiti Coast District Council/Property	Natural Gas - distributed commercial [Energy]	Category 1	Invoice data via Carbon EES	kWh	Low - meter data.

Business unit	GHG emissions source	GHG emissions level scope	Data Source	Data collection unit	Uncertainty (description)
Kāpiti Coast District Council/Property	Refrigerants	Category 1	Contractor estimates of annual system recharges	kg	Moderate - responses provided by maintenance contractors.
Kāpiti Coast District Council/Property	Waste landfilled - MSW, unique EF	Category 4	Office waste - Invoice data via Carbon EES, bin size, waste audit, LFGC rate calculated	kg	Moderate - mass calculated from bin volume, waste density determined by waste audit and number of removals. Fairly good invoice data on number of removals provided by the collector.
Kāpiti Coast District Council/Water and Wastewater Treatment	Electricity - default	Category 2	Invoice data via Carbon EES	kWh	Low - All invoice data managed in. E-Bench
Kāpiti Coast District Council/Water and Wastewater Treatment	Wood - industry	Category 1	Invoice data via Carbon EES	kg	Low - invoice data.
Kāpiti Coast District Council/Water and Wastewater Treatment	Freight Road - rigid and articulated trucks (average)	Category 3	Invoice data (two sources) via Carbon EES	t/km	Low - invoice data.
Kāpiti Coast District Council/Water and Wastewater Treatment	Freight Road - rigid and articulated trucks (>17t)	Category 3	Invoice data from wood pellet freight via Carbon EES	t/km	Low - invoice data.
Kāpiti Coast District Council/Water and Wastewater Treatment	Waste landfilled - sewage sludge, unique EF	Category 4	Invoice and SCADA data via Carbon EES * emission factor * LFGC rate	kg	Low - invoice data based on weighbridge invoice data + lab test data.
Kāpiti Coast District Council/Water and Wastewater Treatment	Waste landfilled - screenings, unique EF	Category 4	Invoice and SCADA data via Carbon EES * emission factor * LFGC rate	kg	Low - invoice data based on weighbridge.
Kāpiti Coast District Council/Water and Wastewater Treatment	Wastewater biological treatment process	Category 1	Water NZ Model 2021 for estimating wastewater treatment process emissions	CO_2-e	Low - but note that this is a model to estimate not measure exact emissions.

A1.1.3 Excluded emissions sources and sinks

Emissions sources in Table 14 have been identified and excluded from this inventory.

Table 14. GHG emissions sources excluded from the inventory

Business unit	GHG emissions source or sink	GHG emissions category	Reason for exclusion
Water and Wastewater Treatment	Water treatment chemicals freight	Category 3 (mandatory)	No specific freight charge applied on invoices. Also, volume 10 – 15 tonnes per month moved within the North Island is likely to be de minimis. However, Council will seek to monitor and report further sources of category 3-6 emissions.
Operations	Closed landfills - Ōtaki and Waikanae	Category 1	Ōtaki Landfill closed 1995, Waikanae Landfill closed 2003. In line with programme emission calculation methods, any emissions that are occurring from waste deposited prior to the inventory period would be considered not to have emissions as the programme uses a calculation approach whereby all emissions are considered to have occurred at time of disposal.
Operations	Closed landfill - Otaihanga	Category 1	Closed to the public in 2008. Closed to all waste types since 2016.
Operations	Freight of office and public litter bin waste from Otaihanga transfer station to Levin and Bonny Glen Landfill	Category 3 (mandatory)	Council will seek to monitor and report further sources of category 3-6 emissions.
General Council	Capital projects embodied carbon	Category 5 (one time, additional)	Council will seek to measure embodied carbon for future projects of significant scale.
General Council Public transport - air travel domestic (average) Category 3 (mandatory)			Some (irregular) contractor air travel is not separately recorded but included in a general invoice sent by the contractor. Air travel cannot be extracted. Volume of contractor air travel is estimated as low.
			Regular air travel by contractors is booked by KCDC and included.
Production and distribution of fuel	Fuel	Category 3 (additional)	Only Scope 1 emissions (consumption of fuel) are included. Scope 3 emissions related to production and distribution of fuel (to local petrol stations, or to our diesel tank at the depot) are not currently included.

A1.2 QUANTIFIED INVENTORY OF EMISSIONS AND REMOVALS

A1.2.1 Calculation methodology

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

The following alternative emissions quantification approaches have been used in this inventory:

- Forest removals using programme supplied template based on growth rate lookup tables.

(no answer provided)

All emissions were calculated using Toitū e-manage with emissions factors and Global Warming Potentials provided by the Programme (see Appendix 1 - data summary.xls). Global Warming Potentials (GWP) from the IPCC fifth assessment report (AR5) are the preferred GWP conversion[5].

Where applicable, unit conversions applied when processing the activity data has been disclosed.

There are systems and procedures in place that will ensure applied quantification methodologies will continue in future GHG emissions inventories.

A1.2.2 GHG Storage and liabilities

A1.2.2.1 GHG STOCKS HELD ON SITE

Refrigerants and fuels may be stored on site, but their accidental leakage or release could result in a large increase in emissions for that period. Refrigerants such as HFCs, PFCs and SF_6 are GHGs with high global warming potentials, so material volumes of these or fuel are reported as potential liabilities.

Table 15. Total storage as of year end with potential GHG emissions liabilities.

GHG gas stock held	Quantity	Unit	Potential liability (tCO_2e)
CO_2	396.00	kilograms	0.40
Diesel commercial	29,000.00	litres	77.68
HCFC-22 (R-22, Genetron 22 or Freon 22)	8.50	kilograms	14.96
HFC-32	33.20	kilograms	22.48
R-407C	88.00	kilograms	142.93
R-410A	286.30	kilograms	550.70
Total potential liability			809.14

A1.2.2.2 LAND-USE LIABILITIES

Organisations that own land subject to land-use change may achieve sequestration of carbon dioxide through a change in the carbon stock on that land. Where sequestration is claimed, then this also represents a liability in future years should fire, flood, management activities or other intentional or unintentional events release the stored carbon.

Table 16. Land-use liabilities (total)

Site name	Total sequestration during reporting period (tCO_2e)	Contingent liability (tCO_2e)	Total potential liability (tCO_2e)
Kapiti Coast District Council	0	306	25009

[5] If emission factors have been derived from recognised publications approved by the programme, which still use earlier GWPs, the emission factors have not been altered from as published.

A1.2.3 Supplementary results

Holdings and transactions in GHG-related financial or contractual instruments such as permits, allowances, verified offsets or other purchased emissions reductions from eligible schemes recognised by the Programme are reported separately here.

APPENDIX 2: SIGNIFICANCE CRITERIA USED

Table 17. Significance criteria used for identifying inclusion of indirect emissions

Emission source	Magnitude	Level of influence	Risk or opportunity	Sector specific guidance	Outsourced	Employee engagement	Intended Use and Users	Include in inventory?
Stormwater construction	Significant (>5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Roading maintenance	Significant (>5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Civil works	Significant (>5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Civil works	Significant (>5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Civil works	Significant (>5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Energy contract	Moderate (1-5% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Insurance services	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Civil works	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Wastewater civil works	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Stormwater civil works	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Wastewater civil works	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude

Emission source	Magnitude	Level of influence	Risk or opportunity	Sector specific guidance	Outsourced	Employee engagement	Intended Use and Users	Include in inventory?
Wastewater civil works	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Corporate fleet licensing	Moderate (1-5% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Stormwater civil works	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Stormwater engineering	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Building Consent processing	Moderate (1-5% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Stormwater civil works	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Stormwater design services	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Legal services	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Stormwater machinery	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Field maintenance	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Non-residential construction	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Stormwater design	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude

Emission source	Magnitude	Level of influence	Risk or opportunity	Sector specific guidance	Outsourced	Employee engagement	Intended Use and Users	Include in inventory?
Stormwater design	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Roading maintenance	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Library services	De minimus (<1% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Consenting services	Moderate (1-5% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Engineering design services	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
IT services	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Civil works	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Economic Development	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Generator testing	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
CCTV pipe monitoring	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
IT data provision	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Engineering design services	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude

Emission source	Magnitude	Level of influence	Risk or opportunity	Sector specific guidance	Outsourced	Employee engagement	Intended Use and Users	Include in inventory?
Coastal data analysis	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Building electrical works	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Park maintenance	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
IT services	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Legal services	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Land improvement and civil works	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Water infrastructure services	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Security services	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Water infrastructure services	De minimus (<1% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Financial services	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Stormwater design	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Engineering design services	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude

Emission source	Magnitude	Level of influence	Risk or opportunity	Sector specific guidance	Outsourced	Employee engagement	Intended Use and Users	Include in inventory?
Financial services	De minimus (<1% of total Scope or Category)	Low	n/a	n/a	Yes	Yes	Yes	Exclude
Roading maintenance	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude
Cleaning services	Moderate (1-5% of total Scope or Category)	Moderate	n/a	n/a	Yes	Yes	Yes	Exclude

APPENDIX 3: CERTIFICATION MARK USE

The Council uses the Toitū certifications on its website https://www.kapiticoast.govt.nz/our-district/our-environment/climate-change/emissions/ it does not sell any products with the Toitū logo on it.

APPENDIX 4: 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.

World Resources Institute and World Business Council for Sustainable Development, 2004 (revised). The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard. WBCSD: Geneva, Switzerland.

World Resources Institute and World Business Council for Sustainable Development, 2015 (revised). The Greenhouse Gas Protocol: Scope 2 Guidance. An amendment to the GHG Protocol Corporate Standard. WBCSD: Geneva, Switzerland.

APPENDIX 5: REPORTING INDEX

This report template aligns with ISO 14064-1:2018 and meet Toitū carbonreduce programme Organisation Technical Requirements. The following table cross references the requirements against the relevant section(s) of this report.

Section of this report	ISO 14064-1:2018 clause	Organisational Technical Requirement rule
Cover page	9.3.1 b, c, r 9.3.2 d,	TR8.2, TR8.3
Availability	9.2 g	
Chapter 1: Emissions Inventory Report		
1.1. Introduction	9.3.2 a	
1.2. Emissions inventory results	9.3.1 f, h, j 9.3.3	TR4.14, TR4.16, TR4.17
1.3. Organisational context	9.3.1 a	
1.3.1. Organisation description	9.3.1 a	
1.3.2. Statement of intent		TR4.2
1.3.3. Person responsible	9.3.1 b	
1.3.4. Reporting period	9.3.1 l	TR5.1, TR5.8
1.3.5. Organisational boundary and consolidation approach	9.3.1.d	TR4.3, TR4.5, TR4.7, TR4.11
1.3.6. Excluded business units		
Chapter 2: Emissions Management and Reduction Report		
2.1. Emissions reduction results	9.3.1 f, h, j, k 9.3.2 j, k	TR4.14, TR6.18
2.2. Significant emissions sources		
2.3. Emissions reduction targets		TR6.1, TR6.2, TR6.4, TR6.6, TR6.8,
2.4. Emissions reduction projects	9.3.2 b	TR6.8, TR6.11, TR6.12, TR6.13, TR6.14, TR6.15
2.5. Staff engagement		TR6.1, TR6.9
2.6. Key performance indicators		TR6.19
2.7. Monitoring and reporting	9.3.2 h	TR6.2
Appendix 1: Detailed greenhouse gas inventory	9.3.1 f, g	TR4.9, TR4.15
A1.1 Reporting boundaries		
A1.1.1 Emission source identification method and significance criteria	9.3.1 e	TR4.12, TR4.13
A1.1.2 Included emissions sources and activity data collection	9.3.1 p, q 9.3.2 i	TR5.4, TR5.6, TR5.17, TR5.18,
A1.1.3 Excluded emissions sources and sinks	9.3.1 i	TR5.21, TR5.22, TR5.23
A1.2 Quantified inventory of emissions and removals		
A1.2.1 Calculation methodology	9.3.1 m, n, o, t	
A1.2.2 Historical recalculations		
A1.2.3 GHG Storage and liabilities		
A1.2.3.1 GHG stocks held on site		TR4.18
A1.2.3.2 Land-use liabilities	9.3.3.	TR4.19

A1.2.4 Supplementary results		
A1.2.4.1 Carbon credits and offsets	9.3.3.3	
A1.2.4.2 Purchased or developed reduction or removal enhancement projects	9.3.2 c	
A1.2.4.3 Double counting and double offsetting		
Appendix 2: Significance criteria used	9.3.1.e	TR4.12
Appendix 3: Certification mark use		TR3.6
Appendix 4: References		
Appendix 5: Reporting index		