

Greenhouse Gas Emissions Inventory Report

Kāpiti Coast District Council CEMARS™ report:

Prepared in accordance with Part 7.3.1 of ISO 14064-1

Person responsible: Jake Roos, Senior Advisor Climate Change and Energy, Strategy and Partnerships

Prepared by: Jake Roos, Senior Advisor Climate Change and Energy, Strategy and Partnerships

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1. Greenhouse Gas Emissions Inventory Summary

Table 1: Operational greenhouse gas emissions inventory summary by scope and business unit.

Reporting unit	Data	Scope 1	Scope 2	Scope 3	Total
Access and Transport	CO₂e		381.0		381.0
	CO ₂		381.0		381.0
Aquatic Facilities	CO₂e	622.6	108.2		730.9
	CO ₂	614.9	108.2		723.1
	CH ₄	0.3			0.3
General Council	CO₂e	144.1		24.0	168.0
	CO ₂	142.3		23.8	166.1
	CH ₄	0.8		0.0	0.9
Leisure and Open Space	CO₂e	0.6	16.5		17.1
	CO ₂	0.6	16.5		17.1
Operations	CO₂e	408.2	160.2	297.8	866.2
	CO ₂	401.0	160.2	297.8	859.0
	CH ₄	0.5			0.5
Property	CO₂e	47.4	156.6	19.7	223.7
	CO ₂	33.2	156.6	19.7	209.5
	HFC	13.8			13.8
Water and Wastewater Treatment	CO₂e	3222.5	937.4	7.3	4167.2
	CO ₂	3107.0	937.4	7.2	4051.5
	CH ₄	107.8			107.8

There have been no removals in the period.

Table 2: Total greenhouse gas emissions by scope.

Total Operational Emissions		
Scope	GHG emissions sources	Tonnes CO₂e
Scope 1	Diesel, petrol, natural gas, R22, R410a, landfill emissions from dried sludge, screenings and mixing agent at Otaihanga Landfill	4,445
Scope 2	Electricity	1,760
Scope 3	Private car travel, flights, taxis, accommodation, conferences, office waste, public litter bin waste, internal freight of sewage sludge between treatment plants	349
Total		6554
	Total GHG emissions per unit revenue (tCO ₂ /\$M)	98.9
	Total gross GHG emissions per head of population (tCO ₂ /resident)	0.13

Compared to the 2009-10 baseline measurement period, this is a decrease of 6,056 tonnes of CO₂e, or 48.0%.

Table 3: Mobile and stationary combustion of biomass

Biomass	Mass (tonnes)	Tonnes CO₂e
Wood fuel, sewage sludge drying	682.2	9.7

Table 4: GHG stock liability

GHG Gas	Legal entity/business unit/location	Mass held at end of inventory reporting period (kg)	Potential liability tonnes CO₂e
HFC: R22 and R410a	Property	337	624

1 Introduction

This report is the fourth annual greenhouse gas (GHG) emissions¹ inventory report prepared CEMARS certification². Accurate quantification of the amount of GHG emissions that can be directly attributed to Kāpiti Coast District Council operations for the reporting period requires the preparation of a GHG inventory in accordance with international protocols and standards as well as meeting the requirements of Programme certification.

The GHG emissions inventory has been prepared in accordance with the *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (revised edition)* developed by the World Resources Institute and the World Business Council for Sustainable Development (2004), and *ISO 14064-1:2006 Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*³ and the Programme Standard for Certification. Appendix 1 outlines mandatory and additional reporting requirements of ISO 14064-1.

2 Organisation description

Kāpiti Coast District Council is the territorial authority for its area. It employs approximately 292 full time equivalent staff and is responsible for water and waste water, local roads (including streetlighting), parks, leisure facilities, community facilities, stormwater management and performing statutory duties such as compliance and development management. Council manages the direction and wellbeing of the district through its democratic and strategic planning functions. Council is committed to the principle of sustainable development, including the environment and seeks to manage and reduce its carbon footprint as part of this.

3 Statement of intent

Kāpiti Coast District Council is intent on achieving Programme certification as indicated by its communications with carboNZero programme staff.

In the event of successfully completing the Programme requirements for CEMARS certification, the proposed scope for certification is:

“Kāpiti Coast District Council meets the requirements of the CEMARS™ certification having measured and reduced its greenhouse gas emissions in respect of its organisation including: emissions from use of energy and materials, disposal of waste, land use change and fugitive emissions from refrigerant systems.”

¹ Throughout this report “emissions” means “GHG emissions”.

² Referred to hereafter as the Programme.

³ Throughout this document “GHG Protocol” means the “GHG Protocol Corporate Accounting and Reporting Standard” and “ISO 14064-1 means the international standard “Specification with Guidance at the Organizational Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals”.

4 Organisational boundaries included for this reporting period

Organisational boundaries were set with reference to the methodology described in the GHG Protocol and ISO14064-1 standards. The GHG Protocol allows two distinct approaches to be used to consolidate GHG emissions: the equity share and control (financial or operational) approaches. The Programme specifies that the operational control consolidation approach should be used unless otherwise agreed with the programme. An operational control consolidation approach was used to account for emissions from Kāpiti Coast District Council.

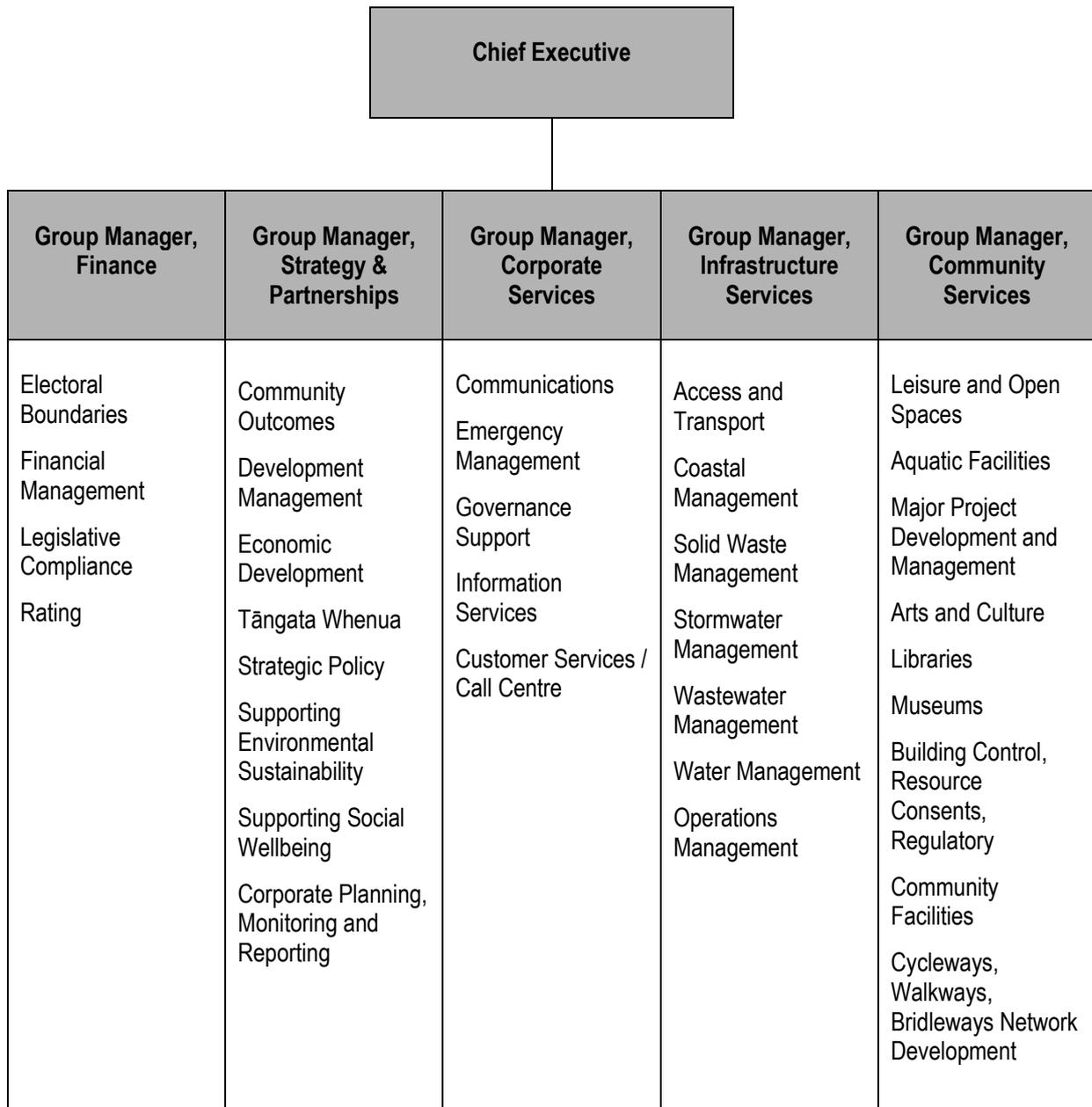


Figure 1: Kāpiti Coast District Council structure

Figure 1 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 Figure 2. This is the most

straightforward approach as management groups share the use of many of these sources (e.g. offices). 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 Council and part of the operational emissions inventory. The emissions sources/stocks in yellow are reported but are not part of operational emissions.

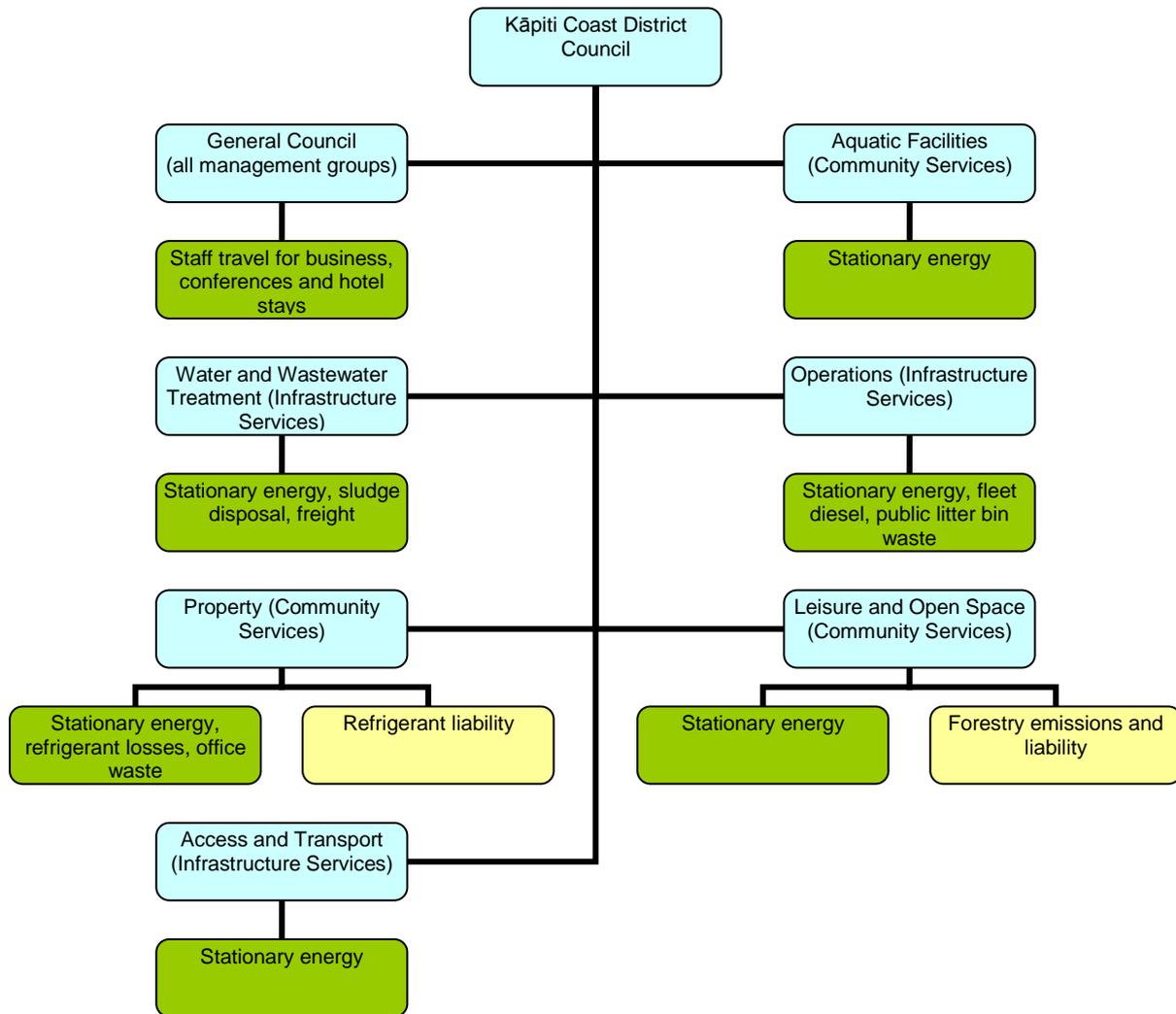


Figure 2 Kāpiti Coast District Council reporting structure

Table 5: Brief description of reporting units in Kāpiti Coast District Council

Reporting unit	Description
Water and Wastewater Treatment	Purpose: Water supply and treatment, treatment and disposal of sewage , management of all associated assets Contact: Dave Bassett
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.

Reporting unit	Description
	Contact: Tony Martin
Property	Purpose: Manages the majority of council-owned buildings including offices, libraries and community halls. Contact: Ken Price
Leisure and Open Space	Purpose: Manages sports facilities, parks and reserves. Contact: Lex Bartlett
Access and Transport	Purpose: Manages development and maintenance of local roads, plus streetlighting Contact: Francis Noriku
Aquatic Facilities	Purpose: Manages the council's three swimming pools Contact: Alison Law
General Council	Purchase: 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: Sara Clift

5 Organisational business units excluded from inventory

None.

6 GHG Emissions source inclusions

GHG emissions sources were identified with reference to the methodology described in the GHG Protocol and ISO14064-1 standards. Identification of emissions sources was achieved via personal communications with Kāpiti Coast District Council staff, and cross checked against operational expenditure records for the 2012-13 reporting period. These records were viewed in order to see what activities may be associated with emissions from all of the organisation's operations.

As adapted from the GHG Protocol, these emissions were classified into the following categories:

- **Direct GHG emissions (Scope 1):** GHG emissions from sources that are owned or controlled by the company.
- **Indirect GHG emissions (Scope 2):** GHG emissions from the generation of purchased electricity, heat and steam consumed by the company.
- **Indirect GHG emissions (Scope 3):** GHG emissions required by the Programme that occur as a consequence of the activities of the company, but occur from sources not owned or controlled by the company. These include operational activities directly at Council's discretion e.g. flights and conferences.

All direct (Scope 1) and indirect (Scope 2) emissions need to be accounted for in the GHG emissions inventory, excluding from forestry emissions and sequestration. Apart from Scope 3 emissions sources required by the Programme, it is recommended that other indirect Scope 3 emissions, as outlined by the GHG Protocol, are included if :

- They are believed to be large relative to the organisation’s direct GHG emissions
- They contribute to the organisation’s GHG risk exposure
- They are deemed critical by key stakeholders (e.g. customers)
- There are potential GHG emissions reductions that can be undertaken or influenced by the company.

After liaison with the organisation, the emissions sources in Table 7 overleaf have been identified and included in the GHG emissions inventory. Emissions classed as ‘other’ are reported, but only ‘operational’ emissions are included when calculating percentage change in emissions between years/organisational improvement.

The process of producing an inventory often uncovers ways inventories from previous years can be improved with more accurate source data or calculation methods. Updating these past inventories and verifying them again provides a clearer picture of actual emissions trends over time. Details of changes to the Council’s 2011-12 GHG inventory being made in conjunction with the production of the 2012-13 inventory are given below.

Table 6: summary of updates to the 2011-12 GHG inventory

Tonnes CO ₂ e	Previously verified figures 2013	Updated figures 2014	Difference
Diesel	367.4	430.8	+ 63.5
Petrol unleaded regular (91)	22.0	123.2	+101.1
Petrol unleaded premium (95)	3.5	11.5	+ 8.1
Petrol default	92.4	0.0	- 92.9
Operational emissions total	9183	9261	+ 78

Table 7: GHG emissions source data collection details.

Reporting unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Calc in E-man age?
Operational					
Water & Wastewater Treatment	Electricity	Scope 2	Invoice data	kWh	Y
Water & Wastewater Treatment	Waste - dried sewage sludge	Scope 1	SCADA data from lab test sheets, sample weighing, MC tests	kg	N
Water & Wastewater Treatment	Waste – screenings	Scope 1	Frequency of bin collection, sample weighing	kg	Y
Water & Wastewater Treatment	Waste – mixing agent (wood)	Scope 1	Freq' of bin collection, bin volume, wood density	kg	Y
Water & Wastewater Treatment	Wood fuel	Scope 1	Invoice data	kg	Y
Water & Wastewater Treatment	Freight – sludge transfers	Scope 3	Invoice data	kg	Y
Aquatic Facilities	Electricity	Scope 2	Invoice data	kWh	Y
Aquatic Facilities	Natural gas	Scope 1	Invoice data	kWh	Y
Property	Electricity	Scope 2	Invoice data	kWh	Y
Property	Natural gas	Scope 1	Invoice data	kWh	Y
Property	Waste - office	Scope 3	Frequency of bin collection, sample weighing, LFGC rate estimate	kg	N
Property	Refrigerant R22 losses	Scope 1	Estimate of annual system recharges	kg	Y
Property	Refrigerant R410a losses	Scope 1	Estimate of annual system recharges	kg	Y
Access and Transport	Electricity	Scope 2	Invoice data	kWh	Y
Leisure and Open Space	Electricity	Scope 2	Invoice data	kWh	Y
Leisure and Open Space	Natural gas	Scope 1	Invoice data	kWh	Y
Operations	Electricity	Scope 2	Invoice data	kWh	Y
Operations	Diesel	Scope 1	Invoice data, BP fuel card data	litres	Y
Operations	Waste – public litter bins	Scope 3	Invoice data, LFGC rate estimate	kg	N
General Council	Petrol	Scope 1	BP fuel card data	litres	Y
General Council	Taxi fares	Scope 3	Credit card transactions/Finance system search	\$	Y
General Council	Air travel	Scope 3	Credit card transactions/Finance system search	Passenger-km	Y
General Council	Hotel stays	Scope 3	Credit card transactions/Finance system search	Visitor-nights	Y
General Council	Conferences	Scope 3	Estimate based on hotel stays	Delegate-days	Y
General Council	Private car	Scope 3	Expense claims/Finance system search	km	Y
Other					
Leisure and Open Space	Forestry emissions/seqestration	Scope 1	GIS data, staff knowledge, MAF look-up tables	Ha	N

7 GHG emissions source exclusions

After analysis of contracts, invoices and landfill closure reports, the emissions sources in Table 8 have been identified and excluded from the GHG emissions inventory. The Programme applies a *de minimus* of 1% where emissions sources less than 1% of the entire inventory may be excluded provided that in total, they are not greater than 5% of the entire inventory. Inventories should aim to include 95% or more of the emissions sources within the designated boundary. The programme sets a materiality threshold of 5%. This means errors or omissions should not exceed 5% of the total inventory within the designated boundary.

Table 8: GHG emissions sources excluded from the inventory.

Business unit	GHG emissions source	GHG emissions level scope	Reason for exclusion
Water and Wastewater Treatment	Wood pellet freight	Scope 3 (mandatory)	Contract for supply specifies product is responsibility of supplier until delivered
Water and Wastewater Treatment	Water treatment chemicals freight	Scope 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 <i>de minimus</i> . The Council has no other significant regular freight.
Operations	Closed landfills - Ōtaki and Waikanae	Scope 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	Partly closed landfill - Otaihanga	Scope 1	Closed to the public in 2008, still used to dispose of sludge and screenings. Convention adopted for these is to account for all future emissions in the year of disposal, based on mass of material deposited.
Operations	Freight of office and public litter bin waste from Otaihanga transfer station to Levin and Bonny Glen Landfills	Scope 3 (mandatory)	Council's responsibility for this waste in terms of freight ends at the transfer station.
General Council	Capital projects embodied carbon	Scope 3 (one time, additional)	Council will seek to measure embodied carbon for future projects of significant scale.

8 Measurement periods

This is Kāpiti Coast District Council GHG emissions inventory report covering the period from 1/7/2012 to 30/6/2013. This is the fourth measurement period.

9 Data collection

A calculation methodology has been used for quantifying the GHG emissions inventory using emissions source activity data multiplied by GHG emissions or removal factors.

Table 7 provides an overview of how data for each emissions source was collected, the source of the data. For a full discussion of methodologies, assumptions and derivation see Appendix 2. It was not possible to calculate the emissions from certain sources in E-Manage due to appropriate emissions factor not being present in the system. The emissions from these sources were calculated separately using unique emissions factors approved by the CarboNZero programme and a CO₂ figure for each source entered into E-Manage.

10 GHG emissions calculation and results

All GHG emissions were calculated using the Programme calculation tools. As shown in Table 1, total operational GHG emissions for Kāpiti Coast District Council were 6,554 tonnes of CO₂e for the 12 month period 1/7/2012 to 30/6/2013. Other emissions (forestry) totalled 2,668 tonnes CO₂e (net) for the same period. Total emissions were 9,222 tonnes of CO₂e.

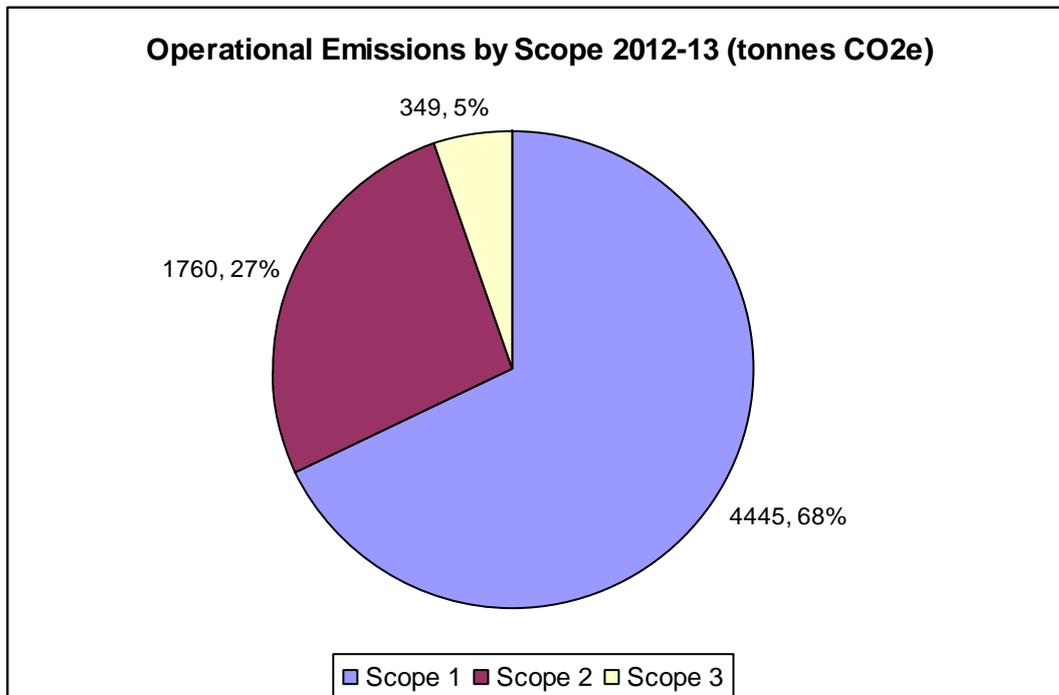


Figure 3: Operational GHG emissions (tonnes CO₂e) by scope.

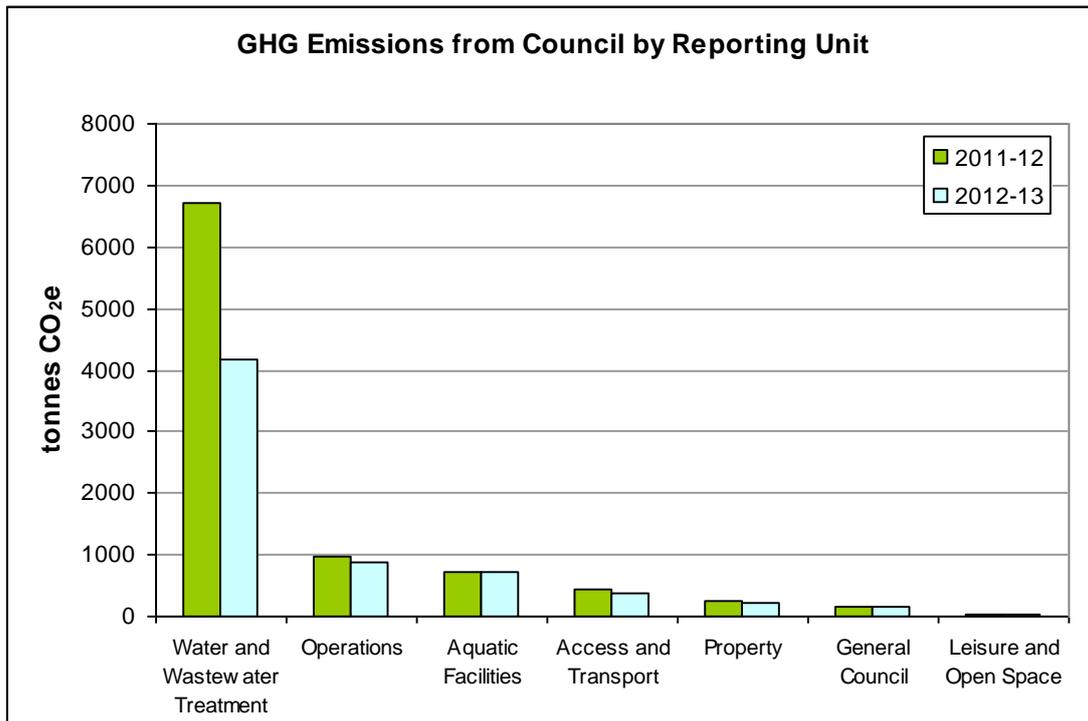


Figure 4: Operational GHG emissions (tonnes CO₂e) by reporting unit.

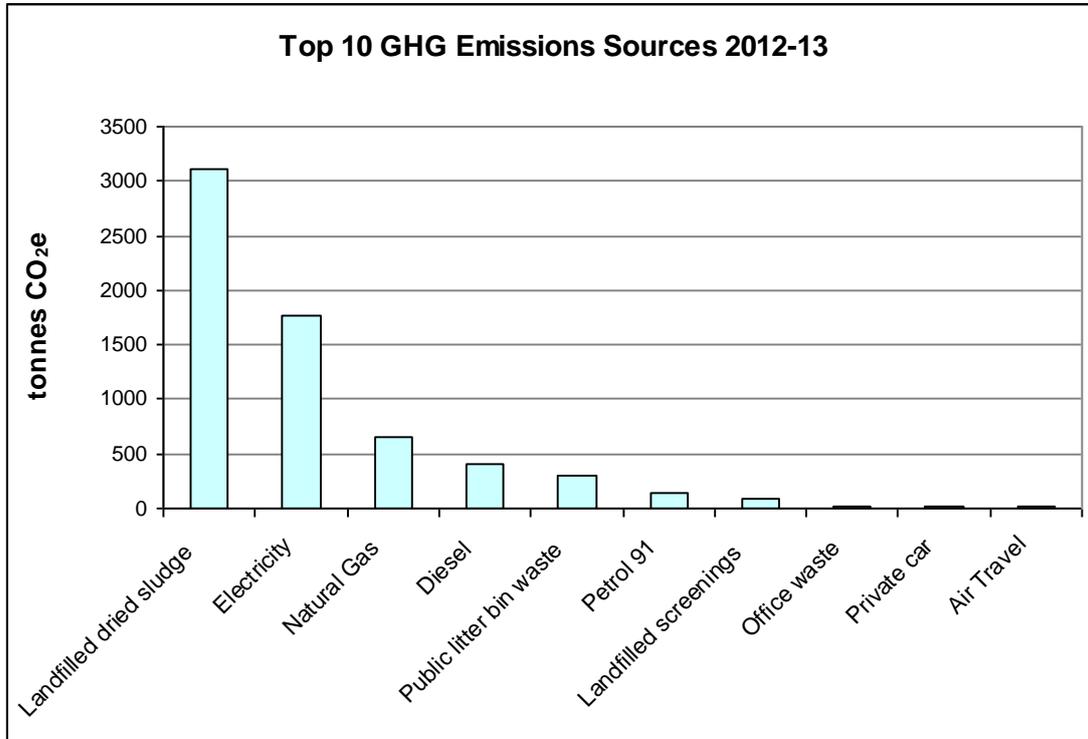


Figure 5: Top 10 Operational GHG emissions sources in 2012-13.

Where the organisation is progressing to certification, the inventory report and any assertions are expected to be verified through an independent third party verification

audit by Programme approved verifiers to a reasonable level of assurance reported to the directors of Landcare Research in a separate assurance statement.

11 GHG emissions reductions and removals

This is Kāpiti Coast District Council's fourth emissions inventory report. As shown in Figure 7, total operational GHG emissions for Council were 6,554 tonnes of CO₂e for the period 1/7/2012 to 30/6/2013 whilst there were 12,610 tonnes of CO₂e for the baseline period 1/7/2009 to 30/6/2010. This is a decrease of 6,056 tonnes CO₂e, or 48.0%. The reduction compared to 2011-12 is 2,707 tonnes or 29.2%.

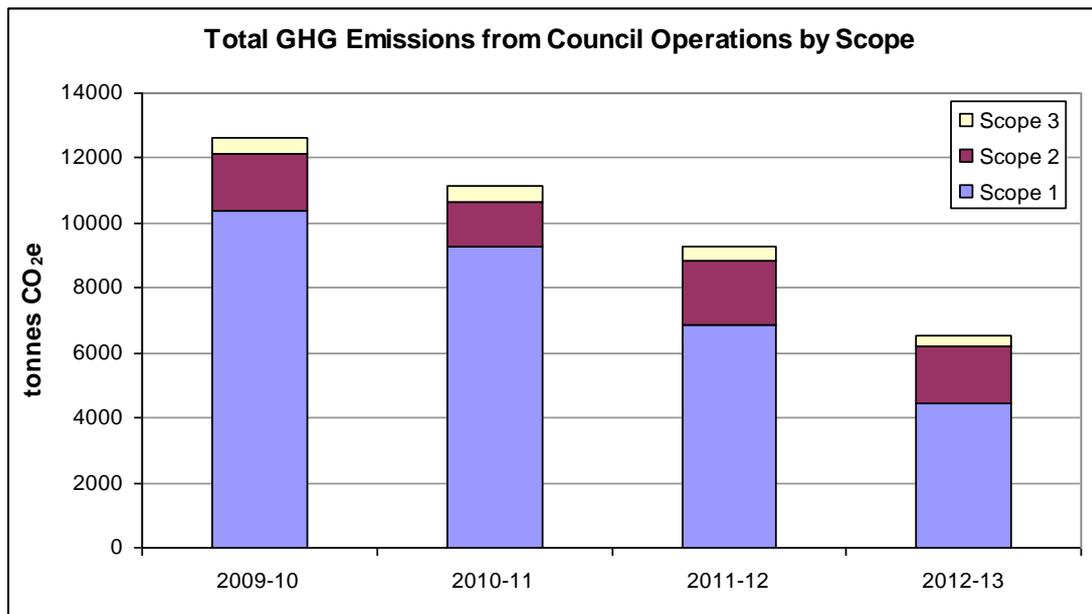


Figure 6: Comparison of GHG operational emissions by scope between the reporting periods.

The most significant decrease occurred for the Water and Wastewater Treatment Group as result of ending the practice of mixing wood waste ('mixing agent') with sewage sludge before disposal in landfill at the beginning of May 2012. Decreases also occurred in the amount emissions arising from diesel, office waste and public litter bin waste. There were slight increases in emissions from natural gas and landfilled screenings. See Figure 7. Electricity emissions declined due to a higher proportion of grid electricity being generated from renewable sources than in 2011-12.

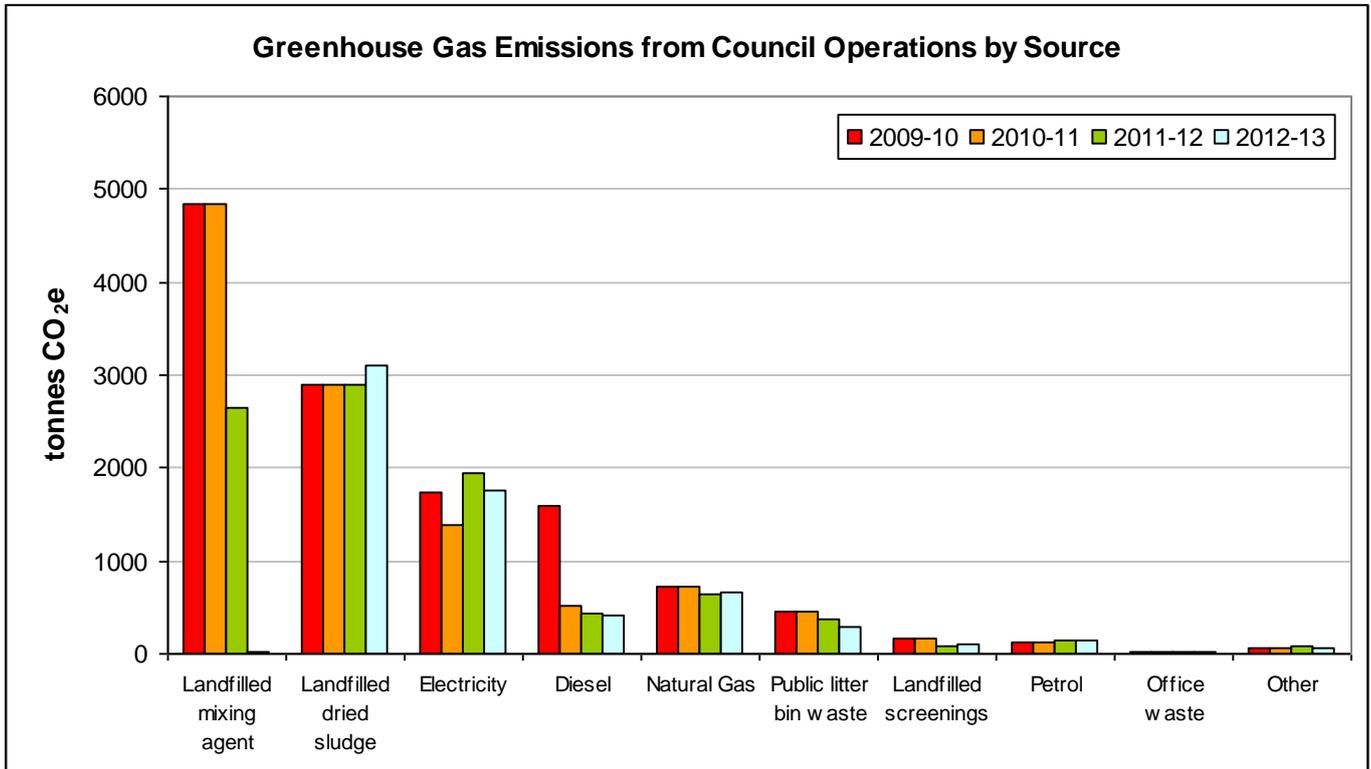


Figure 7: Comparison of GHG operational emissions by emissions sources between the reporting periods.

12 Liabilities - GHG stocks held

Table 9: GHG stocks held

GHG Gas	Reporting unit	Mass – start of reporting period (kg)	Mass – end of reporting period (kg)	Potential liability - tonnes CO ₂ e	Comment on variance
R22	Property	109	74	125.8	see below
R410a	Property	67	263	497.8	see below
Total				623.6	

Air conditioning units at the Ngarara Building at 175 Rimu Rd, Paraparaumu were decommissioned (with the R22 and R410a gases from them captured and recycled) as part of the building refurbishment that commenced in March 2012. Subsequently, the new variable refrigerant volume air conditioning system that was installed and commissioned for this refurbishment during 2012-13 increased the Council's stocks of R410a markedly.

13 Liabilities - Forestry holdings

Table 10: Carbon stocks in forestry

Forest location type and year planted	Area – start of reporting period	Area – end of reporting period	Carbon emissions tonnes CO ₂ e	Potential liability - tonnes CO ₂ e	Comment on variance
Raumati Escarpment, Pinus Radiata, 1985	0.0	0.0	0.0	0	Cleared for native planting
Raumati Escarpment, native planting, 2012	3.1	3.1	0.0	0	Stock not calculated until age 9 years
Raumati Escarpment, natural regeneration, 2002	0.4	0.4	1.0	39	Updated measurement from new aerials
Reikorangi Rd, Pinus Radiata, 1985	5.3	5.3	-143.0	4261	Sequestration by growth
Paraparaumu WWTP, Pinus Radiata, 1985	24.6	20.2	2873.0	16241	Updated measurement from new aerials
Nikau Reserve, native remnant	11.0	11.0	0.0	3564	Fully mature – no sequestration
Reikorangi Rd, Eucalyptus, 1996	4.2	4.2	-63.0	899	Sequestration by growth
Maungakotukutuku dam land, Pinus Radiata, 1998	-	13.8	0.0	5506	Acquired 2012-13
Maungakotukutuku dam land, Pinus Radiata, 1993	-	2.2	0.0	1217	Acquired 2012-13
Maungakotukutuku dam land, native regeneration, 1998	-	3.9	0.0	504	Acquired 2012-13
Maungakotukutuku dam land, native remnant	-	29.0	0.0	9380	Acquired 2012-13
Howarth Block, native remnant	-	1.6	0.0	528	Acquired 2012-13
Howarth Block, Eucalyptus, 1996	-	0.2	0.0	49	Acquired 2012-13
Kaitawa Reserve, native remnant/regeneration/ planting	4.4	4.4	0.0	1422	Various ages – assume all mature
Total	53.0	99.2	2,668.0	43,610	

14 Double counting/offsetting

Double counting refers to situations where:

- a) Emissions have been included and potentially offset in the GHG emissions inventories of two different organisations e.g. a company and one of its suppliers/contractors. This is particularly relevant to all indirect (Scope 2 and 3) emissions.
- b) The organisation is participating in or is the recipient of “green electricity”, renewable energy certificates (RECs) or levy exemption certificates (LECs) or other similar energy generation or GHG initiatives.
- c) Emissions reductions are counted as removals in an organisation’s GHG emissions inventory and are counted or used as offsets/carbon credits by another organisation. This applies to projects registered under the NZ government Projects to Reduce Emissions (PRE) as well as to schemes generating voluntary offsets or carbon credits.

Where the organisation is progressing to carboNZero certification, it must ensure that all GHG emissions and removals are reported appropriately. The offset requirements for carboNZero certification should not be overstated due to emissions that have already been offset by another organisation; nor should they be understated due to removals that have already been used as offsets by another organisation.

In the case of Kāpiti Coast District Council, there are no instances of double counting.

15 References

International Standards Organisation, 2006. ISO14064-1:2006. *Greenhouse gases – Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas GHG 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.

Appendix 1: ISO14064-1 reporting requirements

CEMARS and the carboNZero programme require the generation of an emissions inventory report that shows the total emissions for the application period. In addition ISO14064-1 details mandatory and additional reporting considerations as outlined in Table 9.

Table 7: Mandatory and additional reporting requirements for ISO14064-1.

Mandatory Report Requirements (adapted from ISO14064-1 S7.3.1)	Additional Reporting Considerations (adapted from ISO14064-1 S7.3.2)
<ul style="list-style-type: none"> • Organisational description • Documentation of organisational boundaries. • Direct emissions, quantified separately for each GHG (tonnes and CO₂e). • A description of how CO₂ emissions from combustion of biomass are treated in the emissions inventory. • If quantified, GHG removals (tonnes of CO₂e). • Explanation for the exclusion of any GHG sources or sinks from the quantification. • Energy indirect emissions (tonnes of CO₂e). • The historic base year selected and the base year GHG inventory. • Explanation of any change to the base year or other historical GHG data, and any recalculation of the base year or other historical GHG emissions inventory. • Quantification methodologies and reasons for their selection. • Explanation of any change to quantification methods previously used. • Document GHG emissions or removal factors used. • Description of the impact of uncertainties on the accuracy of the GHG emissions and removal data. 	<ul style="list-style-type: none"> • Description of the organisation's GHG policies, strategies, programmes. • Emissions from combustion of biomass (tonnes of CO₂e). • Description of directed actions and attributable GHG emissions or removals differences (including outside organizational boundaries) (tonnes of CO₂e). • Purchased or developed GHG emissions reductions and removal enhancements from GHG emissions reduction and removal enhancement projects (tonnes of CO₂e). • Description of applicable GHG programme requirements. • GHG emissions or removals disaggregated by the facility. • Other indirect emissions (tonnes of CO₂e). • Uncertainty assessment description and results, including measures to manage or reduce uncertainties. • Description and presentation of additional indicators or metrics. • Assessment of performance against relevant internal and/or external benchmarks, as appropriate. • Description of GHG information management and monitoring procedures.

For renewal applications for Programme certification (i.e. reports submitted after the initial certification year), the submitted report also needs to include:

- The GHG emissions inventory from previous years
- Comparison of current year GHG emissions with the base year
- An explanation of any changes in GHG emissions/removals quantifications and processes previously detailed, and where appropriate, recalculation of the base year.
- Explanation of any changes to the base year.
- Details of directed actions to reduce or prevent GHG emissions (i.e. progress against the emissions reductions programme)

Appendix 2: Summary of GHG emissions calculation methodology and evidence

A description of how the quantity of each emissions source was calculated. Calculation spreadsheets and information sources are embedded in the document 'GHG Emissions Calculation Methodology 2012-13 KCDC.doc'.

GHG emissions calculation methodology used by the Programme may be released on application.

Appendix 3: GHG emissions factor derivations

A GHG emissions factor specifically for Council's sewage sludge was calculated. Its source and derivation of this can be found in the file 'sewage sludge calculation method.doc'

A GHG emissions factors for litter bin waste and office waste were calculated accounting for the methane gas capture and destruction rate at Levin and Bonny Glen Landfills where this waste is disposed of. Their source and derivation can be found in the file '2012-13 GHG inventory calculations.xls'. This spreadsheet also includes forestry emissions calculations and forestry and refrigerant stock calculations.

Both of the files mentioned are imbedded within Appendix 2: 'GHG Emissions Calculation Methodology 2012-13 KCDC.doc'.

Other GHG emissions factors used by the Programme may be released on application to the technical manager.

Appendix 4: E-Manage reports

Used to populate this report with figures and graphs. 'Emissions report incl Graphs 2012-13.xls'