Greenhouse Gas Emissions Inventory Report

Kāpiti Coast District Council
CEMARS ™ report:

Prepared in accordance with Part 7.3.1 of ISO 14064-1

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GHG EIR template version 1.2

Contents

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	**CO_2e**		**306.4**		**306.4**
	CO_2		306.4		306.4
General Council	**CO_2e**	**149.2**		**25.8**	**175.0**
	CO_2	118.4		25.5	143.9
	CH_4	30.1		0.0	30.1
	N_2O	0.8		0.2	1.0
Leisure and Open Space	**CO_2e**	**769.7**			**769.7**
	CO_2	761.2			761.2
	N_2O	8.2			8.2
Operations	**CO_2e**	**388.1**	**0.2**		**388.3**
	CO_2	381.3	0.2		381.5
	N_2O	6.4	0.0		6.4
Property	**CO_2e**	**45.7**	**126.6**		**172.3**
	CO_2	20.6	126.6		147.2
	HFC	24.9	0.0		24.9
Stormwater	**CO_2e**		**1.1**		**1.1**
	CO_2		1.1		1.1
Wastewater	**CO_2e**	**8318.6**	**443.2**		**8761.8**
	CO_2	123.2	443.2		566.4
	CH_4	8184.6	0.0		8184.6
	N_2O	10.8	0.0		10.8
Water	**CO_2e**		**432.6**		**432.6**
	CO_2		432.6		432.6

There have been no removals in the period.

Table 2: Total greenhouse gas emissions by scope.

Total Operational Emissions

Scope	GHG emissions sources	Tonnes CO_2e
Scope 1	Diesel, petrol, natural gas, R22, R410a, landfill emissions from dried sludge, screenings and mixing agent	9,566
Scope 2	Electricity	1,386
Scope 3	Private car travel, flights, taxis, accommodation, conferences, office waste	55
Total		**11,007**
	Total GHG emissions per unit revenue (tCO_2/$M)	195.13
	Total gross GHG emissions per head of population (tCO_2/resident)	0.222

Compared to the 2009-10 baseline measurement period, this is a decrease of 1,459 tonnes of CO_2e, or 11.7%.

Total Other Emissions

Scope	GHG emissions sources	Tonnes CO_2e
Scope 1	Forestry	-92
Scope 2	None	0
Scope 3	Contractor diesel use for domestic waste collection, Landfill emissions from domestic waste, Pensioner housing electricity	18,754
Total		18,632

Total Emissions

Scope	Tonnes CO_2e
Scope 1	9,474
Scope 2	1,386
Scope 3	18,779
Total	29,639

Table 3: Mobile and stationary combustion of biomass

Biomass	Mass (tonnes)	Tonnes CO_2e
Wood fuel, sewage sludge drying	615.6	11.0

Table 4: GHG stock liability

GHG Gas	Legal entity/business unit/location	Mass held at end of inventory reporting period	Potential liability tonnes CO_2e
HFC: R22 and R410a	Property	282	499

1 Introduction

This report is the first annual greenhouse gas (GHG) emissions[1] inventory report prepared CEMARS certification[2]. 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 261 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 mange 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

Chief Executive

Group Manager, Finance	Group Manager, Strategy & Partnerships	Group Manager, Corporate Services	Group Manager, Infrastructure Services	Group Manager, Community Services
Electoral Boundaries	Community Outcomes	Communications	Access and Transport	Leisure and Open Spaces
Financial Management	Development Management	Emergency Management	Coastal Management	Major Project Development and Management
Legislative Compliance	Economic Development	Governance Support	Solid Waste Management	Arts and Culture
Rating	Tāngata Whenua	Information Services	Stormwater Management	Libraries
	Strategic Policy	Customer Services / Call Centre	Wastewater Management	Museums
	Supporting Environmental Sustainability		Water Management	Building Control, Resource Consents, Regulatory
	Supporting Social Wellbeing		Operations Management	Community Facilities
	Corporate Planning, Monitoring and Reporting			Cycleways, Walkways, Bridleways Network Development

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 have been identified as being outside direct operational control or are optional, but still of interest and therefore have been reported.

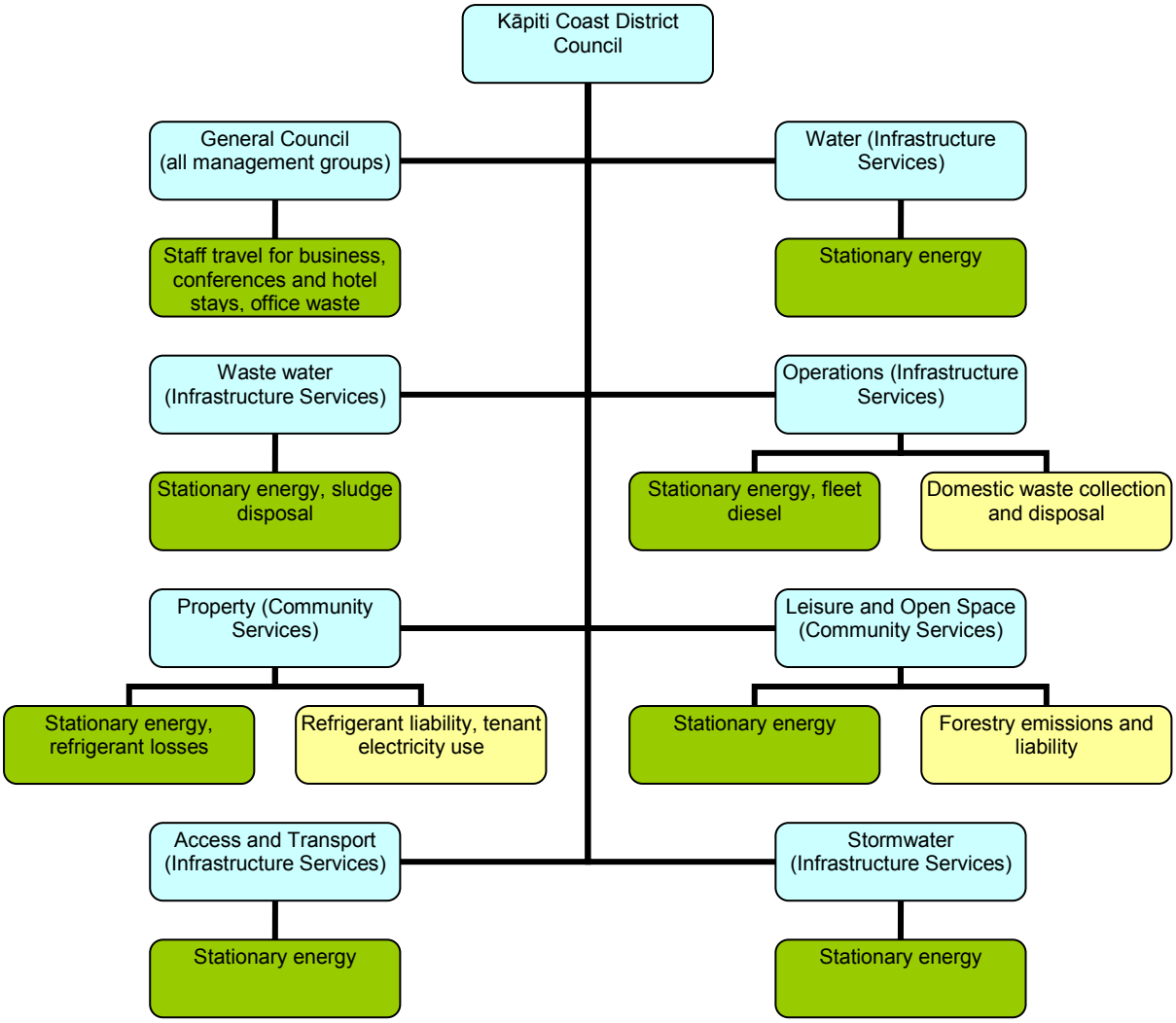

Figure 2 Kāpiti Coast District Council reporting structure

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

Reporting unit	Description
Water	Purpose: Water supply, treatment and reticulation, management of all associated assets Contact: Dave Bassett
Waste water	Purpose: Collection, treatment and disposal of sewage, management of all associated assets Contact: Dave Bassett
Operations	Management of council operations such as waste collection, parks

Reporting unit	Description
	maintenance, leak detection and W&WW maintenance and repairs. Includes management of landfill sites. Contact: Tony Martin, Nienke Itjeshorst
Property	Purpose: Manages the majority of council-owned buildings including offices, libraries and community halls. Contact: Ken Price
Leisure and Open Space	Purpose: Manages swimming pools and sports facilities, plus parks and reserves. Contact: Lex Bartlett
Access and Transport	Purpose: Manages development and maintenance of local roads, plus streetlighting Contact: Michelle Lewis
Stormwater	Purpose: Manages development and maintenance of stormwater assets Contact: Matt Aitchison
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 2010-11 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) – included in improvement target**: 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.

- **Indirect GHG emissions (Scope 3) – not included in improvement target**: GHG emissions not required by the Programme that occur from sources not owned or controlled by the company, but of which the Council still has an interest or influence. These are one-time sources such as capital projects, and continuous sources such as pensioner housing electricity use and domestic and commercial waste collection and disposal.

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 6 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.

Table 6: GHG emissions source data collection details.

Reporting unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Calc in E-manage?
Operational					
Water	Electricity	Scope 2	Invoice data	kWh	Y
Waste water	Electricity	Scope 2	Invoice data	kWh	Y
Waste water	Diesel	Scope 1	Invoice data	litres	Y
Waste water	Waste - dried sewage sludge	Scope 1	Freq' of bin collection, sample weighing, MC tests	kg	N
Waste water	Waste – sewage screenings	Scope 1	Frequency of bin collection, sample weighing	kg	Y
Waste water	Waste – mixing agent (wood)	Scope 1	Freq' of bin collection, bin volume, wood density	kg	Y
Waste water	Wood fuel	Scope 1	Invoice data	kg	Y
Stormwater	Electricity	Scope 2	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	kg	Y
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
Roading	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 Fuelcard data	litres	Y
General Council	Petrol	Scope 1	Invoice data, BP Fuelcard 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/seqestrat'n	Scope 1	GIS data, staff knowledge, MAF look-up tables	Ha	N
Operations	Waste - Domestic	Scope 3	Weighbridge data, SWAP analysis	kg	Y
Operations	Bin collection fuel use	Scope 3	Contractor estimate	km	Y
Property	Pensioner housing electricity	Scope 3	Invoice data for sample of tenants	kWh	Y

7 GHG emissions source exclusions

After analysis of contracts, invoices and landfill closure reports, the emissions sources in Table 7 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 7: GHG emissions sources excluded from the inventory.

Business unit	GHG emissions source	GHG emissions level scope	Reason for exclusion
Wastewater	Wood pellet freight	Scope 3 (mandatory)	Contract for supply specifies product is responsibility of supplier until delivered
Water	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 de minimus. 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 Wastewater 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	Transport of waste from transfer stations to Hokio Landfill	Scope 3 (additional)	It has been identified that this could be calculated, but it is not mandatory (i.e. it is part of 'other' emissions). Council will seek to calculate these emissions in future reporting periods.
General Council	Capital Projects embodied carbon	Scope 3 (one time, additional)	Calculation done for certain materials to be used for new Aquatic Centre under construction in 2012 -13, which is likely to Council's largest project for some time. Analysis will not be carried out on past projects but improvement plan will seek to measure embodied carbon of future projects.

8 Measurement periods

This is Kāpiti Coast District Council GHG emissions inventory report covering the period from 1/7/2010 to 30/6/2011. This is the second measurement period.

9 Data collection

Table 6 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. Some emissions (disposal of sewage sludge in landfill, forestry sequestration and GHG stocks/liabilities) were not possible to calculate in E-Manage – this were done separately using emissions factors approved by the CarboNZero programme.

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

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 11,007 tonnes of CO_2e for the 12 month period 1/7/2010 to 30/6/2011. Other emissions totalled 18,632 tonnes for the same period. Total emissions were 29,639 tonnes of CO_2e.

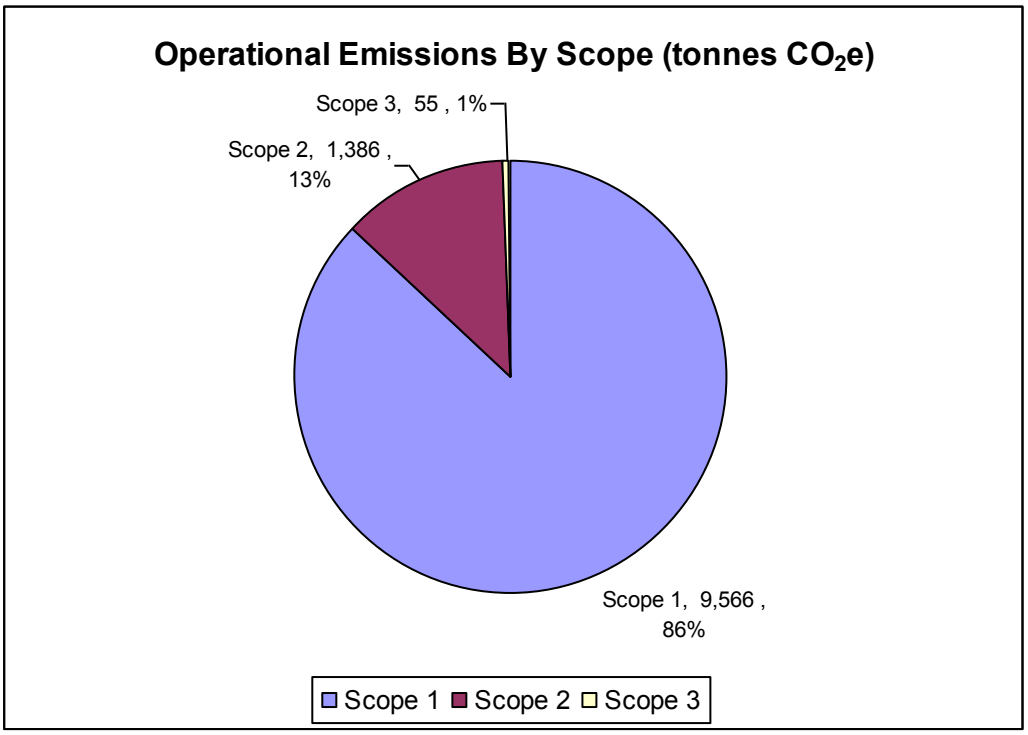

Figure 3: Operational GHG emissions (tonnes CO_2e) by scope.

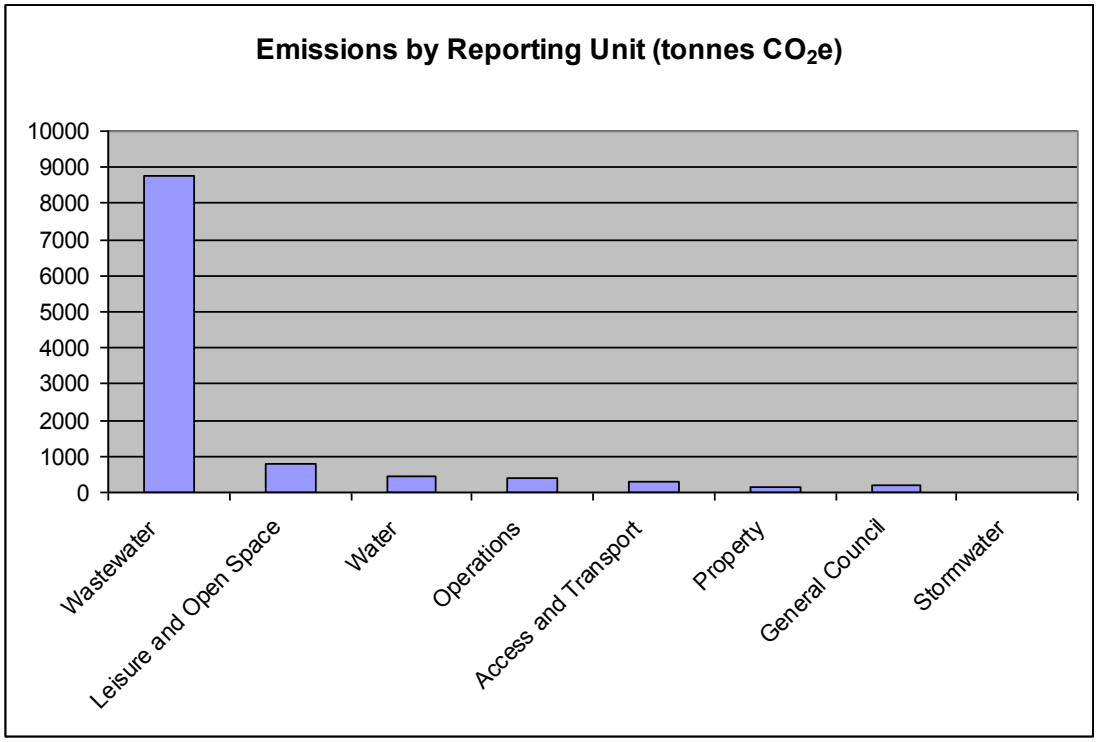

Figure 4: Operational GHG emissions (tonnes CO_2e) by reporting unit.

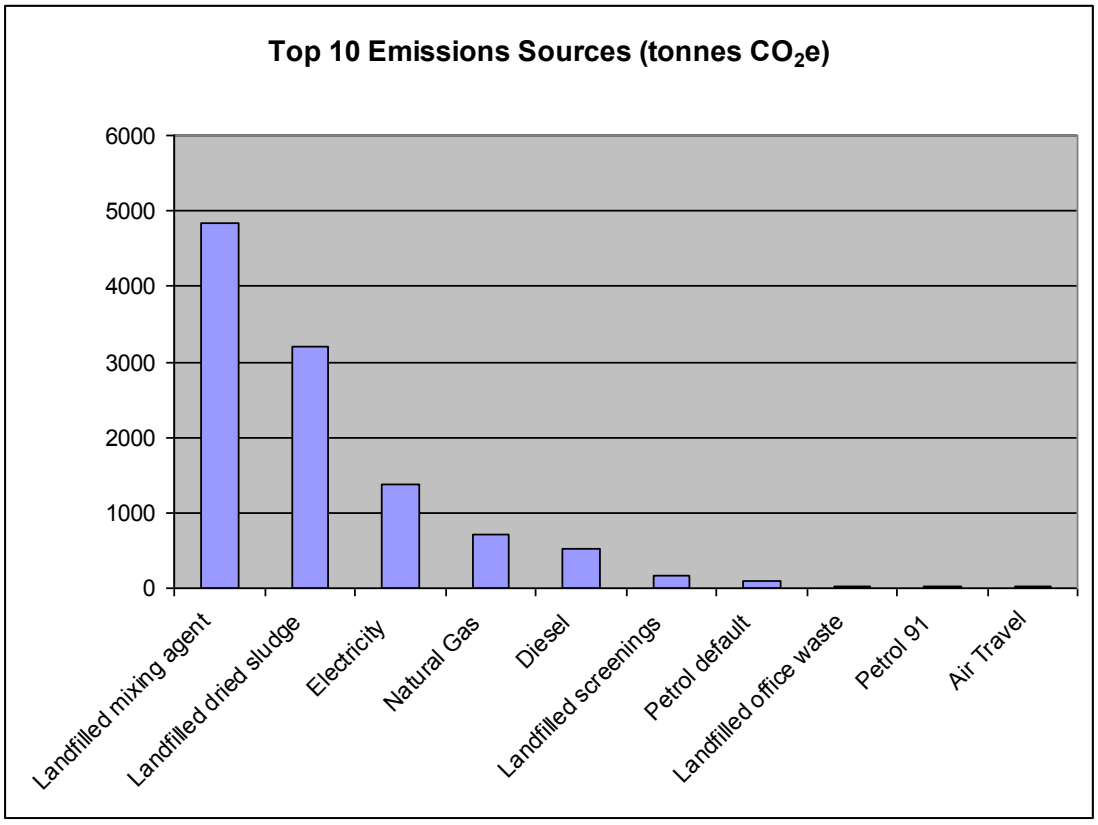

Figure 5: Top 10 Operational GHG emissions sources.

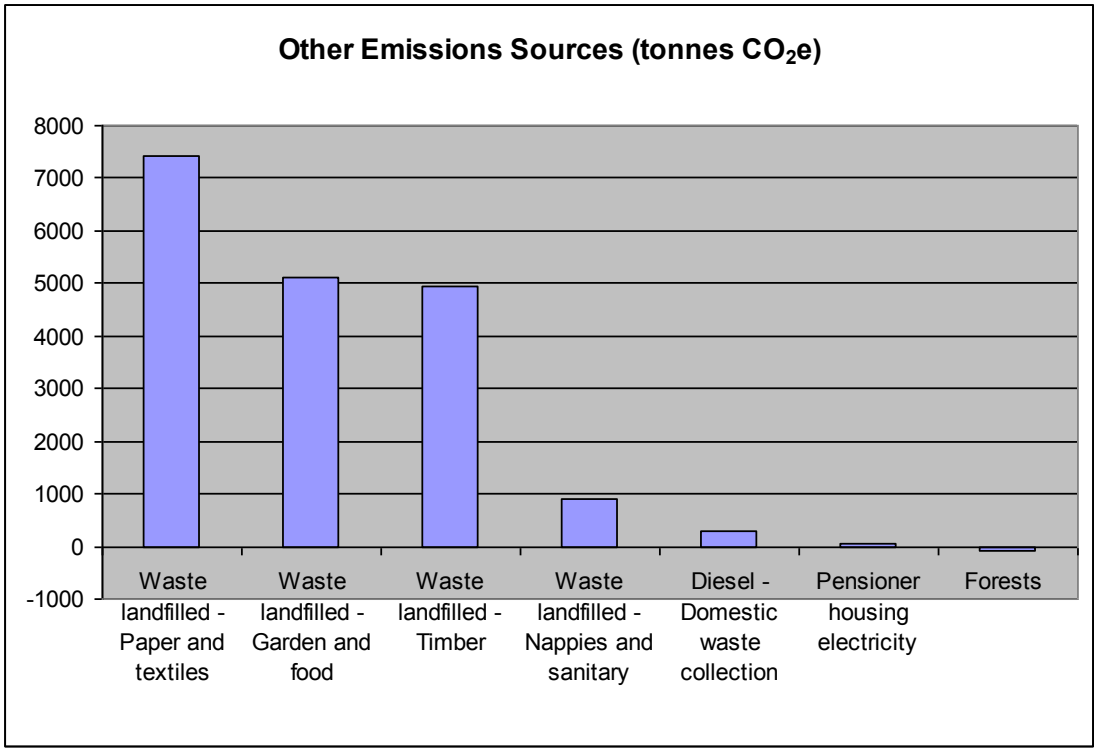

Figure 6 Other emissions sources

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 second emissions inventory report. As shown in Figure 7, total operational GHG emissions for Council were 11,007 tonnes of CO_2e for the period 1/7/2010 to 30/6/2011 whilst there were 12,466 tonnes of CO_2e for the period 1/7/2009 to 30/6/2010. This is a decrease of 1,459 tonnes CO_2e, or 11.7%.

The most significant decrease occurred for the Wastewater Management Group as result of the conversion of sewage drying from diesel to wood pellet fuel. This occurred in August 2010, near the start of the reporting period.

Substantial reductions in emissions can also be attributed to the change in the grid electricity emissions factor from 0.1475 kgCO_2e per kWh in 2009-10 in 0.1201 kgCO_2e per kWh in 2010-11. If electricity consumption was identical between the periods, this change in emissions factor would have cut electricity emissions by 18.6%. As it happens, electricity consumption reduced by 2.5% between the periods.

Kāpiti Coast District Council is in the process of creating a carbon and energy management strategy for managing and reducing emissions further in the future. A specific biosolids strategy, which will address the largest emissions sources (those arising from the disposal of sewage sludge and screenings) has been scheduled for the 2012-13 financial year.

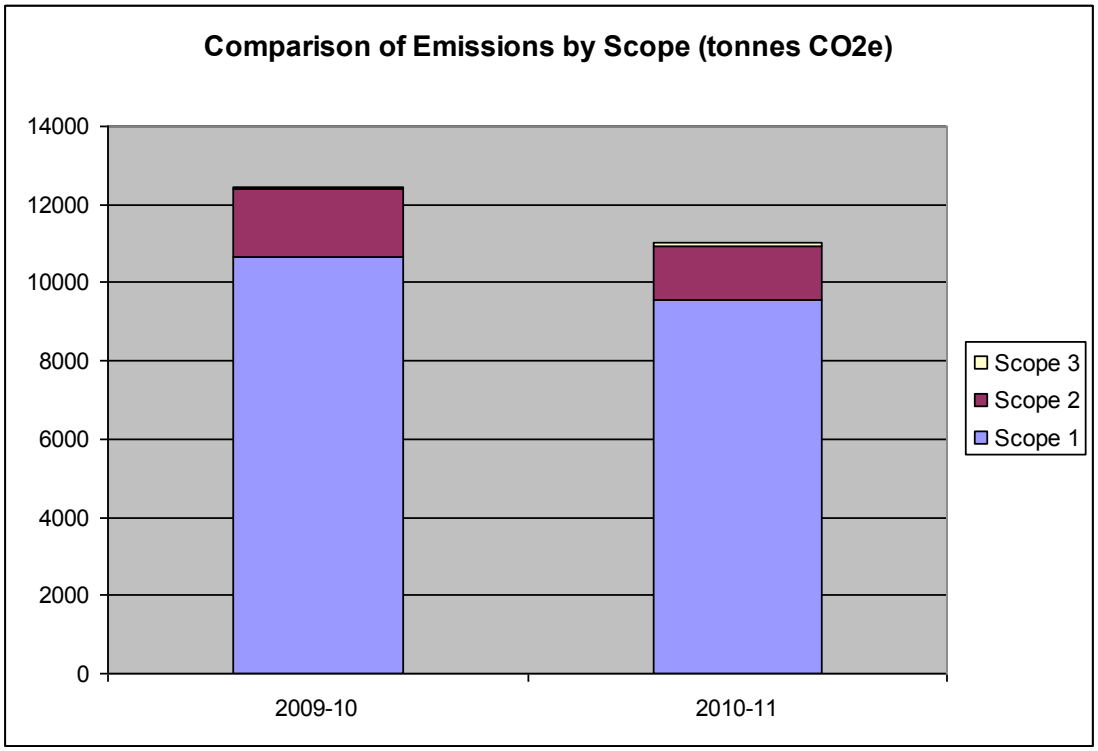

Figure 7: Comparison of GHG operational emissions by scope between the reporting periods.

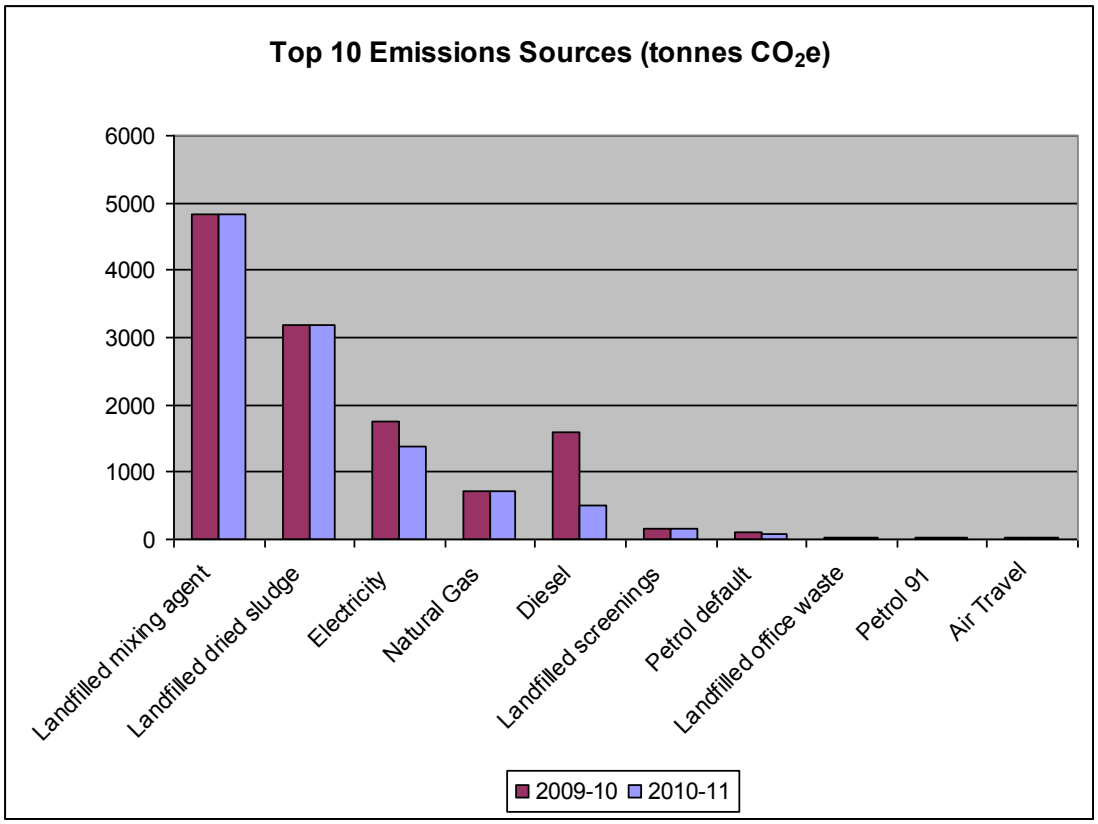

Figure 8: Comparison of GHG operational emissions by emissions sources between the reporting periods.

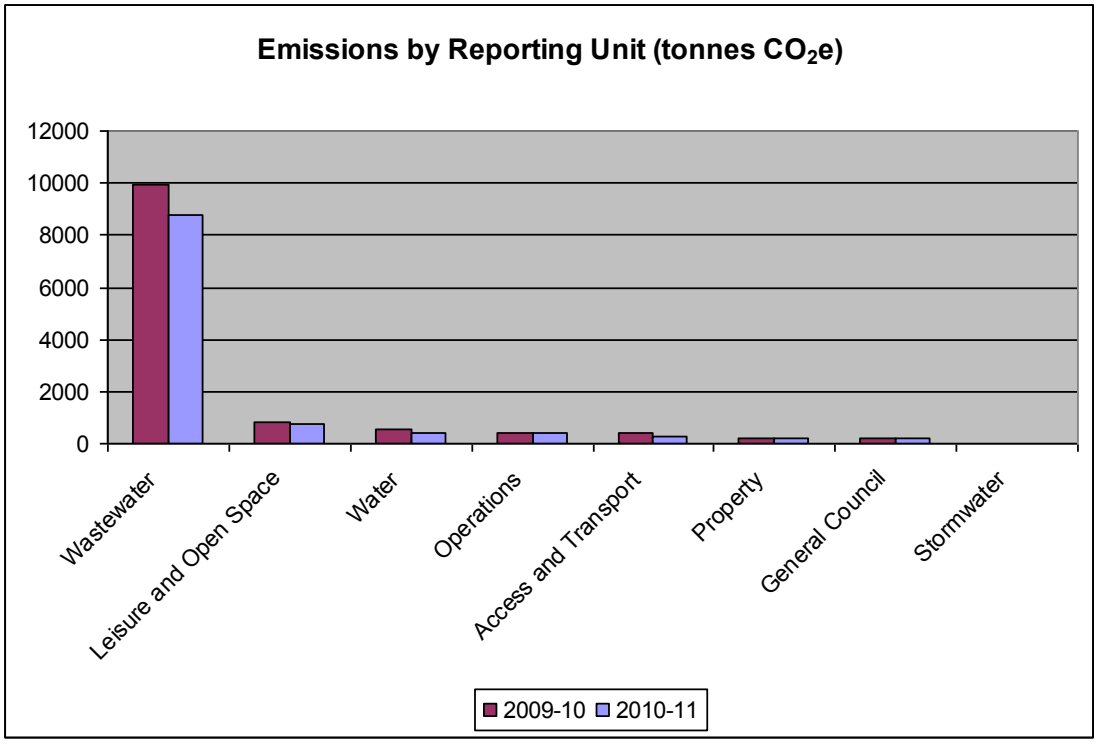

Figure 9: Comparison of emissions by reporting unit between the reporting periods.

12 Liabilities - GHG stocks held

Table 8: GHG stocks held

GHG Gas	Reporting unit	Mass – start of reporting period	Mass – end of reporting period	Potential liability - tonnes CO_2e	Comment on variance
R22	Property	180	180	306	none
R410a	Property	102	102	193	none
Total		**282**	**282**	**499**	

13 Liabilities - Forestry holdings

Table 9: Carbon stocks in forestry

Forest location type and year planted	Reporting unit	Area – start of reporting period	Area – end of reporting period	Carbon emissions tonnes CO_2e	Potential liability - tonnes CO_2e	Comment on variance
Pharazyn Reserve, Pinus Radiata, 1990	Leisure and Open Space	4.9	4.9	-162	2935.1	Sequestration by growth

Raumati Enscarpment, Pinus Radiata, 1985	Leisure and Open Space	2.7	1.3	973	973.7	Sequestration by growth
Reikorangi Rd, Pinus Radiata, 1985	Leisure and Open Space	5.3	5.3	-148	3969.7	Sequestration by growth
Paraparaumu WWTP, Pinus Radiata, 1985	Leisure and Open Space	25	25	-700	18725.0	Sequestration by growth
Nikau Reserve, native remnant	Leisure and Open Space	11.0	11.0	0	3564.0	Fully mature – no sequestration
Reikorangi Rd, Eucalyptus, 1996	Leisure and Open Space	4.2	4.2	-55	777.0	Sequestration by growth
Total		**53.1**	**51.7**	**-92**	**30,944.5**	

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 10: 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)
• Organisational description • Documentation of organisational boundaries. • Direct emissions, quantified separately for each GHG (tonnes and CO_2e). • A description of how CO_2 emissions from combustion of biomass are treated in the emissions inventory. • If quantified, GHG removals (tonnes of CO_2e). • Explanation for the exclusion of any GHG sources or sinks from the quantification. • Energy indirect emissions (tonnes of CO_2e). • 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.	• Description of the organisation's GHG policies, strategies, programmes. • Emissions from combustion of biomass (tonnes of CO_2e). • Description of directed actions and attributable GHG emissions or removals differences (including outside organizational boundaries) (tonnes of CO_2e). • Purchased or developed GHG emissions reductions and removal enhancements from GHG emissions reduction and removal enhancement projects (tonnes of CO_2e). • Description of applicable GHG programme requirements. • GHG emissions or removals disaggregated by the facility. • Other indirect emissions (tonnes of CO_2e). • 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 'Emissions Calculation Methodology 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 emissions factor.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 2010-11.xls'