GREENHOUSE GAS EMISSIONS INVENTORY REPORT

Toitū carbonreduce and Toitū carbonzero programme

Palmerston North City Council

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Dated: 30 August 2021

For the period: 01 July 2019 to 30 June 2020

Base year: 01 July 2015 to 30 June 2016

Verification status: Audited

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GREENHOUSE GAS EMISSIONS INVENTORY SUMMARY

Table 1: GHG emissions data summary.

	2016	2017	2018	2019	2020
Scope 1	23,780.79	21,552.78	20,064.98	19,110.95	18,318.06
Scope 2	1,811.31	1,945.25	1,795.03	1,454.97	1,293.09
Scope 3 Mandatory	502.84	477.20	482.80	379.59	403.78
Scope 3 Additional	349.07	349.00	348.96	454.91	425.32
Scope 3 One time	0.00	0.00	0.00	0.00	0.00
Total gross emissions	26,444.02	24,324.22	22,691.77	21,400.42	20,440.26
Certified green electricity	0.00	0.00	0.00	0.00	0.00
Purchased emission reductions	0.00	0.00	0.00	0.00	0.00
Net GHG emissions (all scopes)	26,444.02	24,324.22	22,691.77	21,400.42	20,440.26
Total gross GHG emissions per Turnover/revenue ($Millions)	239.59	193.05	176.32	149.65	140.97
Total mandatory GHG emissions per Turnover/revenue ($Millions)	236.43	190.28	173.60	146.47	138.03

Note: total mandatory emissions includes scope 1, scope 2, and scope 3 (i.e. excludes scope 3 one-time and scope 3 additional). Refer to inventory spreadsheet for full time series.

Table 2: Gross organisation GHG emissions by scope for current measurement year.

Indicator	tCO_2e
Scope 1	
Other	29.20
Other fuels	966.01
Other gases	1.80
Passenger vehicles - default age	0.67
Refrigerants	60.09
Transport fuels	1,214.28
Waste	14,958.00
Water & Wastewater	1,088.00
Scope 2	

Indicator	tCO_2e
Electricity	1,293.09
Scope 3	
Scope 3 Additional	425.32
Transport - other	171.55
Waste	232.23
Total	20,440.26

Table 3: GHG emissions inventory summary by scope and business unit.

Component gas	Scope 1	Scope 2	Scope 3	Total	Removals	After removals
CH_4	5.23	53.73	236.87	295.83	0.00	295.83
CO_2	18,201.28	1,237.87	577.59	20,016.74	0.00	20,016.74
HFCs	60.09	0.00	0.00	60.09	0.00	60.09
N_2O	51.46	1.49	14.64	67.59	0.00	67.59
NF_3	0.00	0.00	0.00	0.00	0.00	0.00
PFCs	0.00	0.00	0.00	0.00	0.00	0.00
SF_6	0.00	0.00	0.00	0.00	0.00	0.00
Total	18,318.06	1,293.09	829.10	20,440.26	0.00	20,440.26

Table 4: Mobile and stationary combustion of biomass.

Biomass	Quantity	Tonnes Biogenic CO_2
No activity recorded	n/a	n/a

Table 5: Deforestation of two hectares or more.

Source	Mass	tCO_2e
Deforestation tCO_2e (tCO_2e)	11,455.00	11,455.00

Table 6: GHG stock liability (see Table 13: for mass of individual gases).

Source	Units	Quantity	Potential Liability tCO_2e
Diesel commercial	litres	18,764.00	49.98

Source	Units	Quantity	Potential Liability tCO_2e
HCFC-22 (R-22, Genetron 22 or Freon 22)	kilograms	601.93	1,089.49
Petrol	litres	1,200.00	2.94

Table 7: Land-use liabilities.

Type of sequestration	Liability tCO_2e
Contingent liability (carbon sequestered this reporting period)	34,147.00
Potential sequestration liability (total carbon stock)	979,844.00

Table 8: Renewable electricity generation on-site.

Renewable generation on-site	kWh generated	tCO_2e avoided
No activity recorded	n/a	n/a

Table 9: Purchased emissions reductions.

Type of emission reductions purchased	Amount	tCO_2e
Certified green electricity (tCO_2e)	0.00	0.00
Purchased emission reductions (tCO_2e)	0.00	0.00
Total	0.00	0.00

1 INTRODUCTION

This report is the annual greenhouse gas (GHG) emissions[1] inventory report for the named organisation. 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[2] of the Programme , which is based on the *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004) and ISO 14064-1:2006 Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*[3]. Where relevant, the inventory is aligned with industry or sector best practice for emissions measurement and reporting.

2 STATEMENT OF INTENT

This inventory forms part of the organisation's commitment to gain Programme certification.

This inventory reports into the Toitū carbonreduce programme.

3 ORGANISATION DESCRIPTION

Te Kaunihera ō Papaioea, Palmerston North City Council (PNCC), is the territorial authority of Palmerston North, the lower North Island city of approximately 89,000 residents. With 614 full time equivalent staff, PNCC has responsibilities across: water supply, wastewater, stormwater, waste management, local roads, libraries, parks, community centres, animal control and regulatory services, while also providing a range of other services to the community including subsidised housing. Unlike many other councils in Aotearoa, PNCC retains a substantial works department, and much of the city's maintenance work is done in-house, rather than being contracted out.

Council through its 2021-2031 long term plan (LTP) set a target of 30% reduction in citywide carbon emissions, compared to the 2016/17 baseline. This target is the keystone of a wider series of sustainability plans that come under the 'Eco City Strategy'. This strategy includes measures around enhancing biodiversity, reducing waste, building infrastructure resilience to climate change, improving energy efficiency and encouraging active transport.

Council wholly owns four Council Controlled Organisations (CCOs). These are Te Manawa Museums Trust, Palmerston North Airport Limited, Globe Theatre Trust, and Regent Theatre Trust. Council is a 50% shareholder (along with Manawatū District Council) in the Central Economic Development Agency CCO. Council also owns three other small organisations which are exempted from CCO status. These are: Caccia Birch Trust, Palmerston North Performing Arts Trust, and the Manawatū-Whanganui Regional Disaster Relief Fund Trust.

Council owns a large number of properties within the city, many of which are leased out to businesses at market rates. Other properties are leased at a subsidized rate to community organisations. This includes bowls and other sports clubs including the Palmerston North Golf Course, and the lease of Hancock Community House to the Community Services Council, who sublease parts of the building to other community organisations. Council also leases several of its facilities, notably its community libraries, from the private sector. Finally, while retaining ownership

[1] Throughout this document "emissions" means "GHG emissions".
[2] Programme refers to the Toitū carbonreduce and the Toitū carbonzero programme.
[3] Throughout this document 'GHG Protocol' means the *GHG Protocol Corporate Accounting and Reporting Standard* and 'ISO 14064-1:2006' means the international standard *Specification with Guidance at the Organizational Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*.

of the properties themselves, the operation of its community swimming pools (the Lido and Freyberg) is contracted to Community Leisure Management Limited.

4 ORGANISATIONAL BOUNDARIES INCLUDED FOR THIS REPORTING PERIOD

Organisational boundaries were set with reference to the methodology described in the GHG Protocol and ISO 14064-1:2006 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.

The organisational chart provides a summary overview of the primary PNCC structures and business units, outlining which units are included within the scope of this report.

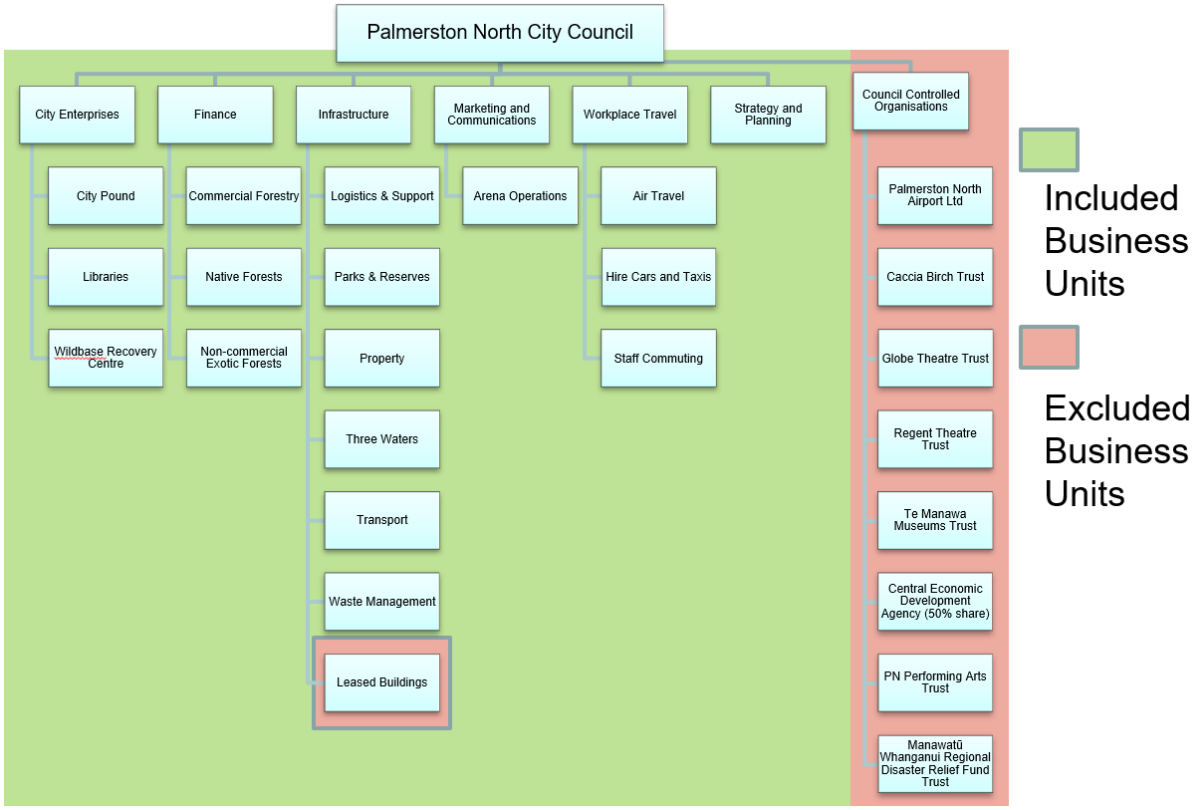

Figure 1: Organisational structure.

Table 10: Brief description of business units in the certifying entity.

Business unit	Address	Purpose
City Enterprises	549 Ferguson St, Terrace End, Palmerston North	Primary operational and works unit of PNCC
-Arena Operations	61 Pascal St, Palmerston North	Stadium and Community Sports Facilities

Business unit	Address	Purpose
-Depot Operations	549 Ferguson St, Terrace End, Palmerston North	PNCC Works Depot
-Facilities Management	Citywide toilets and misc halls	Community halls and supporting facilities
-Garages	Citywide	Vehicle Garages
-Nursery	Depot	
-Storm Water Pump Stations	Citywide	
-Tankers	Citywide	Fuel tankers supporting PNCC plant usage (e.g. Line trimmers)
-Vehicles	Citywide	Pool vehicles, trucks and heavy plant equipment (e.g. Ride on mowers)
-Wastewater Pump Stations	Citywide	
-Water Treatment & Pumps	Citywide	
-Wastewater Treatment	75 Totara Rd, Palmerston North	
City Networks	32 The Square, Palmerston North	Primary asset management unit of PNCC
-Closed Ashhurst Landfill	303 Shriffs Rd, Palmerston North	
-Closed Awapuni Landfill	775-819 Fitzherbert E Rd	
-Bus Shelters	Citywide	Lighting
-Civic Administration Building	32 The Square, Palmerston North	
-Community Centres	Citywide	
-Local Reserves	Citywide	Lighting, community connections, sheds etc.
-Social Housing Buildings	Citywide	Electricity costs supporting social housing complexes
-Square Gardens	The Square	
-Street Lighting	Citywide	
-Traffic Signals	Citywide	
-Waste Management	Citywide	
- - Ashhurst Transfer Station	123 Mulgrave St	Public solid waste transfer station
- - Awapuni Waste Operations	303 Shriffs Rd, Palmerston North	Rubbish, recycling and composting facility

Business unit	Address	Purpose
Community Pools		Community Pools
-Lido Aquatic Centre	Park Rd, Palmerston North	Operated under contract by Community Leisure Management
-Freyberg Aquatic Centre	Thames St, Palmerston North	Operated under contract by Community Leisure Management
Customer Services	32 The Square, Palmerston North	Customer Services
-City Pound	20 Totara Rd, Palmerston North	
Library & Community Services	4 The Square, Palmerston North	Libraries
-Ashhurst Library	64 Bamfield St, Ashhurst, Palmerston North	
-Awapuni Library	96C College St, Awapuni, Palmerston North	
-City Library	4 The Square, Palmerston North	
-Te Pātikitiki Library	157 Highbury Ave, Highbury, Palmerston North	
-Roslyn Library	8 Kipling St, Roslyn, Palmerston North	
-Youth Space	1 George St, Palmerston North	
Workplace Travel	N/A	Staff getting around
-Air Travel	N/A	
-Staff Commuting	N/A	

5 ORGANISATIONAL BUSINESS UNITS EXCLUDED FROM INVENTORY

Excluded from this inventory are:

1) Council Controlled Organisations. These organisations, while associated with PNCC, are separately managed and use different data management systems. Consequently, they have been excluded from this initial inventory.

2) Emissions from Council owned leased buildings. These emissions (e.g. from tenants energy use) are largely outside of the control of Council, and are thus not included in this inventory.

3) Embodied emissions of purchased Council products. Council procurement policy encourages officers to make sustainable purchasing decisions, but Council purchases an extremely wide range of products from a similarly wide range of suppliers, with highly variable carbon accounting practices and methodologies. Consequently, these emissions have been excluded at this stage.

4) Emissions resulting from externally contracted civil works and services. As above, Council procurement policy encourages the use of contractors that demonstrate sustainable practices, but for the same reasons these emissions are not currently within the scope of this inventory.

6 GHG EMISSIONS SOURCE INCLUSIONS

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 ISO14064-1:2006 standards. Identification of emissions sources was achieved via personal communications with Palmerston North City Council staff, and cross-checked against operational expenditure records for the reporting period. These records were viewed in order to see what activities may be associated with emissions from all of the 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. Inclusion of other Scope 3 emissions sources is done on a case-by-case basis.

After liaison with the organisation, the emissions sources in Table 11 have been identified and included in the GHG emissions inventory.

Methane missions from Awapuni and Ashhurst landfills which are closed have been included in the Scope 1 emissions. The results are from AECOM's study in 2017 based on the IPCC's 1st order decay model.

Table 11: GHG emissions sources included in the inventory

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Customer/City Pound	Electricity	Scope 2		kWh	Electricity data is sourced directly from PNCC's supplier who read the electricity meters directly. These meters are assumed to be working correctly.
Customer/Libraries/Ashhurst Library	Electricity	Scope 2		kWh	
Customer/Libraries/Awapuni Library	Electricity	Scope 2		kWh	
Customer/Libraries/City Library	Electricity	Scope 2		kWh	
Customer/Libraries/City Library	Natural Gas distributed commercial	Scope 1		kWh	Natural Gas data is sourced directly from PNCC's supplier who read the gas meters directly. These meters are assumed to be working correctly.
Customer/Libraries/Highbury Library	Electricity	Scope 2		kWh	
Customer/Libraries/Mobile Library	Diesel	Scope 1		L	Vehicle fuel data sourced from fuel card transactions, which are assumed to be accurate.
Customer/Libraries/Roslyn Library	Electricity	Scope 2		kWh	
Customer/Libraries/Youth Space	Electricity	Scope 2		kWh	
Customer/Libraries/Youth Space	Natural Gas distributed commercial	Scope 1		kWh	
Customer/Wildbase Recovery Centre	Electricity	Scope 2		kWh	
Infrastructure/Logistics & Support/Depots	Electricity	Scope 2		kWh	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Infrastructure/Logistics & Support/Depots	Natural Gas distributed commercial	Scope 1		kWh	
Infrastructure/Logistics & Support/Nursery	Natural Gas distributed commercial	Scope 1		kWh	
Infrastructure/Logistics & Support/Tankers	Diesel	Scope 1		L	
Infrastructure/Logistics & Support/Tankers	Petrol regular	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Heavy Plant	Diesel	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Heavy Plant	Petrol premium	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Heavy Plant	Petrol regular	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Heavy Trucks	Diesel	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Light Trucks	Diesel	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Light Trucks	Petrol regular	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Medium Trucks	Diesel	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Mowers	Diesel	Scope 1		L	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Infrastructure/Logistics & Support/Vehicles/Mowers	Petrol regular	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Pool Vehicles	Diesel	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Pool Vehicles	Petrol regular	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Quad Bikes	Petrol regular	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Tractors	Diesel	Scope 1		L	
Infrastructure/Logistics & Support/Vehicles/Utility Vehicles	Diesel	Scope 1		L	
Infrastructure/Parks & Reserves	Fertiliser use Nitrogen	Scope 1		kg N	Nitrogen concentration varies across Council's usage, PNCC uses an estimated average Nitrogen content of 12%
Infrastructure/Parks & Reserves/Aquatic Centres/Ashhurst	Electricity	Scope 2		kWh	
Infrastructure/Parks & Reserves/Aquatic Centres/Ashhurst	Natural Gas distributed commercial	Scope 1		kWh	
Infrastructure/Parks & Reserves/Aquatic Centres/Freyberg Aquatic Centre	Electricity	Scope 2		kWh	
Infrastructure/Parks & Reserves/Aquatic Centres/Lido Aquatic Centre	Electricity	Scope 2		kWh	
Infrastructure/Parks & Reserves/Aquatic Centres/Lido Aquatic Centre	Natural Gas distributed commercial	Scope 1		kWh	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Infrastructure/Parks & Reserves/Cemeteries	Electricity	Scope 2		kWh	
Infrastructure/Parks & Reserves/Cemeteries	Natural Gas distributed commercial	Scope 1		kWh	
Infrastructure/Parks & Reserves/Citywide Reserves	Electricity	Scope 2		kWh	
Infrastructure/Parks & Reserves/Citywide Reserves	Natural Gas distributed commercial	Scope 1		kWh	
Infrastructure/Parks & Reserves/Local Reserves & Sportsfields	Electricity	Scope 2		kWh	
Infrastructure/Parks & Reserves/Local Reserves & Sportsfields	Natural Gas distributed commercial	Scope 1		kWh	
Infrastructure/Property	HCFC-22 (R-22, Genetron 22 or Freon 22)	Scope 1		kg	Based on the volume of gas refilled (rather than a direct measurement of losses)
Infrastructure/Property/Civic Administration Building	Electricity	Scope 2		kWh	
Infrastructure/Property/Civic Administration Building	Natural Gas distributed commercial	Scope 1		kWh	
Infrastructure/Property/Community Centres	Electricity	Scope 2		kWh	
Infrastructure/Property/Community Centres	Natural Gas distributed commercial	Scope 1		kWh	
Infrastructure/Property/Social Housing Buildings	Electricity	Scope 2		kWh	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Infrastructure/Three Waters/Stormwater Pump Stations	Electricity	Scope 2		kWh	
Infrastructure/Three Waters/Wastewater Pump Stations	Electricity	Scope 2		kWh	
Infrastructure/Three Waters/Wastewater Treatment	Electricity	Scope 2		kWh	
Infrastructure/Three Waters/Wastewater Treatment	Natural Gas distributed commercial	Scope 1		kWh	
Infrastructure/Three Waters/Wastewater Treatment	Wastewater precalculated (tCO_2e)	Scope 1		t	TKN estimate based on periodic sampling
Infrastructure/Three Waters/Water Treatment & Pumps	Electricity	Scope 2		kWh	
Infrastructure/Transport/City Bus Terminal	Electricity	Scope 2		kWh	
Infrastructure/Transport/Street Lighting	Electricity	Scope 2		kWh	
Infrastructure/Transport/Traffic Signals	Electricity	Scope 2		kWh	
Infrastructure/Waste Management	Waste landfilled LFGR Mixed waste	Scope 3		kg	Weight of waste collected at PNCC facilities is based on a 2009 study.
Infrastructure/Waste Management/Ashhurst Landfill	Waste to Landfill Municipal solid waste (CO_2e)	Scope 1		t	Landfill emissions are based on a 1st Order Decay Model, based on estimates of deposited waste over lifetime of landfill
Infrastructure/Waste Management/Awapuni Landfill	CH_4	Scope 1		t	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Infrastructure/Waste Management/Awapuni Landfill	N_2O	Scope 1		t	
Infrastructure/Waste Management/Awapuni Landfill	Waste to Landfill Municipal solid waste (CO_2e)	Scope 1		t	
Infrastructure/Waste Management/Waste Management Operations	Electricity	Scope 2		kWh	
Marketing & Communications/Arena Operations	Electricity	Scope 2		kWh	
Marketing & Communications/Arena Operations	Natural Gas distributed commercial	Scope 1		kWh	
Workplace Travel/Air Travel	Air travel domestic (average)	Scope 3		pkm	Assumes standardised distance/flight plans between destinations
Workplace Travel/Air Travel	Air travel long haul (econ)	Scope 3		pkm	
Workplace Travel/Air Travel	Air travel short haul (econ)	Scope 3		pkm	
Workplace Travel/Air Travel	Air travel short haul b/f class	Scope 3		pkm	
Workplace Travel/Hire Cars and Taxis	Company Car average (petrol)	Scope 1		km	
Workplace Travel/Hire Cars and Taxis	Taxi (regular)	Scope 3		$	Assumes all taxi usage is through formal card system, rather than staff reimbursement

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Workplace Travel/Staff Commuting	Air travel domestic (average)	Scope 3		pkm	Staff commuting is based on an extensive travel survey conducted in 2020 prior to Covid lockdowns
Workplace Travel/Staff Commuting	Bus travel (city)	Scope 3 Additional		pkm	
Workplace Travel/Staff Commuting	Car Medium hybrid	Scope 3 Additional		km	
Workplace Travel/Staff Commuting	Motorcycle	Scope 3 Additional		km	
Workplace Travel/Staff Commuting	Private Car average (diesel)	Scope 3 Additional		km	
Workplace Travel/Staff Commuting	Private Car default (petrol)	Scope 3 Additional		km	

6.1 Other emissions – HFCs, PFCs and SF_6

We use hydrofluorocarbons (HFCs) in our operations and these have been included in the inventory. Small quantities of HFCs are used as refrigerants in Council air conditioning units.

No operations use perfluorocarbons (PFCs), Nitrogen Trifluoride (N3) nor sulphur hexafluoride (SF_6), therefore no holdings of these are reported and no emissions from these sources are included in this inventory.

6.2 Other emissions – biomass

Combustion of biomass has occurred in our operations and is included in the inventory. Council operates a Biogas generator at the Totara Rd Wastewater Treament Plant, using gas from the adjacent landfill gas capture system. The methane and nitrous-oxide emissions have been included in the inventory, while the carbon emissions are excluded, due to being part of the short carbon cycle.

6.3 Other emissions – deforestation

Deforestation has been undertaken by the organisation and is included in the inventory. Clearance of approximately 20 ha of pine, mixed scrub, and some older growth native forest occurred during the reporting period to enable the construction of the Turitea Windfarm.

6.4 Pre-verified data

No pre-verified data is included within the inventory.

7 GHG EMISSIONS SOURCE EXCLUSIONS

Emissions sources in Table 12 have been identified and excluded from the GHG emissions inventory.

Emissions resulting from the transport of goods by third parties (freight) have been excluded from this inventory. Given the nature of Council operations resulting in few occasions when these services are used, it is expected that these emissions represent only a tiny fraction of Council's total emissions. Notably, the production of solid waste at the Totara Road Wastewater Treatment Plant is known to produce approximately one truck load of waste a week, which is taken to be carefully disposed of at Bonny Glen Landfill approximately 50km away. It is expected that this will be formally accounted for in the 2020/2021 inventory.

It is also known that on occasion staff can apply to be reimbursed for fuel (such as if they have forgotten their Fuel Card), this data is not currently able to be efficiently captured, but is expected to be very minimal.

Table 12: GHG emissions sources excluded from the inventory

Business unit	GHG emissions source	GHG emissions level scope	Reason for exclusion
Palmerston North City Council	Freight	3	Minimal production of 'exported' materials.
Workplace Travel	Fuel reimbursements	3	Staff reimbursements for fuel purchased for fleet cars, due to the difficulty of accurately capturing this data. Expected to be insignificant due to Fuel Card system.

8 DATA COLLECTION AND UNCERTAINTIES

Table 11 provides an overview of how data were collected for each GHG emissions source, the source of the data and an explanation of any uncertainties or assumptions made. Estimated numerical uncertainties are reported with the emissions calculations and results.

All data was calculated using Toitū emanage and GHG emissions factors as provided by the Programme (see Appendix 1 - data summary.xls).

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

Emissions resulting from Council's wastewater treatment and closed landfills (Awapuni & Ashhurst) have been precalculated as part of a citywide emissions inventory. Details are included in the relevant attached spreadsheets.

Emission data resulting from waste produced at Council facilities, or deposited in public waste bins provided by Council, are reliant on a survey conducted 2009 which has unfortunately not been updated since.

9 GHG EMISSIONS CALCULATIONS AND RESULTS

GHG emissions for the organisation for this measurement period are provided in Table 1 where they are stated by greenhouse gas, by scope, by business unit and as total emissions.

Clearly Council's emissions are dominated by the closed Awapuni Landfill, which accounts for some 74% of gross emissions despite these emissions being substantially mitigated by the landfill gas capture system. Balancing these emissions however are Council's substantial forestry blocks, which sequestered some 34,147 tonnes CO_2 during the reporting period. This figure has reduced somewhat compared to previous reporting periods due to the clearance of approximately 20ha of mixed native and pine forestry for the purposes of the Turitea Windfarm and related infrastructure.

Inventory results show that further inroads into gross emissions is likely to require significant capital investment in energy efficiency improvements and electric vehicles.

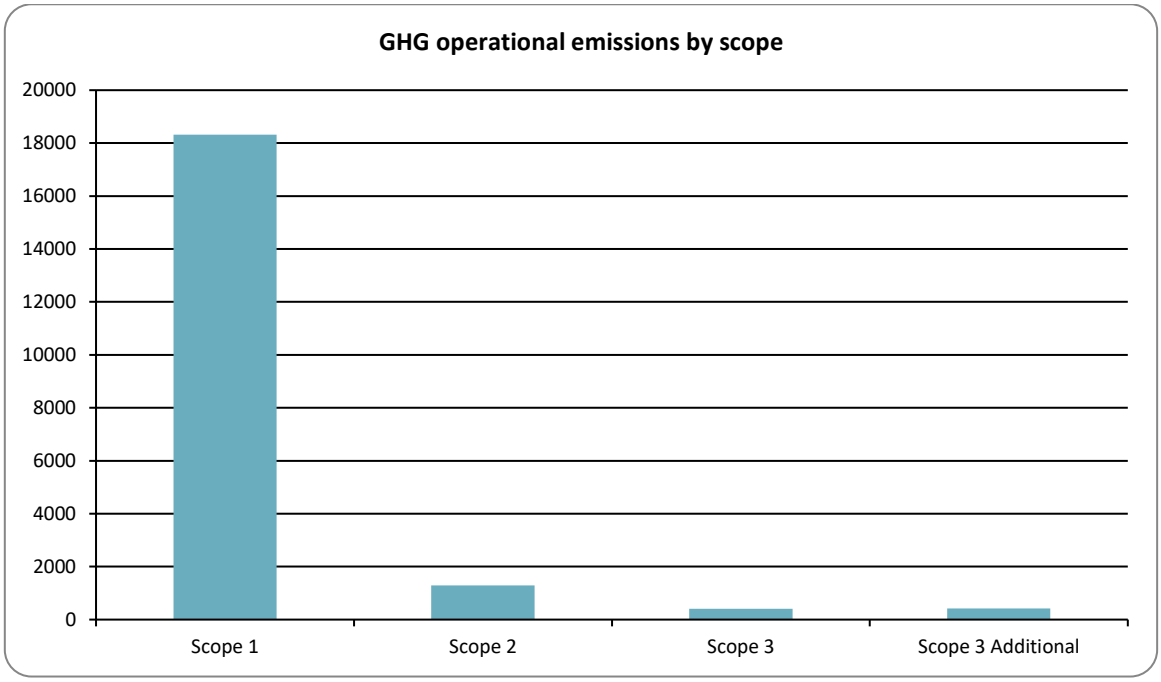

Figure 2: GHG emissions (tonnes CO_2e) by scope

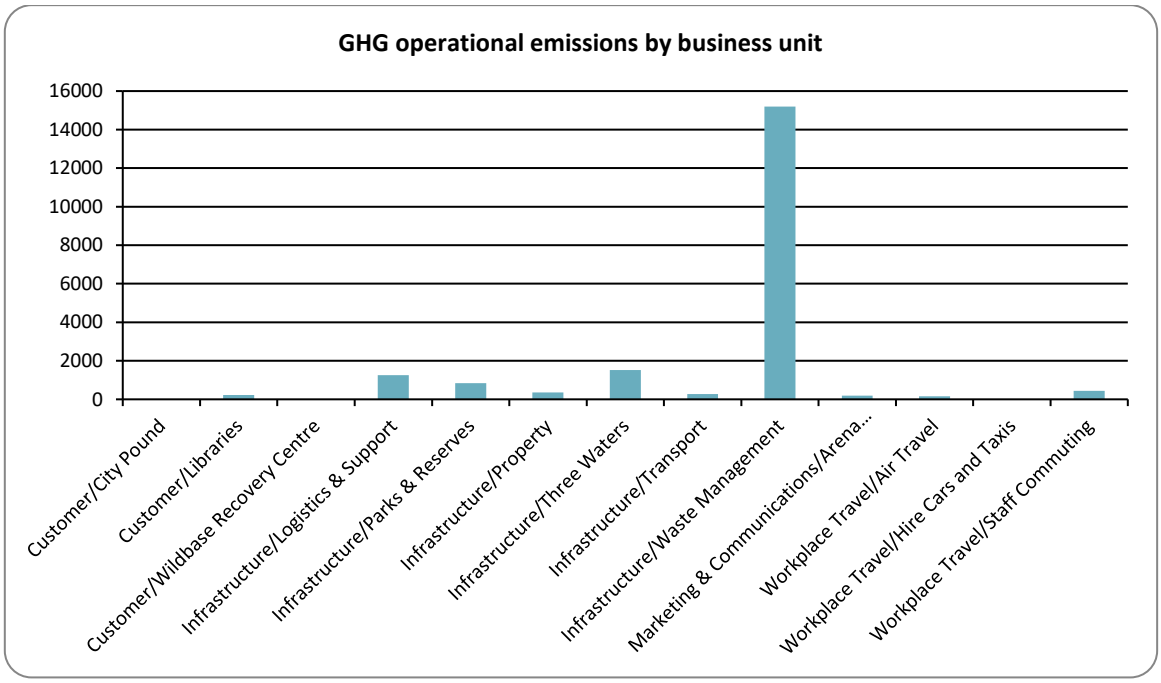

Figure 3: GHG emissions (tonnes CO_2e) by business activity.

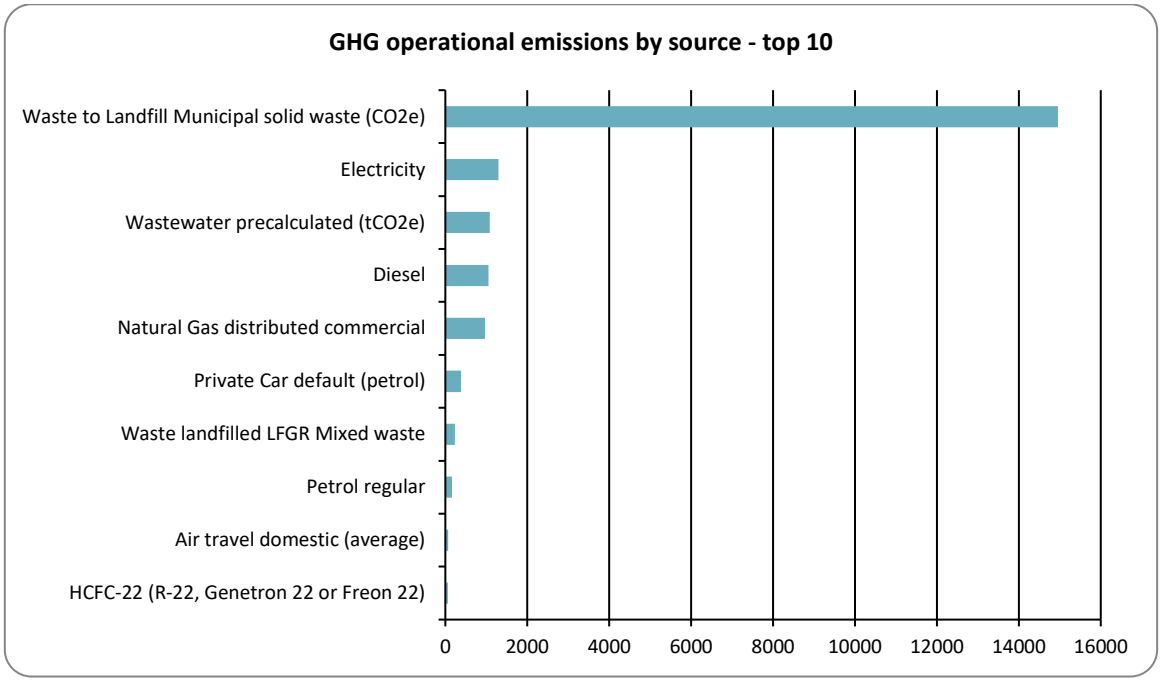

Figure 4: GHG emissions sources by source.

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 certified entity.

10 EMISSIONS REDUCTIONS AND REMOVALS ENHANCEMENT

GHG emissions for the organisation for the current reporting period are detailed in Table 1. Council's emissions have fallen significantly since the 2015/16 baseline, from 26444 to 20440 tCO_2, a 23% reduction. This is thanks in large part due to the continued maturation of the Awapuni and Ashhurst Landfills, which comprise approximately 76% of the total emissions, and roughly two-thirds of the observed emissions reduction. However, this reduction should be viewed as a consequence of the outsourcing of municipal waste management since the closure of Awapuni Landfill, rather than as a result of an actual reduction in greenhouse gas emissions.

Non-landfill related emissions have fallen from 6719 to 5512 tCO_2, an 18% reduction. Almost all of this reduction is due to improvements made in previous reporting periods, such as the rollout of LED street-lighting, and process improvements at the Lido and Wastewater Treatment Plant. 2019/20 was a very unusual year due to Covid-19 related lockdowns, so it remains to be seen what long-term impact this event might have on e.g. staff commuting. In any case, there is little evidence to suggest that the earlier trend in continued reductions in emissions has continued - more work is required to get PNCC back on track.

The organisation will have an updated management plan in place for managing and reducing emissions in the future in order to maintain Programme recertification.

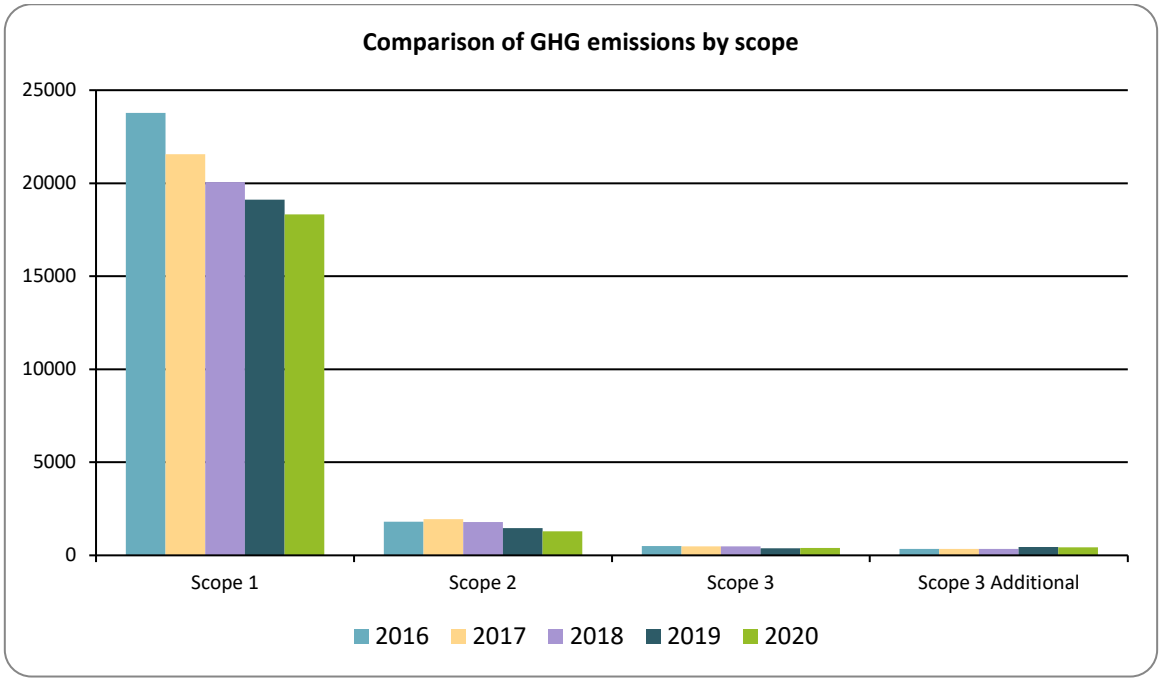

Figure 5: Comparison of GHG operational emissions by scope between the reporting periods.

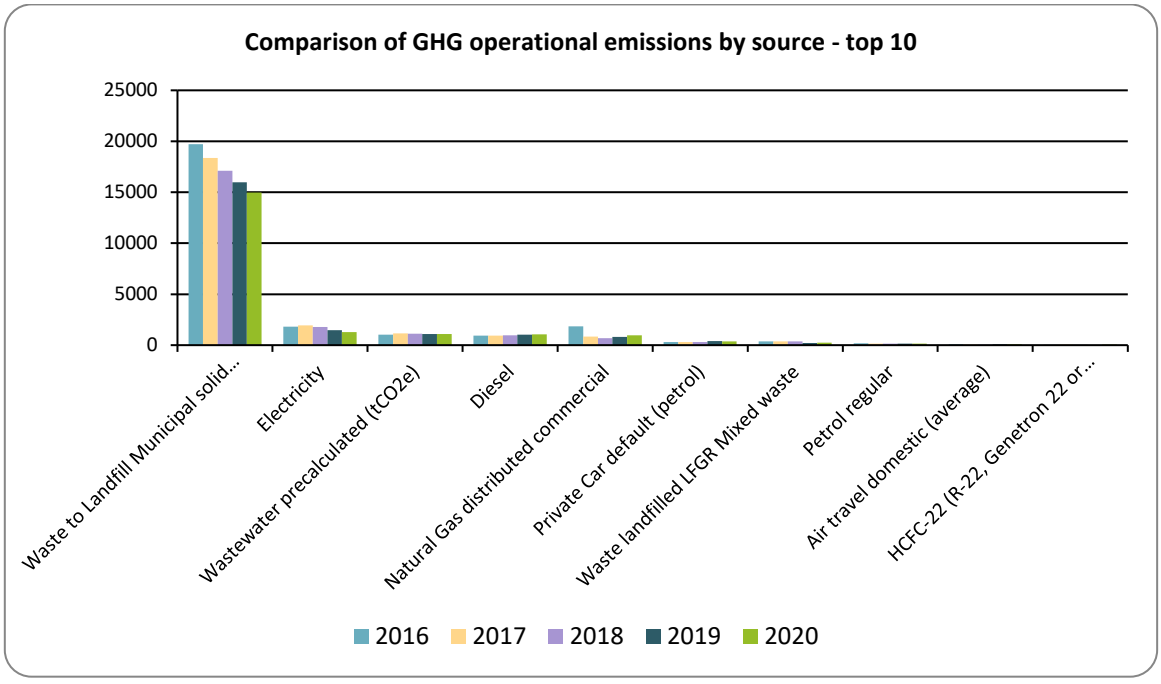

Figure 6: Comparison of GHG operational emissions by emissions sources between the reporting periods.

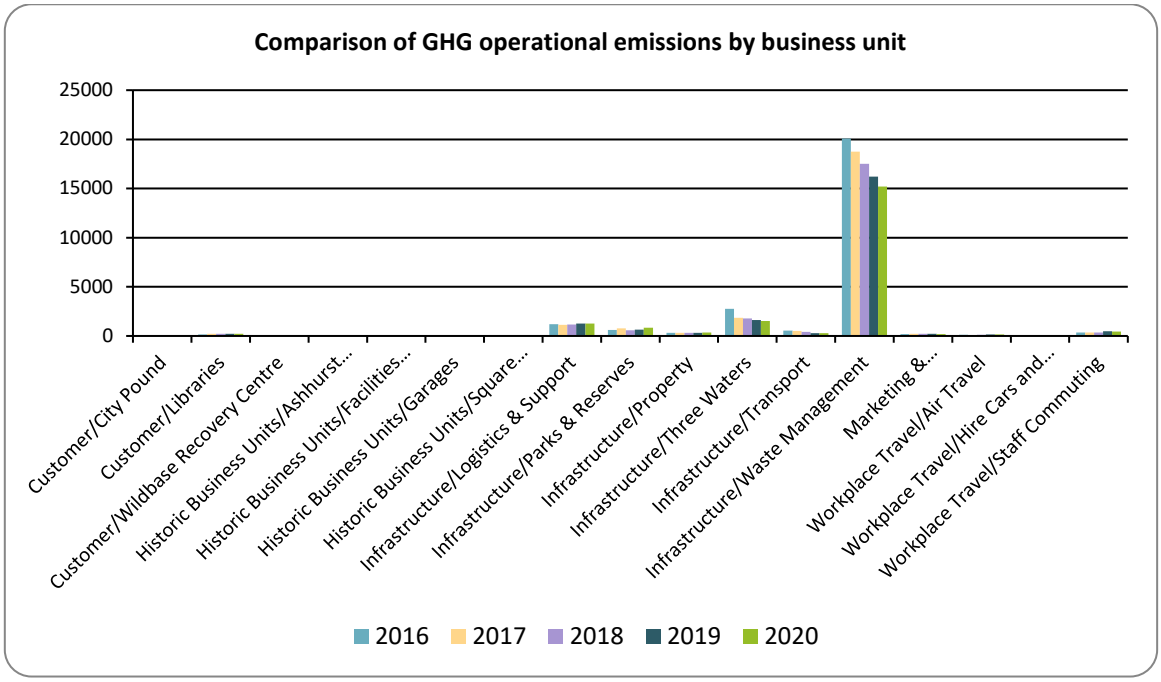

Figure 7: Comparison of emissions by business unit between the reporting periods.

11 LIABILITIES

11.1 GHG stocks held[4]

HFCs, PFCs and SF_6 represent GHGs with high global warming potentials. Their accidental release could result in a large increase in emissions for that year, and therefore the stock holdings are reported under the Programme (Table 13).

GHG stocks have been reported in this inventory and added into the GHG Stock Liability questionnaire.

Table 13: HFCs, PFCs and SF_6 GHG emissions and liabilities.

Business Unit	Source	Units	Amount held - start of reporting period	Amount held - end of reporting period	Potential Liability tCO_2e
Palmerston North City Council	Diesel commercial	litres	18764	18764	49.98204
Palmerston North City Council	HCFC-22 (R-22, Genetron 22 or Freon 22)	kilograms	284.03	601.93	1,089.49
Palmerston North City Council	Petrol	litres	1,200.00	1,200.00	2.94

[4] HFC stock liabilities for systems under 3 kg can be excluded.

11.2 Land-use change

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 a sequestration is claimed, then this also represents a liability in future years should fire, flood or other management activities release the stored carbon.

Land-use change has been included in this inventory. Council owns substantial blocks of native, exotic, and commercial pine forests. During this reporting period, approximately 20ha of mixed native and pinus radiata forests were cleared for the construction of the Turitea Windfarm.

12 PURCHASED REDUCTIONS

Purchased reductions could include certified “green” electricity, verified offsets or other carbon-neutral-certified services. Organisations may choose to voluntarily purchase carbon credits (or offsets) or green electricity that meets the eligibility criteria set by a regulatory authority. The reported gross emissions may not be reduced through the purchase of offsets or green tariff electricity.

Purchased emission reductions have not been included in this inventory.

Certified green electricity has not been included in this inventory. While Council purchases electricity from a 100% renewable supplier (Meridian Energy), is should be understood that this is not the same thing as a carbon neutral supplier. Consequently this supply is not considered to be 'certified green energy' for the purposes of this inventory.

We generate on-site renewable electricity, and this is included in the inventory. Council operates:

Solar farms on the roof of the Administration Building, Conference Centre, and Manawaroa Street Depot. It also operates a micro-hydro generation plant at the Turitea Dam, and a co-generation plant at the Totara Rd Wastewater Treatment Plant, which has recently been upgraded to utilise gas captured at the adjacent closed Awapuni Landfill. In each case, the generated electricity offsets energy that would otherwise be bought from the grid.

13 DOUBLE COUNTING / DOUBLE OFFSETTING

Double counting/offsetting refers to situations where:

- Parts of the organisation have been prior offset.
- The same emissions sources have been reported (and offset) in both organisation and product.
- 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 indirect (Scope 2 and 3) emissions sources.
- The organisation generates renewable electricity, uses or exports the electricity and claims the carbon benefits.
- 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.

Double counting / double offsetting has not been included in this inventory.

14 REFERENCES

International Organization for Standardization, 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.

15 APPENDIX 1: GHG EMISSIONS DATA SUMMARY

More GHG emissions data is available on the accompanying spreadsheet to this report:

PNCC 17_18 Wastewater Calculations.xlsx, PNCC Airtravel.xlsx, PNCC Business Units.xlsx, PNCC Emission Source Exclusions.xlsx, PNCC Forestry.xlsx, PNCC Refrigerants Fertilizers and Stock Liabilities.xlsx, PNCC Solid Waste Calculations.xlsx, PNCC Vehicles.xlsx, PNCC Workplace Travel.xlsx

