

# Greenhouse Gas Emissions Inventory Report

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CEMARS and the carboNZero programme

Prepared in accordance with Part 7.3.1 of ISO 14064-1:2006



## Palmerston North City Council

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For the period: 01 July 2017 to 30 June 2018

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## Greenhouse Gas Emissions Inventory summary

Table 1: GHG emissions data summary (tCO<sub>2</sub>e).

	2016	2017	2018
Scope 1	23,780.79	21,552.78	20,064.98
Scope 2	1,811.31	1,945.25	1,795.03
Scope 3 Mandatory	502.84	476.07	481.72
Scope 3 Additional	349.07	349.00	348.96
Scope 3 One time	0.00	0.00	0.00
Total gross emissions	26,444.02	24,323.10	22,690.68
Certified green electricity	0.00	0.00	0.00
Purchased emission reductions	0.00	0.00	0.00
Net GHG emissions (all scopes)	26,444.02	24,323.10	22,690.68
Total gross GHG emissions per Turnover/revenue (\$Millions)	239.59	193.04	176.31
Total mandatory GHG emissions per Turnover/revenue (\$Millions)	236.43	190.27	173.60

*Note: total mandatory emissions includes scope 1, scope 2, and scope 3 (i.e. excludes scope 3 one-time and scope 3 additional).*

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

Indicator	tCO <sub>2</sub> e
Scope 1	
Other	27.49
Other fuels	679.70
Other gases	12.66
Transport fuels	1,095.13
Waste	17,123.00
Water & Wastewater	1,127.00
Scope 2	
Electricity	1,795.03
Scope 3	
Scope 3 Additional	348.96
Transport - other	109.13
Waste	372.58
Total	22,690.68

**Table 3: GHG emissions inventory summary by scope and greenhouse gas.**

Component gas	Scope 1	Scope 2	Scope 3	Total	Removals	After removals
CH <sub>4</sub>	4.10	0.00	376.05	380.14	0.00	380.14
CO <sub>2</sub>	20,002.70	1,795.03	442.97	22,240.70	0.00	22,240.70
HFCs	10.86	0.00	0.00	10.86	0.00	10.86
N <sub>2</sub> O	47.32	0.00	11.66	58.98	0.00	58.98
PFCs	0.00	0.00	0.00	0.00	0.00	0.00
SF <sub>6</sub>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>20,064.98</b>	<b>1,795.03</b>	<b>830.68</b>	<b>22,690.68</b>	<b>0.00</b>	<b>22,690.68</b>

**Table 4: Mobile and stationary combustion of biomass.**

Biomass	Quantity	Tonnes Biogenic CO <sub>2</sub>
No activity recorded	n/a	n/a

**Table 5: Deforestation of two hectares or more.**

Source	Mass	tCO <sub>2</sub> e
Deforestation tCO <sub>2</sub> e (tCO <sub>2</sub> e)	0.00	0.00

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

Source	Units	Quantity	Potential Liability tCO <sub>2</sub> e
Diesel commercial	litres	18,764.00	50.43
HCFC-22 (R-22, Genetron 22 or Freon 22)	kilograms	293.03	530.38
Petrol	litres	1,200.00	2.92
R-407C	kilograms	107.60	190.88
R-407F	kilograms	80.00	146.00
R-410A	kilograms	52.00	108.58

**Table 7: Land-use liabilities.**

Type of sequestration	Liability tCO <sub>2</sub> e
Contingent liability (carbon sequestered this reporting period)	31,898.00
Potential sequestration liability (total carbon stock)	940,634.00

**Table 8: Renewable electricity generation on-site.**

Renewable generation on-site	kWh generated	tCO <sub>2</sub> e avoided
No activity recorded	n/a	n/a

**Table 9: Purchased emissions reductions.**

Type of emission reductions purchased	Amount	tCO <sub>2</sub> e
Certified green electricity (tCO <sub>2</sub> e)	0.00	0.00
Purchased emission reductions (tCO <sub>2</sub> e)	0.00	0.00
Total	0.00	0.00

## 1 Introduction

This report is the annual greenhouse gas (GHG) emissions<sup>1</sup> 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<sup>2</sup> 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*<sup>3</sup>. 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 CEMARS programme.

## 3 Organisation description

Te Kaunihera o Papaioea, Palmerston North City Council (PNCC), is the territorial authority of Palmerston North, the lower North Island city of approximately 89,000 residents. With 564 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 2018-2028 long term plan (LTP) set a target of 25% reduction in citywide carbon emissions. 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 Manawatu 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 Manawatu-Wanganui 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 of the properties themselves, the operation of its community swimming pools (the Lido and Freyberg) is contracted to Community Leisure Management Limited.

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<sup>1</sup> Throughout this document "emissions" means "GHG emissions".

<sup>2</sup> Programme refers to the Certified Emissions Measurement And Reduction Scheme (CEMARS) and the carbonZero programme.

<sup>3</sup> 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*.

## 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. Note that due to a organisational restructure during the 2018/19 financial year, this chart does not reflect the current 2019 organisational structure.

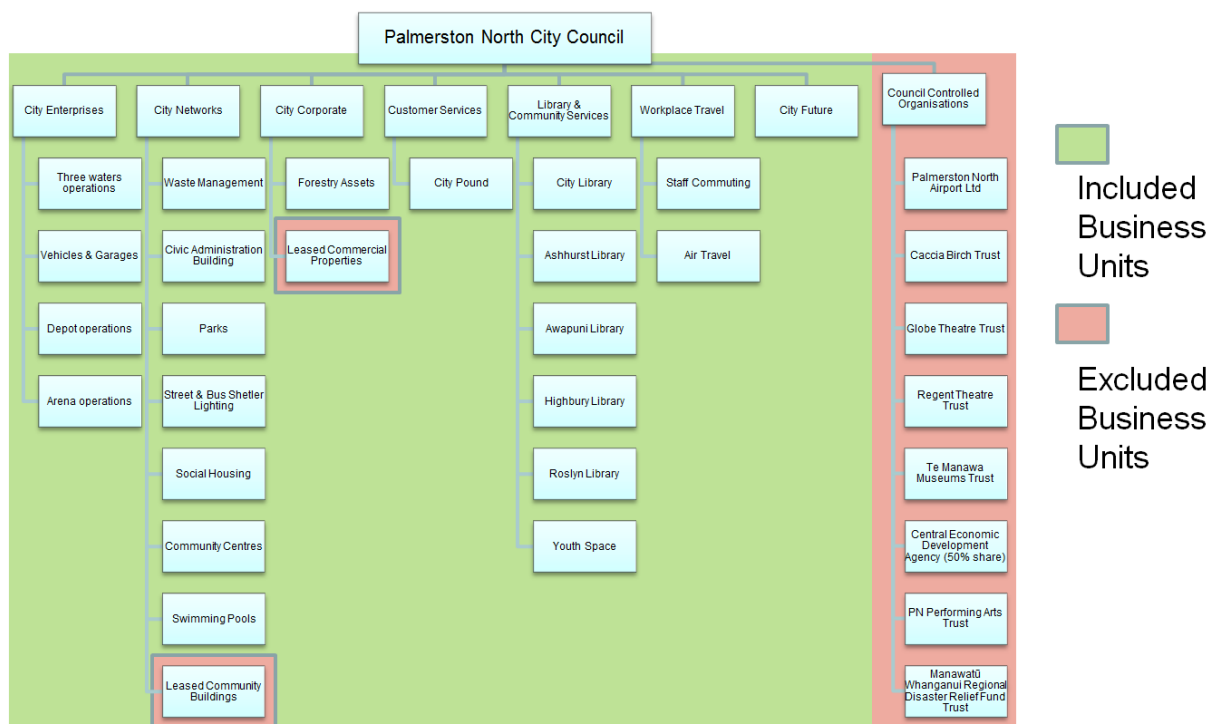


Figure 1: Organisational structure.

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
-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	Citywide	



Business unit	Address	Purpose
Stations		
-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 Shriifs 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 Shriifs Rd, Palmerston North	Rubbish, recycling and composting facility
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

Business unit	Address	Purpose
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 emissions 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)
City Enterprises/Arena Operations	Electricity	Scope 2	Smart Power	kWh	
City Enterprises/Arena Operations	Natural Gas distributed commercial	Scope 1	Smart Power	kWh	
City Enterprises/Depot	Electricity	Scope 2	Smart Power	kWh	
City Enterprises/Facilities Management	Electricity	Scope 2	Smart Power	kWh	
City Enterprises/Facilities Management	HCFC-22 (R-22, Genetron 22 or Freon 22)	Scope 1	PNCC Refrigerants Fertilizers and Stock Liabilities	kg	
City Enterprises/Facilities Management	Natural Gas distributed commercial	Scope 1	Smart Power	kWh	
City Enterprises/Facilities Management	R-410A	Scope 1	PNCC Refrigerants Fertilizers and Stock Liabilities	kg	
City Enterprises/Facilities Management	R-438A	Scope 1	PNCC Refrigerants Fertilizers and Stock Liabilities	kg	
City Enterprises/Garages	Natural Gas distributed commercial	Scope 1	Smart Power	kWh	
City Enterprises/Nursery	Natural Gas distributed commercial	Scope 1	Smart Power	kWh	
City Enterprises/Storm Water Pump	Electricity	Scope 2	Smart Power	kWh	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Stations					
City Enterprises/Tankers	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Tankers	Petrol regular	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Heavy Plant	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Heavy Plant	Petrol premium	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Heavy Trucks	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Leased Vehicles	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Leased Vehicles	Petrol premium	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Leased Vehicles	Petrol regular	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Light Trucks	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Medium Trucks	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Motorcycles	Petrol regular	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Mowers	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Mowers	Petrol regular	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Pool Vehicles	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Pool Vehicles	Petrol regular	Scope 1	PNCC Vehicles Spreadsheet	L	
City Enterprises/Vehicles/Tractors	Diesel	Scope 1	PNCC Vehicles Spreadsheet	L	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
City Enterprises/Wastewater Pump Stations	Electricity	Scope 2	Smart Power	kWh	
City Enterprises/Wastewater Treatment	Electricity	Scope 2	Smart Power	kWh	
City Enterprises/Wastewater Treatment	Natural Gas distributed commercial	Scope 1	Smart Power	kWh	
City Enterprises/Wastewater Treatment	Wastewater precalculated (tCO <sub>2</sub> e)	Scope 3	PNCC Wastewater Calculations Spreadsheet	t	
City Enterprises/Water Treatment & Pumps	Electricity	Scope 2	Smart Power	kWh	
City Networks/Bus Shelters	Electricity	Scope 2	Smart Power	kWh	
City Networks/Civic Administration Building	Electricity	Scope 2	Smart Power	kWh	
City Networks/Civic Administration Building	Natural Gas distributed commercial	Scope 1	Smart Power	kWh	
City Networks/Community Centres	Electricity	Scope 2	Smart Power	kWh	
City Networks/Community Centres	Natural Gas distributed commercial	Scope 1	Smart Power	kWh	
City Networks/Local Reserves	Electricity	Scope 2	Smart Power	kWh	
City Networks/Local Reserves	Fertiliser use	Scope 1	PNCC Refrigerants Fertilizers	kg	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
	Nitrogen		and Stock Liabilities		
City Networks/Social Housing Buildings	Electricity	Scope 2	Smart Power	kWh	
City Networks/Square Gardens	Electricity	Scope 2	Smart Power	kWh	
City Networks/Street Lighting	Electricity	Scope 2	Smart Power	kWh	
City Networks/Traffic Signals	Electricity	Scope 2	Smart Power	kWh	
City Networks/Waste Management	Waste landfilled LFGR Mixed waste	Scope 3	September 2009 Waste Audit of Council Facilities	t	Tonnage is based on an out of date (2009) estimate
City Networks/Waste Management/Ashhurst Landfill	Waste to Landfill Municipal solid waste (CO <sub>2</sub> e)	Scope 1	PNCC Solid Waste Calculation Spreadsheet, and associated IPCC modelling spreadsheets	t	Resource consent estimates landfill size to be 15,000m <sup>3</sup> , but little else is known about site, requiring a variety of assumptions to be made regarding density and yearly use.
City Networks/Waste Management/Ashhurst Transfer Station	Electricity	Scope 2	Smart Power	kWh	
City Networks/Waste Management/Awapuni Landfill	CH <sub>4</sub>	Scope 1	PNCC Solid Waste Calculation Spreadsheet, and associated IPCC modelling spreadsheets	t	
City Networks/Waste Management/Awapuni Landfill	N <sub>2</sub> O	Scope 1	PNCC Solid Waste Calculation Spreadsheet, and associated IPCC modelling spreadsheets	t	
City Networks/Waste Management/Awapuni Landfill	Waste to Landfill Municipal solid waste (CO <sub>2</sub> e)	Scope 1	PNCC Solid Waste Calculation Spreadsheet, and associated IPCC modelling spreadsheets	t	Landfill composition estimate only
City Networks/Waste	Electricity	Scope 2	Smart Power	kWh	

Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Management/Awapuni Waste Ops					
Community Pools/Freyberg Aquatic Centre	Electricity	Scope 2	Smart Power	kWh	
Community Pools/Lido Aquatic Centre	Electricity	Scope 2	Smart Power	kWh	
Customer Services/City Pound	Electricity	Scope 2	Smart Power	kWh	
Library & Community Services/Ashhurst Library	Electricity	Scope 2	Smart Power	kWh	
Library & Community Services/Awapuni Library	Electricity	Scope 2	Smart Power	kWh	
Library & Community Services/City Library	Electricity	Scope 2	Smart Power	kWh	
Library & Community Services/City Library	Natural Gas distributed commercial	Scope 1	Smart Power	kWh	
Library & Community Services/Highbury Library	Electricity	Scope 2	Smart Power	kWh	
Library & Community Services/Roslyn Library	Electricity	Scope 2	Smart Power	kWh	
Library & Community Services/Youth Space	Electricity	Scope 2	Smart Power	kWh	
Library & Community Services/Youth Space	Natural Gas distributed commercial	Scope 1	Smart Power	kWh	



Business unit	GHG emissions source	GHG emissions level scope	Data source	Data collection unit	Uncertainty (description)
Workplace Travel/Air Travel	Air travel domestic (average)	Scope 3	Smart Power & PNCC Airtravel Spreadsheet	pkm	
Workplace Travel/Air Travel	Air travel long haul (econ)	Scope 3	Smart Power & PNCC Airtravel Spreadsheet	pkm	
Workplace Travel/Air Travel	Air travel short haul (econ)	Scope 3	Smart Power & PNCC Airtravel Spreadsheet	pkm	
Workplace Travel/Staff Commuting	Bus travel (city)	Scope 3 Additional	PNCC Workplace Travel Spreadsheet	pkm	Based on the 2011 Workplace Travel Study (i.e. out of date)
Workplace Travel/Staff Commuting	Car Medium hybrid	Scope 3 Additional	PNCC Workplace Travel Spreadsheet	km	Based on the 2011 Workplace Travel Study (i.e. out of date)
Workplace Travel/Staff Commuting	Company Car average (petrol)	Scope 3 Additional	PNCC Workplace Travel Spreadsheet	km	Based on the 2011 Workplace Travel Study (i.e. out of date)
Workplace Travel/Staff Commuting	Motorcycle	Scope 3 Additional	PNCC Workplace Travel Spreadsheet	km	Based on the 2011 Workplace Travel Study (i.e. out of date)
Workplace Travel/Staff Commuting	Private Car average (diesel)	Scope 3 Additional	PNCC Workplace Travel Spreadsheet	km	Based on the 2011 Workplace Travel Study (i.e. out of date)
Workplace Travel/Staff Commuting	Private Car default (petrol)	Scope 3 Additional	PNCC Workplace Travel Spreadsheet	km	Based on the 2011 Workplace Travel Study (i.e. out of date)

## 6.1 Other emissions – HFCs, PFCs and SF<sub>6</sub>

We use hydrofluorocarbons (HFCs) in our operations and these have been included in the inventory.

No operations use perfluorocarbons (PFCs), Nitrogen Trifluoride (N<sub>3</sub>) nor sulphur hexafluoride (SF<sub>6</sub>), 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 Treatment 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

No deforestation has been undertaken by the organisation on land it owns and that is included in this inventory. Therefore no emissions from deforestation are included in this inventory.

## 6.4 Pre-verified data

No pre-verified data is included within the inventory.

# 7 GHG emissions source exclusions

The following emissions sources have been identified and excluded from the GHG emissions inventory.

Three emissions sources have been excluded from this inventory: Emissions resulting from the transport of goods by third parties (freight), taxi travel, and emissions from the use of rental cars. In each case, given the nature of Council operations resulting in few occasions when these services are used, it is expected that these emissions represent only a small de minimis fraction of Council's total emissions. However, it is intended that these emissions sources will be included in future inventories.

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	3.00	Currently insufficient data. Likely to be de minimis, however intention is to include source in future years
Palmerston North City Council	Taxi Travel	3.00	Currently insufficient data. Likely to be de minimis, however intention is to include source in future years
Palmerston North City Council	Rental Cars	3.00	Currently insufficient data. Likely to be de minimis, however intention is to include source in future years

# 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 E-Manage 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.

## 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 comprises some 81% 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 31898 tonnes CO<sub>2</sub> during the reporting period. However, it should be noted that a number of these blocks are to be harvested in the 2018/19 financial year.

Inventory results show that serious inroads into gross emissions can be made by tackling Council's other major emission sources by improving the energy efficiency of Council facilities, reducing council waste, and effective workplace travel planning.

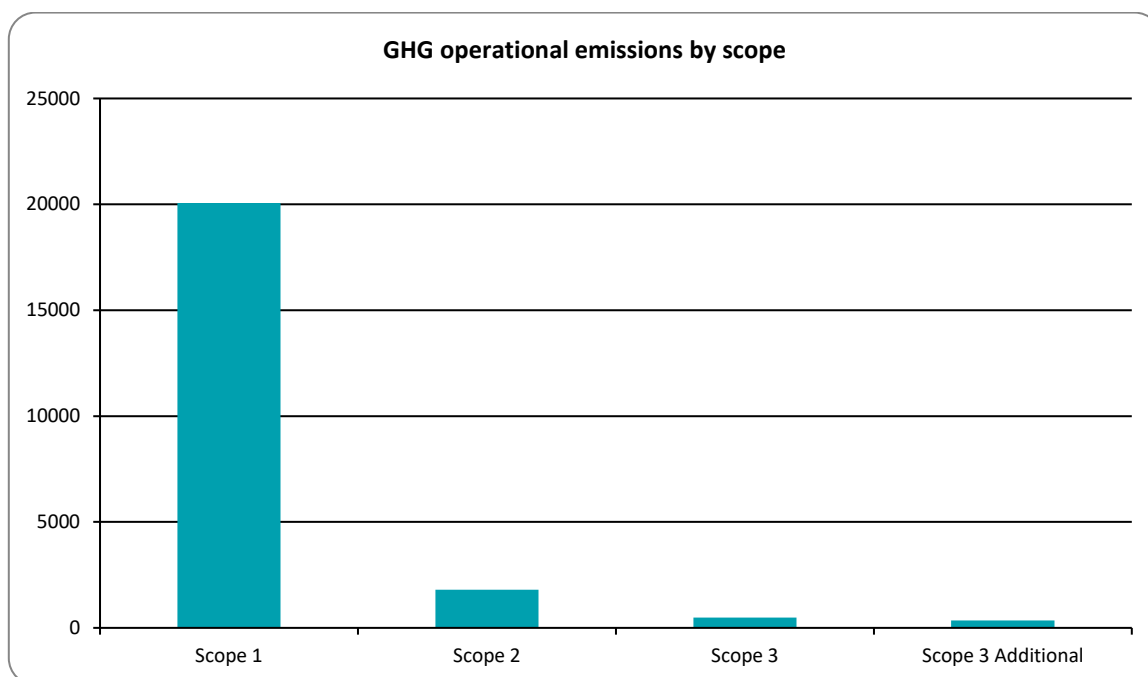


Figure 2: GHG emissions (tonnes CO<sub>2</sub>e) by scope.

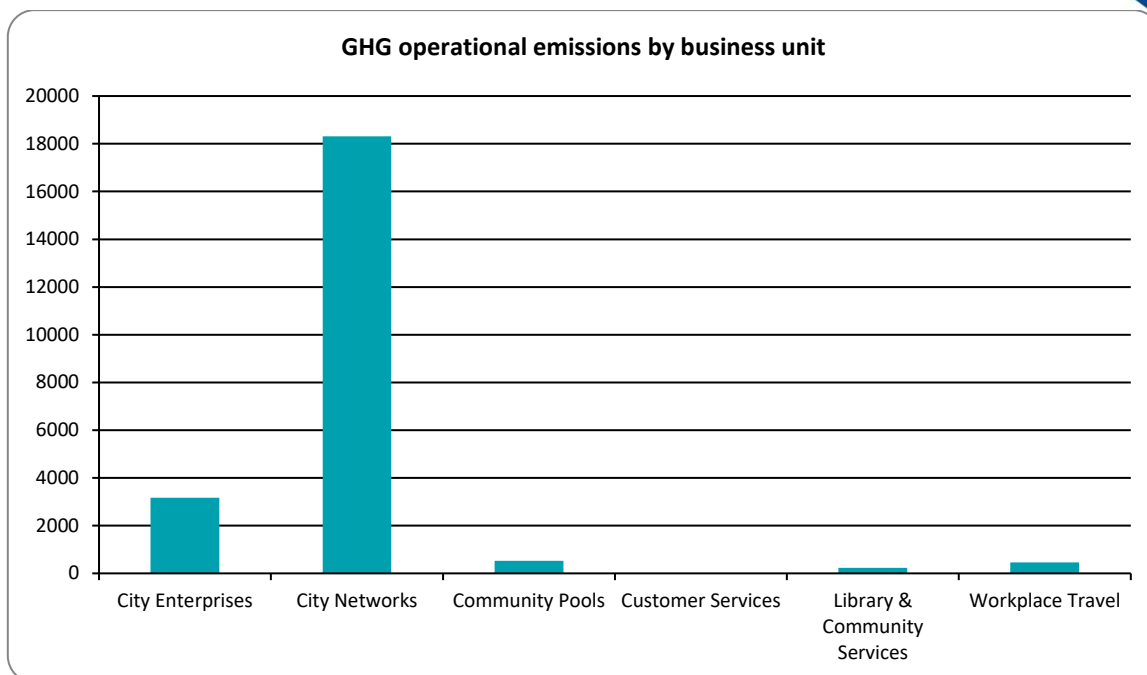


Figure 3: GHG emissions (tonnes CO<sub>2</sub>e) by business activity.

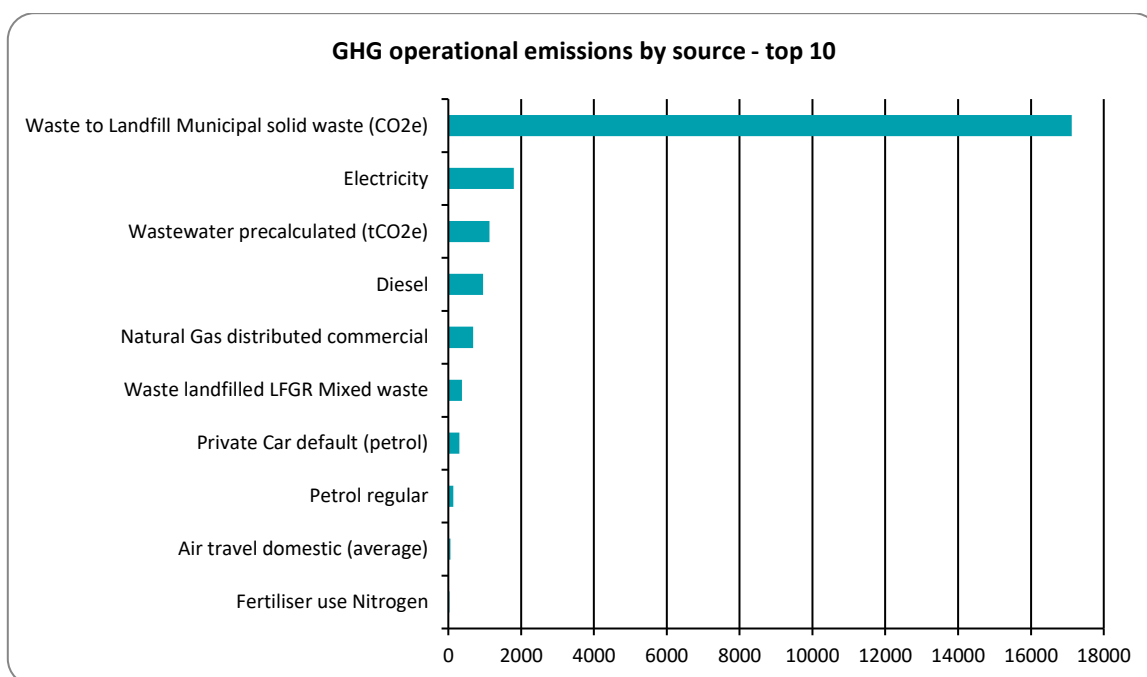


Figure 4: GHG emissions sources by source.

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 GHG 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 33772 to 28916 tCO<sub>2</sub>, an 14% reduction. This is thanks in large part due to the continued maturation of the Awapuni and Ashhurst Landfills, which comprise approximately 81% of the total emissions, and 65% 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 6946 to 5627 tCO<sub>2</sub>, a 19% reduction. Much of this improvement was made in the previous financial year through process improvements at the Lido and Wastewater Treatment Plant, and a reduction in air-miles. Further emission reductions have been made through the ongoing LED street-lighting upgrade programme, the introduction of electric vehicles into the fleet and minor upgrades to energy efficiency of Council buildings, particularly again through LED lighting upgrades. Reductions in each of these areas are expected to continue as these programmes continue to roll out.

The management and reduction plan has not changed since certification.

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

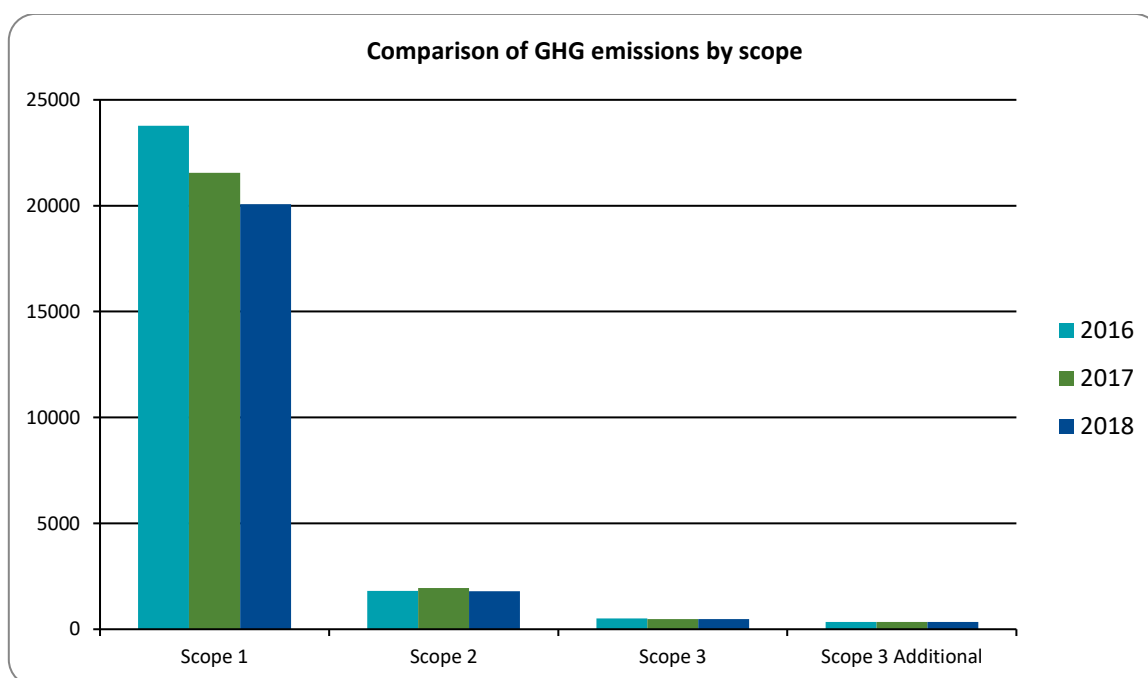


Figure 5: Comparison of GHG operational emissions by scope between the reporting periods.

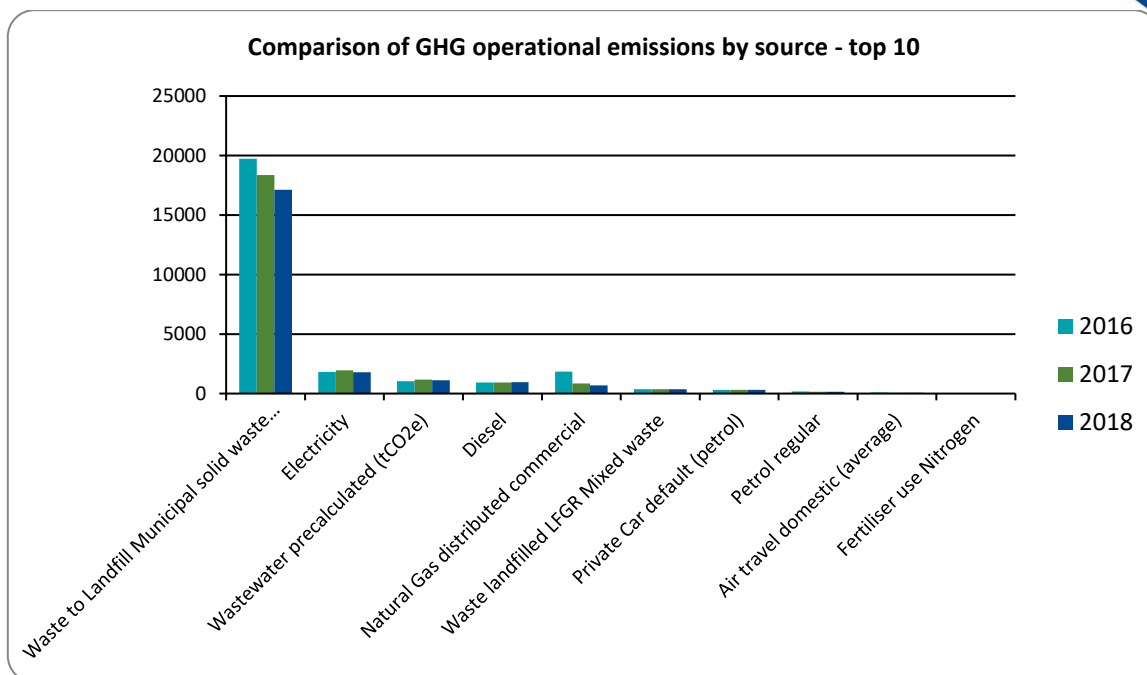


Figure 6: Comparison of GHG operational emissions by emissions sources between the reporting periods.

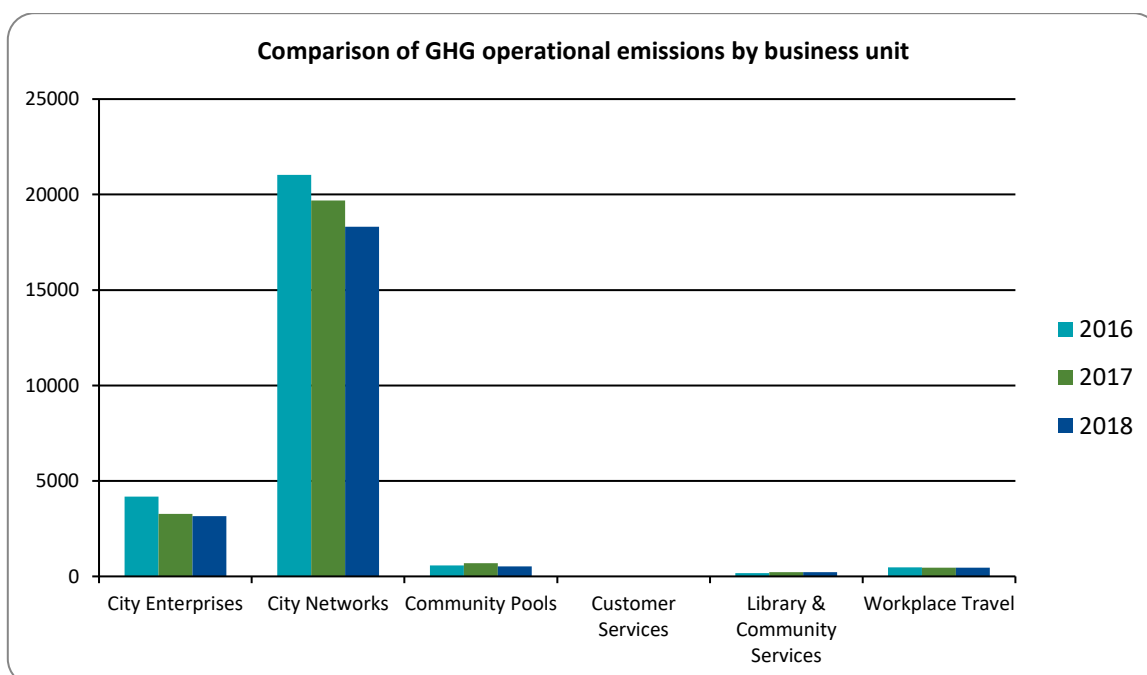


Figure 7: Comparison of emissions by business unit between the reporting periods.

## 11 Liabilities

### 11.1 GHG stocks held<sup>4</sup>

HFCs, PFCs and SF<sub>6</sub> 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).

<sup>4</sup> HFC stock liabilities for systems under 3 kg can be excluded.

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

**Table 13:** HFCs, PFCs and SF<sub>6</sub> GHG emissions and liabilities.

Business Unit	Source	Units	Amount held - start of reporting period	Amount held - end of reporting period	Potential Liability tCO <sub>2</sub> e
Palmerston North City Council	Diesel commercial	litres	18764.00	18764.00	50.43
Palmerston North City Council	HCFC-22 (R-22, Genetron 22 or Freon 22)	kilograms	281.43	293.03	530.38
Palmerston North City Council	Petrol	litres	1,200.00	1,200.00	2.92
Palmerston North City Council	R-407C	kilograms	107.60	107.60	190.88
Palmerston North City Council	R-407F	kilograms	80.00	80.00	146.00
Palmerston North City Council	R-410A	kilograms	69.60	52.00	108.58

## 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.

## 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 been included in this inventory. While Council purchases electricity from a 100% renewable supplier (Meridian Energy), it 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.

## Appendix 1: GHG emissions data summary

More GHG emissions data is available on the accompanying spreadsheet(s) 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