New Plymouth District Council Greenhouse Gas Emissions Inventory

Financial Year: 2023/2024

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Introduction

This GHG Inventory reports New Plymouth District Council's (NPDC) GHG emissions for financial year 2023 / 2024 (FY24), a from 1st July 2023 to 30th June 2024.

The FY24 GHG Inventory was prepared in accordance with ISO 14064-1 (2018) and the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard.

NPDC use the operational control approach for developing the annual GHG Inventories. This includes all NPDC corporate operations and excludes all council-controlled organisations, as these organisations are outside of operational control.

The purpose of this GHG emission inventory is to:

- Provide NPDC and the New Plymouth District community information on the GHG emissions produced within operational control.
- Track NPDC's annual GHG emissions to measure and monitor progress against the FY22 baseline year and Emission Reduction Plan.
- Report annual GHG emissions as part of NPDC's Climate Action Framework and responsibility to measure and manage GHG emissions.
- Document and report a standard methodology for use in future years
- Demonstrate to key stakeholders NPDC is actively involved in managing and reducing GHG emissions in line with NPDC's Emission Reduction Plan and New Zealand's net zero by 2050 target.

Statement of Intent

This inventory is prepared as a management tool for NPDC to:

- Assist NPDC in tracking and managing its GHG emissions.
- Complying with NPDC's Climate Action Framework and Emissions Reduction Plan.
- Provide verified information for all interested parties and stakeholders on NPDC's GHG emissions.
- Demonstrate integrity and transparency with respect to GHG emissions for NPDC rate payers.

Stakeholders and interested parties include NPDC Management, Executive Leadership Team, Community members, IWI / Hapu, external suppliers, central government and regulatory bodies.

Organisation Profile

New Plymouth District Council is responsible for a wide range of activities in the New Plymouth District. The 2023 population of New Plymouth District was 88,900 (StatsNZ, 2024) and covers a land area of 2,324 square kilometres.

Figure 1: New Plymouth District Council location

NPDC operate in the following key areas:

- Infrastructure and Planning
- External Relations and Communications
- Corporate Services
- Community
- People & Capability
- Information Technology
- Community and Customer Services

The operational revenue was $251.859 million in FY24, with average employment of 656 FTEs.

Boundary

Organisational Boundary

The organisational boundary defines the method used to consolidate GHG emissions and the NPDC facilities or subsidiaries included and excluded from the GHG inventory. Consolidation is done using one of the following methods:

- Control, whereby all emissions over which the organisation has either financial or operational control are included in the inventory
- Equity share, whereby the organisation only includes emissions for the portion of the facilities and business that the organisation owns.

NPDC uses the operational control method to consolidate GHG emissions. The NPDC operational control boundary is outlined in Figure 2. NPDC business units within operational control and coloured blue, while council-controlled organisations (CCO) coloured grey are outside of NPDC operational control and excluded from the GHG inventory. Note, operational emissions from New Plymouth PIF Guardians are excluded, however GHG emissions associated with the investments managed by PIF Guardians are included, as NPDC are direct beneficiaries of the revenue generated from the investments.

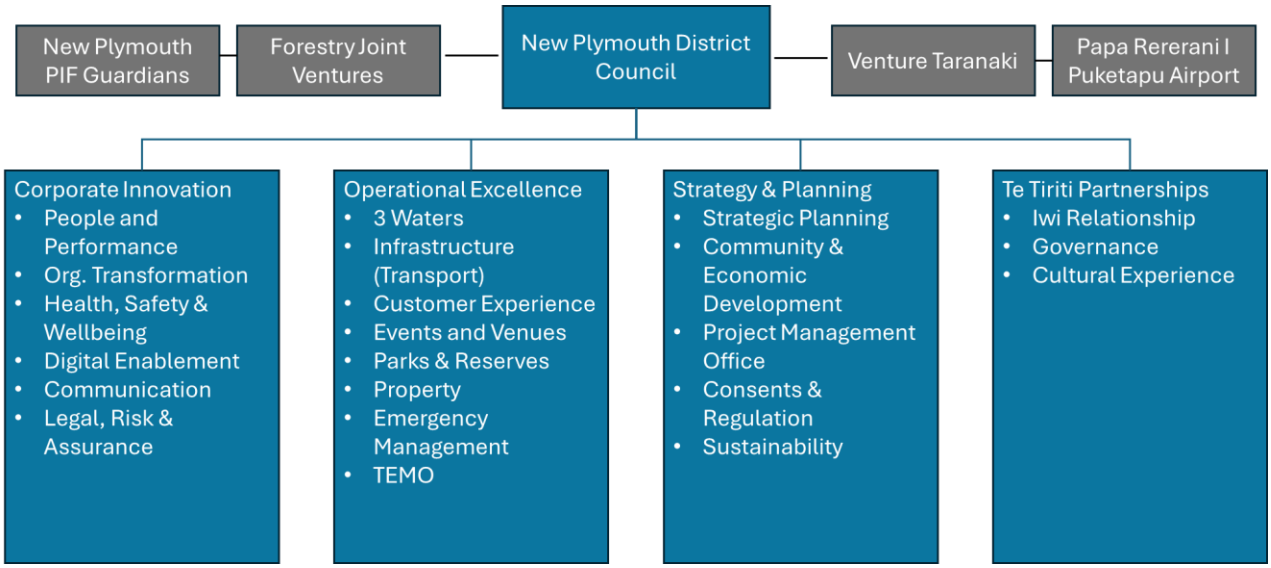

Figure 2: NPDC operational control boundary.

NPDC does not have the ability to determine activities within the CCOs. The two main levers in which NPDC can influence CCOs are 1) appointment of directors and 2) the statement of intent – neither enable NPDC to direct policies or control operational activities, hence CCO's remain outside the scope of NPDC's GHG consolidation and reporting.

Table 1 NPDC's CCO Functions

CCO	Function
Venture Taranaki	Partially funded by NPDC, Venture Taranaki (VT) are the regional economic development agency. The agency offers professional services. VT has its own independent board of directors and CEO. VT has its own GHG inventory by Toitu.
PIF Guardians	The New Plymouth PIF Guardians Limited was set up in 2017 and is a council-controlled organisation. Since 2017, the PIF has been managed at arm's length by independent investment firm Mercer. Release payments / annual revenue from PIF are used to offset rates and keep rate rises minimised. The New Plymouth District Council (Perpetual Investment Fund) Act 2023 sets out requirements for investment decisions for the PIF to be made independently of elected members. NPDC does not have operational control of PIF Guardians or Mercer.
Papa Rererangi i Puketapu Ltd (PRIP)	New Plymouth Airport services the regional flights. PRIP has its own independent board of directors and CEO. PRIP has its own GHG inventory and is part of the international Airport Carbon Accreditation Programme. PRIP is currently working on a sustainability strategy to define and prioritise sustainability action and investment.
Forestry JV	NPDC and Multiple Land Owners. The JV's set out that the landowners provide the land and the Council plants the trees and undertakes the silviculture (pruning) of the trees. When they are harvested, the profits are split between the landowner and council. The landowner's return is a form of rental for the land, and the council gets back money to reflect that spent growing the forest. NPDC has already used and cancelled its Carbon credits from its pre 1990 Forests.

Operational Boundary

The operational boundary defines the scope of direct and indirect emissions within the organisational boundary. The GHG emission sources and sinks were determined based on its materiality. An emission source or sink's materiality is determined on a significance criterion, which includes the quantum of emissions, stakeholder interest, reduction potential, and accuracy or reliability of the measurement.

The majority of emission sources within NPDCs operational boundary have been included in the GHG Inventory. However, not all emissions sources were captured. Table 2 summarises the inclusions in this year's reporting year, and Table 3 summarises the known exclusions for the FY24 reporting period.

Table 2: Inclusions

GHG Protocol Classification	**ISO Classification**	**Activity Type**	**Activity/ Emission source**

Scope 1	Category 1	Stationary combustion	Natural gas
			LPG
			Stationary diesel
		Transport combustion	Fleet diesel
			Fleet petrol
		Fugitive emissions	Refrigerants
			Colson Road gas flare
		Biogenic emissions	NPDC Wastewater Treatment Plant
Scope 2	Category 2	Electricity	Electricity
Scope 3	Category 3	Upstream transportation and distribution	Freight and postal
			Business travel - Air travel
			Staff mileage claims
			Business travel – rental vehicle
			Business travel – accommodation
			Employee commuting
		Downstream freight	Waste transportation.
		Working from home	Working from home
	Category 4	Purchased Goods and Services	Purchased Goods and Services
		Capital goods	Capital Goods
		Waste generated in operations	Rural transfer stations
			Kerbside collection - organics
			Kerbside collection - general waste
			Kerbside collection - recycling rejects (MRF)
			Illegal dumping and litter
			Wastewater treatment plant waste – sludge and screening waste
			Organisation waste - organics
			Organisation waste - waste to landfill
		Transmission and distribution	Electricity T&D
			Natural gas T&D
	Category 5	Downstream leased assets	Grazing animals
		Investments	PIF investment fund

Table 3: Exclusions

GHG Protocol Classification	Activity Type	Reason for exclusion

Scope 1	Historic closed landfill emissions (other than the Colson Road closed landfill)	Old historic landfills such as Okato, Inglewood, Okoki Road, Oakura, Waitara, Marfell Park, Waiwhakaiho, Tongaporutu were excluded from this inventory. These landfills have been closed and capped for over 17 years. Based on the Scholl Canynon LFG generation curve, these landfills have negligible LFG emissions with low certainty in the calculation method, so were deemed an exclusion.
	Well to tank emissions	Emissions associated with the production and transportation of fuel from 'well to tank' were excluded.
Scope 3	Kerbside waste collection – transportation emissions	No data was available from the contractor for kerbside collection transportation emissions. Estimation of these emissions were considered low quality. This emission source will be included in the FY25 emission inventory.
	Emissions associated from diverted / recovered materials	Downstream emission associated with diversion of waste were excluded from this inventory, including the processing and remanufacturing of kerbside recyclables and waste to energy (e.g. burning tyres at Golden Bay Cement). Emissions from reprocessing and remanufacturing recyclables and waste to energy are considered part of the diverted materials next lifecycle so are deemed outside of scope and excluded from this inventory.
	New Plymouth Transfer Station	The New Plymouth Transfer Station is owned and operated by Enviro NZ. NPDC has no operational control of this facility. Therefore, emissions associated with waste processing at the New Plymouth Transfer Station, except for kerbside collection, MRF rejects, the Junction and the Sorting Depot, are excluded from this inventory. Note, rural transfer stations are owned by NPDC and are included in this inventory.
	Use of sold products - emissions from using Bioboost fertiliser	NPDC sell bioboost to a contractor who bags, sells and distributes bioboost. There is no available data on the use of sold product.

Data Collection, uncertainties and assumptions

Data Collection

Data collection was coordinated by the NPDC Climate Change Mitigation Advisor.

The following approaches were used for data collection:

- Direct supplier data – direct engagement with suppliers to provide measured data for the organisation, such as electricity, natural gas, waste to landfill, or transport fuel.
- Indirect employee data – data collection via employees at NPDC who provide measured or estimated data from specific activities, such as refrigerant use, forestry land, closed landfill methane emissions, or general ledger data.

Emission calculation

Emissions were calculated by multiplying activity data with appropriate emissions factors. Three main methods were used for calculating emissions in this GHG inventory:

- Applying MfE emission factors to NPDC activity data
- Applying custom emission factors to NPDC activity data
- Applying Thinkstep spend-based emission factors to NPDC spend data.

Most emission factors are sourced from the Te ine tukunga: He tohutohu pakihi – Measuring emissions: A guide for organisations (MfE, 2024). Custom emission factors were created or derived when certain emission factors were not available from the MfE guide or when more suitable, industry approved emission factors or methods were available, such as the Water New Zealand guidance for calculating wastewater treatment plant emissions.

Spend-based emission factors were used when activity data was poor quality or unavailable, such as emissions from purchased goods and services and capital goods. In these cases, spend-based emission factors were sourced from Thinkstep (Thinkstep, 2024) and applied to general ledger spend.

Table 4 outlines the custom emission factors used in this report, i.e. the emission factors used other than MfE 2024:

Table 4 Custom emission factors

Activity / Emission source	Unit	Methodology
Biogenic wastewater treatment plant emission	Kg TOW (total organics in wastewater)	Combination of CH4 effluent COD, CH4 WWTP COD, WWTP N2O and effluent N2O emissions calculated, based on Water New Zealand: Carbon accounting guidelines for wastewater treatment: CH4 and N2O
Closed landfill burnt methane emissions	Kg burnt methane and kg unburnt methane	Metered gas data with stoichiometry to estimate CO_2 emissions from burnt methane. CO_2e emissions from unburnt methane estimated using GWP of 28 (AR5).

Domestic air travel emissions	Passenger kilometres travelled	Orbit Travel provide flight specific emission factors based on the type of plane used for travel. Domestic air travel emissions are taken directly from the Orbit reports.
Time of Use Electricity emissions	kWh	Simply Energy provides bespoke electricity emission factors based on half hour Transpower grid energy data. Emission data is sourced from Simply Energy directly.
Staff mileage claim	$	FY24 average fuel price per litre ($/L) applied to emission factor of petrol (kgCO_2e / L) to estimate emissions from staff mileage claims
Forestry	Hectares	Ministry for Primary Industries carbon stock value data used to calculate total removals and liabilities.

Global Warming Potential

Global Warming Potential (GWP) is an index to translate the level of emissions of various gases into a common measure to compare the relative radiative forcing of different gases. GWPs are calculated as the ratio of the radiative forcing that would result from the emissions of one kilogram (kg) of a greenhouse gas to that from the emission of one kg of CO2 over a period of time (usually 100 years).

This FY24 GHG Inventory was prepared using AR5 values. Figure 3 shows the GWPs in the latest AR5, compared to AR4 for N_2O, CH_4, and CO_2.

Figure 3 GWP factors

Greenhouse gases	Chemical formula	GWP (AR4)	GWP (AR5)
Nitrous oxide	N_2O	298	265
Methane	CH_4	25	28
Carbon dioxide	CO_2	1	1

Uncertainty

A description of the data quality indicators, with explanations of the terms used in the table, is provided below.

Figure 4: Uncertainty summary key

Data management	Data collection		
	Measured	Derived	Estimated
Robust	M1	D1	E1
Satisfactory	M2	D2	E2
Questionable	M3	D3	E3

Measured = Data directly provided by a service provider, contractor or directly obtained from a monitoring device. For example, electricity invoices, contractor receipts, emissions monitoring equipment, incident reports, consultant reports etc.

Derived = Data obtained from calculations, mass balances, use of physical/chemical properties, use of coefficients and emission factors etc., for example converting cubic meters of waste into tonnes.

Estimated = Usually, where there is no other available method for obtaining the data. Such data could be pro-rated on previous results, use precedents or historical data, or even be based on a calculated guess.

Robust = Evidence from a sound, mature and correct reporting system, where room for error is negligible. Examples would include well-kept spreadsheets, databases and on-line reporting.

Satisfactory = Examples would include manual, but structured keeping of records, files and results. Some potential for error or loss of data.

Questionable = No logical or structured approach to data or record keeping. High potential for error &/or loss of data. Data may appear to differ from those initially reported.

Table 5: Emission sources, data collection and uncertainty

GHG Protocol / ISO reporting categories	Activity/ Emission source	Unit	Data Collection	Data quality	Emission factor name
Scope 1					
Category 1 - Direct GHG emissions and removals - Emissions	Natural Gas	GJ	Activity data provided by Nova Energy	M1	MfE - Natural gas - Industrial use
	LPG	kg	Activity data provided by Ongas	M1	MfE - LPG - Industrial use
	Stationary Diesel	litres	Activity data obtained by McFuel Invoices and prorated for FY24	E1	MfE - Diesel - Commercial
	Fleet diesel	litres	Activity data obtained by BP fuel cards	M1	MfE - Diesel
	Fleet Petrol - regular	litres	Activity data obtained by BP fuel cards	M1	MfE - Regular petrol
	Fleet Petrol – premium	litres	Activity data obtained by BP fuel cards	M1	MfE - Premium petrol
	Refrigerants	kg	Refrigerant liability (total refrigerant stock) determined by Excel maintenance schedule. FY 24 leakage determined by refrigerant purchases in reporting period.	E1	MfE - Refrigerant emission factors
	Colson Road gas flare	m3	Burnt methane data obtained from gas meter data and extracted from Water Outlook (Scada system).	D1	Stoichiometric conversion for the combustion of methane and GWP of methane emissions (AR5)
	Fertilisers	kg	Fertiliser activity data provided by Parks team, and nitrogen content	D1	MfE - Nitrogen content of non-

			determined from product descriptions.		urea nitrogen fertiliser
	Biogenic Waste Water Treatment Plant emissions	CH4 and N2O	Activity data sourced from WWTP measured data. Water NZ guidelines used to determine CH4 and N2O emissions.	D2	Water NZ methodology
Category 1 - Direct GHG emissions and removals - Removals	Forestry carbon sequestration	Ha	Forestry hectare data determined by aerial surveying and sourced from forestry valuations.	D1	MPI - carbon stock data
Scope 2					
Category 2 - Indirect GHG emissions from imported energy - Electricity	Electricity	kWh	Activity data sourced from Simply Energy and Meridian Energy	M1	MfE - Electricity 2023 / Simply Energy calculation
Scope 3					
Category 3 - Indirect emissions from transportation	Freight and postage	$	Spend data sourced from internal general ledger	E3	Inflation adjusted Thinkstep spend-based emission factors
	Air travel	passenger km travelled	Activity data sourced from Orbit	M1	MfE - Air travel emission factors
	Mileage claims - accounts payable	$	Spend data sourced from internal general ledger	E3	Inflation adjusted Thinkstep spend-based emission factors
	Waste transportation	tonnes kilometer travelled	Distance travelled estimated from maps, total tonnage provided by EnviroNZ	E1	MfE - Road haulage factor
	Taxi	$	Spend data sourced from internal general ledger	E3	MfE - Taxi ($)
	Rental vehicle	$	Spend data sourced from internal general ledger	E3	Inflation adjusted Thinkstep spend-based emission factors
	Accommodations - Orbit data	employee nights	Activity data sourced from Orbit	M1	MfE - Accomodation
	Employee commuting	vkt	Internal staff survey (2024) to estimated passenger kilometers travelled	E2	MfE - travel emission factors
Category 4 - Indirect GHG	NPDC Purchased	$	Spend data sourced from internal general ledger	E3	Inflation adjusted Thinkstep spend-

emissions from products an organisation uses	Goods and Services				based emission factors
	NPDC Capital Goods	$	Spend data sourced from internal general ledger	E3	Inflation adjusted Thinkstep spend-based emission factors
	Electricity T&D losses	kWh	Activity data sourced Simply Energy and Meridian Energy	M1	MfE - Electricity T&D losses
	Natural Gas T&D losses	Gj	Activity data sourced from Nova	M1	MfE - Natural gas - T&D losses
	Rural transfer stations	tonnes	Activity data provided by EnviroNZ	M1	MfE - Waste to landfill with gas capture
	Kerbside collection - Organics	tonnes	Activity data provided by EnviroNZ	M1	MfE - Organics with gas capture
	Kerbside collection - general waste	tonnes	Activity data provided by EnviroNZ	M1	MfE - Waste to landfill with gas capture
	Kerbside collection - recycling rejects	tonnes	Activity data provided by EnviroNZ	M1	MfE - Waste to landfill with gas capture
	Waste water treatment waste	tonnes	Activity data provided by WWTP team	M1	MfE - Sludge with gas capture
	Organisation waste - Organics	tonnes	Activity data provided by Waste Management NZ	M1	MfE - Organics with gas capture
	Organisation waste - waste to landfill	tonnes	Activity data provided by Waste Management NZ	M1	MfE - Waste To Landfill with gas capture
	Working from home	employee days	Internal staff survey (2024) to estimated passenger kilometers travelled	E1	MfE - working from home
Category 6 - Indirect GHG emissions from other source	Grazing lands	head count	Activity data estimated from agricultural leased land and stock number per hectare assumptions	E3	MfE - agricultural emissions
	Investments	$	PIF emissions determined by respective fund emission estimations	E1	Mercer fund emission inventories

Biogenic emissions

Biogenic GHGs are made up of carbon dioxide, methane and nitrous oxide emissions and a produced because of the absorption of emissions by the feedstock during its lifetime, from

biogas / biomass combustion, or microbial processes. The main forms of biogenic emissions in the organisation for this reporting period include:

- N_2O and CH_4 emissions from the wastewater treatment
- CO_2 and CH_4 emissions from the Colson Road Landfill (landfill gas capture flare and unburnt methane emissions)
- N_2O and CH_4 emissions from agricultural grazing, including manure management, livestock enteric fermentation.
- CO_2 removals from the NPDC forestry portfolio.
- CH_4 emissions from waste to landfill.

All biogenic emission sources are quantified, however biogenic CO_2 removals from forestry are reported separately in the inventory. This is because biogenic CO_2 removals from forestry are part of the short carbon cycle and outside of the reporting scope. This differs from biogenic N_2O and CH_4 which are produced from decaying organic matter or combustion of biomass and are within the reporting scope.

NPDC have received 15,420 NZU Carbon Credits for pre -1990 forest land that have been claimed previous to this inventory and are excluded from reporting.

The method of calculating these emissions are outlined in the table below

Biogenic GHG source	Description	Method
Closed landfill gas capture flare	Colson Road is the most recent and largest landfill which closed in 2019 and contains just under 1 million Tonnes of waste. The final capping on Colson Road was completed in FY24.	Gas flow data is metered and recorded in NPDC's SCADA system. Daily Burnt Methane data is applied a 90% burnt rate, based on a conservative assumption the quantity of methane destroyed in combustion. Stoichiometry is used to convert burnt methane into carbon dioxide emissions. The remaining 10% of unburnt methane is applied a GWP (AR5) factor of 28 to estimate the carbon dioxide equivalent impact of methane.
Wastewater treatment plant emissions	NPDC operates the NP wastewater treatment plant (WWTP) which is a large producer of N20 and CH4 emissions due to the processing of wastewater. NPDCs WWTP is an aerobic process.	WWTP GHG emissions were calculated based on Water NZ, Carbon Accounting Guidelines for Wastewater Treatment Aug. 2021. The BOD methodology was chosen as it was the most conservative (highest GHG emissions).
Grazing	Emissions associated with NPDCs leased grazing land is a Scope 3 emissions source based on Downstream leased assets. NPDC leased out approximately	To estimate the emissions associated with these grazing leases, NPDC used stock unit estimates for small blocks and large blocks and stock type information provided by the NPDC

	185 ha of grazing land across 39 different grazing leases.	Property team to estimate the head count per ha for the different stock type. MfE emission factors for enteric fermentation, manure management and agricultural soils were used to estimate annual emissions from grazing.
Forestry	NPDC has 217.8 ha of post -1990 forestry, as reported in the 2024 Forestry Valuation. NPDC also has the Planting our Place Programme which has planted a total area of 5.42 ha of natural plantings since 2021 / 2022. There are other natural planted areas within NPDC portfolio, however these have been excluded due to poor data on land area.	Removals from forestry were estimated using the Toitu calculator tool, which is based on the MPI lookup tables for carbon stock change. Total area and age of forestry were applied carbon stock change value assumptions to estimate total removals in the reporting year and total liabilities from forestry.

Liabilities

Liabilities are the potential GHGs that could result in emissions if released. NPDC have GHG liabilities in the form of refrigerants, forestry and stationary fuel. Refrigerants, such as HFCs, PFCs and SF6, have high global warming potentials if leaked. Forestry biomass is stored carbon, and stationary fuel is held in one 2000 litre fuel tank. Forestry and stationary fuel could result in GHG emissions if they were accidentally released in a fire. The GHG stock holdings are presented in the table below:

Table 6 Liabilities

Liability type	**Type**	**Potential liability (tCO2e)**
Refrigerant	R22	208.0
Refrigerant	R32	11.6
Refrigerant	R410A	531.6
Refrigerant	R404A	14.9
Refrigerant	R134A	6.4
Refrigerant	R407C	4.6
Refrigerant	R600A	0.0003
Refrigerant	R290	0.0003
Refrigerant	R12	2.1
Refrigerant	R448A	2.3
Forestry	Total carbon stock	110,704
Stationary fuel	Diesel	5.4
Total liabilities		**111,491**

Base year

The baseline year for NPDC is financial year 2021 / 2022 (FY22). The estimated FY22 GHG footprint was 105,014 tCO_2e including closed landfill emissions, or 35,223 tCO_2e excluding closed landfill emissions. Figure 5 & 6 summarise the FY22 baseline GHG inventory.

Figure 5: Base year emissions, by scope

GHG by scope	Total excluding closed landfill	% TOTAL (excl closed landfill)
Scope 1	4,220	12%
Scope 2	988	3%
Scope 3	30,014	85%
Total	**35,223**	**100%**
Emissions per FTE (tCO2e)	56	

Figure 6: Base year emissions, by ISO category

ISO Cat	Source	Te CO_2e	% of total	% of Total (LFG removed)	CO2 (Te CO2-e)	CH4 (Te CO2-e)	N2O (Te CO2-e)
	Scope 1	**74,012**		**4,220**	**2,338**	**70,194**	**1,436**
Cat 1	Refrigerants	44	0.0%	0.1%	-	-	-
Cat 1	Natural (reticulated) Gas	2,060	2.0%	5.8%	2,055	5	1
Cat 1	Fleet Petrol	167	0.2%	0.5%	281	0	4
Cat 1	Fleet Diesel	285	0.3%	0.8%	-	-	167
Cat 1	Colson Road Landfill Gas	69,792	66.5%	NA	-	69,792	-
Cat 1	LPG	106	0.1%	0.3%	-	106	-
Cat 1	Fertiliser	8	0.0%	0.0%	3		5
Cat 1	Waste Water Treatment Plant (WWTP)	1,551	1.5%	4.4%	0	292	1,259
	Scope 2	**988**		**988**	**960**	**26**	**2**
Cat 2	Electricity	988	0.9%	2.8%	960	26	2
	Scope 3	**30,014**		**30,014**	**815**	**6,257**	**109**
Cat 6	Community Waste to landfill	5,916	5.6%	16.8%		5,989	
Cat 4	Organisational Waste to landfill	90	0.1%	0.3%	-	90	
Cat 6	Community Food Composting	256	0.2%	0.7%	256	163	93
Cat 4	Organisational Food Composting	22	0.0%	0.1%	22	14	8
Cat 6	Community Mixed recycling	99	0.1%	0.3%	-		-
Cat 4	Organisational Mixed recycling	3	0.0%	0.0%			
Cat 4	Purchased Goods & Services	14,695	14.0%	41.7%	-	-	-
Cat 4	Capital Goods	6,549	6.2%	18.6%	-	-	-
Cat 4	T&D Loss Electricity & Gas	191	0.2%	0.5%			
Cat 4	Upstream Leased Assets	78	0.1%	0.2%	-	-	-
Cat 3	Business Travel (airtravel, taxis and accom)	19	0.0%	0.1%			
Cat 3	Employee Commuting	193	0.2%	0.5%			
Cat 5	Downstream Leased Assets	1,313	1.3%	3.7%			
Cat 3	Upstream trasportation and distribution	592	0.6%	1.7%	537	1	9
	Total	**105,014**	**100%**	**100%**	**4,113**	**76,477**	**1,547**
	Total excluding closed landfill	**35,223**			**4,113**	**6,686**	**1,547**

Base year data is revised when material changes occur and have an impact on calculated emissions. When changes to the organisational boundary, operational boundary or calculation methodology are estimated to represent more than 5% of Scope 1, 2 or 3 emissions, a recalculation of base year data will be completed with explanation.

Changes to the FY2021 / 2022 baseline that result in more than a 5% change to the organisational emissions are listed below:

- Closed landfill emissions: In the FY2021 / 2022 baseline year, closed landfill emissions were calculated using the Scholl Canyon landfill gas (LFG) method for calculating the emissions from the Colson Road landfill gas capture flare. This method used modelling provided by WSP and had a low level of certainty. The method has been updated due to higher quality, measured data from the Colson Road gas meters. The volume of burnt methane is calculated using gas flow meters. Methane burnt is assumed at 90% combustion to estimate the total portion of methane combusted during the flaring process. Stoichiometry is used to covert the mass of burnt methane to carbon dioxide.
- Investments: The FY2021 / 2022 baseline year excluded emissions from investments due to PIF Guardians being a CCO and outside of the organisational boundary using the operational control method. Investments are included in the FY 2023 / 2024 inventory as NPDC use the PIF investment fund for operational revenue.

NPDC will reset the baseline for the FY25 inventory

Disclosure statement

This GHG inventory has been third-party verified by Toitū according to the Greenhouse Gas Protocol: A Corporate Accounting and Standard (2004) and ISO 14064-1:2018.

The level of assurance is “reasonable” for categories 1 & 2 and “limited” for other categories.

From the analysis conducted, the inventory is classified as good.

As part of NPDC’s Climate Action Framework and Emission Reduction Plan, NPDC will report the results of this FY24 GHG Inventory to Council and disclose the results publicly.

Results

Total gross GHG emissions for the FY24 GHG Inventory are 29,513 tCO_2e (including landfill gas emissions). Total category 1 removals from the forestry portfolio and Planting our Place programme are -5,578 tCO_2e. Figure 7 outlines the GHG emissions by category, Figure 8 outlines GHG emissions by source, and Figure 9 outlines GHG emissions by gas contribution (in tCO_2e).

Figure 7: GHG emissions by category

Emissions summary by categories	All verified emissions LOCATION BASED	Units
Category 1 total	5,041.62	tCO_2e
Category 2 total	1,117.57	tCO_2e
Category 3 total	1,325.14	tCO_2e
Category 4 total	20,161.45	tCO_2e
Category 5 total	1,837.68	tCO_2e
Category 6 total	29.08	tCO_2e
Total gross inventory:	**29,512.54**	**tCO_2e**
Category 1 Removals	**-5,578.09**	**tCO2e**
Total Net Inventory:	**23,934.45**	**[% or tCO_2e]**

Figure 8: GHG emissions by source

Source	tCO_2e	%of Scope	% of Total
Scope 1	**5,042**		
Refrigerants	133	2.6%	0.5%
Natural Gas	2,172	43.1%	7.4%
Fleet Petrol (transport)	151	3.0%	0.5%
Fleet Premium Petrol (transport)	23	0.5%	0.1%
Fleet Diesel (transport)	300	5.9%	1.0%
Colson Road Landfill Gas	589	11.7%	2.0%
LPG	191	3.8%	0.6%
Bulk Diesel (stationary)	4	0.1%	0.0%
Fertiliser	5	0.1%	0.0%
Waste Water Treatment Plant (WWTP)	1,475	29.3%	5.0%
Scope 2	**1,118**		
Electricity	1,118	100.0%	3.8%
Scope 3	**23,353**		
Upstream transport and distribution	112	0.5%	0.4%
Business travel - other (spend based)	50	0.2%	0.2%
Business Travel - airtravel	86	0.4%	0.3%
Business Travel - accomodation	9	0.0%	0.0%
Employee Commuting	556	2.4%	1.9%

Working from home	4	0.0%	0.0%
Waste transportation	508	2.2%	1.7%
Rural Transfer Station: Waste to landfill	95	0.4%	0.3%
Rural Transfer Station: Green Waste	196	0.8%	0.7%
Kerbside collection: Waste to landfill	2,081	8.9%	7.1%
NPDC Organisation: Waste to landfill	17	0.1%	0.1%
Kerbside collection: organics	251	1.1%	0.9%
The Sorting Depot	518	2.2%	1.8%
Illegal waste dumping: Waste to landfill	82	0.4%	0.3%
Illegal waste dumping: Green Waste	0	0.0%	0.0%
NPDC Organisation: Organics	9	0.0%	0.0%
WWTP waste	145	0.6%	0.5%
Purchased Goods & Services	6,657	28.5%	22.6%
Capital Goods	9,965	42.7%	33.8%
T&D Loss Electricity	66	0.3%	0.2%
T&D Loss Gas	81	0.3%	0.3%
Downstream Leased assets - Grazing	1,836	7.9%	6.2%
Investments	29	0.1%	0.1%
Removals	**-5,578**		
Total Gross	**29,513**		
Total Gross excluding closed landfill	**28,924**		
Total Net	**23,934**		
Total net excluding closed landfill	**23,346**		

Figure 9: GHG emissions by gas contribution, in tCO_2e

	CO_2 (tCO_2)	CH_4 (tCO_2-e)	N_2O (tCO_2-e)	Remaining tCO_2e
Total Gross	**2,981**	**5,657**	**1,648**	**19,226**
Total Gross excluding closed landfill	**2,700**	**5,350**	**1,648**	**19,226**

Appendix 1 – Emissions factors

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