



GREENHOUSE GAS EMISSIONS INVENTORY AND MANAGEMENT REPORT

Prepared in accordance with ISO 14064-1:2018

Lyttelton Port Company Limited

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Measurement period: 01 July 2022 to 30 June 2023

Base year period: 01 July 2017 to 30 June 2018

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Chapter 1: Organisation goals and inventory objectives

1.1. About Lyttelton Port Company (LPC)

Lyttelton Port Company (LPC) is New Zealand's third largest port, facilitating \$8.9 billion of exports and \$6.62 billion of imports each year. It provides a vital link in international trade routes and plays a key role in the global transport network. LPC are the largest port in the South Island and the country's second largest export port, managing nearly half the South Island's container volume. LPC employs over 650 staff.

LPC recognises that its operations may have a direct impact on the environment and is working to integrate sustainability throughout every aspect of our business - this includes operational processes and culture. To LPC, a sustainable port means three things:

- Economic prosperity through trade
- Connecting with communities
- Sustaining a healthy environment

LPC have embarked on a journey to achieve a balance between these three areas, alongside implementing other measures to ensure sustainable practice:

Footprint

- Measure and minimise our environmental footprint
- Influence our supply chain toward sustainability

Climate Action

- Protect against potential impacts of climate change
- Ensure energy efficiency in all aspects of Port operations and development
- Climate Risk Assessment, mitigation and adaptation planning

Environmental Management

- Comprehensive Environmental Management Systems that support continuous improvement in operational performance and future development
- Grow our scientific understanding of the Lyttelton Harbour / Whakaraupō environment by establishing partnerships with leading research organisations and conducting our own independent investigations.

LPC manages, monitors and improves its environmental performance through implementation of an environmental management system based on the internationally recognised ISO 14001 standard. LPC's Environmental Management System is certified to Toitū EnviroMark Gold standard.

1.2. Persons responsible for the greenhouse gas emissions (GHG) inventory

The LPC Environment and Sustainability Team, led by Head of Environment and Sustainability Crystal Lenky is responsible for overall emission inventory measurement and monitoring reduction performance, as well as reporting results to top management.

1.2.1. Top management Commitment

In May 2019, the LPC Board approved the business wide Sustainability Strategy. The strategy shapes how LPC ensures the business is prosperous, while supporting its people, growing trust and mutual benefits with communities and taking care of the environment

that makes our business possible. LPC set key commitments and targets across three key focus areas: Prosperity, People and the Planet.

Carbon reduction is one of the three key priorities under Planet. In October 2023, the Board approved the company's alignment with Science Based Targets.

LPC is also a signatory on the New Zealand Climate Leaders Coalition (CLC) and member of the Sustainable Business Council (SBC).

The Chief of Corporate Affairs reports on GHG emissions and waste production to the Board and Executive Leadership Team through the monthly board report.

1.3. Reporting period

This GHG emission inventory report covers the financial year 1 July 2022 to 30th June 2023. The base year measurement period was 1 July 2017 to 30 June 2018. These 12-month periods align with LPC's financial year.

1.4. Uses and users of this report.

The intended uses for this report are to provide a verified inventory against which to:

- Reduce emissions and measure progress against recently adopted science-based targets.
- Inform significant opportunities for emission reductions through plant upgrades.

The intended users of this report are:

- The Board of Directors and Executive Leadership Team
- Christchurch City Holdings Limited (CCHL) who owns 100% of LPC.
- LPC's customers
- LPC staff

1.4.1. Availability

This report is available internally to the Lyttelton Port Company Environment and Sustainability Team, the Chief Corporate Affairs Officer who is the executive with responsibility for LPC's GHG Emissions Inventory and GHG reduction programme. It is also publicly available on the Lyttelton Port Company website (<https://www.lpc.co.nz/>).

Chapter 2: Organisational and reporting boundaries

An operational control consolidation approach was used to account for emissions. Organisational boundaries were set with reference to the methodology described in the GHG Protocol and ISO 14064-1:2018 standards.

2.1. Organisational structure

Christchurch City Holdings Limited (CCHL) is the 100% shareholder of LPC. CCHL is the investment arm of Christchurch City Council (CCC), holding shares in seven trading companies. LPC operates as a totally independent business from CCHL, CCC and the other trading companies (Figure 1). Lyttelton Port Company has seven Directors.

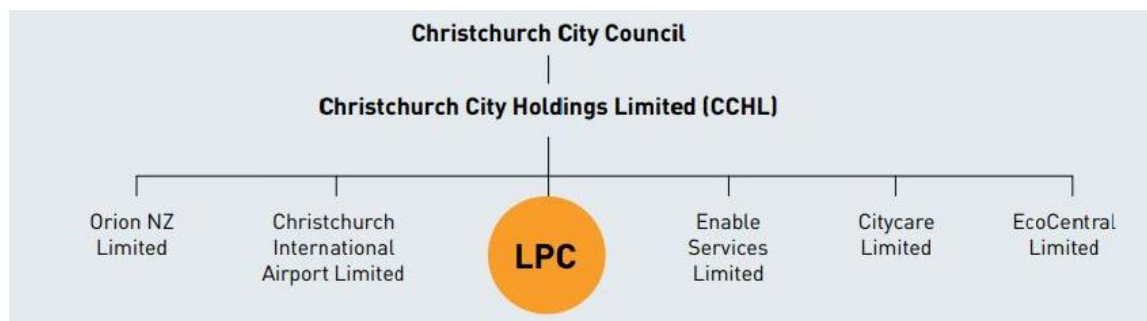


Figure 1: Organisational structure of Christchurch City Holdings Ltd (CCHL)

Under the operational control approach, an organisation must account for all GHG emissions and/or removals from facilities over which it has operational control. Table 1 outlines the business units/facilities owned by LPC and of which LPC has operational control over. No business units are excluded from this inventory. For emissions reporting purposes, the operations within LPC have been divided into physical operational areas. Data on activities creating emissions has been collected from these 11 areas within the business.

Table 1: Brief description of the business units, sites and locations included in this inventory.

Company/Business unit/Facility	Physical location	Description
City Depot	Chapmans Road, Woolston, Christchurch	A land-based depot for container handling and storage. Includes rail links with Lyttelton Port and Midland Port.
Midland Port	686 Jones Road, Rolleston	A land-based depot for container handling and storage in Rolleston on the outskirts of Christchurch. The depot is strategically placed for transport links including rail and road.
Coal Terminal, Container Terminal, Corporate, Dry Dock, Infrastructure Services, Maintenance, Marine and Port Services	37-39 Gladstone Quay, Lyttelton	Business units at the Lyttelton Port site in Lyttelton and make up the operational units of the Port.
Te Ana Marina	Godley Quay, Lyttelton	A 180-berth marina located in Lyttelton.

2.2. Criteria used to evaluate the significance of indirect emissions.

The following criteria were used to evaluate the significance of indirect emissions, in the context of the intended uses of this inventory described in section 1.4:

1. Access to data: The ability for LPC to gain accurate data for indirect GHG emissions in a timely and cost-effective manner.
2. Shareholder interest: The emissions of the LPC's shareholder, CCHL require LPC to report on.
3. Level of influence: The extent to which LPC can monitor and reduce emissions.

Table 2 outlines the emission sources included in this inventory and explanations of any data uncertainties. Table 3 outlines the emission sources excluded from the inventory and the reason/s for their exclusion. In FY24, LPC is undergoing a full value chain mapping exercise to identify significant indirect emission sources to be accounted for in future inventories, on a spend basis. This work will significantly increase the indirect emissions reported by LPC.

Table 2: Emissions sources included in the GHG inventory and their relative uncertainties.

GHG emissions category	GHG emissions source or sink subcategory	Overview of activity data and evidence	Data source	Explanation of uncertainties or assumptions around your data and evidence
Category 1: Direct emissions and removals	Stationary combustion	LPG stationary commercial	BP Bulk fuel reports	Assume supplier report is complete and accurate
	Mobile combustion (incl. company owned or leased vehicles)	Diesel commercial, Diesel, Petrol premium, Petrol regular (l)	BP fuel card reports	Assume supplier report is complete and accurate
Category 2: Indirect emissions from imported energy	Imported electricity	Electricity (kWh)	Meridian Energy	An estimation was made for three months in 2022 as the supplier had changed reporting systems and accurate back-dated data could not be gained. For the remaining reporting, it is assumed supplier reports are correct and accurate.
Category 3: Indirect emissions from transportation	Business travel - Transport (non-company owned vehicles)	Air travel domestic (pkm), Taxi, rental cars and Uber (\$ spend)	LPC internal activity centre "Travel and Accommodation" finance reporting system, 'M3'	Taxi, rental cars, and Ubers: LPC do not have actual km travelled in taxis, rental cars or Ubers for this year. We use dollars spent to calculate emissions. There is some uncertainty for this data as it is items extracted from the finance system under the internal activity code "Travel & Accommodation". Potentially some spend for these items may have been miss coded in the finance system.
			Air NZ travel card report	Air travel: It is assumed data source represents a complete and accurate account of all travel activity.
	Upstream freight - Paid by the organisation	Freight Road van (average)	NZ Couriers	Van: NZ Couriers provided a report of the total weight of packages for FY23. It is assumed supplier reports are correct and accurate.
	Downstream freight - Paid by the organisation	Freight Rail, Freight Road (estimated total CO ₂ e)	Move Logistics NZ Express Kiwirail	Shipping container trucks: Move Logistics provided a report with litres use for FY23, NZ Express provided a report with actual litres of fuel used for FY23. It is assumed supplier reports are correct and accurate. Rail: It is assumed supplier reports are correct and accurate.

Category 4: Indirect emissions from products used by organisation	Purchased goods and services	Water supply	Internal reporting	High level of uncertainty as meter readings are completed manually and inputted into internal asset management software. There is high potential of human error during the reading of meters and inputting of data.
	Disposal of solid waste - Landfilled	Incineration of clinical waste, Waste landfilled LFGR Mixed waste	Waste management CCC kerbside waste collection	WM reports have a high level of accuracy with actual weights provided for most pickups. Low level of accuracy, actual weights unavailable and therefore weights assumed based on historical data.
	Disposal of solid waste - Not landfilled	Waste disposal recycling	Remarkit E Waste CCC kerbside waste collection Tyre Innovations	High level of accuracy in data provided by supplier (pick up actuals). Low level of accuracy, actual weights unavailable and therefore weights assumed based on historical data. Low level of certainty as no data of actual weights available.
	Transmission of energy (T&D losses)	Electricity distributed T&D losses	Meridian energy	It is assumed supplier reports are correct and accurate.

Table 3: Emissions sources excluded from the inventory.

GHG & ISO 14064-1 reporting category	Activity / emission source	Reason for exclusion
Scope 1 - Category 1: Direct emissions and removals		
Fugitive emissions	Miscellaneous gases in maintenance workshop	Given the small quantities of gases stored on site, GHG emissions from these sources are considered de-minimis.
Scope 2 – Category 2 Indirect emissions from imported energy		
No exclusions	N/A	N/A
Scope 3 – Category 3: Indirect GHG emissions from transportation		
Business travel	Business travel accommodation	Only could obtain spend based data for accommodation. From FY 24, LPC are shifting to one travel provider which will enable easily obtainable reporting of accommodation and other travel related factors.
Working from home	Employee commuting	Low level of influence due to the high proportion of staff in operational roles required to be on site to undertake their work. Data collection to be explored for future inventories.
Employee commuting	Employee commuting	Low level of influence due to the high proportion of staff in operational roles required to be on site to undertake their work. Data collection to be explored for future inventories.
Scope 3 – Category 4 indirect emissions associated with the use of products from the organisation		
Capital goods and consumables	Development projects	Difficult to capture accurate data. LPC are currently piloting capturing GHG data from infrastructure development projects (e.g., pavement maintenance). This reporting is maturing and will be included the in verified inventory in the next financial year.
Capital goods and consumables	Development projects	Difficult to capture accurate data. LPC are currently piloting capturing GHG data from infrastructure development projects (e.g., pavement maintenance). This reporting is maturing and will be included the in verified inventory in the next financial year.
Waste generated in operations	Disposal of liquid waste – tradewaste	Difficult to gain data, will explore for inclusion in future inventories.
Waste generated in operations	Recycling of steel from maintenance workshop	Difficult to gain data from steel recycler, to be included in future inventories.
Scope 3 – Category 5 indirect emissions associated with the use of products from the organisation		
Emissions associated with the use of products from the organisation	Downstream leased assets	Difficulty to get accurate data from leaseholders.

2.3. Data collection and quantification

Where feasible, LPC measured data for the different sources of emissions by collecting measures as close to the point of combustion of the emissions as possible. (e.g., litres of fuel used instead of the total kilometres). However, for some indirect sources of emissions, less accurate data was obtained (e.g., for taxi and uber travel, only spend based data could be collected). Data was collected directly from LPC staff, suppliers and LPC's internal finance software, M3. Table 2 outlines the emissions sources and where the data was sourced from.

Collection of data occurs on a monthly or annual basis depending on the magnitude of the emissions source and the ease of access to the data. Prior to FY23, data was uploaded to Toitū Envirocare's Emanage software annually. In FY23 LPC implemented CSR's BraveGen software for carbon emissions data management. Data is collected and uploaded to BraveGen monthly or annually by LPC staff or directly from suppliers. In BraveGen, activity data is multiplied by the relevant emission factors to calculate the tonnes CO₂e. IPCC Global Warming Potential's (GWPs), are as published by the Ministry for the Environment, MfE (<https://environment.govt.nz/publications/measuring-emissions-a-guide-for-organisations-2023-detailed-guide/>) and DEFRA (<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023>). All calculations in this report are expressed in total tonnes of carbon dioxide equivalent (tCO₂e). In some instances, the data provided by suppliers was reported in tCO₂e and was assumed to be accurate.

Chapter 3: GHG Inventory of emissions

3.1. FY 23 reported emissions

The total reported GHG emissions for LPC in the period 1 July 2022 to 30 June 2023 using location-based reporting were 10571.82 tCO₂e, and 9511.74 tonnes for market-based reporting. This difference is due to the purchase of renewable energy certificates (NZECS), negating the category 2 emissions from electricity usage. Emissions from all non-landfilled waste were reported for the first time in the FY 23 inventory.

LPC's GHG emissions are dominated by category 1 emissions (Figure 2), specifically the combustion of diesel to operate large mobile plant (Figure 3). In FY 23, category 1 emissions made up 84% of LPC's total emissions. Of LPC's total direct emissions, 46% area attributed to the Container Terminal (Figure 4). The Container Terminal operates straddle carriers for moving around containers which are heavy diesel consumers. FY 23 is the first year where the full straddle fleet are diesel-electric, completing the transition from a fully diesel fleet. The Marine business unit contributes the second greatest proportion of direct emissions due to the combustion of diesel to power LPC's two tugs and pilot boats. Both Marine and Container Terminal operations are 24/7 365 days per year.

3.2. Biogenic emissions

Biogenic emissions are those that come from a natural source, including the burning of biomass and biofuel. Neither of these activities occur at LPC.

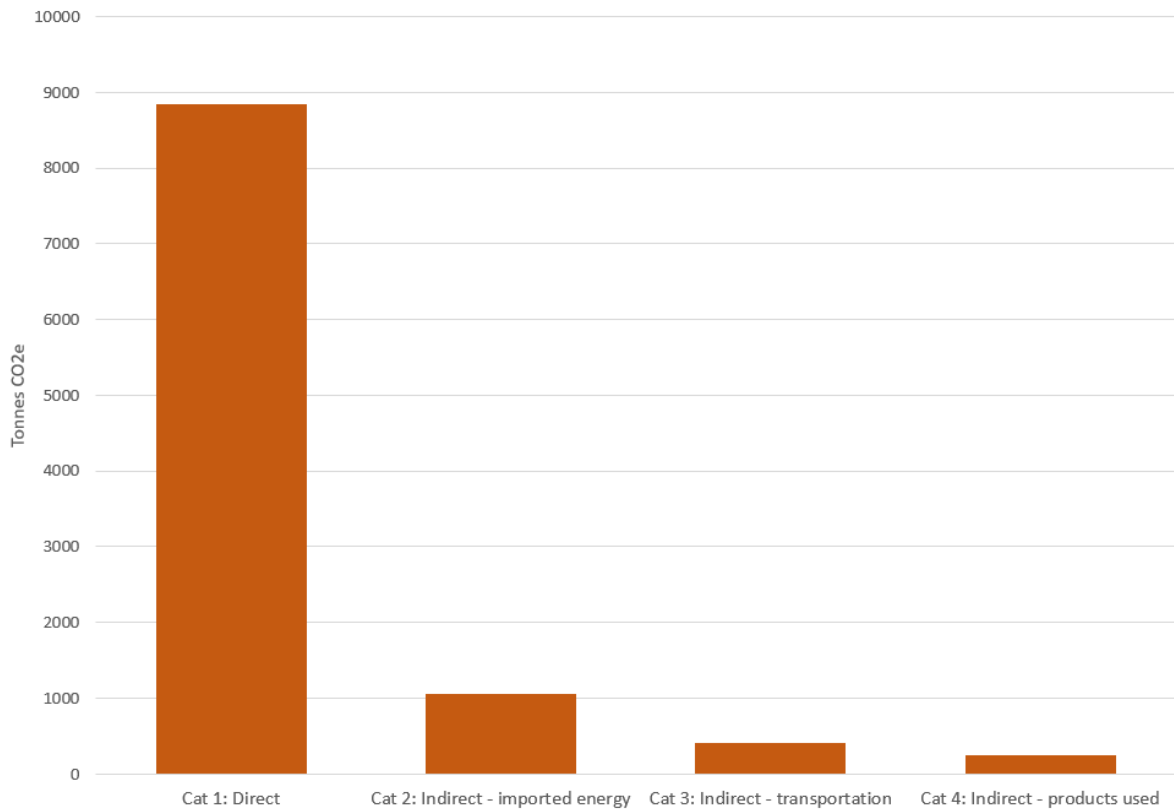


Figure 2: LPC FY 23 emissions by ISO 140064-1:2018 Category (tCO2e).

Table 4: FY 2023 GHG emissions separated by ISO 140064-1:2018 Category.

	Location based reporting	Market-based reporting
Cat 1: Direct emissions and removals	8844.18	8844.18
S1 Mobile combustion	8843.64	8843.64
S1 Stationary combustion	0.54	0.54
Cat 2: Indirect GHG emissions from imported energy	1060.08	0
S2 Purchased electricity	1060.08	0
Cat 3: Indirect GHG emissions from transportation	414.73	414.73
S3 4. Upstream transportation and distribution	28.56	28.56
S3 6. Business travel	70.08	70.08
S3 9. Downstream transportation and distribution	316.09	316.09
Cat 4: Indirect GHG emissions from products used by organization	193.59	193.59
S3 1. Purchased goods and services	9.52	9.52
S3 4. Upstream transportation and distribution	129.71	129.71
S3 5. Waste generated in operations	54.36	54.36
Cat 5: Indirect emissions associated with the use of products from the organisation	59.23	59.23
S3 3. Fuel- and energy-related activities	59.23	59.23
Grand Total	10571.82	9511.74

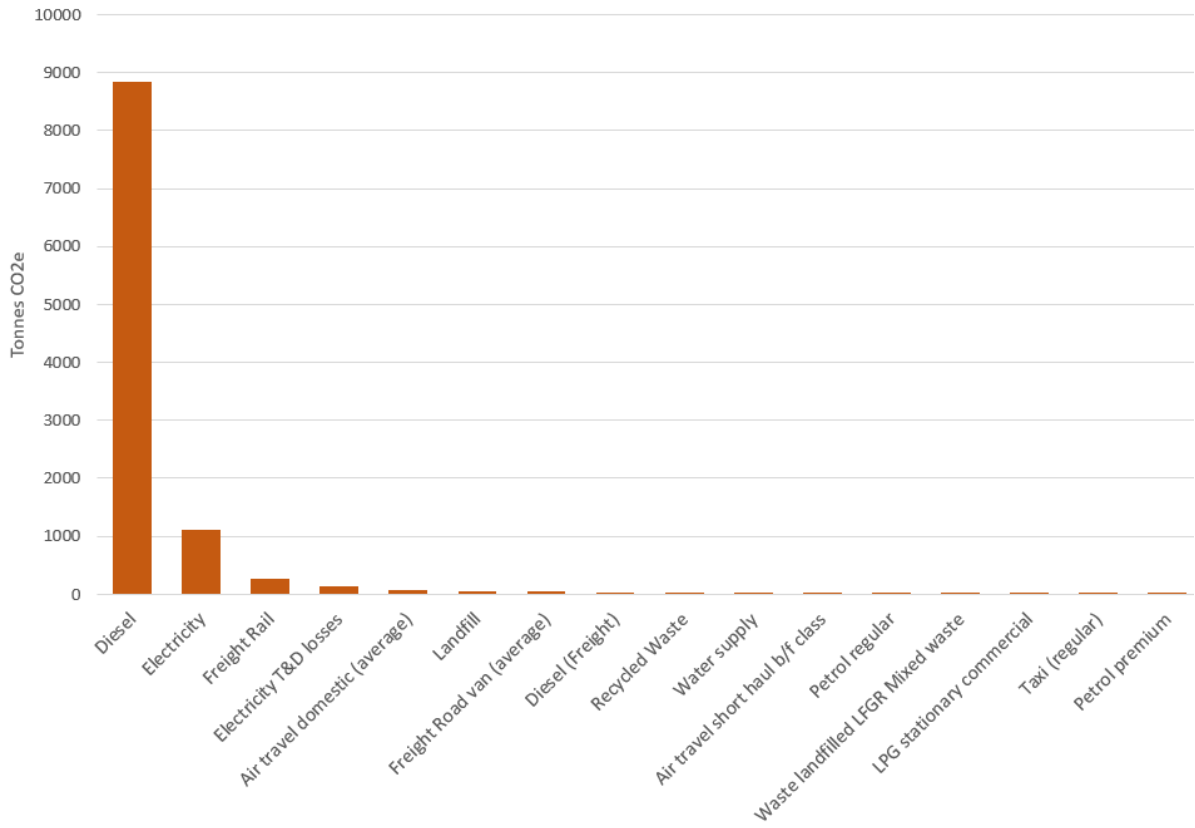


Figure 3: LPC FY 23 emissions by emissions source (tCO2e)

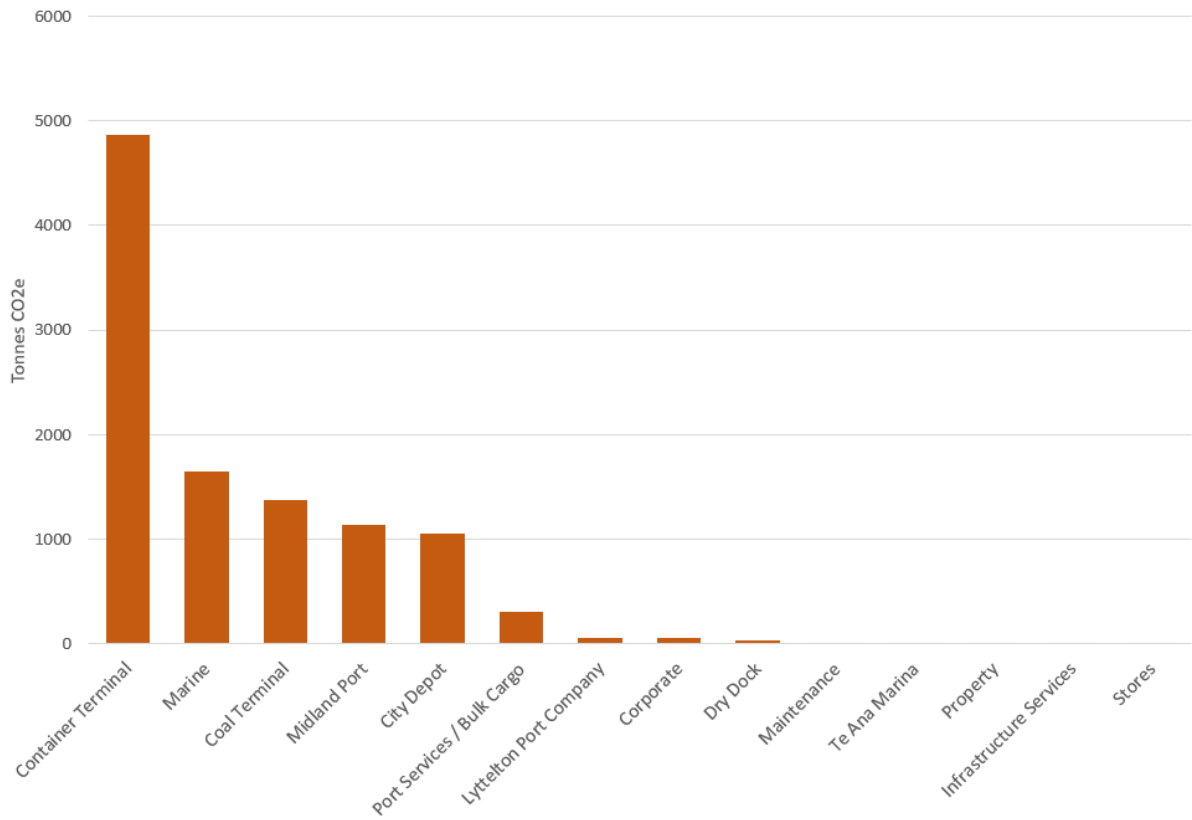


Figure 4: LPC's FY 23 direct emissions (tCO2e) based on business unit / location.

Table 5: Direct GHG emissions, quantified separately for each applicable gas.

			Carbon Dioxide	Methane	Nitrous Oxide	HF Cs	PF Cs	SF6	Other	tCO2e
Cat 1: Direct										
Other gases										
Cat 1: Direct	Other gases		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transport - other										
	Transport - other	Petrol regular	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transport fuels										
	Transport fuels		0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
		Diesel	8,785.4	33.7	19.1	0.0	0.0	0.0	0.0	8,838.2
		Petrol premium	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3
		Petrol regular	5.0	0.1	0.1	0.0	0.0	0.0	0.0	5.2
	Transport fuels Total		8,790.7	33.7	19.3	0.0	0.0	0.0	0.5	8,844.2
Cat 1: Direct Total			8,790.7	33.7	19.3	0.0	0.0	0.0	0.5	8,844.2

3.2. Comparison with Base Year

LPC's baseline year is FY 18 (1st July 2017 – 30th June 2018). In this year the total emissions reported for LPC were 10811.67 tonnes CO2e. In FY 23, there was slight reduction of 2.2% from the baseline year following location-based reporting, or a 13% reduction following market-based reporting (Figure 5). In comparison with the baseline year, there has been a decrease in emissions across all categories (Figure 6), with the exception of Category 4. This is likely due to the increase in reporting of the number of Category 4 emissions sources since the base year (e.g., the inclusion of all non-landfilled waste).

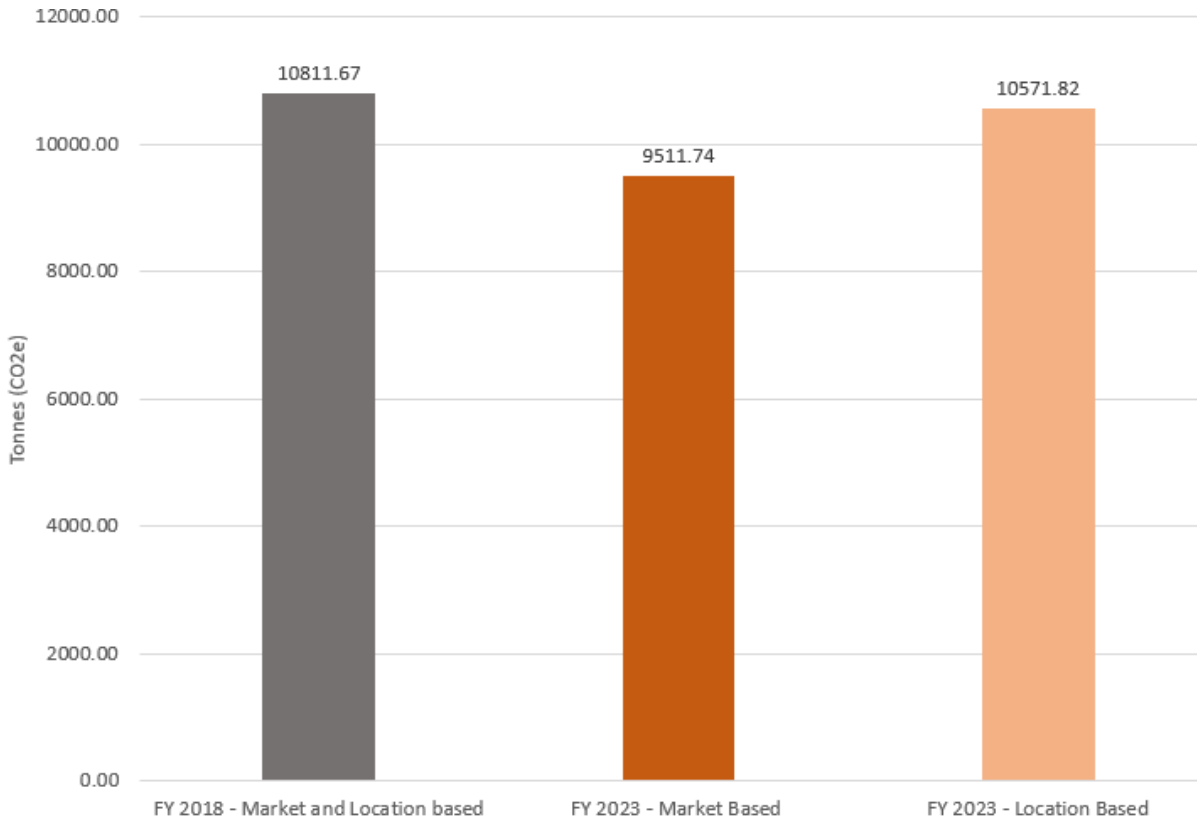


Figure 5: Market and location base GHG emissions (tonnes CO2e) for LPC's baseline year (FY18) and FY23).

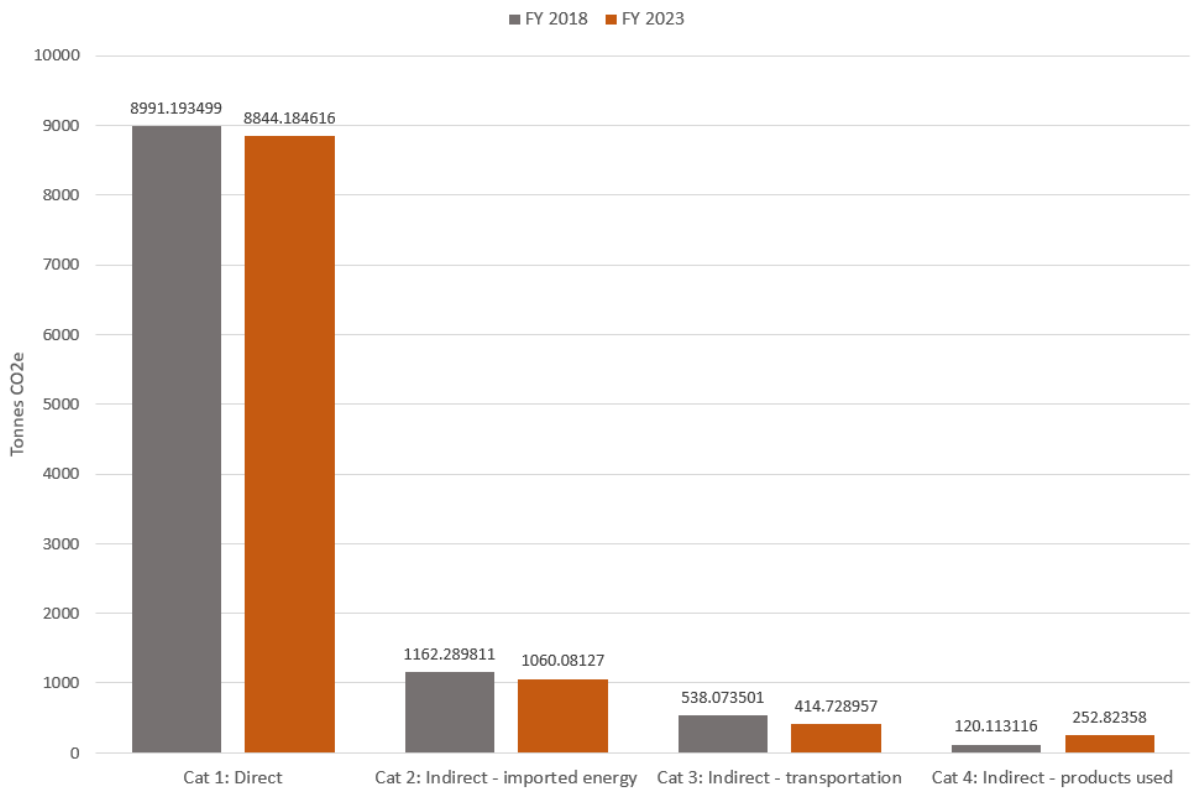


Figure 6: Location based GHG emissions (tonnes CO₂e) by category for LPC's baseline year (FY2018) and FY2023).

Chapter 4: Compliance and Verification

4.1. Compliance

This GHG inventory report has been prepared in accordance with ISO14064-1-2018 standards.

4.2. Verification of this GHG emissions inventory

The assurance status of the inventory can now be updated to state that independent verification was completed by McHugh & Shaw Limited, and that the assurance level achieved is Reasonable Assurance ISO Category 1-2 and Limited Assurance ISO Categories 3-6.