Greenhouse Gas Inventory Report

Period: 01 July 2024 to 30 June 2025

Prepared in accordance with the Greenhouse Gas Protocol

Date:	**7th August 2025**
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Executive Summary

This Greenhouse Gas (GHG) Inventory Report provides an accurate account of Lyttelton Port Company's (LPC) Scope 1, 2, and 3 GHG emissions for the FY2025 financial year (1 July 2024 – 30 June 2025). LPC's total gross GHG emissions for FY2025 were approximately 49,861 tonnes of carbon dioxide equivalent (tCO2e) (market-based reporting).

The table below summarises the main sources of GHG emissions for the reporting period.

GHG Protocol Scope	GHG Protocol Category and Description	FY2018 (baseline year)	FY2024	FY2025
Scope 1	Direct GHG emissions and removals	8,991.19	8,792.52	8,069.72
Scope 2	Indirect GHG emissions from imported energy (location-based method)	1,162.29	1,386.51	1,340.92
	Indirect GHG emissions from imported energy (market-based method)	1,162.29	0.00	0.00
Scope 3	Category 1: Purchased goods and services	17.62	12,776.95	7,041.99
	Category 2: Capital goods	0.00	0.00	1,159.33
	Category 3: Fuel and Energy related activities	0.00	116.47	70.68
	Category 4: Upstream transportation and distribution	312.15	117.61	94.17
	Category 5: Waste generated in operations	102.49	480.83	555.88
	Category 6: Business travel	225.93	127.93	116.80
	Category 7: Employee commuting	0.00	1,102.8	1,228.68
	Category 8: Upstream leased assets	0.00	0.00	1,307.37
	Category 11: Use of sold products	0.00	20,864.49	28,826.70
	Category 13: Downstream leased assets	0.00	49.44	49.31
	Total direct emissions	8,991.19	8,762.52	8,069.72
	Total indirect emissions (market-based)	1,820.48	35,636.53	40,450.85
	Total indirect emissions (location-based)	1,820.48	37,023.04	41,791.78
	Total gross emissions (location-based)	10,811.67	45,785.56	49,861.50
	Category 1 direct removals	0.00	0.00	0.00
	Indirect emissions negated due to purchase of NZ Certified Renewable Energy Certificates (NZRECs)	0.00	1,386.51	1,340.92[1]
	Total net emissions (market-based)	10,811.67	44,399.05	48,520.58

[1] Due to timing of calculation, the monthly purchased RECs may be slightly more or less than the electricity consumption which in FY25 has resulted in a minor discrepancy between the annual consumption and RECs purchased.

Introduction

This report is the annual greenhouse gas (GHG) Inventory Report for Lyttelton Port Company Limited (LPC), covering the measurement period 01 July 2024 to 30 June 2025.

This inventory has been prepared according to the:

- *Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard, revised edition, 2004.*
- *Greenhouse Gas Protocol – Scope 2 Guidance, an amendment to the GHG Protocol Corporate Standard, 2015.*
- *Greenhouse Gas Protocol – Corporate Value Chain (Scope 3) Accounting and Reporting Standard, 2011.*
- *Scope 3 GHG Emissions Preliminary Guidance for New Zealand Ports* (Tonkin & Taylor 2025).

This GHG inventory report has been audited by a third-party independent assurance provider in accordance with the New Zealand Standard on Assurance Engagement 1 and ISO 14064-3:2019.

Statement of Intent

This inventory forms part of LPC's commitment to consistently account for its GHG emissions using best practice greenhouse gas accounting standards.

The primary purpose of this report is to inform our own emissions management, reduction, and reporting activities. The intended users of this report are, but not limited to:

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

This report is primarily used by the Environment and Sustainability Team, and the Chief Bulk Cargo, Engagement and Sustainability Officer who is the Executive with responsibility for LPC's GHG Emissions Inventory and GHG reduction programme. Internally it is available to all staff, and it is also publicly available on LPC's website (https://www.lpc.co.nz/).

Description of Lyttelton Port Company

LPC is a regionally and nationally significant infrastructure asset operating over three locations in Greater Christchurch (Figure 1). It provides a vital link in international trade routes and plays a key role in the global transport network. LPC employs over 650 staff.

Figure 1 Lyttelton Port Company Operational Sites and Connecting Freight Routes

LPC's seaport (Lyttelton Port) is located on the northern shores of Lyttelton Harbour. Lyttelton Port is the largest port in the South Island and the country's second largest export port, managing nearly half the South Island's container volume. Lyttelton Port is a 24 hour, 7 days a week, around $190 million/year operation. It facilitates coastal and international shipping for range of trades including containers and fuel, supports commercial fishing operations, provides port services for Antarctic research vessels, military vessels, cruise ships and supports recreational boating and harbour access.

The CityDepot site in Woolston occupies 17ha of rail-side industrial land. It is the largest empty container hub depot in the South Island. Its role is to facilitate the storage and repair of empty containers as well providing full container handling for imports and export moving to and from the port. It provides a conveniently located rail and road interchange and can store up to 10,000 containers (TEUs).

Midland Port in Rolleston occupies 27ha of rail-side land. While similar, Midland Port is a different operation to CityDepot. Primarily it is focused on the aggregation of import and export cargo. There are daily connecting transport services between Midland Port and Lyttelton.

LPC's Sustainability Strategy

LPC recognises that its operations may have a direct impact on the environment and integrates sustainability throughout every aspect of our business. The LPC Board approved the business wide Sustainability Strategy in 2019. 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.

GHG emissions reduction is one of the three key priorities under our Sustainability Strategy. In October 2023, the Board approved the company's alignment with Science Based Targets (SBT). LPC has set an ambitious goal of halving its Scope 1 and 2 emissions (market-based reporting) by 2030 using 2018 as its baseline.

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

Persons Responsible

This GHG Inventory Report has been primarily prepared by LPC's Environment and Sustainability Team. LPC's Head of Environment and Sustainability is responsible for overall emission inventory measurement and monitoring reduction performance, as well as reporting results to management. Data inputs came from a range of sources at LPC, as well as from LPC's key suppliers and consultants.

Reporting Period

This GHG Inventory Report covers the financial year 01 July 2024 to 30 June 2025.

Organisational Boundaries

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 2).

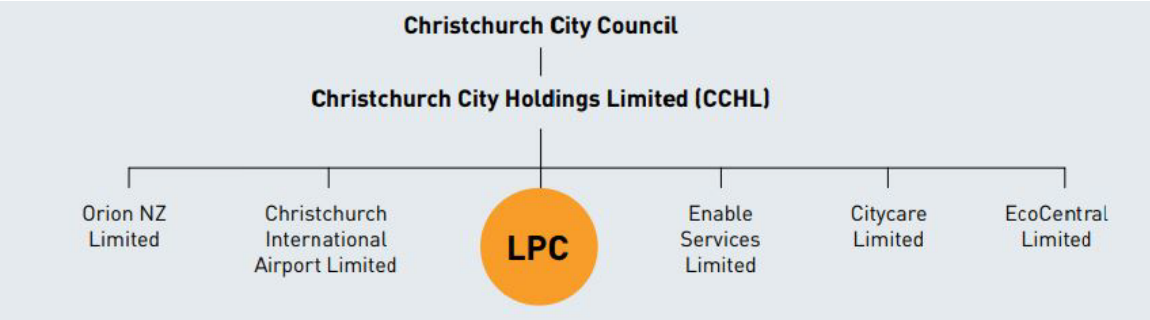

Figure 2 Organisational Structure of LPC

LPC applies the operational control consolidation approach in accounting for the organisational boundary of our emissions, in accordance with the methodology described in the ISO 14064-1:2018 standard. This approach was chosen as it best aligns with the GHG Inventory Report's intended uses. This allows us to focus on those emissions sources that we have greater control over and can influence in line with our targets.

Table 1 outlines the business units/facilities owned by LPC and of which LPC has operational control over. 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 12 areas within the business.

Table 1: LPC business units and their physical locations.

Business unit / Facilities	Physical location	Description
CityDepot	Chapmans Road, Woolston	A land-based depot for container handling and storage Includes rail links with Lyttelton Port and Midland Port.

Business unit / Facilities	Physical location	Description
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 transports links including rail and road.
Coal, Container Terminal, Corporate, Dry Dock, Infrastructure Services, Maintenance, Marine, Bulk Cargo, Port Services, Te Ana Marina	37-39 Gladstone Quay, Lyttelton	Business units at the Lyttelton Port site in Lyttelton and make up the operational units of the Port.

Operational Boundary

LPC has included Scope 1, 2 and 3 emissions in this GHG Inventory Report. The following GHG emissions sources are classified by the following GHG Protocol scopes:

- Scope 1: Direct GHG emissions, as a result of LPC operations, including fuel usage and fugitive gases;
- Scope 2: Indirect GHG emissions from LPC electricity usage; and
- Scope 3: Indirect GHG emissions from LPC's supply chain. This accounts for all emissions occurring because of LPC operations that are not included in Scope 1 or 2, including upstream and downstream emissions and transmission losses from the national grid. LPC reports on GHG Protocol Scope 3 categories 1-7, 11 and 13. The other categories are not applicable to our operations.

Materiality

LPC considers that all scope 1 and 2 emissions are material. A materiality assessment (Appendix A) was conducted to identify material scope 3 emission sources to be reported in the inventory. Factors include:

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

A materiality threshold of 1% was established, where an emission source contributing less than 1% of the total inventory can be excluded.

Information Management Procedures

LPC have developed a guidance document that describes the methods the organisation takes to prepare its GHG emissions inventory. The document describes how to calculate GHG emissions for the purposes of monthly reporting, and in preparation for the annual audit in accordance with the GHG Protocol.

Data Collection, Quantification and Uncertainties

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.

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 such as dollar spend. 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. Data is collected and centrally filed in a Sharepoint folder. Data is 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 quantities of each greenhouse gas. These quantities are then converted to tCO2e using the Global Warming Potentials (GWP) from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report on a 100-year time horizon. Emission factors were sourced from the below publications.

- Ministry for the Environment, MfE. Measuring_Emissions_Emission_Factors_Workbook_2023 (https://environment.govt.nz/publications/measuring-emissions-a-guide-for-organisations-2023-detailed-guide/). Published 12th July 2023
- Ministry for the Environment, MfE. Measuring_Emissions_Emission_Factors_Workbook_2024. (https://environment.govt.nz/publications/measuring-emissions-a-guide-for-organisations-2024-detailed-guide/). Published 31 May 2024.
- Ministry for the Environment, MfE, EmissionFactors_Workbook_2025 (https://environment.govt.nz/publications/measuring-emissions-guide-2025/). Published 11th June 2025.
- Department for Energy Security and Net Zero, (https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023). Published June 2023
- ME. Consumption Emissions Modelling (https://www.knowledgeauckland.org.nz/media/2593/consumption-emissions-modelling-market-economics-march-2023.pdf) Published March 2023.

The IPCC GWPs (100 year) are:

Greenhouse Gas	**CO_2**	**CH_4**	**N_2O**
Global Warming Potentials	1	28	265

Changes to Approach Used Previously

To estimate staff commute emissions and working from home emissions, LPC undertook an employee survey over the period mid-late May 2025. Of the 650 staff members contacted (staff numbers at the time of survey), 169 responses were received – 26% per cent of staff. Data has been calculated using this response figure as a representative proportion of our full employee emissions by Mission Zero: Join The Zero Carbon Mission.

Ship's emissions were calculated for the first time in FY24 following the USA EPA's *Port Emissions Inventory Guidance: Methodologies for estimating Port-Related and Goods Movement Mobile Source Emissions*. The FY24 shipping emissions was calculated using python script based on Automatic Identification System (AIS) data. For FY25 vessel arrival and departure data from LPC's Port Control system were used which automatically extracts AIS data from vessels as visiting Lyttelton.

In FY25, emissions from capital projects were reported separately to goods and services for the first time using more accurate data from LPC's financial reporting system.

Impact of uncertainty

Some level of uncertainty is associated with the preparation of GHG emissions inventory. LPC outlines our approach to uncertainties in Table 2.

GHG Inventory of Emissions

Summary of Emission Sources Included

Table 2 Boundary disclosure table. The table below provides a summary of the emissions sources included in the GHG inventory. It also describes the methodology used and level of uncertainty.

Category	GHG emissions source or sink subcategory	Activity data and evidence	Data source	Uncertainties or assumptions
Scope 1: Direct GHG emissions and removals				
Mobile combustion (incl. company owned or leased vehicles)		Diesel commercial	BP Bulk fuel reports	Low level of uncertainty, assume supplier report is complete and accurate.
		Diesel commercial, Diesel, Petrol premium, Petrol regular (l)	BP fuel card reports	Low level of uncertainty, assume supplier report is complete and accurate.
Fugitive emissions		Refrigerant losses from HVAC units (kg)	AC Dynamics HVAC supplier reports	Low level of uncertainty, assume supplier report is complete and accurate.
		Welding gases (kg)	Southern Gas Services supplier reports	Low level of uncertainty, assume supplier report is complete and accurate.
Scope 2: Indirect emissions from imported energy				
Imported electricity		Electricity (kwH)	Meridian Energy reports	Low level of uncertainty, assume supplier report is complete and accurate.
Renewable Energy Certificates (RECs)		Renewable Energy Certificates	BraveTrace Renewable Energy Produced (MWh)	Medium level of uncertainty as electricity reported as MWh.
Scope 3 – Indirect upstream and downstream emissions				

Category	GHG emissions source or sink subcategory	Activity data and evidence	Data source	Uncertainties or assumptions
Category 1	Purchased Goods and Services	Suppliers spend ($, excluding GST)	Suppliers spend ($, excluding GST)	High level of uncertainty as calculated based on spend. Suppliers with annual spend less than $50,000 was excluded.
Category 2	Capital Goods	Suppliers spend ($, excluding GST)	Suppliers spend ($, excluding GST)	High level of uncertainty as calculated based on spend. Suppliers with annual spend less than $50,000 was excluded.
Category 3	Transmission of energy (T&D losses)	Electricity distributed T&D losses	Meridian Energy reports	Low level of uncertainty. It is assumed supplier reports are correct and accurate.
Category 4	Upstream freight - Paid by the organisation	Freight (supplier calculated CO2e including RFI)	NZ Couriers reports	Low level of uncertainty, assume supplier report is complete and accurate.
		Diesel commercial (l)	NZ Express	Low level of uncertainty, assume supplier report is complete and accurate.
		kg CO2e	Move Logistics reports	Low level of uncertainty, assume supplier report is complete and accurate.
		Net Tonne Kilometres (NTK)	KiwiRail reports	Low level of uncertainty. Assume supplier report is complete and accurate. Rail freight of containers between Lyttelton and Inland Ports.
Category 5	Disposal of solid waste - Landfilled	Incineration of clinical waste, Waste landfilled LFGR Mixed waste (tonnes or kg)	Waste Management reports	Low level of uncertainty. WM reports have a high level of accuracy with actual weights provided for most pickups.
			Interwaste report	Low level of uncertainty, assume supplier reports are true and accurate.
Category 5	Disposal of solid waste - Not landfilled	Waste disposal recycling (kg on tonnes)	Waste Management	Low level of uncertainty. WM reports have a high level of accuracy with actual weights provided for most pickups.
Category 5	Treatment of liquid waste	Waste Management liquid waste collection.	Waste Management	WM reports have a high level of accuracy with actual weights provided for collection.

Category	GHG emissions source or sink subcategory	Activity data and evidence	Data source	Uncertainties or assumptions
		Discharge to CCC tradewaste system.	Trade waste consented maximum allowable limits.	High level of uncertainty, total volume estimated based on consented annual maximum allowable limits.
Category 6	Business travel - Transport (non-company owned vehicles)	Air travel, rental cars and business travel accommodation (pre-calculated emissions, kgCO2e)	Orbit Travel report	Low level of uncertainty. Orbit Travel became LPC's travel booking provider in September 2023. It is assumed Orbit Travel reports are correct and accurate. Some inaccuracies as an average of the remaining months were used to estimate rental car and hotel stay emissions for July and August 2023.
		Air travel (pkm)	Air NZ travel card report	Air travel: It is assumed data source represents a complete and accurate account of air travel activity. Air NZ reports were used to calculate air travel emissions for July and August 2023 prior to Orbit Travel being used.
Category 7	Employee commuting and working from home	Employee commuting and working from home	Employee suburb location in internal HR software	Medium level of uncertainty, calculated based on national average and some inaccuracies as employees don't always update change of address.
Category 11	Use of sold products	Ships emissions while within port limits	Shipping data from "Port Control", LPC's marine planning system	Medium level of uncertainty as there are assumptions on the fuel usage during each type of shipping movement (e.g., hotelling), not based on actual fuel usage of the vessels.
Category 13	On sold electricity	Electricity on sold (kwh)	Energy on sold to LPC tenants and customers	Medium level of uncertainty. Calculated using on sold electricity to tenants and customers.

Calculation of emissions associated with electricity

LPC supplies electricity to several tenants and port users. To calculate the emissions associated with this electricity, the total emissions from the total kwh on-sold are calculated, then deducted from LPC's total scope 2 emissions and reported as emissions from downstream leased assets under scope 3, category 13.

Summary of Emissions Sources Excluded

Table 3: Summary of emission sources excluded from this inventory. GHG Protocol Scope 3 reporting categories 8, 9, 10, 12, 14 and 15 were also excluded from this inventory as they are not applicable to LPC.

GHG reporting category	Activity / emission source	Reason for exclusion	Estimated tCO2e excluded from inventory
Scope 1: Direct emissions and removals			
Fugitive emissions	AdBlue	Total contribution of AdBlue to LPC's GHG emissions inventory considered de minimis.	Approximately 6 tCO2e (25,000l x 0.000238 EF)
	Refrigerant loss from mobile plant	Low accuracy in calculation, minimal contribution to LPC's total footprint	Approximately 5-25tCo2e
Scope 3 - Category 4: Indirect emissions from products used by organisation			
Purchased Goods and Services	Spend on consent condition related payments, sponsorship and payments to staff	Low accuracy in attributing emission factor. One-time payments.	Approximately 43 tonnes CO2e (~$600,000 x 0.00007235 EF)
	Suppliers where annual spend <$50,000 (excl GST)	Significant number of suppliers where the spend was <$50,000.	Each supplier with spend $50,000 or less unlikely to contribute more than 140 tonnes to inventory ($50,000 x 0.00279 maximum ME spend-based EF)

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.

FY2025 Reported Emissions

The total reported GHG emissions for LPC using location-based reporting were 49,861.50 tCO2e, and 48,520.58 tCO2e for market-based reporting. This difference is due to the purchase of renewable energy certificates (NZECS), negating the Scope 2 emissions from electricity usage.

Table 4: Location based and market-based reported emissions for FY25.

Scope / Category	Location based reporting (tCO2e)	Market-based reporting (tCO2e)
S1 Mobile combustion	8031.86	8031.86

S1 Fugitive Emissions	37.86	37.86
S2 Purchased electricity	1,340.92	0.00
S3.1 Purchased goods and services	7,041.99	7,041.99
S3.2 Capital goods	1,159.33	1,159.33
S3 3. Fuel- and energy-related activities	70.69	70.69
S3 4. Upstream transportation and distribution	94.17	94.17
S3 5. Waste generated in operations	555.88	555.88
S3 6. Business travel	116.79	116.79
S3 7. Employee commuting	1,228.68	1,228.68
S3 8. Upstream leased assets	1,307.32	1,307.32
S3 11. Use of sold products	28,826.69	28,826.69
S3 13. Downstream leased assets	49.31	49.31
Total	49,861.50	48,520.58

Table 5 Direct FY25 direct emissions broken down by Greenhouse Gas (market-based).

GHG Scope & Category	Emissions Source	CO2	CH4	NOx	HFCS	PFCs	SF6	Other	tCO2e
Direct emissions (Scope 1)	Welding gases	358.7	0	0	0	0	0	0	0.4
	Other gases	0	0	0	0	0	0	37.5	37.5
	Diesel	7,891.2	11.8	112.0	0	0	0	0	8,015.1
	Petrol premium	1.3	0	0	0	0	0	0	1.3
	Petrol regular	14.8	0.2	0.5	0	0	0	0	15.5
	Total	**8,266**	**12**	**113**	**0**	**0**	**0**	**38**	**8,070**

Significant Emission Sources

In FY25, the greatest emission contribution to the inventory was the use of sold products, specifically the emissions from ships while in the Port's operational limits. This indirect emission source contributed 28,826.69 tCO2e in FY25 (Figure 3). Following ship's emissions, mobile combustion from large mobile plant contributed a further 8,031 tCO2e, followed by purchased goods and services at 7,042 tCO2e.

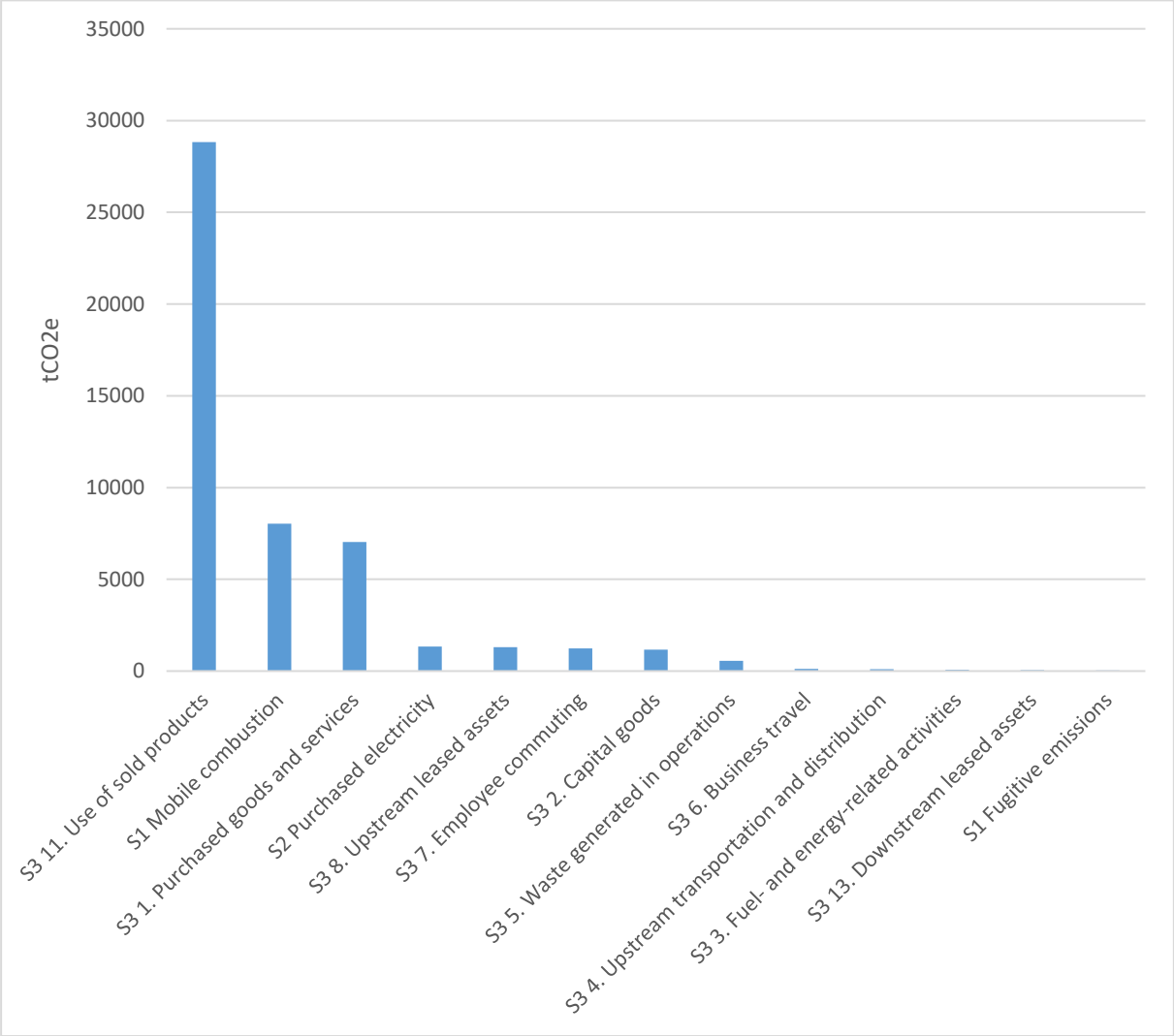

Figure 3: FY25 emissions categorised by GHG Protocol scope (market-based reporting).

LPC's container terminal operates 24/7, 365 days a year with 25 diesel electric straddles used for moving containers. For this reason, it contributes about half of LPC's direct emissions. The marine and coal business units also rely heavy on diesel powered fleet such as tugs, the pilot boat and front-end loaders, also contributing significantly to LPC's direct emissions.

Intensity Measures

In FY25 there was a decrease of 2.9% in the average direct tCO2e per TEU moved, from 0.009524 tCO2e in FY24, to 0.00924 in FY25 (Figure 4). However, this was a decrease of around 15% from the FY18 baseline. Overall, there has been a significant decrease of 18.8% in the tCO2e per TEU moved since the FY18 base year (0.0215 tCO2e). These increases in efficiency are attributed to a combination of factors including the purchase of more efficient straddle fleet, reducing idling time on the straddles and more effective container terminal planning.

In FY25 there was also a reduction of 8.6% in the direct tCO2e per thousand dollars of revenue compared to FY24 (Figure 5). This is also a reduction of 4.7% compare to the FY18 baseline year.

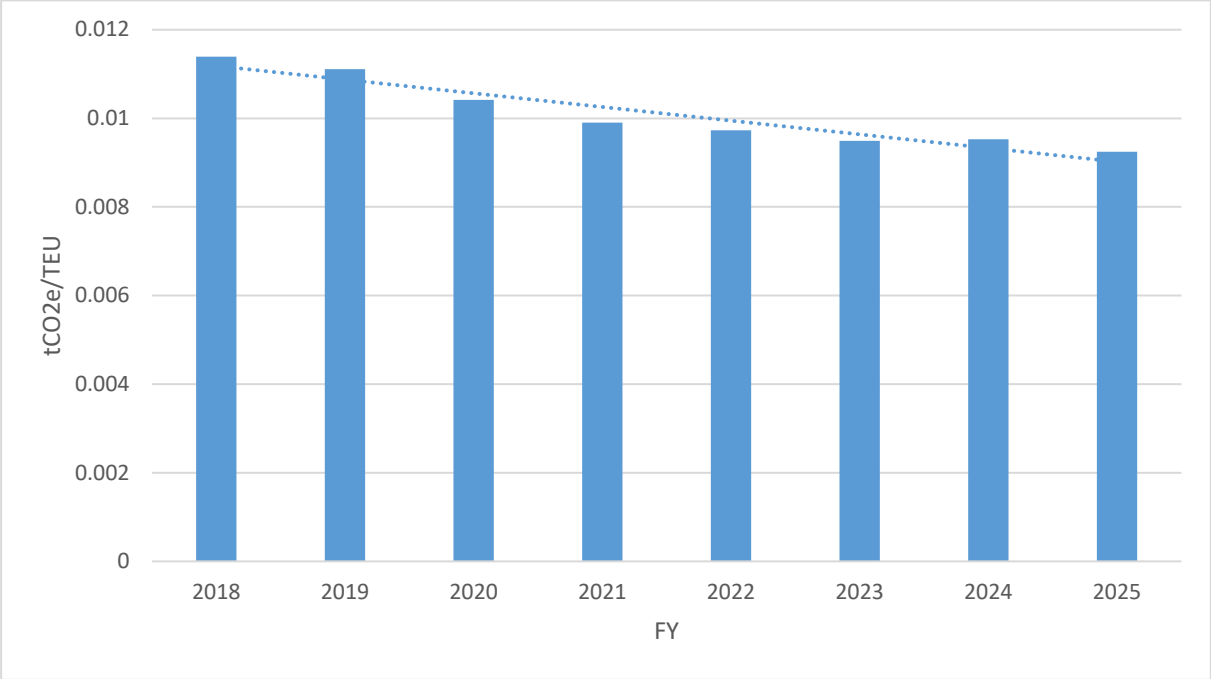

Figure 4: Carbon Intensity (tCO2e per TEU moved)

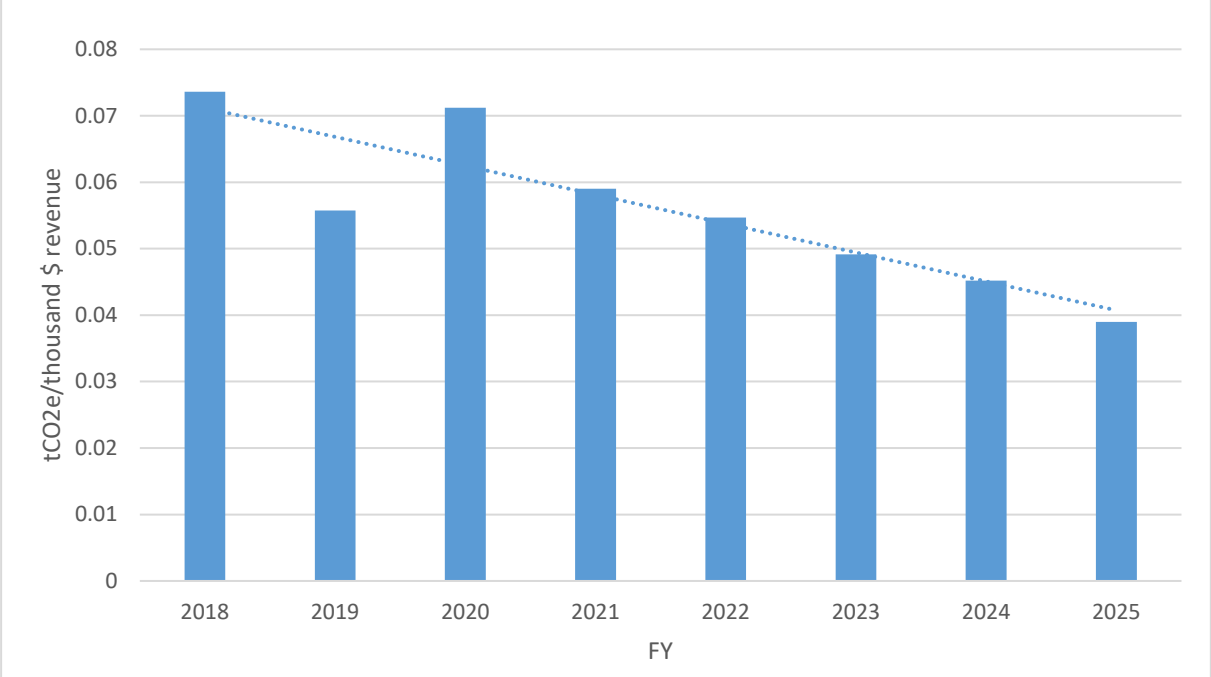

Figure 5: Carbon Intensity (tCO2e per thousand $ revenue)

Changes to Historic Base Year and Recalculations

LPC's baseline year is FY18, covering the period 01 July 2017 to 30 June 2018 in line with the financial year. FY18 was chosen as the base year as it was the first year LPC produced a GHG inventory in accordance with the ISO14064 standard. Changes will be made to the baseline year's data if significant changes in LPC's operational footprint or reporting boundary occur that have a 5% or greater impact on our scope 1, 2 or 3 emissions excluding purchase goods and services, use of sold products and staff commuting/working from home. This is because these scopes and categories are included in LPC's GHG emission reduction targets. A recalculation will also be triggered upon the discovery of significant errors, changes in calculation methodology, improvements in the accuracy of emissions factors, or activity data that results in a significant impact on the base year.

From FY24, LPC reported emissions from all relevant scope 3 sources, resulting in a significant increase in overall emissions. It was elected not to re-calculate the FY18 baseline year due to the lack of available data for the period and as these additional scope 3 categories are not included in the scope of LPC's emission reduction targets.

In June 2025, the Ministry for the Environment released an update to its guidance on calculating emissions (https://environment.govt.nz/publications/measuring-emissions-guide-2025/). Electricity emissions from FY25 and FY24 were calculated using the most recent 2024 electricity emission factor reported in this guidance.

GHG Emissions Reductions and Comparison with Previous Inventories

LPC's reported emissions increased by over 400%, due to additional Scope 3 categories being reported for the first time (Figure 6). These same categories have been reported in FY25, with an increase in overall emissions of 11%. These are largely attributed to emissions from visiting vessels, with the number of vessel visits to LPC increasing between FY24 and FY25.

LPC's direct emissions from mobile combustion were 8,031.86 tCO2e in FY25, a reduction of 8.3% from FY24 and 10.3% from FY18 (Figure 7). The reduction in Scope 1 emissions since FY18 has largely coincided with the efficiencies implemented in the Lyttelton Container Terminal. In 2021, LPC started purchasing certified renewable energy through Meridian Energy. This has negated emissions from electricity since the baseline year under market-based reporting.

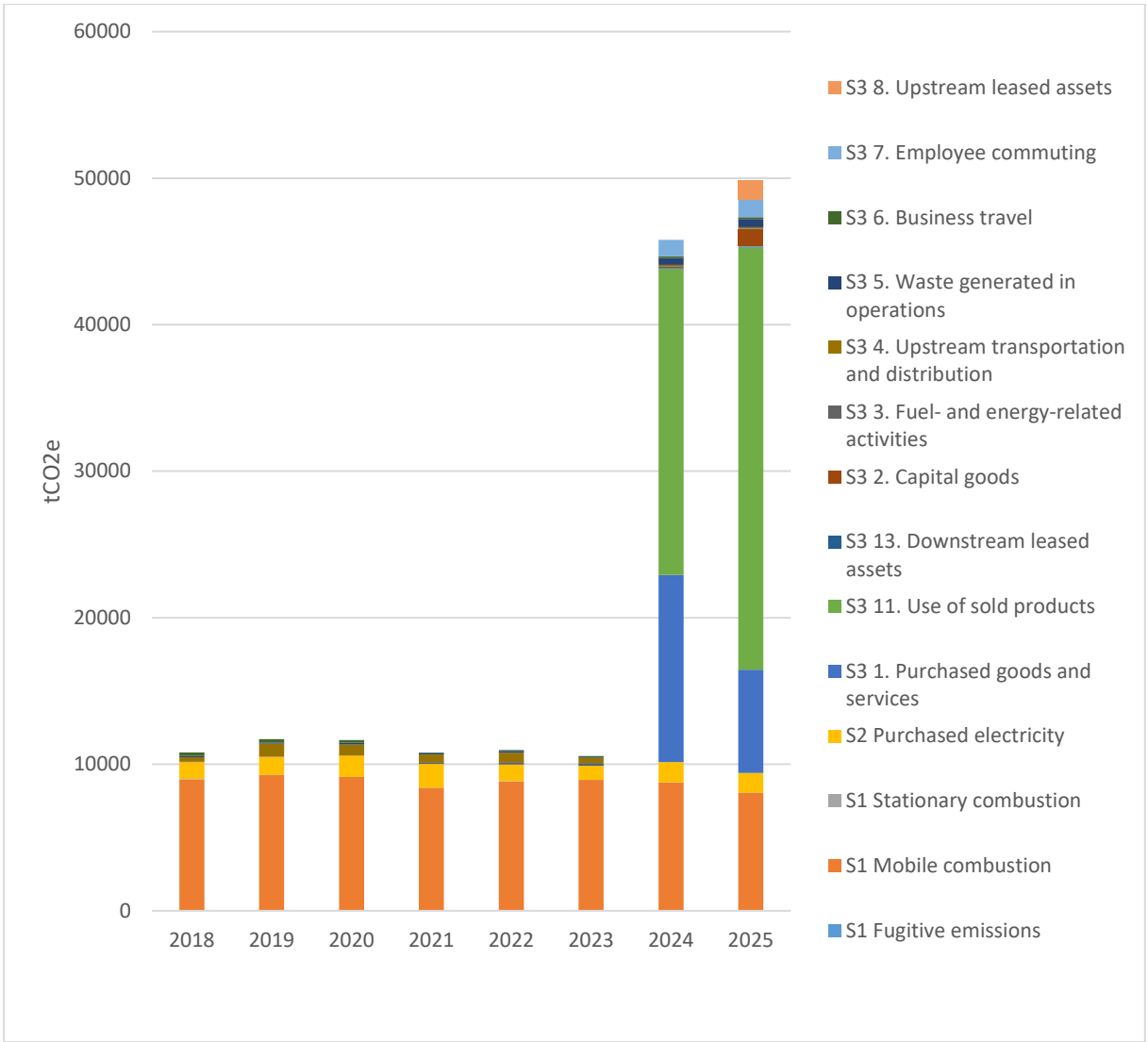

Figure 6: Total emissions from LPC (tCO2e)

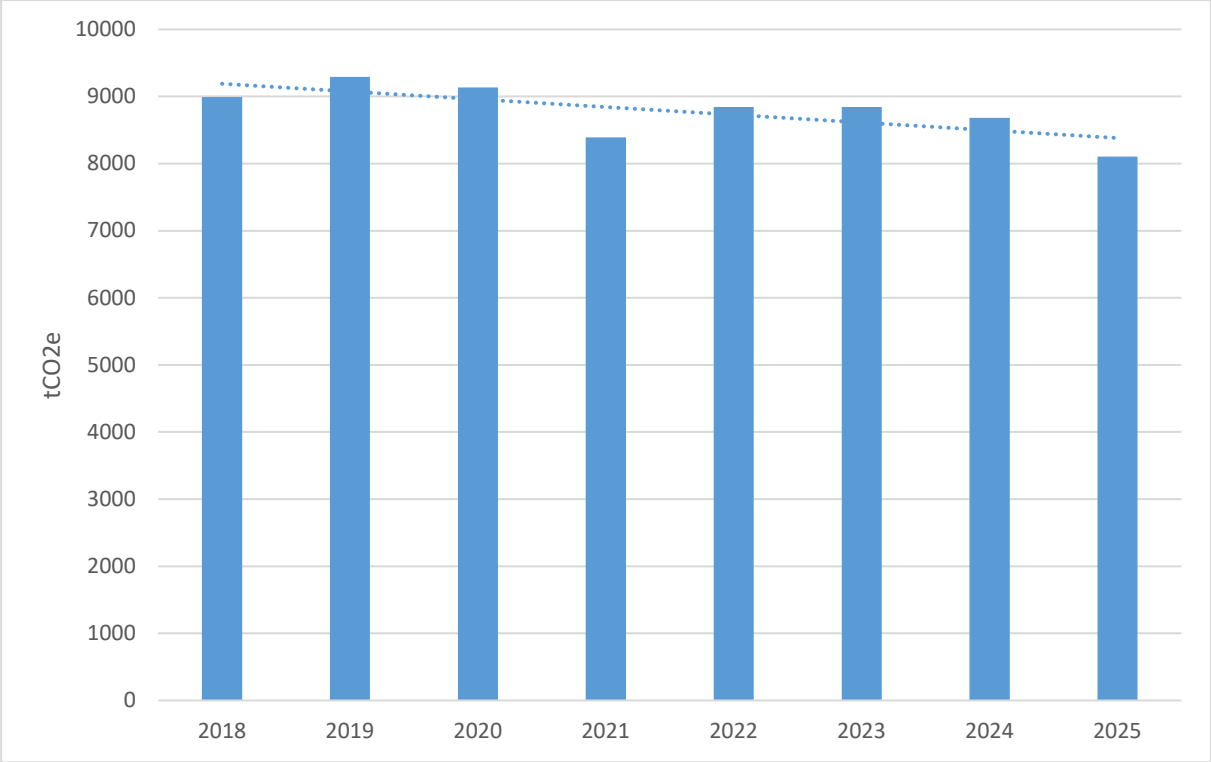

Figure 7: Direct (scope 1) emissions (tCO2e).

Assurance

The GHG Inventory report has been compiled in accordance with:

- *Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard, revised edition, 2004.*
- *Greenhouse Gas Protocol – Scope 2 Guidance, an amendment to the GHG Protocol Corporate Standard, 2015.*
- *Greenhouse Gas Protocol – Corporate Value Chain (Scope 3) Accounting and Reporting Standard, 2011.*
- *Scope 3 GHG Emissions Preliminary Guidance for New Zealand Ports* (Tonkin & Taylor 2025).

Audit of GHG Inventory

Independent verification was completed by McHugh & Shaw Limited (ISO 14064-3:2019) and the assurance level achieved is Reasonable Assurance for Scope 1 and Scope 2 and Limited Assurance for Scope 3.

Appendix A Boundary disclosure table

Organisational boundary disclosure. Provides a summary of the emissions sources included and excluded in the GHG inventory. It also describes the methodology used and level of uncertainty.

ISO category	GHG Protocol category	Emission source	Recommended or Optional	Inclusion Yes/No N/A	Justification	Calculation methodology	Data limitations	Uncertainty rating	New source in FY25 (Yes/No)
Category 1: Direct GHG emissions and removals	Stationary Combustion	Diesel	Recommended	Yes		Direct activity-based BP Bulk fuel reports	None	Low	No
		Natural Gas	Recommended	N/A					
		LPG	Recommended	N/A					
	Mobile Combustion	Diesel	Recommended	Yes		Direct activity-based BP Bulk fuel and Everlink reports	None. Assume supplier report is complete and accurate.	Low	No
		Petrol	Recommended	Yes		Direct activity-based BP Bulk fuel reports	None. Assume supplier report is complete and accurate.	Low	No
		LPG	Recommended	N/A					
		Biofuels used in the fleet (CH_4 and N_2O only)	Recommended	N/A					
	Fugitive Emissions	Refrigerants (HFC) Office	Optional	Yes		Direct activity-based AC Dynamics HVAC supplier reports	None. Assume supplier report is complete and accurate.	Low	No
		Refrigerants (HFC) Fridges	Optional	Yes		Direct activity-based AC Dynamics HVAC supplier reports	None. Assume supplier report is complete and accurate.	Low	No

ISO category	GHG Protocol category	Emission source	Recommended or Optional	Inclusion Yes/No N/A	Justification	Calculation methodology	Data limitations	Uncertainty rating	New source in FY25 (Yes/No)
		Refrigerants (HFC) Vehicles	Optional	No	Total contribution of AdBlue to LPC's GHG emissions inventory considered de minimis.				No
	Land Use Change	Vegetation clearance	Optional	N/A					
		Planted (new) forests	Optional	N/A					
		Fertiliser Use (Urea and Non-Urea)	Optional	N/A					
Category 2: Indirect GHG emissions from imported energy	Electricity	Electricity used in mobile and stationary assets	Recommended	Yes		Direct activity-based Meridian Energy reports	None. Assume supplier report is complete and accurate.	Low	No
Category 4: Indirect GHG emissions from products used by an organisation	1. Purchased Goods and Services	Goods and services not included elsewhere (suppliers identified by individual ports) including water supply	Recommended	Yes	Suppliers with annual spend > $50,000 included. Each supplier with spend $50,000 or less unlikely to contribute more than 140 tonnes to inventory ($50,000 x 0.00279 maximum ME spend-based EF).	Suppliers spend records Internal finance reporting software 99% Spend-based 1% Suplier-specific	Emissions factors for spend based data. This category also includes GHG emissions associated with *maintenance* of capital goods. High level of uncertainty as water meter readings are completed manually and inputted into internal asset management software. FY23 data used as estimate of FY25 due to inaccuracies in data.	Medium – purchased goods and services High – water supply	No
	2. Capital Goods	Construction projects (fuel and electricity use, freight of materials and waste, embodied emissions of steel and concrete, wood waste and water use)	Recommended	No	Lack of data and accuracy Construction projects categorised as high included in future inventories				

ISO category	GHG Protocol category	Emission source	Recommended or Optional	Inclusion Yes/No N/A	Justification	Calculation methodology	Data limitations	Uncertainty rating	New source in FY25 (Yes/No)
		Construction projects (embodied emissions of other materials, contractors travel to site, professional services, vegetation clearance)	Optional	No	Lack of data and accuracy Construction projects categorised as high included in future inventories				
		Purchase of high value fixed assets fixed assets identified by individual ports	Recommended	Yes	All fixed assets above $1,000,000 included	Spend-based		Medium	No, but previously captured in Category 1
	3. Fuel- and Energy-related Activities	T & D losses (Scope 2 electricity)	Recommended	Yes		Direct activity-based Meridian Energy reports		Low	No
		T & D losses (Category 8 &13 electricity)	Optional	No	Difficult to measure, little to no control of the emissions source				
		T & D losses (Scope 1 natural gas)	Recommended	N/A					
		T & D losses (Scope 8 & 13 natural gas)	Optional	No	Difficult to measure, little to no control of the emissions source				
		Production and distribution of purchased fuels and energy / well to tank (Scope 1 fuels)	Recommended	No					
		Production and distribution of purchased fuels and energy/ well to tank (Category 4 & 6 fuels)	Optional	No					

ISO category	GHG Protocol category	Emission source	Recommended or Optional	Inclusion Yes/No N/A	Justification	Calculation methodology	Data limitations	Uncertainty rating	New source in FY25 (Yes/No)
Category 3: Indirect GHG emissions from transportation	4. Upstream Transportation and Distribution	Freight, couriers and post of the products purchased by the port	Recommended	Yes		Direct activity-based NZ Courier reports		Low	No
		Freight of customers cargo (where contracted via port)	Recommended	Yes		Direct activity-based NZ Express, Move logistics and Kiwirail reports			No
		Storage and distribution, cargo handling.	Optional	No	Not commonly reported in port carbon footprints				
Category 4: Indirect GHG emissions from products used by an organisation	5. Waste Generated in Operations	Waste to landfill from own operations	Recommended	Yes		Direct activity-based WM reports			No
		Waste to landfill from visiting vessels	Optional	No	Insignificant emissions source and limited control of the emissions source				
		Waste to landfill from third parties operating at the port	Optional	No	Insignificant emissions source and limited control of the emissions source				
		Waste to composting from own operations	Recommended	Yes		Direct activity-based WM reports			
		Waste to composting from visiting vessels	Optional	No	Insignificant emissions source and limited control of the emissions source				

ISO category	GHG Protocol category	Emission source	Recommended or Optional	Inclusion Yes/No N/A	Justification	Calculation methodology	Data limitations	Uncertainty rating	New source in FY25 (Yes/No)
		Waste to composting from third parties operating at the port	Optional	No	Insignificant emissions source and limited control of the emissions source				
		Processing of recycled waste from own operations	Recommended	Yes		Direct activity-based WM reports			
		Processing of recycled waste from visiting vessels and third parties operating at the port	Optional	No	Insignificant emissions source and limited control of the emissions source				
		Wastewater treatment from own operations and third parties operating at the port	Optional	Yes		Direct activity-based	Total volume estimated based on consented annual maximum allowable limits.	High	
		Wastewater treatment from own operations for visiting vessels	Optional	No	Insignificant emissions source and limited control of the emissions source	Indirect activity-based			
		Freight of waste	Optional	No					
Category 3: Indirect GHG emissions from transportation	6. Business Travel	Air travel on commercial airlines	Recommended	Yes		Direct activity-based			
		Air travel on charted flights	Optional	No	LPC does not charter flights				
		Fuel use in rental vehicles	Recommended	Yes		Direct activity-based			
		Fuel use in taxi	Optional	Yes		Direct activity-based			

ISO category	GHG Protocol category	Emission source	Recommended or Optional	Inclusion Yes/No N/A	Justification	Calculation methodology	Data limitations	Uncertainty rating	New source in FY25 (Yes/No)
		Personal mileage - fuel use in personal vehicles for business travel	Optional	Yes	Difficulty obtaining data, immaterial to total inventory.				
		Public transport - fuel use in buses and rail for business travel	Optional	No	Insignificant emission source, difficult to measure				
		Accommodation associated with business travel	Recommended	Yes		Direct activity-based			
	7. Employee Commute	Employee commute - fuel use in personal vehicles and public transport while commuting to work	Recommended	Yes		Indirect activity-based Employee commute survey	26% response rate. Emission factors low uncertainty (1.8%-0.9%) for petrol and diesel and high uncertainty for km based emission factors. Emission factors from mfE. 2024	Medium	No
		Energy used by employees while working from home	Optional	Yes		Indirect activity-based Employee commute survey			
Category 4: Indirect GHG emissions from products used by an organisation	8. Upstream Leased Assets	Leased building and assets - electricity and fuel use	Recommended	Yes		Spend-based.			
		Fugitive refrigerants from leased buildings and assets.	Optional	N/A					
Category 3: Indirect GHG emissions from transportation	9. Downstream Transportation and Distribution	Energy use in vehicles delivering customer cargo (outside port boundary)	Optional	No	Difficult to measure and little to no control, not commonly reported in port carbon footprints				
		Energy use in rail delivering customer	Optional	No	Difficult to measure and little to no				

ISO category	GHG Protocol category	Emission source	Recommended or Optional	Inclusion Yes/No N/A	Justification	Calculation methodology	Data limitations	Uncertainty rating	New source in FY25 (Yes/No)
		cargo (outside port boundary)			control, not commonly reported in port carbon footprints				
		Energy use in ships delivering customer cargo (outside of port boundary)	Optional	No	Difficult to measure and little to no control, not commonly reported in port carbon footprints				
		Energy use for passengers travel to port	Optional	No	Difficult to measure and little to no control, not commonly reported in port carbon footprints				
Category 5: Indirect GHG emissions associated with the use of products from the organisation	10. Processing of Sold Products	N/A		N/A					
	11. Use of Sold Products	Visiting vessels - electricity on-shore charging	Recommended	No	Lack of data and accuracy				
		Visiting vessels - fuel use while inside of port boundary	Optional	Yes		Indirect activity-based estimated time transiting, manoeuvring, hotelling and anchorage.	Data gaps in LPC's Port Control System and engine types	Medium	No
		Fuel use by visiting trucks and rail (within port boundary)	Optional	No	Little to no control, lack of data and accuracy				
		Third party fuel use and fugitive emissions at the port	Optional	No	Little to no control, lack of data and accuracy				
		Third party electricity	Recommended	No	Lack of data and accuracy				

ISO category	GHG Protocol category	Emission source	Recommended or Optional	Inclusion Yes/No N/A	Justification	Calculation methodology	Data limitations	Uncertainty rating	New source in FY25 (Yes/No)
	12. End-of-life Treatment of Sold Products	N/A		N/A					
	13. Downstream Leased Assets	Fuel use by tenants	Optional	No	Little to no control				
		Electricity use by tenants	Recommended	Yes		Spend based	Calculated using on sold electricity to tenants	Medium	No
	14. Franchise	N/A		N/A					
	15. Investment	Fuel of investments' operations	Optional	N/A					
		Electricity of investments' operations	Optional	N/A					