

CLIMATE RISKS REPORT 2023



MAINFREIGHT

OVERVIEW

INTRODUCTION

Mainfreight welcomes the opportunity to provide our first climate related risks report. This report is prepared with reference to the Taskforce for Climate Related Financial Disclosures. This should be viewed as a separate but complimentary work piece to the Climate Related Disclosure reporting we will publish from 2024.

We recognise the significant global impact that climate change poses to economic, environmental and social systems. We acknowledge that where there are climate risks there are financial risks but also practical opportunities.

Mainfreight is committed to playing our part to reduce the impact of our operations and support our customers on their own journey.



Figure 1. Core Elements of TCFD

TCFD

THE TASKFORCE FOR CLIMATE-RELATED FINANCIAL DISCLOSURES

The TCFD framework was designed to improve transparency and the evaluation of climate risks in global capital markets.

The TCFD structures its recommendations around four thematic areas shown in Figure 1. Split among these main elements are eleven recommendations for organisations in detailing information aligned to the standard. We have sought to address each of these, as well as provide context around some of the challenges to date and our path ahead.

You can read more about the TCFD here: <https://www.fsb-tcfid.org/>

CRD

CLIMATE-RELATED DISCLOSURES

Mainfreight are a designated Climate Reporting Entity in scope of the [Aotearoa New Zealand Climate Standards](#)

Our 2024 Climate Risks Report will be adapted to meet the additional requirements set out within the standards.

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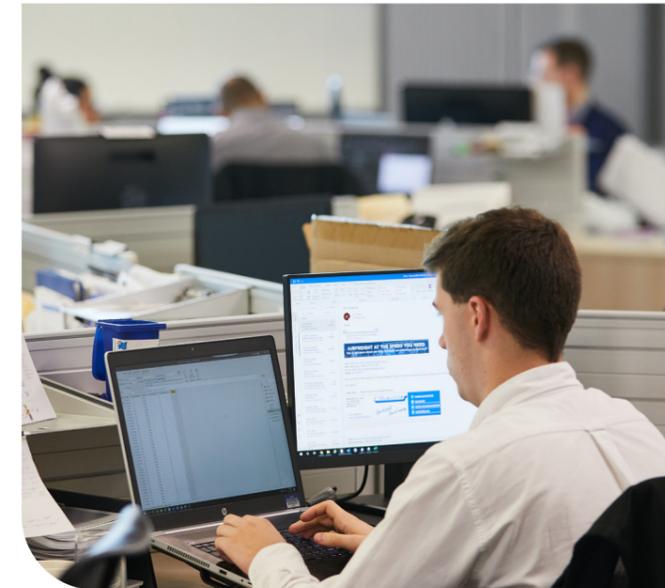
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GOVERNANCE

INTRODUCTION

The TCFD defines Governance as the “set of relationships between an organisation’s management, its board, its shareholders, and other stakeholders. Governance provides the structure and processes through which the objectives of the organisation are set, progress against performance is monitored, and results are evaluated”. To that end we describe below how the existing governance frameworks of our organisation enable and support the principles outlined within the TCFD recommendations.

TCFD DISCLOSURE RECOMMENDATIONS - GOVERNANCE

- a. Describe the board’s oversight of climate-related risks and opportunities.
- b. Describe management’s role in assessing and managing climate-related risks and opportunities

BOARD OVERSIGHT

The Board is responsible for the proper direction and control of the Group’s activities. This responsibility includes such areas of stewardship as the identification and control of the Group’s risks (including climate-related risks), along with the integrity of management information systems and reporting to shareholders.

The Board has an established Audit Committee with responsibility for overseeing the framework of internal control mechanisms that ensure proper management of the Group’s affairs including oversight of business risks. On an annual basis or as necessary, recommendations are then made by the Committee to the Board.

The Board delegates the conduct of the day-to-day affairs of the company to the Group Managing Director and Executive Management.

MANAGEMENT ROLE

Executive Management is responsible for ensuring the business is identifying, managing, and controlling climate-related risks alongside other risks. Risk mitigation strategies directed by the Board are implemented and monitored by management.

The Group finance and Group sustainability teams reporting to the Chief Financial Officer support the practical implementation of climate-related risk mitigation strategies. The Group sustainability team is also responsible for preparing climate risk assessments provided to management and the Audit Committee.

OUR GOVERNANCE STRUCTURE



The Board approves the Group Risk Management Process. It receives and reviews reports provided to it, by the Audit Committee.



The Audit Committee reviews all major risks and those escalated by management. The Committee ensures risks are being managed in accordance with the Group’s Risk Management Process.



Executive Management is responsible for ensuring that the business is effectively following and delivering on the Group Risk Management Process, to identify, measure, manage, monitor and control risks.



The Sustainability and Finance teams provide support with the consideration and assessment of potential risks as well as functional support in the implementation of the Group Risk Management Process.

Figure 2. Risk Governance Structure

RISK MANAGEMENT

INTRODUCTION

Risk Management is defined by the TCFD as “a set of processes that are carried out by an organisation’s Board and management to support the achievement of the organisation’s objectives by addressing its risks and managing the combined potential impact of those risks.”

In reflection of the Risk Management recommendations shown right, we have outlined here our Risk Management Process (Figure 3) and detailed each of its core components as they relate to the framework.

TCFD DISCLOSURE RECOMMENDATIONS - RISK MANAGEMENT

- a. Describe the organisation’s processes for identifying and assessing climate-related risks.
- b. Describe the organisation’s processes for managing climate-related risks.
- c. Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation’s overall risk management

1 IDENTIFY

We have used the following sources in an effort to identify potentially relevant climate-related risks and opportunities:

- Academic publications and literature related to climate change
- Scientific assessments and data
- Policy guidance and public sector research
- Industry specific reports and developments
- Regional specific reports and developments
- References from other related standards

Assessments of materiality are made against possible risks and opportunities to warrant their disclosure in this report. The absence of a specified risk here does not preclude that risk from assessment and may well be addressed strategically at local levels. Instead material risks are presented from a Group perspective.



OUR RISK MANAGEMENT PROCESS

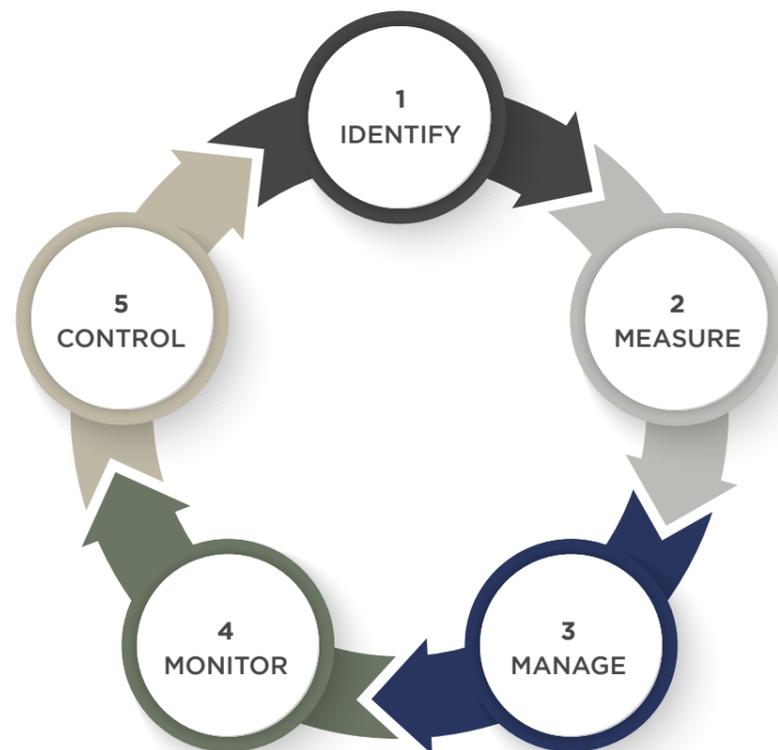


Figure 3. Risk Management Process



2 MEASURE

We have elected to consider identified risks against the 3 climate scenarios defined in figure 4. For each we explore the time horizon, regional exposure and potential impact as it pertains to the strategic objectives of the business when assessed against each of the scenarios.

CONSIDERED CLIMATE SCENARIOS

1. 'Immediate Action - Smooth Transition'

Explanation

This scenario follows an immediate but orderly transition to Net Zero. It assumes decisive and coordinated action intended to keep the global mean temperature to warming within 1.5°C.

Interpretation

- Transition risks: Moderate
- Physical risks: Low

2. 'Delayed Action - Disruptive Transition'

Explanation

This scenario follows a disorderly transition where delayed and uncoordinated global efforts prevent emissions reductions until 2030. From 2030 aggressive responses are required to keep the global mean temperature to within 2.0°C.

Interpretation

- Transition risks: High
- Physical risks: Moderate

3. 'Existing Policies - Business as Usual'

Explanation

This scenario follows a business as usual approach where no further policies are introduced to address climate change. The global mean temperature will rise to more than 3.0°C.

Interpretation

- Transition risks: Low
- Physical risks: High

Figure 4. Climate Scenarios

Our Approach to Scenario Analysis and Selection

In order to assess our resilience to plausible climate futures, three scenarios were chosen, as described in figure 4. These allowed us to explore the range of impacts different emission pathways would have on our material risks and opportunities.

All three scenarios are based on the 'Middle-of-the-Road' Shared Socioeconomic Pathway (SSP2). This pathway does not markedly shift from historical patterns, where both global and local institutions make slow progress towards the Sustainable Development Goals.

The SSP framework is widely used in the climate change research community in order to facilitate the integrated analysis of future climate impacts, vulnerabilities, adaptation, and mitigation. External data from the REMIND-MAGPIE model was used, as this is the marker Integrated Assessment Model for SSP2 and is representative of the broader developments for this pathway.

The variation between our three scenarios comes from the level of policy coordination over the short and long term, as well as technology availability.

These scenarios were selected in order to capture a range of assumptions about uncertain futures. Two of our scenarios meet the Paris Agreement target of <2°C by 2100, but compare the effects of a smooth and delayed transition. Our third scenario leads to a hot house world where emissions continue to rise into the long term.

Time Horizons

For each of the assessed risks and opportunities we have compared their likely consequence across three time horizons between 2023 and 2050.

1. Short Term: 2023 - 2030
2. Medium Term: 2030 - 2040
3. Long Term: 2040 - 2050

With respect to the listed horizons we have sought to use independent data and modelling as more reliable indicators of possible effects. However the consequences of climate change still carry a high degree of uncertainty and are not anticipated to be felt in a linear fashion. As data and models improve new assessments and revisions will be made and the materiality of different risk classes are likely to change.

Regional Exposure

The significance of risks and opportunities have been broadly assessed against our five major operating regions, namely: New Zealand, Australia, Asia, The Americas and Europe. This is reflective of our organisational and financial exposure to these regions relative to our major bases of operation. Some regions thereby carry a higher degree of generalisation given their geographic dispersion (namely Asia, the Americas, and Europe).

Impact

The assessment of impact is provided on a basis of five different tiers ranging from low through to high (see tables 2 and 3). We are in the process of developing quantitative and financial assessments of stated risks. These will be shared as part of our 2024 Climate Related Disclosures reporting.



3 MANAGE

The management of climate-related risks and opportunities are considered individually against the Group's Risk Management framework and collectively through strategic response. Strategic elements outlined in the subsequent section, reflect how climate-related risks and opportunities are addressed in a manner that supports the organisation's climate resilience. Specific tactical responses are overseen by management and implemented by functional departments of the business.

4 MONITOR

Identified risks will be reviewed at least annually in line with the reporting cycle. Detailed scenario analysis is used to assess whether current responses and controls are adequate with respect to the developing impact of each disclosed risk and opportunity.

5 CONTROL

The control element provides the resource and capability to deliver all other core functions of the risk management process along with determination of strategic responses. Efforts to identify, standards to measure, projects to manage and conditions against which to monitor are all formulated within risk management control. Our existing and well-practiced risk management processes are critical here to the resilience and adaptability of the organisation to climate-related and other business risks.

STRATEGY

INTRODUCTION

TCFD defines strategy as “an organisation’s desired future state. An organisation’s strategy establishes a foundation against which it can monitor and measure its progress in reaching that desired state. Strategy formulation generally involves establishing the purpose and scope of the organisation’s activities and the nature of its business, taking into account the risks and opportunities it faces and the environment in which it operates”. It is recommended that organisations describe the impact of material risks and opportunities as well as their strategies towards resilience compared against different scenarios.

TCFD DISCLOSURE RECOMMENDATIONS - STRATEGY

- Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term.
- Describe the impact of climate-related risks and opportunities on the organisation’s businesses, strategy and financial planning.
- Describe the resilience of the organisation’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

EXPLANATION



‘Material’ risks are those that could have a significant effect on an organisation’s operations and/or financial planning if not properly managed. ‘Material’ opportunities are those which carry the potential to significantly improve operational performance with respect to climate objectives as well as financial outcomes.

It is a function of good business strategy that all major risks are mitigated or managed and all major opportunities are explored and addressed.

Here we have identified 14 different climate-related risks and 4 opportunities as potentially material. For the assessment of each risk, consideration has been given to scenario, time horizon, regional exposures and possible impacts.

TRANSITION RISKS

Transition risks are those that emerge from efforts to transform global economies to low carbon in order to avert the worst effects of climate change. These risks fall under areas such as policy, legal, technological, market and reputation.

The rate of change and drivers behind it will have meaningful implications on where and how these risks materialise but many will have a financial component.

PHYSICAL RISKS

Physical risks are those that arise from both extreme weather events (acute risks) and from gradual shifts in climate conditions like increasing temperature, rainfall and sea levels (chronic risks).

They pose operational, financial and supply chain risks to organisations, and threats to life and livelihoods for individuals and communities (who are our team members and customers). These are risks arising from climate change.

Physical and transition risks tend to bear a somewhat inverse relationship. A more aggressive global climate response will likely impose more immediate transition risks to mitigate further physical risks. Whereas an inadequate global climate response will see lower transition risks (in the near term) followed by higher physical risks.

OPPORTUNITIES

Climate-related opportunities can exist from both the transition and physical standpoint, however given the nature of these two classes they fall most commonly under transition. That is because physical considerations especially acute risks like major storms or bushfires carry few upsides. It is possible certain industries may have opportunities in the emergence of chronic climate changes (i.e. increased precipitation for some crops).



MAINFREIGHT CLIMATE RISKS AND OPPORTUNITIES

TYPE	AREA	RISKS/OPPORTUNITIES	RISK IMPACT	SCALE
Transitional Risk	Policy & Legal	Increase in GHG pricing (through emissions trading schemes or carbon tax)	Increasing the cost of goods and raw materials most notably fuel	●
	Policy & Legal	Enhanced reporting requirements	Further organisational compliance obligations	●
	Policy & Legal	Policy uncertainty	Lack of direction, detail or delay in establishing appropriate policy impedes business decision making and stifles early investment	●
	Policy & Legal	Exposure to litigation	Increasing stakeholder litigation against companies demonstrating poor climate action	●
	Technology	Cost and potential for failure in new technology adoption	New technologies might prove unviable or exhaustively expensive	●
	Market	Changing customer preferences/loss of customers	Changing customer behaviour and preferences reduces sales activity across certain industries and organisations	●
	Market	Divergence in shareholder perspectives	Growing divides in opinion require greater mediation and management	●
	Reputational	Diminishing brand equity, stigmatisation of industries and boycotts	Fast dissemination of information and social networks facilitating quick Group organising enables stronger social campaigns and influence	●
Physical Risk	Acute	Wildfires/bushfires	Increasing frequency and severity of fire events causing damage and disruption to organisations, infrastructure, supply chains and communities	●
	Acute	Flooding	Increasing frequency and severity of flooding events causing damage and disruption to organisations, infrastructure, supply chains and communities	●
	Acute	Major storms	Increasing frequency and severity of major storms causing damage and disruptions to organisations, infrastructure, supply chains and communities	●
	Chronic	Increasing land and sea surface temperatures	Increasing land and sea surface temperatures exacerbate droughts, dry periods and associated fire events in certain geographies and frequency and severity of storms and flooding in others	●
	Chronic	Increase in precipitation	Changing seasonal climates disrupt established industry and infrastructure	●
	Chronic	Sea level rise	Increasing susceptibility of coastal and low lying areas to flooding and erosion	●
Opportunities	Policy & Legal	Early preparation and developed capability in areas of legislative attention	Low exposure to regulatory disruption and fast adaption enables gains in market share over slow to react competitors	●
	Technology	Fast adoption of new technologies	Early adopters of new technologies will receive more initial support, more market attention and have more data and learnings about the technology to apply when it scales	●
	Reputational	Early or fast movers towards climate response likely to receive a more enduring reputational boost	Consumer and public perceptions tend to last once established, active early movers are likely to obtain a larger and more lasting reputational lift relative to others that act (and catch up) later	●
	Acute and Chronic	Effective scenario analysis and business continuity planning enables market leading responses to major events	Fast responses and adaption provides a more reliable and resilient service that increasingly captures market share	●

Table 1.

RISK SCALE KEY



MAINFREIGHT TRANSITION RISKS AND OPPORTUNITIES

TYPE	AREA	RISK IMPACT	TIME HORIZON	SCENARIO 1 Immediate Action - Smooth Transition	SCENARIO 2 Delayed Action - Disruptive Transition	SCENARIO 3 Existing Policies - Business as Usual
Transitional Risk	Policy & Legal	Increase in GHG pricing	Short	●	●	●
			Medium	●	●	●
			Long	●	●	●
	Policy & Legal	Reporting requirements	Short	●	●	●
			Medium	●	●	●
			Long	●	●	●
	Policy & Legal	Policy uncertainty	Short	●	●	●
			Medium	●	●	●
			Long	●	●	●
	Policy & Legal	Exposure to litigation	Short	●	●	●
			Medium	●	●	●
			Long	●	●	●
	Technology	High Cost for alternatives	Short	●	●	●
			Medium	●	●	●
			Long	●	●	●
	Market	Changing preferences	Short	●	●	●
			Medium	●	●	●
			Long	●	●	●
Market	Divergence in shareholder perspectives	Short	●	●	●	
		Medium	●	●	●	
		Long	●	●	●	
Reputational	Diminishing brand equity, stigmatism of industries and boycotts	Short	●	●	●	
		Medium	●	●	●	
		Long	●	●	●	
Transitional Opportunities	Policy & Legal	A high degree of preparation and lower exposure to likely legislation enables market share gains	Short	●	●	●
			Medium	●	●	●
			Long	●	●	●
	Technology	Fast adoption of new technologies	Short	●	●	●
			Medium	●	●	●
			Long	●	●	●
	Reputational	Early or fast movers towards climate response likely to receive a more enduring reputational boost	Short	●	●	●
			Medium	●	●	●
			Long	●	●	●

EXPLANATION

Globally; shipping, logistics and transportation represents a major source of greenhouse gas emissions contributing to climate change and one which continues to grow. As a result the wider industry features heavily in many national transition strategies towards climate action. Our expectation, supported by the analysis is that transition risks will be highly significant especially over the short and medium time horizons.

Scenario analysis indicates transition risks would most strongly be felt in Scenario 2 (Disruptive Transition), followed by Scenario 1 (Smooth Transition), with lesser effect but not significantly so in Scenario 3 (Business as Usual). Time Horizons summarised across the 3 scenarios indicate the highest overall risk in the medium term followed by the longer term. Refer Figure 4. Climate Scenarios.

Interestingly we see different behaviour and exposure of certain transition risks between the Scenarios and time horizons. Policy and Legal transition risks are largely unfelt by Scenario 3 but are significant for Scenarios 1 and 2 over the short and medium term. Conversely Market and Reputational transition risks incurred over the medium and long time horizons are borne most heavily by Scenarios 2 and 3. The implication is that where governments fail to act at least some elements of markets and social pressures will fill the void and apply their own risks and opportunities.

Transition opportunities vary somewhat from risks, they feature less throughout all time horizons for Scenario 3 but slightly more so over the longer term. Transition opportunities exist in similar proportions for both Scenarios 1 and 2 but are observed sooner and maintained more steadily across time horizons over Scenario 1. Scenario 2 experiences transition opportunities more heavily in the medium time horizon.

Political and Legal transition opportunities emerge earlier and to greater effect in the short and medium terms. Technological transition opportunities bear greater benefit in the medium and longer terms and Reputational opportunities are felt relatively consistently across time horizons but slightly more centralised around the point of coordinated response (short term for Scenario 1 and medium term for Scenario 2).

RISK FACTOR



Table 2.

MAINFREIGHT PHYSICAL RISKS AND OPPORTUNITIES

TYPE	AREA	RISK IMPACT	TIME HORIZON	SCENARIO 1 Immediate Action - Smooth Transition	SCENARIO 2 Delayed Action - Disruptive Transition	SCENARIO 3 Existing Policies - Business as Usual
Physical Risk	Acute	Wildfires / bushfires	Short Term	●	●	●
			Medium Term	●	●	●
			Long Term	●	●	●
	Acute	Flooding	Short Term	●	●	●
			Medium Term	●	●	●
			Long Term	●	●	●
	Acute	Major storms	Short Term	●	●	●
			Medium Term	●	●	●
			Long Term	●	●	●
	Chronic	Droughts	Short Term	●	●	●
			Medium Term	●	●	●
			Long Term	●	●	●
	Chronic	Increase in precipitation	Short Term	●	●	●
			Medium Term	●	●	●
			Long Term	●	●	●
Chronic	Sea level rise	Short Term	●	●	●	
		Medium Term	●	●	●	
		Long Term	●	●	●	
Physical Opportunities	Acute & Chronic	Effective scenario analysis and business continuity planning enables market leading responses to major events	Short Term	●	●	●
			Medium Term	●	●	●
			Long Term	●	●	●

EXPLANATION

Physical risks considered here and especially in respect to Scenario 3 (Business as Usual) pose major risks to people, communities and economies. Their wider societal consequences arguably dwarf transition risks associated with efforts to thwart global average temperature increases beyond 1.5°C.

However due to the dispersed and resilient composition of our operations globally, physical risks carry a lower degree of direct materiality than transition risks in this assessment.

As might be anticipated the most extreme effects of physical risks develop over time in line with global average temperature increases. These are exacerbated somewhat in Scenario 2 (Disruptive Transition) and significantly in Scenario 3. Physical opportunities aligned with the capacity to capture greater market share due to preparedness, resilience and adaptability are also more prevalent with the worst global outcomes.

Consideration of the relative risks and opportunities raised here follow independent scientific modelling detailed in appendix 2.



Table 3.



TRANSITION PLANNING

The provided scenario analysis reflects the challenge and uncertainty but also opportunity posed by climate change and climate responses. Our approach, fundamentally driven by our 100-year vision, is consistent with managing for all scenarios and time horizons based on the current outlook. Where signals lend themselves towards one scenario over others, pace and priority will be adjusted accordingly.

By preparing for a low carbon transition while leveraging the flexibility and resilience of our network, we are well placed to respond quickly to both changing demands and disruptive events.

On balance, we assess our position in respect to climate risks and opportunities as net positive where our preparation, resilience and adaptability serve to improve our competitive offering.

Our Response

Acting today

Mainfreight is actively working to decarbonise core elements of the business and facilitating understanding of value chain emissions to share that journey with our customers.

Our broader Sustainability Strategy including climate response is outlined in our **Sustainability Overview** available [here](#), there are three key areas of focus:

Transportation:

- Maintaining a modern fleet (less than half the age of the NZ heavy fleet average)
- Supporting multi-modal (significant integration and support for rail and coastal)
- Electrifying the fleet (20+ vehicles so far, more to come)
- Getting closer to customers through network intensification
- Providing advanced emissions analytics to customers

Infrastructure:

- Modern energy efficient builds (including Greenstar 5)
- Significant solar installations with more on the way (over 6MW)
- Large site batteries (5MWh)
- EV charging for small and heavy fleet (from 7kW up to 180kW)

Operations:

- Electrification of our materials handling equipment/forklifts (now at over 80%)
- Transition of our small fleet to electric and hybrid (now at over 43%)

Adapting for tomorrow

We recognise that the design decisions we make today will determine the operational capabilities we have tomorrow and although we can't predict the future we can prepare for it.

Our new Mainfreight facility in Dandenong South, Australia provides a good example of this future oriented design, incorporating;

Energy resilience:

- Major solar generation - 1.5MW
- Site Battery Energy Storage System (BESS) - 3MWh
- New sites able to operate as much as 85% off grid
- New energy management systems supporting continuous improvements in energy efficiency

Water resilience:

- Rooftop designed for rainwater capture (42,000 square metre catchment)
- Significant water storage (1.6million litres)
- Filtration to drinking water (site operates over 95% water self-sufficient)
- Greywater capture and reuse (for truck wash and ablutions while reducing waste water)

In recent years our operations have sought to serve customers affected by major floods, bushfires, global supply chain disruptions, earthquakes and a pandemic. Our capacity to respond quickly and re-establish critical supply chains has seen our business grow bigger, better and more resilient.



SAMPLE CLIMATE RISKS & OPPORTUNITIES BY REGION

A more detailed assessment of regional risks and opportunities will be explored in our Climate Related Disclosures reporting



METRICS & TARGETS

INTRODUCTION

The metrics disclosed here provide key inputs to our risk management process across our Measure, Manage and Monitor functions. Metrics and targets also support our strategic assessments of risks and opportunities and appropriate pathways to best addressing them relative to their priority and proximity.

The TCFD recommends that GHG emission measures are included within organisational disclosures. We report and independently verify our global GHG emissions inventory in line with the ISO 14064-1: 2018 standard. ISO 14064-1: 2018 follows a similar but extended breakdown on the original GHG Protocol methodology as below.

TCFD DISCLOSURE RECOMMENDATIONS - GOVERNANCE

- a. Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.
- b. Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
- c. Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.

GHG PROTOCOL	ISO 14064-1: 2018
Scope 1 - Direct GHG emissions	Category 1 - Direct GHG emissions and removals
Scope 2 - Indirect emissions from purchased electricity, heat, cooling or steam	Category 2 - Indirect GHG emissions from imported energy
Scope 3 - Other indirect GHG emissions (Corporate Value Chain emissions)	Category 3 - Indirect GHG emissions from transportation
	Category 4 - Indirect GHG emissions from products used by the organisation
	Category 5 - Indirect GHG emissions associated with the use of products from the organisation
	Category 6 - Indirect GHG emissions from other sources

Table 4.

OUR MEASURES AND PROGRESS

MAINFREIGHT EMISSIONS (TONNES CO2-E)

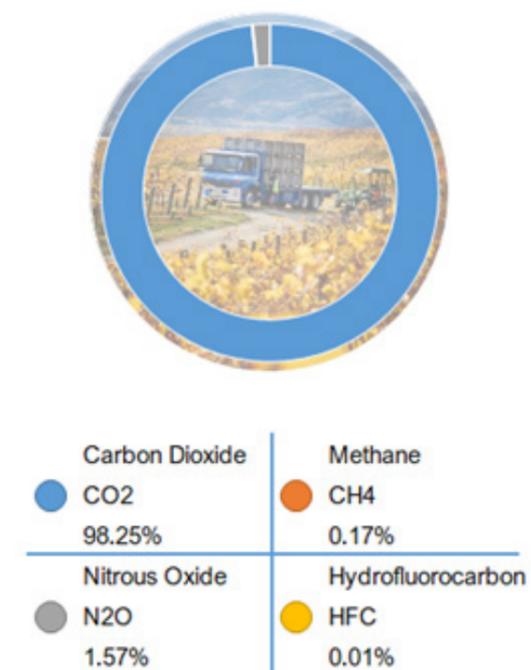
CATEGORY	CATEGORY DESCRIPTION	2022	2021	2020
Category 1	Direct GHG emissions and removals	239,241	278,964	263,759
Category 2	Indirect GHG emissions from imported energy	18,385	14,865	15,414
Category 3	Indirect GHG emissions from transportation	1,170,369	1,309,744	1,115,134
Category 4	Indirect GHG emissions from products used by the organisation	68,501	76,389	74,678
Category 5	Indirect GHG emissions associated with the use of products from the organisation	-	-	-
Category 6	Indirect GHG emissions from other sources	131	137	61
TOTAL		1,496,627	1,680,099	1,469,046

Table 5.

Emissions Category



Category 1 Gas Breakdown



MODE EMISSIONS (TONNES CO2-E)

SOURCE	2022	2021	2020
Road	461,391	464,327	460,063
Rail	10,233	9,603	7,038
Air	818,980	943,337	706,239
Sea	163,960	226,769	261,739
Total Customer Freight Emissions (Total of Road, Rail, Air, Sea)	1,454,564	1,644,036	1,435,079
Direct Operational Emissions	42,063	36,063	33,967
Total Emissions	1,496,627	1,680,099	1,469,046

Table 6.

INTENSITY FACTORS

FACTORS	2022	2021	2020
Tonnes CO2-e per Mainfreight Team Member[1]	131.62	161.97	164.69
Tonnes CO2-e per \$million in Revenue[1]	236.39	329.43	436.89
Kilograms CO2-e per tonne Domestic Freight[2]	49.79	49.65	58.46
Tonnes CO2-e per tonne of Air Freight [2]	1.22	1.20	1.21
Tonnes CO2-e per TEU of Sea freight[2]	0.07	0.09	0.12

[1] of Total Co2-e emissions
 [2] of mode specific emissions by Categories 1 & 3

Our full GHG reports for the years 2022, 2021 and 2020 are all publicly available on our website here: <https://www.mainfreight.com/global/en-nz/investor/reports-library>

Table 7.

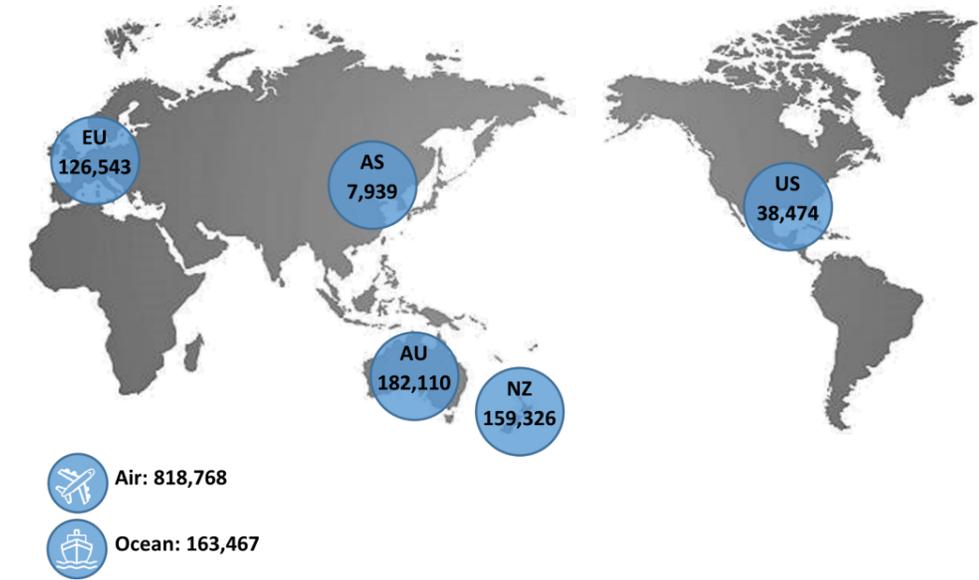


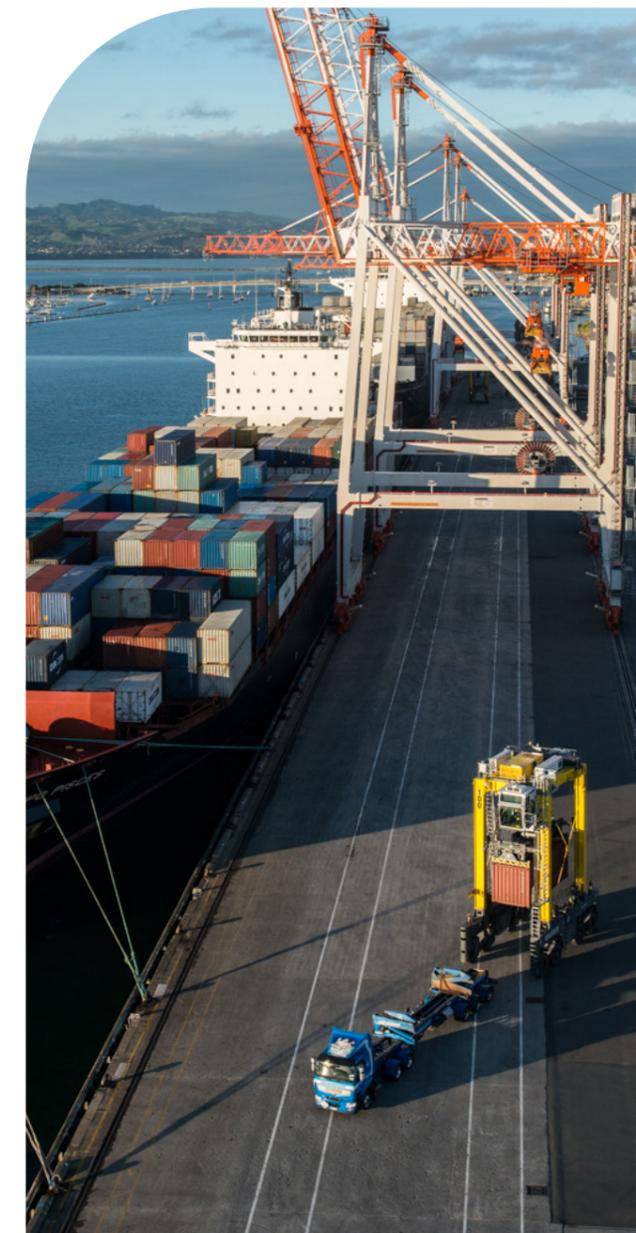
Figure 5. Emissions by Region of Origin

OUR TARGETS

We are in the process of considering applicable emission targets for the Group, for now we remain committed to continuously improving on our stated emission intensity figures.

NEXT STEPS

- We will continue to capture, investigate and verify our GHG emissions data and metrics.
- Assessments of materiality, changes in risk weightings and the emergence and consideration of new risks and opportunities will all be examined annually in accordance with our Risk Management Process.
- Developing scientific research and climate data will be incorporated where appropriate into adaptations of our scenario analysis.
- We expect to develop and define more specific and stringent targets in future iterations.
- We are well progressed in aligning to Climate-related Reporting (Aotearoa New Zealand Climate Standards) and will publish our first full report in 2024.



APPENDICES

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APPENDIX 2: SCENARIO PARAMETERS

SCENARIO	SMOOTH	DELAYED	BAU
Action to reduce emissions	Immediate	Delayed	None
Policies to achieve low-carbon economy	High Coordination	Regional Variation	No new policies enacted
Global Mean Temperature increase by 2100	1.5°C	1.8°C	3.0°C
Emissions	Smooth transition to net zero by 2050	Delayed and more severe transition to net zero by 2060	Start to decrease from 2090
Transition Risks	Moderate	Medium-High	Low
Physical Risks	Low	Medium	High
Short Term Temperature (2030)	1.42°C	1.40°C	1.40°C
Medium Term Temperature (2040)	1.54°C	1.66°C	1.65°C
Long Term Temperature (2050)	1.58°C	1.79°C	1.92°C
TRENDS TO 2050			
Transportation Energy	Starts to decline	Declines from 2030	Continually increases
Transportation Energy Mix	Transitions towards electric and lower carbon gases	Less rapid transition to electric and low carbon gas, remains reliant on oil	Remains reliant on oil with a small introduction of lower carbon gases and electricity
Investment in Energy Supply	Continually increases with reduced reliance on fossil extraction and an increase of electricity	Continually increases with reduced reliance on fossil extraction and an increase of electricity	Continually increases remaining reliant on fossil extraction
Carbon Price	Steady increase from 2020	Steep increase from 2030	Consistently very low
Carbon Sequestration	Most energy production emissions are captured as well as using land-based sinks	Most energy production emissions are captured as well as using land-based sinks	Relies on land-based sinks (e.g. afforestation, soil carbon enhancement, biochar)
Scenario Explorer Data	Net Zero 2050 (with REMIND-MAgPIE 3.0-4.4 inputs)	Net Zero 2050 (with REMIND-MAgPIE 3.0-4.4 inputs)	Net Zero 2050 (with REMIND-MAgPIE 3.0-4.4 inputs)
Climate Impact Explorer Data	NGFS net-zero 2050	NGFS Delayed 2°C	NGFS current policies
All scenario data was accessed through:			
1. NGFS Scenario Explorer hosted by IIASA			
2. Climate Impact Explorer by Climate Analytics			

