



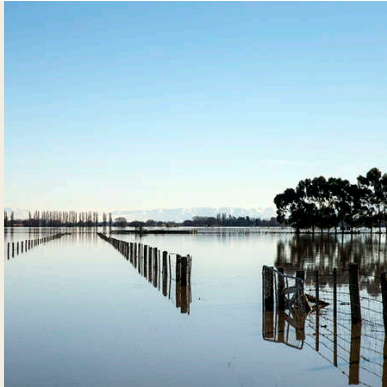
# Carbon Footprint

2024

**20**  
YEARS

INVESTING  
FOR FUTURE  
GENERATIONS

# Carbon Footprint 2024



## INTRODUCTION

The Guardians of New Zealand Superannuation ('Guardians') has published an annual Carbon Footprint for the New Zealand Super Fund ('Fund') since 2017.

This Carbon Footprint Report details the approach, methodology, assumptions and limitations specific to the Fund's carbon emissions and targets. It should be read in conjunction with our standalone Climate Change Report which summarises the wider context of the Guardians' climate-related governance, strategy, risk management and metrics – along with a glossary of key terms.<sup>1</sup>

The Fund's approach to carbon foot printing (Box 2), associated assumptions and methodologies, and the resulting outputs (Table 1; Table 2) have been externally assured (refer to the Independent Assurance Report for the full details).<sup>2</sup> The Guardians' wider Climate Change Report 2024 is out of scope of the external assurance engagement.

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<sup>1</sup> [nzsuperfund.nz/how-we-invest/sustainable-finance/climate-change/](https://nzsuperfund.nz/how-we-invest/sustainable-finance/climate-change/)

<sup>2</sup> According to the International Standard on Assurance Engagements (New Zealand) 3000 (Revised)

Under our climate change investment strategy and our commitment that the Fund will be net zero by 2050, the Guardians is reducing the Fund's exposure to greenhouse gases (GHG). We use 'carbon' to refer to all major GHGs and determine our exposure as both current carbon emissions intensity ('emissions intensity'), and potential future emissions from fossil fuel reserves ('fossil fuel reserves').

Our short-term targets to June 2025 are to reduce the potential emissions from fossil fuel reserves held by the Fund by at least 80% and to reduce the carbon emissions intensity of the Fund by at least 40%. We achieved

these targets ahead of time and opted to continue seeking opportunities for further reductions.

The methodology we have used to reduce the Fund's carbon footprint is set out in Box 1. Box 2 outlines the main metrics used for the calculations.

We report on the Fund's carbon footprint annually to track our progress. Our climate change investment strategy is set for the long-term, and there may be volatility in the footprint from year to year. It is the trend in the footprint relative to our targets over time that is most important.

The **estimated reduction in the Fund's carbon footprint (as at 30 June 2024)** is:

- **-64.4%** as measured by emissions intensity (target -40%); and
- **-98.2%** as measured by fossil fuel reserves (target -80%).

These percentage reductions are measured against the Fund's unadjusted Reference Portfolio (as at 30 June 2024).<sup>1</sup>

Estimated reductions in the previous year (as at 30 June 2023) were -59.7% and -98.8%, respectively.

<sup>1</sup> The term 'Unadjusted Reference Portfolio' links back to the benchmark indices in use as the Fund's Reference Portfolio when we established our current carbon emissions reduction targets in 2020. That benchmark comprises a combination of the MSCI All Country World Investable Market Index (ACWI IMI) and the NZX50. We consider what those original benchmark indices own at each subsequent year end (30 June 2024 in this latest case) as the 'unadjusted Reference Portfolio' - only for the purposes of a baseline against which to compare performance of our actual portfolio on carbon metrics and targets.

**TABLE 1: ANNUAL EMISSIONS INTENSITY AND FOSSIL FUEL RESERVES OF THE FUND, RELATIVE TO THE UNADJUSTED REFERENCE PORTFOLIO**

CARBON FOOTPRINT METRICS <sup>1</sup>						
Year Ending:	30 June 2019	30 June 2020	30 June 2021	30 June 2022	30 June 2023	30 June 2024
Emissions Intensity (tonnes CO <sub>2</sub> e / \$USm in sales) <sup>2</sup>						
Unadjusted Reference Portfolio	230.7	212.9	207.1	194.8	175.8	167.2
NZ Super Fund	131.8	127.6	109.5	99.4	70.9	59.6
% reduction	<b>-42.9%</b>	<b>-40.0%</b>	<b>-47.1%</b>	<b>-49.0%</b>	<b>-59.7%</b>	<b>-64.4%</b>
Potential emissions from fossil fuel reserves per amount invested (tonnes CO <sub>2</sub> e / \$USm NAV) <sup>3</sup>						
Unadjusted Reference Portfolio	2,740	2,324	1,663	1,524	1,331	1,247
NZ Super Fund	1,319	233	106	134	16	23
% reduction	<b>-51.9%</b>	<b>-90.0%</b>	<b>-93.6%</b>	<b>-91.2%</b>	<b>-98.8%</b>	<b>-98.2%</b>

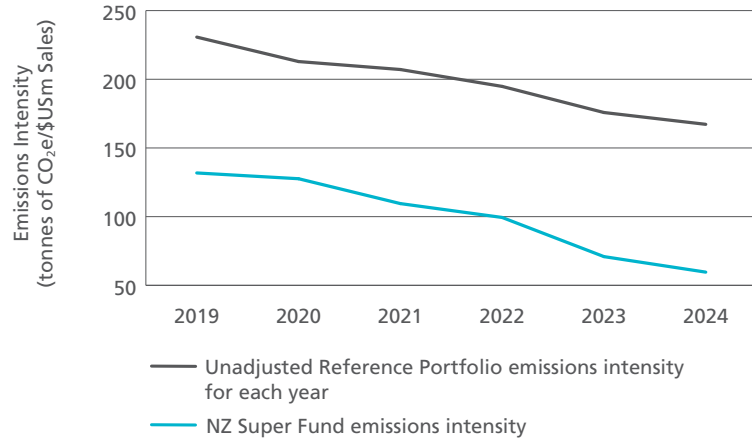
1 Refer to Box 2 on definitions of reported metrics.

2 GHGs are usually measured as tonnes 'carbon dioxide equivalent (tCO<sub>2</sub>e)'. For simplicity's sake, we use the word 'carbon' to refer to all major GHGs. See [msci.com/www/research-paper/carbon-footprinting-101-a/0229050187](https://www.msci.com/www/research-paper/carbon-footprinting-101-a/0229050187) for formulas for carbon metrics.

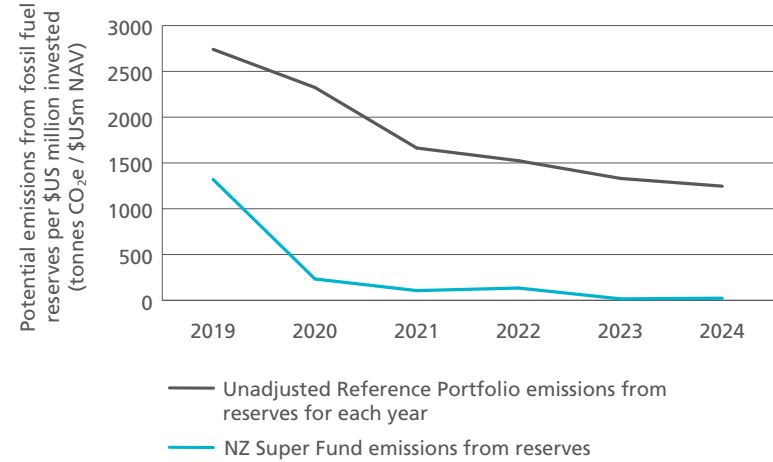
3 For the sake of clarity, we use the exchange rates as of 30 June for the financial year end, rather than a twelve-month average to convert currencies.

4 Net Asset Value (NAV), including NAV of nil positions.

### NZ Super Fund - Emissions Intensity



### NZ Super Fund - Potential emissions from fossil fuel reserves



Consistent with New Zealand's other Crown Financial Institutions, we also provide figures for the reduction in the Fund's carbon intensity and fossil fuel reserves relative to a 2019 baseline - defined as the carbon footprint of the unadjusted Reference Portfolio in 2019.

**TABLE 2: 2024 EMISSIONS INTENSITY AND POTENTIAL EMISSIONS FROM FOSSIL FUEL RESERVES RELATIVE TO UNADJUSTED REFERENCE PORTFOLIO (2019 BASELINE) - CFI COMPARISON MEASURE**

Emissions Intensity (tonnes of CO <sub>2</sub> e / \$USm sales)	
Unadjusted Reference Portfolio in 2019	230.7
NZ Super Fund (as at 30 June 2024)	59.6
<b>% Reduction</b>	<b>-74.2%</b>
Potential emissions from fossil fuel reserves per \$USm invested (tonnes of CO <sub>2</sub> e / \$USm NAV)	
Unadjusted Reference Portfolio in 2019	2,740
NZ Super Fund (as at 30 June 2024)	23.0
<b>% Reduction</b>	<b>-99.2%</b>

## APPROACH AND METHODOLOGY

### BOX 1: NZ SUPER FUND EMISSIONS REDUCTION METHODOLOGY

#### Emissions reduction methodology for passive physical listed global equities

##### Emissions Intensity

The Guardians transitioned the benchmark indices of the Fund's Reference Portfolio in 2022/23 to the MSCI World Climate Paris Aligned Index and the MSCI EM Climate Paris Aligned Index.

Relative to their equivalent market cap weighted parents, the new Climate Paris Aligned indices will:

- *reduce GHG emissions intensity by 50%*
- *reduce GHG emissions intensity by 10% each year until 2050*
- *integrate Scope 3 emissions into targets.*

As well as improving the overall ESG profile of the Fund, these indices should ensure that the Fund's passive equity positions are better aligned with net zero objectives.

##### Potential Emissions from Fossil Fuel Reserves

We aim for a 100% reduction in fossil fuel reserves within the Fund's global listed equity portfolio in order to exceed our Fund-wide target of an 80% reduction in reserves. The Climate Paris Aligned indices reduce, but do not fully eliminate exposures to fossil fuel reserves. As such, we continue to apply a custom overlay to screen and remove any remaining holdings with exposure to potential emissions from fossil fuel reserves, in line with our targets.

## BOX 2: NZ SUPER FUND CARBON FOOT PRINTING APPROACH

### Emmissions assessment approach - with reference to the GHG Protocol

The Fund has made reference to the Greenhouse Gas Protocol's (GHG Protocol) approach to measuring our emissions. The GHG Protocol provides standards, guidance, tools and training for business and government to measure and manage GHG emissions.

The Fund continues to make reference to the GHG Protocol methodology for FY2024, to ensure consistency with previous reporting periods and avoid introducing methodological changes which would have implications for our 2025 emissions reduction targets.

We will consider alternative methodologies (for example, from the Partnership for Carbon Accounting Financials) as part of reviewing and updating our next set of carbon reduction targets.

We rely on external data from a range of sources for calculating the potential emissions from fossil fuel reserves and emission intensity of our investments. There are certain inherent limitations with this external data, and the availability, quality, relevance, and accuracy of the data can affect our calculated emissions results. Due to our reliance on external data, and external data providers' controls in producing the data, there are risks regarding the lack of completeness of data, scientific uncertainty, unverified data sources, and complexity and judgement involved when the emissions data is sourced.

## LISTED PORTFOLIO

We obtained MSCI ESG Research's footprint calculations for the Fund's actual listed equities (including active and passive listed physical equities, and passive equity derivative exposures), which accounts for 69.9% of the Fund's holdings by asset value at 30 June 2024 (*compared with 67.0% of Fund holdings in 2023*).

Our equity derivative exposures are treated as equivalent in emissions intensity and fossil fuel reserves as their underlying physical equities equivalents, even though there is not necessarily any underlying holding of physical equities.

For our long holdings of listed equities, the MSCI ESG Research data covered 99.6% (by market value), *compared with 98.7% in 2023*, with 0.4% (1.3%) not attributable. The data used comprised company-reported emissions for 95.9% of the portfolio (92.0%), and model-based estimates of emissions for the remaining 3.7% (6.8%).

For our short holdings of listed equities, the MSCI ESG Research data covered 100% (by market value), *compared to 99.9% in 2023*. The data used comprised company-reported emissions for 97.6% of the portfolio (96.9%), and model-based estimates of emissions for 2.4% (3.0%).

MSCI ESG Research data is subject to timing lags meaning data included in the footprint calculations may not directly correlate to our 30 June year end.

### **Treatment of Short Positions**

We use the 'Carbon Net Financial Exposure Approach' from the Institutional Investors Group on Climate Change (IIGCC) to short positions, whereby the emissions and reserves from the long and short portfolios are netted off to show the Fund's portfolio exposure to net carbon financial risk.<sup>3</sup>

We continue to monitor evolving best practices for measuring and reporting on derivative positions and may adjust our approach in the future.

### **UNLISTED PORTFOLIO**

Where carbon data is available, we obtain information on our unlisted assets directly from our external managers or asset operators. This year we were able to collect data from investees representing approximately 14% of the Fund's total holdings by asset value, including from our Kaingaroa Timberland asset representing 2.6%.

For the remaining unlisted assets where no data was available (3.6% total holdings by asset value), the emissions intensity and fossil fuel reserves are

<sup>3</sup> [https://139838633.fs1.hubspotusercontent-eu1.net/hubfs/139838633/Past\\_resource/uploads/IIGCC\\_Incorporating\\_Derivatives\\_May\\_2022.pdf](https://139838633.fs1.hubspotusercontent-eu1.net/hubfs/139838633/Past_resource/uploads/IIGCC_Incorporating_Derivatives_May_2022.pdf)

proxied. We proxied other unlisted timber assets (0.9%) based on Kaingaroa Timberland's FY2023 emission profile, and all other assets (e.g. Real Estate) using the Reference Portfolio's averages for the most relevant sector to the asset - as per the Global Industry Classification Standard.

When a holding is invested in multiple assets or when the underlying assets are not known, we proxy it against the overall average emissions intensity and fossil fuel reserves. We infer fossil fuel reserves, emissions intensity and revenue for individual assets by viewing them as some combination of equities and bonds/cash. We determine this mix from the proxy system used to control portfolio risk by the Asset Allocation team, thus ensuring consistency.

### **ASSETS EXCLUDED OR ASSUMED TO HAVE NIL EMISSIONS**

Our bond investments are considered to have no carbon footprint (and no revenue) assigned. This is based on the market capitalisation approach as set out in TCFD guidance, where emissions are allocated based on equity ownership.<sup>4</sup>

In this approach, bonds are not allocated fossil fuel reserves, emissions and revenue as there is no equity ownership. Additionally, equity positions taken as part of our strategic tilting program and other market neutral strategies, as well as life settlements, natural catastrophe insurance, active collateral,

<sup>4</sup> [tcfddhub.org/wp-content/uploads/2022/04/Table-3.pdf](https://tcfddhub.org/wp-content/uploads/2022/04/Table-3.pdf)



currency exposure, and wireless spectrum (15.6% of the Fund in total) have been excluded from this analysis for the purpose of calculating carbon intensity (and they are treated as having a zero fossil fuel reserves for the purposes of our fossil fuel reserve calculation – see the Fossil Fuel Reserve Calculation section for further details).

We have excluded these as the strategies meet one of the following criteria: (1) they are net-neutral over the long-term. That is, they take both long and short positions which we expect to net to zero over the long-term. If we do not remove these positions, they will cause our footprint to swing significantly based on short term positions which do not reflect our long term exposure; (2) the strategies are constructed of fixed income products, which our methodology does not attribute emissions to; or (3) the investment has no clear carbon footprint.

### CALCULATION

Total portfolio foot printing is a combination of our listed portfolio emissions (calculated by MSCI), obtained carbon data from unlisted assets, and proxy-based estimates.

In calculating emissions, revenue and potential emissions from fossil fuel reserves in the listed portfolio, we assume that these are all attributable to equities and not fixed income or net neutral investments.

### DATA AND DEFINITIONS

We use 'carbon' to refer to all major GHGs, collectively measured as tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e).

Our calculated footprint only includes Scope 1 and Scope 2 emissions of the Fund's investees. Scope 3 emissions are not currently included in footprint calculations, other than for fossil fuel reserves, since Scope 3 data quality and estimation methodologies are still evolving.

- **Scope 1** emissions are the direct emissions from a company's own production or controlled by the company. It includes emissions from combustion in the company's own boilers, furnaces and vehicles, as well as fugitive emissions.
- **Scope 2** emissions are the emissions from the production of electricity, heat or steam used by that company (including the transmission and distribution losses associated with some purchased entities).
- **Scope 3** emissions are the indirect emissions from the production of goods and services purchased by that company or other indirect emissions that occur from sources not owned or controlled by the company. It includes the emissions of contractors and other outsourced activities, such as third-party deliveries, business travel and the ultimate use of the product or service. Thus, it covers upstream and downstream emissions.<sup>5</sup>

The GHG Protocol provides guidance on appropriate source and use of global warming potential (GWP) rates and emission factors.<sup>6</sup> MSCI considers the GHG Protocol as the basis of their footprinting calculations, including use of the following GWP rates in their estimation of GHG emissions:<sup>7</sup>

Greenhouse Gas	100-year Global Warming Potential (CO2e)
Carbon Dioxide (CO2)	1
Methane	28
Nitrous Oxide (N2O)	265
Hydrofluorocarbons (HFCs)	4 – 12,400
Perfluorocarbons (PFCs)	6,630 – 17,400
Sulphur Hexafluoride (SF6)	23,500
Nitrogen Trifluoride (NF3)	16,100

5 MSCI ESG Research

6 GHG Protocol - Inventory Guidance ([https://ghgprotocol.org/sites/default/files/Guidance\\_Handbook\\_2019\\_FINAL.pdf](https://ghgprotocol.org/sites/default/files/Guidance_Handbook_2019_FINAL.pdf))

7 MSCI ESG Research, formulas for carbon metrics ([msci.com/www/research-paper/carbon-footprinting-101-a/0229050187](https://www.msci.com/research-paper/carbon-footprinting-101-a/0229050187))

MSCI applies emissions factors to estimate emissions based on available activity data. These emissions factors are typically derived from relevant authoritative sources such as the Intergovernmental Panel on Climate Change (IPCC), US Environmental Protection Agency, etc.<sup>8</sup>

### Footprint Target Metrics Reported<sup>9</sup>

**Emissions Intensity:** measured tonnes CO2e/\$m sales = Tonnes of carbon emissions divided by US\$ million of company sales. This measures the portfolio in terms of carbon emissions per unit of output and provides a measure of the overall efficiency of the portfolio by comparing emissions to the economic activity that produces them. This metric is not as impacted by shifts in market valuations as approaches that measure emissions per dollar invested. The emissions/sales data of listed equities is derived from MSCI.

**Potential Emissions:** measures tonnes CO2e/\$m invested = Tonnes of carbon emissions divided by \$US million invested. This measures the carbon equivalent emissions stored in fossil fuel reserves that would be released if those fossil

8 MSCI ESG Research (2023). ESG Climate Change Metrics - Methodology and definitions (<https://support.msci.com/support/methodologies/climate-change-metrics/03553936309>)

9 MSCI ESG Research data is subject to timing lags meaning data included in the footprint calculations may not directly correlate to our 30 June year end.

fuel reserves were produced and used in the future, relative to dollars invested. Fossil fuel reserves include thermal coal, gas and oil. MSCI ESG Research calculates the potential emissions should all fossil fuel reserves be produced and burnt expressed as tonnes of CO2 equivalent using the Potsdam Institute methodology. This includes proved and probable fossil fuel reserves.

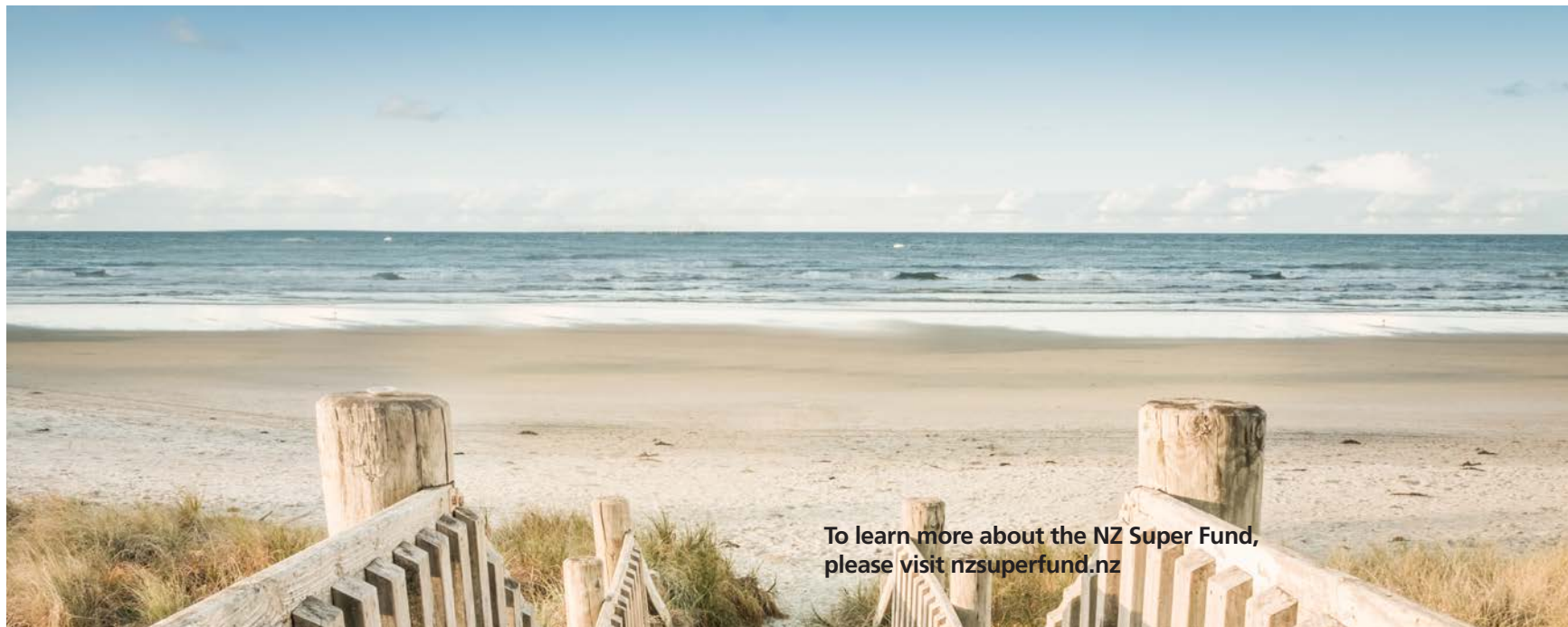
### **FOSSIL FUEL RESERVES CALCULATIONS**

For listed holdings, fossil fuel reserves data is received from MSCI. For our unlisted assets, we request that they report their fossil fuel reserves. Given our knowledge of the unlisted assets that report on their footprint, if they do not report, we assume that they own no fossil fuel reserves.

For assets with proxy-based estimates, we assumed that a company has no fossil fuel reserves unless it is proxied against the Overall category rather than a specific category (because we have deeper knowledge of these investments). In the latter case, fossil fuel reserves are proxied using the average fossil fuel reserves for our unadjusted Reference Portfolio, which was calculated by MSCI.

Portfolio footprints have been reported in US\$ terms to facilitate easier comparison both over time and to other international funds.





To learn more about the NZ Super Fund,  
please visit [nzsuperfund.nz](https://nzsuperfund.nz)