NZSUPERFUND
Te Kaitiaki Tahua Penihana Kaumātua o Aotearoa

Climate Change Report

2022

Prepared in accordance with the final recommendations of the Taskforce on Climate-related Financial Disclosures

Contents

Purpose

"We believe our Strategy can guide us in capturing opportunities from the forthcoming transition to a low-carbon global economy."

CEO STATEMENT – MATT WHINERAY

MATT WHINERAY
CEO

Climate change is upon us. The most recent report from the Stockholm Resilience Centre identified multiple, dangerous tipping points such as collapse of ice sheets and thawing of the permafrost, which could be triggered at current levels of warming, creating cascading and unpredictable impacts on our environment. The need for global, concerted action increases in urgency daily. In this context, the past year has seen the Guardians take profound steps towards our shift from a responsible investment approach to one of sustainable finance.

A key part of this shift is how we integrate the consideration of the financial risks and opportunities stemming from climate change into our investment decisions, as well as steps we can take as a long-term asset owner to support the transition to a more sustainable financial system.

In 2016 we launched our Climate Change Investment Strategy recognising that reducing the Fund's exposure to climate-related risks is good for the portfolio and consistent with our mandate to maximise returns without undue risk. We also believe our Strategy can guide us in capturing investment opportunities from the forthcoming transition to a low-carbon global economy.

In 2019 we decided to take a hard look at our responsible investment practices, and fundamentally reassess our approach. This multi-year review resulted in the Board agreeing to shift from a responsible investment approach to sustainable finance strategy and set a new sustainable finance goal for the Guardians:

The Guardians incorporates sustainability considerations into investment decision-making and supports the development of a sustainable financial system.

This means that we are now not only thinking about how environment, social and governance (ESG) issues impact on the financial performance of our portfolio, but also how our portfolio impacts on environmental and social outcomes.

We have incorporated sustainability into our organisational purpose statement: *Sustainable investment delivering strong returns for all New Zealanders.*

While we remain focused on maximising risk-adjusted returns – as outlined in our legislated mandate – this new purpose statement sends a clear message to our staff and stakeholders about the importance of achieving those financial returns in a sustainable way.

Steps we have taken to achieve our sustainable finance goal include working with the Government to design the Crown Responsible Investment Framework for Crown Financial Institutions (CFIs) which commits us to act on climate change. We have signed up to the Net Zero Asset Owners Commitment, which commits us to taking a set of actions to help put the world on a path to achieve net zero emissions by 2050. These actions include:

- reporting our progress against a historic benchmark;
- ensuring that we increase our investment in assets that are aligned or aligning with a net zero path;
- investing in climate solutions; and
- publishing a Climate Action Plan (contained in this report) which outlines how we intend to deliver on these commitments.

At the same time, we have continued to make progress in delivering each of the elements of our Climate Change Investment Strategy. We are:

- stepping up our efforts to **reduce** our emissions by shifting our passive equity holdings, the largest component of the New Zealand Super Fund (NZ Super Fund) portfolio, to Paris-Aligned Benchmark indices, which will continue to deliver on our emissions intensity and fossil fuel reserve reduction targets but also add other objectives such as: year-on-year decarbonisation, consideration of scope 3 emissions, increased investment in climate solutions and reduced climate risk;
- improving our abilities to **analyse** the climate risks and impacts of our private investments by buying and building improved tools;
- preparing to **engage** with New Zealand companies – in partnership with the other CFIs – to encourage them to adopt net zero targets;
- continuing to **search** for new investments, and have created a new investment opportunity called Sustainable Transition, investing in several funds which are investing in the climate transition.

I invite you to read about the details of this new approach in the rest of the report.

OUR JOURNEY TO DATE

2007
Established our Responsible Investment Framework
—
Joined the CDP

2007–2011
Began responsible investment engagement
—
Joined the Investor Group on Climate Change
—
Developed renewable energy investment strategy

2011
Made climate change a macro investment theme

2015
Contributed to Mercer climate work
—
Signed Paris Pledge for Action
—
Published first NZ Super Fund carbon footprint

2016
Announced the Climate Change Investment Strategy

2017
Received AAA rating, Asset Owners Disclosure Project – Global Climate Index Report
—
Started implementation of our Climate Change Investment Strategy
—
Implemented the low carbon passive portfolio
—
Joined Climate Action 100+
—
Was a founding member of One Planet Sovereign Wealth Fund Working Group on Climate Change

2018
Developed the Carbon Valuation Framework
—
Produced climate change scenarios

2019
Met 2020 carbon reduction targets a year early
—
Joined the Transition Pathways Initiative

2020
Set new carbon reduction targets

2021
Developed Rural Sustainability Strategy
—
Analysed Value-at-Risk under different Climate Scenarios

2022
Committed to net zero by 2050, joining the Paris Aligned Investment Initiative's Asset Owners Commitment
—
Shifted to Paris Aligned Benchmark indices for our Reference Portfolio
—
21 private investments reported their carbon emissions

WHO WE ARE

The NZ Super Fund (the Fund) exists to 'smooth out' the increasing cost of government-provided superannuation due to New Zealand's ageing population. From around 2035/36, the Government will begin to withdraw money from the Fund to help pay for New Zealand Superannuation. The Fund will continue to grow as a proportion of New Zealand's GDP, due to peak in the 2070s. The Fund is, therefore, a long-term, growth-oriented, global investment fund.

Our governing legislation, the New Zealand Superannuation and Retirement Income Act 2001, requires the Guardians of New Zealand Superannuation (the Guardians) to invest the Fund on a prudent, commercial basis and, in doing so, to manage and administer the Fund in a manner consistent with:

a) best-practice portfolio management;

b) maximising return without undue risk to the Fund as a whole; and

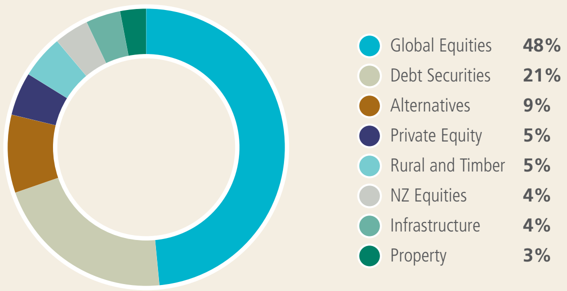
c) avoiding prejudice to New Zealand's reputation as a responsible member of the world community.

The Board sets our default investment approach and our benchmark by constructing an index-linked Reference Portfolio. The Reference Portfolio represents how the Fund would be invested if we elected to use a low-cost, entirely passive approach rather than actively managing the Fund. The Guardians looks to add value by using active investment strategies where we believe there is an opportunity to improve the Fund's portfolio.

Currently approximately two-thirds of the Fund is aligned with the Reference Portfolio, while the remainder is invested in different active opportunities and access points. These include equities, bonds, a collection of real assets (real estate, infrastructure, forestry and farms), private equity, alternatives and private debt. Our alternative assets include life settlements, catastrophe insurance and arbitrage strategies. In addition to these positions, we also run a 'strategic tilting' programme in which we seek to increase or decrease the Fund's exposure to various asset classes where we believe an asset class is mispriced.

As of 30 June 2022, the Fund has a Net Asset Value of approximately NZ$55 billion (after costs but before NZ tax).

Asset Class Exposures as at 30 June 2022*



* Excludes the impact of any strategic tilts. Totals do not add to 100% due to rounding.

REPORTING AGAINST THE TCFD RECOMMENDATIONS

We believe we meet all the core elements of the TCFD framework and have endeavoured to follow the TCFD structure as closely as possible in developing this Report. However, our Climate Change Investment Strategy was developed before the final TCFD recommendations were confirmed and therefore does not necessarily follow the same order nor correspond one-to-one with the TCFD recommendations.

Our Strategy is a long-term initiative that has been well integrated into the day-to-day business of the Fund and this process has highlighted some areas within our Strategy that could be strengthened. We will continue to evolve it as more data, research and best-practice approaches emerge.

Disclosure	Summary	Further Information
GOVERNANCE		
Describe the Board's oversight of climate-related risks and opportunities	• The Board has approved our Climate Change Investment Strategy and regularly sets climate change objectives in our strategy and governance documents. • The Board approves our Investment Beliefs, one of which is that environmental, social and governance considerations, including climate change, are fundamental to long-term risk and return. • The Board approves our carbon reductions targets. • The Board receives annual updates on our progress.	Refer to the Governance section
Describe management's role in assessing and managing climate-related risks and opportunities	• Responsibility for achieving our strategic objectives sits with our Chief Executive Officer (CEO) while our Chief Investment Officer (CIO) is responsible for delivering our Climate Change Investment Strategy. • Managers and the Investment Committee are responsible for ensuring that climate change is embedded in our investment process. • All investment staff receive training on climate change, and relevant staff are set climate change-related objectives to achieve as part of our incentive programme.	Refer to the Governance section
STRATEGY		
Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term	• As an asset owner, the Fund's assets will be impacted by climate change in a range of ways. Transition risks will decrease the attractiveness of carbon-intensive assets and the value of fossil fuel reserves, while these may increase the attractiveness of low-carbon intensity assets. Physical risks will impact the value of assets which are highly exposed to extreme weather events, rising sea levels and changing weather patterns.	Refer to the Strategy section

Disclosure	Summary	Further Information
	• It is unclear when these risks and opportunities will manifest themselves but we believe that it is necessary for us, as a long-term investor, to take them into account now.	
Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning	• Our Climate Change Investment Strategy has four elements: Reduce, Analyse, Engage and Search. • The Reduce element involves measuring our carbon footprint and targeting a reduced exposure to carbon relative to our Reference Portfolio (benchmark). • The Analyse element integrates climate change considerations into our investment framework across our portfolio and particularly for our active investments. • The Engage element involves us working with the Fund's key investments to help them actively consider climate change in their strategies, voting to support climate change initiatives proposed for our listed equities, and partnering with like-minded investors to push for better climate change reporting and action. • The Search element involves us actively looking for investments that will benefit from a changing climate or the transition to a low-carbon energy system.	Refer to the **Strategy section**
Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	• We have developed a guide to explicitly help us consider 2°C, 3°C and 4°C scenarios as part our valuation framework for the assets we invest in directly. • We have used MSCI's Climate Value-at Risk model to measure the value at risk from climate change for our listed equities portfolio.	Refer to the **Analyse** part of the Strategy section

Disclosure	Summary	Further Information
RISK MANAGEMENT		
Describe the organisation's processes for identifying and assessing climate-related risks	• We collaborated with other investors to instruct Mercer to produce a report analysing the impact of climate change on a global investment portfolio. • This research has identified that our climate-related risk exposure is concentrated in a few sectors (utilities, materials and energy), with a wide geographic spread and predominantly in our global listed equities holdings. • In identifying investment risk, for our listed equity holdings, we use carbon intensity and fossil fuel reserves as our measure of exposure to climate-related risk. For our direct investments, we undertake a more detailed assessment of climate-related investment risk.	Refer to the **Risk Management** section and the **Reduce** and **Analyse** parts of the Strategy section
Describe the organisation's processes for managing climate-related risks	• We manage risk for our listed equity holdings by reducing our exposure to carbon-intensive investments and those with high carbon reserves. We manage risk exposure for our direct investments by means of our valuation framework and through our governance oversight. • We also engage with many of our investee companies to encourage them to consider climate-related risk in their management processes.	Refer to the **Risk Management** section and the **Reduce** and **Analyse** parts of the Strategy section
Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation's overall risk management	• We manage our investment risk through our risk assessment process. Since 2017, the process has included climate change considerations when considering new types of investment opportunities or reviewing existing ones. • We also review exposure to environmental (including climate change), social and governance risks through our operational risk assessment process before we appoint a new manager to invest the Fund or make a new investment ourselves.	Refer to the **Risk Management** section

Disclosure	Summary	Further Information
METRICS AND TARGETS		
Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process	• We measure the aggregate carbon emissions intensity (as a proportion of revenues) of the Fund as well as its exposure to fossil fuel reserves.	Refer to the Metrics and Targets section
Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	• We disclose this in the Metrics and Targets section.	Refer to the Metrics and Targets section
Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets	• We target a 40% reduction in carbon emissions intensity versus our Reference Portfolio. • We target an 80% reduction in fossil fuel holdings versus our Reference Portfolio. • Our Reference Portfolio benchmark incorporates our carbon-reduction exclusions; this means we measure our performance against a low-carbon benchmark.	Refer to the Metrics and Targets section

Governance

"We believe that climate change is one of the Fund's most critical investment risks and opportunities."

GOVERNANCE

As a fund with a very long horizon, we believe climate change is one of the Fund's most critical investment risks and opportunities. Ultimately, responsibility for it sits with the Board. The Board delegates responsibility for management of this risk to senior leadership by ensuring the overall organisational strategy includes climate change risks and opportunities and by setting a stand-alone Climate Change Investment Strategy for the Fund.

Our CEO leads the delivery of our strategic objectives and plays an active role in promoting a focus on climate change across the New Zealand investment industry, particularly in his former role as co-Chair of the New Zealand Sustainable Finance Forum. Climate change responsibilities are delegated throughout the Guardians, with our CIO, Head of Sustainable Investment, and key internal committees each playing an active role in ensuring that our Climate Change Investment Strategy is implemented. Members of the Investment team are required to integrate climate change into investment decisions and they are supported by the subject-matter experts in the Sustainable Investment team.

We aim to ensure that everyone has the tools they need to deliver on our climate change objectives, by running regular education sessions and including our approach to climate change in the induction process for new employees.

<table>
<tr><th>The Board</th><th>Senior Management</th><th>Investment Teams</th></tr>
<tr>
<td rowspan="2">The Board is ultimately responsible for setting the Fund’s investment risk appetite and drives climate change objectives by including them in our Statement of Investment Policies, Standards and Procedures, and our annual Strategic Plan.

The Board sets the Fund’s carbon emissions reduction targets and method, and monitors performance against these through a whole-of-portfolio carbon footprint which is published annually on our website.

The Board decides the benchmarks against which we measure our investment performance and, through the Reduce methodology, has set a low-carbon benchmark.

The Board has ad hoc education sessions on climate change and the implications for the Fund.

The Board receives annual updates on our carbon footprint and on the implementation of the Climate Change Investment Strategy.</td>
<td>Our CEO is responsible for executing the Guardians’ overall strategy and implementing our Statement of Investment Policies, Standards and Procedures, our Statement of Intent, and our annual Strategic Plan. He also plays an active role in promoting a focus on climate change across the investment industry in New Zealand, and among other institutional investors internationally.

Our CIO has overall responsibility for our Climate Change Investment Strategy. Both the CIO and Head of Responsible Investment oversee its implementation, and act as project sponsors.

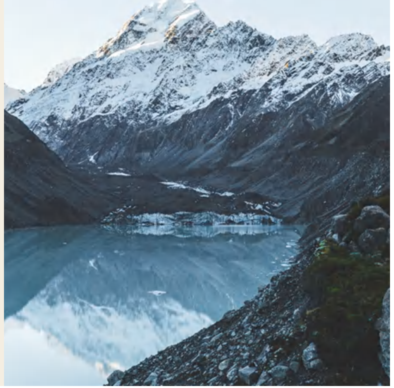
The Investment Committee (a group of senior Guardians’ investment professionals) is responsible for the valuation framework and for ensuring that the elements of our Strategy are integrated into investment decisions. It receives an update on our Strategy biannually.

The Risk Committee (a group of senior Guardians’ executives) receives biannual risk reports which may consider the enterprise risk presented by climate change.</td>
<td>The elements of our strategy are integrated into the objectives of the relevant members of the Investment teams. The managers of each team are responsible for ensuring delivery and implementation.

When considering new investments, the Investment team test climate change-related assumptions in their assessments.

The Sustainable Investment team provides expertise on climate change issues, giving support to other teams in integrating climate considerations into investment analysis.</td>
</tr>
<tr><td colspan="2">All new employees are given an overview of our Climate Change Investment Strategy as part of their induction process.</td></tr>
</table>

Strategy



"Given the significant impact of climate change, the Guardians has long considered how to take this issue into account in designing our investment approach."

STRATEGY

The Guardians has a set of investment beliefs and endowments that inform its investment decisions. Our beliefs are views that we have formed based on rigorous academic and industry research. Our endowments are the advantages we believe we have over the average investor; namely: our long investment horizon, our operational independence, our sovereign status and governance. We seek out opportunities which we believe offer especially attractive risk-adjusted returns and where our endowments allow us to capture them.

The Guardians has long considered how to take this issue into account in designing our investment approach. In 2014, we and other global institutional investors commissioned a report from Mercer to help us identify ways to hedge against climate-related risk. We supplemented this research with our own interviews with a range of energy market analysts and experts.

These observations have led the Guardians to form the following views:

- Climate change is a market and policy failure. Companies are producing too many emissions and markets are over-invested in fossil fuels, given the growing consensus among scientists and policy-makers that reductions must be made.
- Pricing carbon risk needs to consider policy, technology, physical impacts, consumer action and liability across different scenarios, geographies and timeframes, combined with uncertainty on the destination and pathway involved. Historically, we have held a view that carbon was not efficiently priced by the market. We have reviewed how the market is pricing climate risk compared to when we launched our Climate Change Investment Strategy, and concluded there is a greater appreciation now for climate risk in parts of the market. We remain of the view that carbon remains under-priced in many asset classes. Over time we expect carbon to become more efficiently priced as we more fully transition to a low-carbon economy.
- Different climate change risks will have differing impacts, depending on the path taken. Risk arises from:
  - the supply and demand changes from substitution, higher cost structures, consumer preference and regulation;
  - physical damage or disruption to industries and economies; and
  - inability to adapt at reasonable cost over a reasonable period.
- Climate change presents risks for which we will not be rewarded. It is considered good practice to remove uncompensated portfolio risks. These risks have multiple drivers across technological change, resource and physical impacts, and policy actions. They affect both listed and unlisted

assets but may impact them in different ways. It requires a shift to a low-carbon energy system, which affects all sectors.

- Climate change is an intergenerational and trans-boundary issue, one which requires significant coordination across countries and stakeholder groups.
- Climate change offers opportunities for investment as well as risk, with (for example) the development of more energy-efficient and alternative technologies.

Our Climate Change Investment Strategy seeks to express these views through our investment approach. While many of these risks will take time to be revealed, financial markets are forward looking. This means that prices may adjust quickly when a greater appreciation of the threat of climate change emerges. Therefore, it is prudent to reduce our exposure to these uncompensated risks and increase our exposure to unpriced opportunities immediately rather than trying to estimate when markets will adjust.

Our Strategy has four elements:

Reduce decreases the transition risk of the portfolio. We do this by:

- measuring our carbon footprint;
- setting a target to reduce our portfolio's emissions intensity and our holdings of potential emissions from reserves; and
- applying a bespoke carbon methodology to our equity portfolio and our benchmark.

Analyse integrates climate change considerations into our assessment of potential new investments and when we review our existing holdings. We do this by building climate change scenarios into our valuation framework.

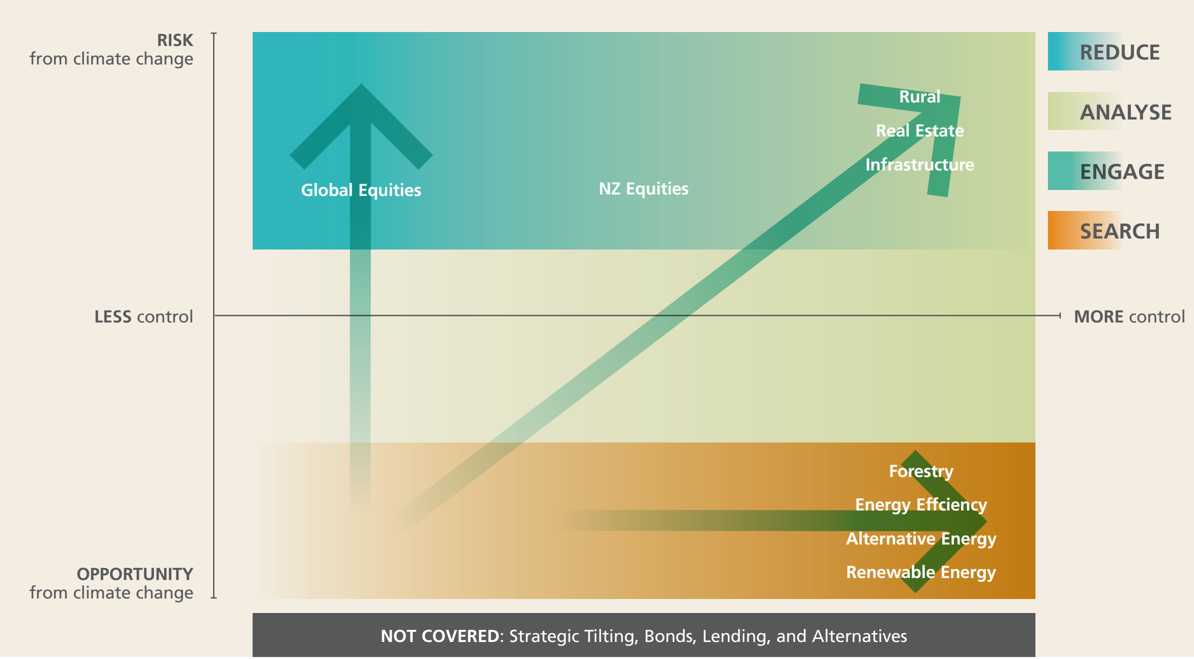
Engage influences the companies we own an interest in to continuously mitigate and improve resilience to climate-related risks. We do this by being an active owner, including prioritising engagement and voting in accordance with our climate change views.

Search focuses us on finding companies that will thrive during the low-carbon transition. We do this by actively searching for new opportunities in the areas such as alternative energy, energy efficiency and transformational infrastructure.

This graphic shows how our Climate Change Investment Strategy maps to our portfolio. The Strategy covers the whole Fund but we are still working through implementation. We have focused on the areas where we have the most control and where risk (transitional and physical) or opportunity is greatest.

The 'Reduce' element is mainly focused on reducing carbon intensity and exposure to fossil fuel reserves in equities. The targets are for the whole Fund. The 'Analyse' element applies to all our investments but we have placed more focus on our direct investments. The 'Search' element focuses on impact investments which support a low-carbon economy. The 'Engage' element covers all our investments but is mostly focused on where we have the most influence and where climate risk is greatest.

Mapping our Strategy to our portfolio



REDUCE

The aim of **Reduce** is to lower the entire Fund's exposure to investments that are most at risk from climate change policy, and to mitigate the risks during the transition to creating a low-carbon society. We do this by removing from our portfolio those investments with the highest emissions intensity and potential emissions from reserves.

The Board controls the degree of risk mitigated by setting a Fund-wide emissions-intensity target and a target for potential emissions from reserves. We set our first carbon-reduction targets in 2016, achieving them a year early. In 2020, the Board decided to make the next set of targets more ambitious, on the grounds that:

- There is a risk that the equity market is becoming more intensive through the inclusion of new carbon-intensive assets in the index.

Enhancements in our data provider's carbon research and methodology allow us to use additional metrics to test the impact of various carbon-reduction scenarios. This analysis showed that we could set more ambitious targets without severely impacting portfolio diversification.

With five years of experience in implementing carbon reductions, we now have greater confidence that doing so will improve the Fund's portfolio and we believe more ambitious targets are appropriate.

As a result, the Board chose to target a reduction in:

- the carbon emissions intensity of the Fund by at least 40%; and
- the carbon reserves of the Fund by at least 80%.

Both these targets are relative to our Reference Portfolio and are to be achieved by 2025.

If we are correct in our belief that markets under-price carbon-related risks, then reducing the Fund's exposure to the most at-risk assets is likely to improve its long-term risk-adjusted returns. However, if markets are ultimately found to be efficiently pricing these risks, then we would have sold some fairly-priced assets and swapped them for other fairly-priced assets. In this case, the impact on expected returns would be minimal, with the main cost being a minor reduction in portfolio diversification. We used to achieve the Fund-wide targets by applying a bespoke carbon methodology to our physical passive equity holdings. We apply a carbon short to neutralise our exposure to any companies with high carbon reserves that we incidentally take a position in; for example, when we use an index derivative to complete our passive equity exposure. We also ask our external investment managers, who manage quantitative multi-factor strategies on our behalf, to meet our carbon-reduction targets, but give them flexibility in how they do this.

This year, as part of our Reference Portfolio Review, the Board has elected to change the ACWI IMI building block of our Reference Portfolio to the MSCI World Climate Paris Aligned Index and the MSCI EM Climate Paris Aligned Index (see our 2022 Annual Report for more information on this decision). As well as improving the overall ESG profile of the Fund, these indices will ensure that the Fund's passive equity positions are better aligned with net zero objectives.

The new indices will:

- reduce the GHG emissions intensity by 50%;
- reduce the GHG emissions intensity by 10% each year until 2050;
- integrate Scope 3 emissions into targets;
- underweight companies facing high transition and physical climate risk;
- increase allocation to companies with credible emissions reduction targets;
- increase exposure to green revenue; and
- overweight companies providing climate solutions.

The indices reduce but do not eliminate exposures to fossil fuel reserves. We will continue to apply an overlay to achieve this, in line with our targets. See the graphic below for a fuller list of the ESG characteristics of the new portfolios.

MSCI Paris Aligned Benchmark ESG Criteria

ESG	TRANSITION RISK		GREEN OPPORTUNITY	1.5°C ALIGNMENT	PHYSICAL RISK
Controversial weapons	Carbon intensity reduction (Scopes 1, 2 and 3)	Neutral exposure to high-impact sector	At least double the green revenue exposure	Self-decarbonisation at 10%	Physical Risk Climate VaR is at least 50% lower
Societal norms violators	Immediate Scope 3 phase-in	Higher allocation to companies with credible emissions-reduction targets	Green/fossil fuel-based ratio – 4x higher than parent	Neutral Aggregate Climate VaR under 1.5°C Scenario	
MSCI ESG Controversy Score	Underweight companies facing transition risk	Significant improvement in Low Carbon Transition (LCT) Score	Overweighting of companies providing solutions		
	Lower fossil fuel exposure	50% minimum reduction in Potential Emissions Intensity			

We ensure that we are on track to meet these targets by calculating the carbon footprint of the Fund's portfolio and its potential emissions from reserves each year. Our aim is for this carbon footprint to cover the whole portfolio. In calculating the carbon footprint, however, we do not currently consider bonds, positions which are market neutral over the long term or investments which have no clear carbon footprint like life settlements and natural catastrophe insurance.

We recognise that our methodology is not perfect and will review this if it is appropriate to include our other investments as carbon accounting methodologies evolve.

See the **Metrics and Targets** section for further details on our carbon foot-printing work.

Implementing changes to the Reference Portfolio

The new equity benchmarks for the Reference Portfolio became effective on 1 July 2022. This meant undergoing a transition of the Fund's physical and derivative equity exposures from the former custom benchmark to the new MSCI Climate Paris Aligned benchmarks. The transition involved moving NZ $25 billion of equity exposure to the new benchmark; however, given the large overlap in security holdings between the two benchmarks, in practice around 50% of this value was traded in the market with the balance being transferred in-specie.

The transition was largely completed between 28 June 2022 and 15 July 2022 to ensure efficient implementation, minimising both cost and market impact. Other than ESG considerations, the move from a custom benchmark to a simple off-the-shelf benchmark will help facilitate market adoption of low-carbon indices. Part of the measure of success for a benchmark is that market participants can trade derivatives on it. Our Portfolio Completion team has been encouraging its counterparties to price equity swaps on the Paris Aligned suite of indices as well as trading the first MSCI World Climate Paris Aligned listed future. Our goal is to create a market shift to low-carbon indices and help facilitate a liquid derivatives market.

ANALYSE

The aim of **Analyse** is to integrate climate change into our analysis and decision-making. This includes incorporating analysis of climate change risks and opportunities into the pre-investment due diligence that we undertake for areas of the Fund's portfolio in which we have more concentrated positions.

ASSESSING THE PHYSICAL RISKS TO THE FUND'S REAL ASSETS

In 2017, we undertook a review of the physical risk exposure of the Fund's real assets. The report drew heavily on the International Panel on Climate Change (IPCC)[1] Fifth Assessment Report (AR5).[,2] Our findings highlighted the different kinds of risks that our physical assets were exposed to. This review considered both the inherent risk to the asset and the level of exposure the Fund has to that asset. It identified five investments that presented the greatest physical climate-related risk to the Fund as:

1. Timber;
2. Retirement/aged care;
3. New Zealand rural land (dairy);
4. Toll roads; and
5. Banking.

THE VALUATION FRAMEWORK

We have adapted our investment decision-making framework to explicitly account for climate change investment risk in our valuation models where practicable. The framework aims to provide a structured approach and has been updated with improved physical risk analysis. It guides the investment professional through filtering climate change considerations into those assumptions that have enough significance to be modelled in valuations and provides a common framework to ensure greater consistency across teams and time. The assumptions are then integrated into our existing investment processes.

1 *The IPCC is the leading international body for the assessment of climate change. It reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change.*

2 *AR5 is the IPCC's fifth assessment report, finalised in November 2014. See https://www.ipcc.ch/report/ar5/*

Our valuation framework has five steps:

1. We identify the investee company's core activities, operating environment, financial drivers and the geographies it operates in.
2. We assess the sources of climate change risks and opportunities, applying six lenses to assess how assets might be affected by the climate change transition:
   - Technology – Disruption driven by the development of technology to support a low-carbon economy;
   - Resource availability – Slow-onset shifts in everyday environmental factors;
   - Impact of physical damages – The impact of acute, extreme events linked to climate change;
   - Policy – Increased costs and complexity from policies and regulations designed to limit the long-term effects of climate change and to encourage sustainability;
   - Demand and supply – Changes in economic and social factors affecting demand and supply; and
   - Liability – Parties who have suffered loss or damage from the effects of climate change seek compensation from those held responsible.
3. We filter the sources of climate-related risks to assess their materiality. Those considered immaterial are not factored into the valuation model but are mentioned in the qualitative commentary. For those that are material, we try to quantify their impact. Where this is possible, we include it in our model (see step four below). Where this is not possible, we identify its likely directional impact on the attractiveness of the investment.
4. We integrate the material and quantifiable climate-related risks and opportunities into our valuation model. We have three methods for this:
   - adjusting cash flows (revenue, costs, capital expenditure) during the forecast period;
   - adjusting the terminal value; and
   - adjusting the discount rate.[3]

   Our preferred approach is to adjust cash flows; our least-favoured approach is to adjust the discount rate. This valuation, along with the qualitative

3 *When comparing earnings in the future with earnings today, financial models apply a discount to earnings in the future to reflect that they are less certain and that there is value to having cash today rather than cash in the future. The amount that earnings are discounted (each year) is called the discount rate. When earnings are less certain, for example because of climate-related risk, this can be adjusted by increasing the discount rate to reflect this extra risk.*

commentary, is reviewed by our Investment Committee and influences whether or not we invest in the asset.

5. If we acquire the asset, we own it actively (see our Engage element for further details), and monitor business performance against climate change standards and metrics.

Over the last three years, we have made progress in applying the framework to the Direct Investments portfolio, with Step 2 completed for all assets and recently re-assessed to ensure the analysis is up to date.

Step 3 – Filter is currently in progress and 6 investments have preliminary views of risk likelihood and materiality ratings.

In the past we found it difficult to complete all four steps of this assessment for it to feed into our investment decisions. This year we have:

- built an excel tool to make it easier for investment professionals to implement the framework;
- integrated the three climate change scenarios into our investment screen; and
- started using external tools such as MSCI's Climate Value-At-Risk for Real Estate.

As a result, we have completed an initial analysis of climate change impacts for each of our new investments.

SCENARIO ANALYSIS

To assist consistency, and to help integrate the analysis of climate change impacts into our valuation analysis, we have developed a common set of climate change scenarios to supplement the climate change valuation framework.

We specify key global physical and economic characteristics within each scenario through to 2050 and 2100 (where possible). Intended only as a starting point, the details and variables for each scenario are expected to evolve over time as additional information and more precise estimates become available.

The future trajectory of global warming will largely be determined by policy choices that emerge from the intersection of social, political, economic and technological developments. Within each scenario, we distil the range of these policy choices down to a single metric – the global carbon price (US$ per tonne of carbon dioxide (CO_2)).

The carbon price paths presented in the scenarios are not forecasts in the usual sense. Rather, they represent the price of carbon needed to implement the change in energy mix that is required to achieve the specified climate-related outcomes. Key assumptions used as a basis for setting this price are the adoption rates of new lower-carbon technologies such as renewable power generation, electric vehicle uptake, and carbon capture and storage.

We use a climate-related scenario of three degrees Celsius (3°C) warming by 2100 to inform the central valuation of an asset. This does not reflect a judgement about the level of warming we would like to achieve; instead, we believe it is a reasonable assumption of the world's current climate change trajectory.

We test the robustness of investments to different climate change outcomes by running higher (4°C) and lower (2°C) scenarios. These are intended to span the range of outcomes to which most experts would assign a meaningful probability of occurring, to test the sensitivity of our asset to the effects of climate change.

We are currently updating these scenarios to include a 1.5°C scenario and recent analyses from the IPCC and the Network for Greening the Financial System (NGFS).

REVIEWING EXISTING OPPORTUNITIES AND ALLOCATION

As well as assessing individual investments, we review the types of opportunities we allocate to. This year we completed a risk budget review, covering our investment opportunities and the expected ESG profile (including climate change) of each opportunity. These were considered alongside each opportunity's expected information ratio and alignment with our endowments to decide on the level of risk budget to allocate to each opportunity. We upweighted infrastructure and downweighted distressed credit on the basis of their expected ESG profiles.

HOW OUR INVESTMENT STRATEGY HAS IMPACTED OUR EXPOSURE TO CLIMATE RISK

Last year we ran the MSCI's Climate Value-at-Risk model on our listed equity portfolio. We decided not to repeat this analysis this year because we have been in the process of transitioning our Reference Portfolio to Paris-aligned Indices. We will consider whether to reintroduce this process next year.

ENGAGE

The goal of the **Engage** element is to improve the reporting and management of climate-related risks by the companies we invest in. We concentrate our direct engagement in New Zealand, where we have the scale to play a leadership role. Internationally, where we are a relatively small player, we focus on collaboration with others and lending support to the multilateral initiatives we believe will have the greatest impact. Our investment managers and our engagement service provider, Columbia Threadneedle Investment (CTI) Responsible Investment (reo®) overlay service, also play a significant role engaging with companies on climate-related issues on our behalf.

CROWN RESPONSIBLE INVESTMENT FRAMEWORK ENGAGEMENT

Over the last financial year we worked closely with the Treasury and the other CFIs to develop the Crown Responsible Investment Framework that was announced by the Minister of Finance in late 2021. This framework includes commitments to net zero by 2050 or sooner, reporting against common carbon metrics and a focus on climate change engagement.

The framework applies to the New Zealand CFIs (NZ Super Fund, the Accident Compensation Corporation, and the Government Superannuation Fund) and the National Provident Fund, which are among the largest institutional investors in New Zealand.

In response to the framework, these investors have committed to transitioning their investment portfolios, which collectively total more than NZ$100 billion, to be aligned with a net zero emissions economy by 2050 or sooner. All four investors have joined the Paris Aligned Investment Initiative's Net Zero Asset Owners Commitment, under which we will make reductions in portfolio carbon footprint in line with a globally accepted pathway. The CFIs also committed to seek to invest in climate solutions in New Zealand and abroad, consistent with their respective investment strategies and commercial mandates.

Importantly, these investors have agreed to use their collective influence as asset owners to engage with companies on climate change and emissions reductions as well, with the objective of achieving net zero by 2050 or sooner.

The framework sends a strong signal to the broader New Zealand investment industry that best practice is aligning around net zero by 2050 emissions targets.

These investors are developing a programme of engagement on climate change with listed New Zealand companies, in particular the top 50 listed companies. The purpose of the engagement is to ensure that companies understand investor expectations as we transition to a low-carbon economy. This includes measuring and reporting on carbon and other GHG emissions in line with best-practice guidelines, and meaningful reduction plans. We expect the engagement to be rolled out in 2023, with follow-up activity extending longer as required.

INFLUENCING OUR DIRECT INVESTMENTS

Engagement with companies where we have a direct ownership stake is critical to developing an understanding of climate change risks and opportunities and how they may play out in practice. The management teams of these companies are on the front line in being able to identify emerging threats and opportunities, and executing related strategies.

We continue to hold education sessions with the boards and management teams of some of our direct investment companies, presenting the Fund's Climate Change Investment Strategy, including our valuation framework, recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) and the evolving expectations of stakeholders. We have found boards and management teams receptive to discussing what climate change means for their business and the role of governance in managing this risk.

INFLUENCING OUR EXTERNAL INVESTMENT MANAGERS

We have included climate change-related clauses into all relevant new investment mandates since late 2016. These set out our expectations to our external managers to look at the risks and opportunities associated with climate change. The Sustainable Investment and External Investments and Partnerships teams together periodically review the engagement work conducted by our listed equity investment managers on climate change. In addition, as part of our ongoing monitoring, all managers are asked about their climate change activities through ESG due diligence surveys approximately every two years. This year, we have asked our external managers to report on their portfolio GHG emissions intensity for the first time. Climate change is just one factor fed into manager assessments. When managers are performing significantly worse than we expect them to we work with them to lift their performance.

CASE STUDY: CLOUDBERRY CLEAN ENERGY (OSLO, NORWAY)

Investment Opportunity

Cloudberry provides clean renewable energy for future generations by developing, owning and operating hydro and wind power in Norway and Sweden. The Fund is a substantial shareholder in Cloudberry, through a long-standing listed infrastructure mandate with HRL Morrison & Co.

External Manager

HRL Morrison & Co is a global infrastructure investor that manages high-conviction listed infrastructure investment strategies utilising its knowledge as a specialist owner and operator of real assets. HRL Morrison & Co believes that value-add engagement is built from a deep understanding and ongoing collaborative relationship with companies. Its team of more than 70 investment professionals invests across public and private markets. Over the last year, HRL Morrison & Co engaged with each listed investment managed for the Fund with a focus on improving sustainability outcomes in a manner that is accretive to shareholder returns. Eighty percent of the investee companies made substantial improvements, with 20% requiring further improvements.

Engagement Purpose

Cloudberry is an early-stage, high-growth company owned predominantly by domestic investors that aims to become the leading sustainable renewable energy producer in the Nordics. HRL Morrison & Co has supported this objective by bringing:

- an institutional shareholder's perspective on ESG;
- global experience in developing renewable energy platforms sustainably; and
- thought leadership from its collaboration with industry bodies.

Engagement Process, Outcome and Ongoing Priorities

Over the past year, HRL Morrison & Co visited Cloudberry's head office, reviewed a development project on site and met with a broad range of stakeholders including the chair, senior management, the Head of Sustainability, the development team, and suppliers and engineers. This allowed HRL Morrison & Co to build a deep, first-hand understanding of the company's ESG approach, including the environmental impact and related mitigation activities during the construction phase of projects, a key risk for Cloudberry.

Cloudberry already has a strong commitment to addressing climate change: it is reporting on scope 1 and 2 emissions and it has committed to reducing to being net zero on all scopes of emissions by 2040. HRL Morrison & Co sought short- and medium-term targets to track tangible progress, and a commitment to align reporting with EU taxonomy to attract further institutional capital to support its development pipeline.

Cloudberry has committed to both outcomes in the 2023 financial year, and is preparing for the Corporate Sustainability Reporting Directive (CSRD), and disclosure under TCFD.

ENGAGING WITH COMPANIES IN OUR GLOBAL EQUITIES PORTFOLIO

Internationally, we express our climate change views through the way we vote. We have voting guidelines on climate change and vote all our shares in a consistent way. Our default position is to support climate change-related resolutions, unless there is a compelling reason not to. In 2018, we brought voting in-house rather than leaving it in the hands of several external investment managers voting different ways. In 2019, we began recalling shares lent out as part of our securities lending programme in order to vote on significant climate change issues. We disclose voting decisions on our website as part of our commitment to best-practice governance and transparency. We use the Columbia Threadneedle Investments reo® service (formerly known as BMO reo®) to lead our engagements with the companies within our global equity portfolio. Additional details on the CTI reo® engagement can be found in our Annual Report.

The CTI reo® service has more than 45 Responsible Investment staff around the world, including four climate change specialists. It is a signatory to the Net Zero Asset Manager initiative and is an active participant in the Climate Action 100+ initiative, leading eight engagements and being in a support role on a further 38.

The NZ Super Fund has also been a long-term member of the CDP (formerly the Carbon Disclosure Project), which provides a framework through which companies are requested to disclose their carbon footprints as well as other environmental impacts. We are an official supporter of the TCFD and encourage companies to report against these recommendations. Both these reporting initiatives have greatly improved the quality of the data available when we look at the climate-related aspects of our investment decisions. In addition, we play a leadership role on climate change in New Zealand by actively engaging with New Zealand companies and managing our voting decisions accordingly.

In 2019, we hosted a climate change investment seminar with our New Zealand-based investment managers. We presented an overview of our Strategy, along with deep dives into our climate change scenario analysis and case studies on how we integrate climate change considerations into the Fund's New Zealand equities and New Zealand direct portfolios. We are active members of the Investor Group on Climate Change (IGCC) which engages with Australasian businesses on climate-related issues on behalf of institutional investors.

We engage with policy makers, especially in New Zealand. We have made submissions supporting climate action and disclosure to:

- the External Reporting Board's climate strategy consultation documents on mandatory reporting requirements against the TCFD;
- the Ministry for the Environment's emissions reduction plan;
- the Climate Change Commission's consultation on climate action for Aotearoa New Zealand.

All our submissions are available on our website.

OUR COLLABORATIONS

Climate Action 100+	The Fund joined the Climate Action 100+ (CA100+) in December 2017, at its launch. This initiative has now grown into one of the largest investor-led engagement programmes in the world, with over 450 investor signatories representing more than US$39 trillion in assets under management (AUM). It seeks to engage with 161 global companies across 33 markets. These companies account for up to 80% of global industrial emissions. They are critical to the decarbonisation of investment portfolios and the global economy. The initiative has three central goals: 1. Improve corporate climate governance; 2. Curb GHG emissions in line with the Paris Agreement; and 3. Strengthen climate-related financial disclosures. A number of public commitments have resulted from this engagement, including: • Nestlé has committed to reducing its scopes 1, 2 and 3 emissions to zero by 2050; • Volkswagen has committed to becoming 'climate neutral' by 2050 and releasing 70 electric vehicle models by 2028; and • Duke Energy Corporation has updated its carbon transition plan, committing to reduce its GHG emissions by 50% by 2030 and achieve net zero emissions generation by 2050. It is clear, however, that many of the companies being engaged are not yet aligned with the CA100+ engagement agenda. The task of encouraging all 161 companies to align with the goals of the Paris Agreement has only just begun.
The Transition Pathway Initiative	The Transition Pathway Initiative (TPI) is a global initiative led by asset owners and supported by asset managers. Aimed at investors and free to use, it assesses companies' preparedness for the transition to a low-carbon economy, enabling investors to better understand how companies are managing climate change and the risks it poses to their business. In turn, this aids better-informed investment processes and decisions, and can shape engagement activities and proxy voting decisions as well. The TPI's data also provides insights into how a company's transition plans align with the Paris Agreement goals. It compares a company's current emissions intensity with benchmark pathways for meeting the 2030 goals of the Paris Agreement. These benchmarks are in the process of being extended 2050. When we joined the TPI, it covered 274 companies in 14 sectors of the economy. There are plans to increase coverage to 700 firms (covering 80% of emissions). The Guardians is one of 80 investors globally which have pledged support for the TPI to date. We are committed to using the tool and its data to engage with companies.

WORKING TOGETHER WITH OTHER SOVEREIGN WEALTH FUNDS (SWFS)

One Planet Sovereign Wealth Funds (OPSWF) Initiative	The OPSWF Initiative was established at the inaugural One Planet Summit in December 2017 in Paris, championed by President Emmanuel Macron of France. The Guardians is one of five founding SWFs on the steering group of the OPSWF Initiative which has grown its SWF members and has supporting initiatives across the asset manager, private equity funds and academic communities. The group has committed to implement an investment framework published in 2018 to address climate-related financial risk, devise methods and indicators that can help inform investors' priorities as shareholders and participants in financial markets, and accelerate alignment with the Paris Agreement.
Toitū Tahua Centre for Sustainable Finance	The Toitū Tahua Centre for Sustainable Finance was established in 2021 on the recommendation of the Sustainable Finance Forum. The vision of the Forum is to change the financial system so that it provides for environmental, social and economic prosperity. This means creating a financial system where business and finance respect and operate within environmental and social constraints and recognise their dependencies, and that preserves, enhances and restores the planet for future generations. To do this, the Forum seeks to deliver a set tangible recommendations set out in the Roadmap for Action. The Guardians, via Matt Whineray and the Sustainable Investment team, has committed to providing leadership and support to the Sustainable Finance Forum and the new Centre for Sustainable Finance, Toitū Tahua in Auckland. Toitū Tahua is developing a range of training programmes on sustainable finance. We have also supported Toitū Tahua to develop a New Zealand Stewardship Code.

SEARCH

The **Reduce**, **Analyse** and **Engage** elements are mostly about managing the risk of climate change across our investment portfolio. **Search** is about taking advantage of opportunities presented by the transition to a low-carbon energy system. In assessing new prospects, we continue to maintain our investment discipline as we would with any potential investment. This year we have created a new investment opportunity, designed to invest in assets that will benefit from rapid structural change and the vast amount of capital required to tackle sustainability issues in the coming years. We have made two investments in this opportunity so far.

Fifth Wall Early-Stage Climate Technology Fund

In November 2021, the Fund committed US$100 million to the Fifth Wall Climate Fund, a fund managed by leading real estate technology venture capital firm Fifth Wall, which seeks to invest in new technologies to decarbonise the global real estate industry. In April, we invested US$35 million in Turntide Technologies, a manufacturer of smart, energy-efficient electric motors, as part of a co-investment with the Fifth Wall Climate Fund. We see this as an impact investment that will support decarbonisation while also delivering strong financial returns. We are excited about the possibilities new technologies present for the real estate sector, which by some metrics is the largest asset class in the world and consumes around 40% of the world's energy.

Generation Investment Management Sustainable Solutions Fund IV (SSF IV)

In May 2022, the NZ Super Fund invested US$97 million in Generation Investment Management's Sustainable Solutions Fund IV (SSF IV). Generation is a pure-play sustainable investment manager with over $36 billion of assets under management. SSF IV is a $1.7 billion fund that continues the firm's commitment to invest globally in companies and teams driving the sustainable future. It is Generation's fourth and largest Growth Equity fund, enabling Generation to invest US$50-US$150 million as active minority investors in high-growth companies that are shifting industries towards sustainability and responsible innovation at scale.

We have also made two infrastructure investments into climate solutions with high positive climate change impacts, and are working on securing a third:

Copenhagen Infrastructure Partners Energy Transition Fund

In October 2021 we committed €125 million (NZ$208 million) to Copenhagen Infrastructure Partners' Energy Transition Fund. This Fund is focused on developing industrial-scale sustainable energy infrastructure, known broadly as Power-to-X (power-to-hydrogen, power-to-ammonia and power-to-methanol). Investments will be focused in OECD markets throughout Western Europe, North America and Asia-Pacific.

Longroad Energy

The NZ Super Fund, alongside NZX-listed Infratil, has been invested in Longroad Energy Holdings since 2016. Over the year, Longroad achieved several project milestones across the United States, including the completion of the 200MW Sun Streams 2 solar project in Maricopa County, Arizona. During the 2021/22 financial year, the Guardians worked with co-investors and the Longroad management team to welcome a new investor, MEAG, acting as the asset management arm for entities of Munich Re, which was announced in August 2022. MEAG has committed to invest US$300 million to acquire a 12% stake in Longroad Energy, subject to certain conditions.

Partnership to explore offshore wind energy in South Taranaki

In March 2022 we announced our partnership with Copenhagen Infrastructure Partners (CIP) to explore the potential for large-scale offshore wind energy in the South Taranaki Bight. Subject to feasibility, an initial planned 1GW development would represent more than 11% of New Zealand's current electricity demand capacity and could power over 650,000 homes. We believe the project could later expand to 2GW, helping to meet strong projected growth in demand for electricity in New Zealand.

In June 2022 the partnership submitted a pre-activity notice to New Zealand's Environment Protection Authority (EPA) for a floating wind measurement device to be deployed 37km off the South Taranaki coast. This is an important step in understanding the wind resource that is available in our location of interest. Our initial research suggests the South Taranaki area has world-class fundamentals; however, deploying the wind measurement device will help us build a fuller environmental picture and develop an investible proposition.

Offshore wind energy has the potential to be an attractive commercial opportunity that aligns with the Fund's Climate Change Investment Strategy and focus on sustainable finance, as well as our desire to invest in large-scale New Zealand infrastructure. While this proposal is still at a very early, exploratory stage, we are confident it has great potential to both generate attractive commercial returns and help New Zealand's transition away from fossil fuels and towards clean energy.

Risk Management

"Considering risk is a fundamental component of each of the elements of our Climate Change Investment Strategy."

INVESTMENT RISK

Trading off risk and return is a central part of investment management. Therefore, considering risk is a fundamental component of each of the elements of our Climate Change Investment Strategy. Rather than restate our risk approach in detail, we have summarised our approach on the right.

ENTERPRISE RISK

The most significant impact from operational risk related to climate change is damage to our reputation and long-term investment outcomes due to failure to integrate climate-related risks and opportunities into our investment processes. We treat this risk through the Analyse element of our Strategy and by carrying out Responsible Investment due diligence as part of the operational risk assessment process that we undertake before we make an investment or appoint an external investment manager.

	Reduce We manage our exposure to carbon by setting reduction targets and adjusting our equity portfolio.
	Analyse We integrate climate change considerations into our valuation of our direct investments.
	Engage We work with the Fund's investments to help them actively consider climate change in their strategies, vote to support climate change initiatives proposed for our listed equities, and partner with like-minded investors to push for better climate reporting and action.
	Search We look for investments which will benefit from the opportunities created by climate change.

Metrics and Targets

"We strive to integrate environmental, social and governance considerations into our internal organisational culture and conduct at the Guardians."

THE FUND'S CARBON FOOTPRINT

EMISSIONS INTENSITY

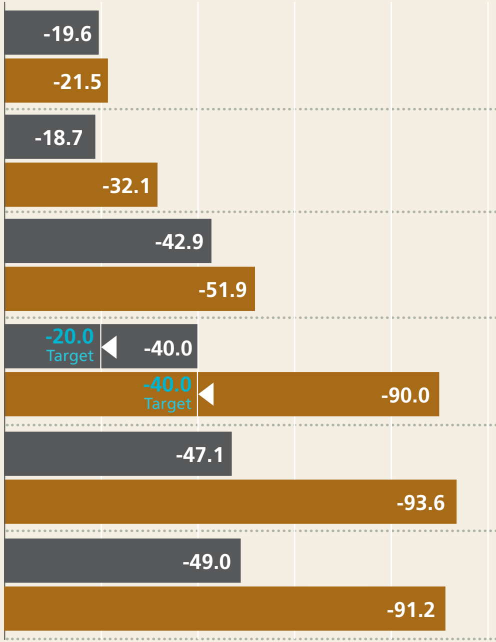
2025 target:

-40%

EXPOSURE TO POTENTIAL EMISSIONS FROM RESERVES

2025 target:

-80%



2017

- Applied our bespoke carbon methodology to our global passive equity portfolio
- Released our first carbon footprint
- Set carbon-reduction targets for 2020

2018

- Introduced carbon exclusions for some external manager equity mandates

2019

- Applied our bespoke carbon methodology to the rest of our active equity mandates
- Asked the managers of our multi-factor funds to meet our targets
- Implemented an equity-short position targeting high-carbon companies
- Met our 2020 reduction targets a year early

2020

- Introduced new carbon-reduction targets for 2025
- Revised our bespoke carbon methodology to assist us in achieving these lower targets in the most effective way

2021

- Helped our portfolio companies complete their carbon footprint, explaining to them the process and connecting them with a service provider. The number of companies undertaking their own footprint assessment has increased from 4 to 10

2022

- Committed to net zero by 2050, joining the Paris Aligned Investment Initiative's Asset Owners Commitment
- Made the decision to shift to a Paris Aligned Reference Portfolio; implementation was in progress as of 30 June 2022
- Twenty one of our private market investments reported their carbon intensity

In 2022 we achieved our targets of reducing GHG emissions intensity by -40% and -80%, ahead of the 2025 target date.

This should not be interpreted to mean that we will look to increase the Fund’s carbon intensity or exposure to reserves; the targets are there to be exceeded, not hit precisely. See our 2022 Carbon Footprint Report for further details on this work.

WALKING THE TALK

This report is focused on the NZ Super Fund, as it generates the bulk of our emissions; but, as responsible investors, we strive to integrate ESG considerations into our internal organisational culture and conduct at the Guardians, the Fund’s manager.

The Guardians achieved carboNZero certification from Toitū Envirocare in 2018/19 and has been successfully recertified in each of the subsequent financial years. The majority of our emissions are incurred through air travel, followed by office electricity use and waste to landfill. For the last two years we have elected to offset our operational carbon emissions plus 20% of the rolling average of the past five years, effectively becoming carbon negative.

THE GUARDIANS' CARBON FOOTPRINT

		2021/22		2020/21		2019/20	
Energy Source	Measure	Quantity	CO_2e	Quantity	CO_2e	Quantity	CO_2e
Electricity	kWh	137,669	14.73t	126,070	12.79t	130,467	12.75t
Electricity distributed transmission and distribution losses*	kWh	137,699	1.20t	N/A	N/A	N/A	N/A
International air travel (long haul)	km	322,657	129.78t	18,724	2.74t	3,054,217	1,405.06t
International air travel (short haul)	km	136,295	23.11t	18,772	2.86t	795,356	151.60t
Domestic air travel	km	60,352	18.46t	139,776	33.89t	160,437	38.90t
Mileage (medium-sized car) 1.6–2L	km	1,531	0.37t	4,533	1.08t	9,027	2.24t
Taxi – cost	$	15,056	1.06t	30,918	2.17t	69,883	5.22t
Waste to landfill**	kg	230	0.05t	1,054	0.33t	4,037	0.98t

*2021/22 is the first year the Guardians has measured: the carbon impact of commuting and working from home, freight (short and long haul) and electricity distributed transmission and distribution losses. **Non-hazardous waste.

		2021/22		2020/21		2019/20	
Energy Source	Measure	Quantity	CO_2e	Quantity	CO_2e	Quantity	CO_2e
Freight (short and long haul)*	km	127,669	0.13t	N/A	N/A	N/A	N/A
Commuting and working from home*	kg	23,907	23.91t	N/A	N/A	N/A	N/A
Total gross emissions	$TCO_{2\text{-}e}$		213t		59t		1,617t

*2021/22 is the first year the Guardians has measured: the carbon impact of commuting and working from home, freight (short and long haul) and electricity distributed transmission and distribution losses.

Climate Action Plan

"We are dedicated to a continued focus and evolution in our approach as better data and best practice emerge."

CLIMATE CHANGE ACTION PLAN

The Guardians has signed up to the Net Zero Asset Owners Commitment. This means that we have committed to taking a set of actions to help put the world on a path to achieve net zero emissions by 2050. This action plan sets out our plan for delivering on this commitment.

Our Climate Action Plan is informed by the fact that: (1) we already have an existing and evolving Climate Change Investment Strategy; and (2) we are pursuing an ambitious plan to deliver better outcomes and increased impact from our portfolio – not only for climate change but also for a broader range of environmental and social areas, through our Sustainable Finance Roadmap.

We have already set emission intensity and climate solutions targets but we have yet to set alignment or engagement targets. However, given the limited data currently available, and our desire to deliver broad ESG outcomes, we have decided to prioritise lifting the ESG performance of each of our investment classes and ensuring our investments will be net zero aligned. We have shifted our passive portfolio into Paris Aligned Benchmark indices. This year, we are considering our multi-factor factor equity portfolio. In the following two years, we will consider how to lift the performance of our private assets and fixed-income portfolios. Once we have improved the performance of these assets, we will set new emissions intensity, climate solutions, asset alignment and engagement targets for our portfolio as a whole.

Sustainable Finance Framework

RI COMPASS REVIEW PHASE 1 – 2020/21

Changing Mindsets
- Emerging trends & stakeholder research
- Review of policy & regulatory trends, our mandate
- Willis Towers Watson & best practice review
- Sustainable Finance Strategy developed & approved

Transforming Finance
- Research on ESG, best practice, peer practice
- Research on improving ESG performance (equities)
- CFIs & Net-Zero/Paris alignment methods

Financing transformation
- Link between Positive (Impact) Investment & our mandate;
- Impact investment research, review of peers & market
- Understanding internal barriers
- Options to increase number & scale of impact investments

RI COMPASS PHASE 2 – CAPACITY BUILDING 2021/22

Changing Mindsets
- Sustainable Finance reflected in Guardians' Mission/ Vision
- SIPSP updated
- Join Centre for Sustainable Finance
- UNPRI sustainability outcomes
- CFI Framework/Net Zero commitment; engagement

Transforming Finance
- Test, approve, apply ESG performance methodologies for equities, ESG in private markets; improve ESG data
- ESG in Risk Budget Review
- CCIS: Net Zero alignment
- Engage/exclude review

Financing transformation
- Deepen PI integration & resourcing; experiment
- Sustainable financial system engagement (external)
- Impact measures

RI COMPASS PHASE 3 – SCALING UP 2022/23

Changing Mindsets
- SF in personal objectives; build capability
- SF in SOI & SIPSP
- Measurement, reporting

Transforming Finance
- ESG equity portfolio established, monitored
- Improving ESG across other investments
- ESG data platform & research deepened
- CCIS/Net-Zero alignment
- External engagement
- Engage/exclude review

Financing transformation
- Increased impact AUM and scale of impact; climate solutions a focus
- Refining definitions, measurement, reporting
- Options for mapping impact

MATURING 2023-2025

Changing Mindsets
- SF reporting
- 5-yearly Independent Review

Transforming Finance
- Mature ESG performance strategy
- Mature data
- ESG consideration in 5-yearly Reference Portfolio review
- Review CCIS Targets

Financing transformation
- Mature Impact strategy
- Assess, review and adjust as needed
- Mapping impact where appropriate

IN OUR DNA 2026-30...

Changing Mindsets
- 5-yearly Independent Review (2029)

Transforming Finance
- ESG embedded – building best practice standards
- Outcomes mapped to SDGs (if appropriate)

Financing transformation
- Impact core to investment strategy
- Accounts for significant part of AUM
- Outcomes mapped to SDGs


To learn more about the NZ Super Fund,
please visit nzsuperfund.nz