"HOW WE INVEST" WHITE PAPER

PORTFOLIO COMPLETION

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JUNE 2020

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Te Kaitiaki Tahua Penihana Kaumātua o Aotearoa

PREFACE

Portfolio Completion is a value-adding strategy focused on obtaining cost-effective access to liquid exposures and managing them efficiently. We aim to minimise and reduce the direct and indirect costs associated with implementing the NZ Super Fund's Reference Portfolio investments, hedging and active investments.

This paper expands on the role of the Portfolio Completion programme at the Guardians of New Zealand Superannuation, and how it fits with our wider endowments and investment beliefs. It explains the performance of the programme to date, and lists the governance and decision-making frameworks needed for its implementation.

Matt Whineray
Chief Executive Officer

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WHAT IS PORTFOLIO COMPLETION?

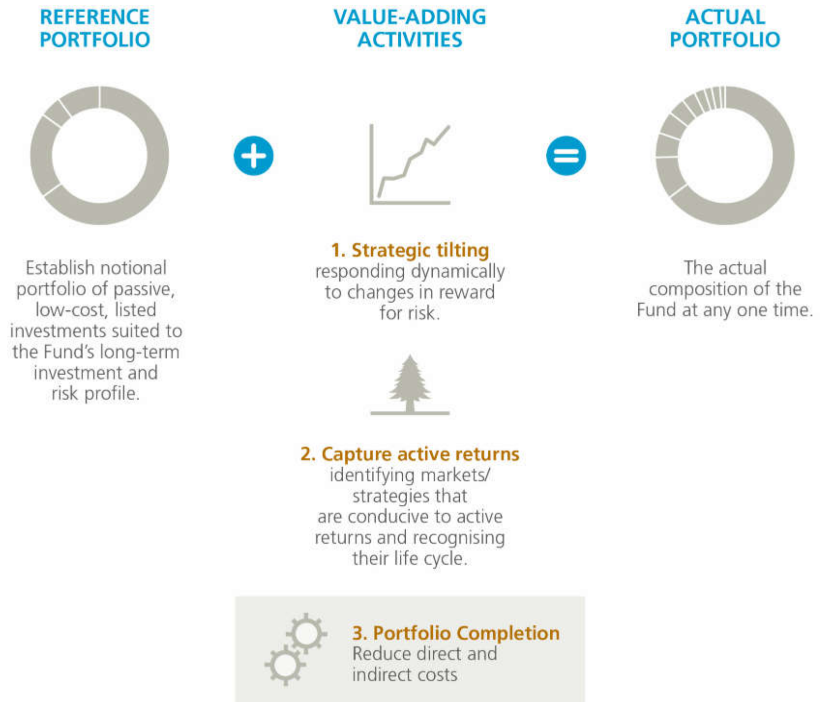
We use a Reference Portfolio, set by our Board, to benchmark the performance of the NZ Super Fund's Actual Portfolio and the value we are adding to it through our active investment strategies.

The Reference Portfolio is a shadow or notional portfolio of passive, low-cost, listed investments capable of meeting our objectives over time. Suited to the Fund's long-term investment horizon and risk profile, it has an 80:20 split between growth equities and fixed-income investments. Its foreign currency exposures are 100% hedged to the New Zealand dollar.

The Fund's Actual Portfolio comprises all the investments we have made in line with the Reference Portfolio, plus our three active, value-adding investment strategies.

Portfolio Completion is a value-adding strategy that accesses and manages the Fund's passive exposure to equities and bonds. It does this by managing and rebalancing the Fund to the Guardians' desired Reference Portfolio weightings and managing liquidity risk in the most cost effective manner possible.

The Guardians has developed a set of beliefs that provide a clear statement about how we believe investment markets work. Accompanying each belief is an investment fact. The Portfolio Completion strategy is anchored to the investment fact that managing fees and costs, and ensuring efficient implementation, can prevent unnecessary cost to the Fund over time.



A DISCIPLINED APPROACH TO PASSIVE IMPLEMENTATION

A disciplined approach to investment implementation is important for the long-term success of the Portfolio Completion programme. Our goal is to minimise the transaction costs and tracking error[1] involved in implementing the Fund's passive exposures.

The Fund's passive exposures change as markets move over time. Periodically, therefore, we consider whether to rebalance (buy and sell listed equities and fixed income assets) the Fund's actual passive exposures back in line with the weightings in the Reference Portfolio. Minimising the costs of this rebalancing activity is an important objective.

We also believe it is important to have multiple ways of accessing the Fund's passive exposure to global equity and fixed income markets. This avoids the possibility of being locked into one, potentially expensive, option. Our access points to obtain passive exposure include:

[1] Also known as active risk, the difference between the volatility of a portfolio's returns and the benchmark or index it is meant to mimic.

- physically owning shares in a company, or bonds issued by a corporate or sovereign government;
- using derivative instruments which replicate the performance of particular subsets of the equity and fixed income markets; and
- using exchange traded funds.

When choosing between these different methods of obtaining passive exposure, we look closely at the total cost of ownership for each. The costs and risks that we factor into our decisions include:

- the time horizon over which the Fund needs the passive exposure;
- entry and exit costs e.g. broker commission and securities transaction taxes;
- opportunity costs of having liquidity tied up in cash equities or cash bonds versus derivative exposure;
- counterparty credit risk hedging costs if we use a derivative;
- funding costs of a derivative e.g. financing paid to counterparty banks;
- investment management costs paid to our external managers;
- internal Guardians costs e.g. IT, Investment Operations and legal costs; and
- custody and related costs for assets or derivatives held on our behalf.

CURRENCY MANAGEMENT

The Reference Portfolio's foreign currency exposures are 100% hedged to the New Zealand dollar. This means that we receive the actual return of the assets we are invested in without currency fluctuations adding or detracting from performance.

There are reasons, however, why we sometimes 'step away' from 100% hedging in the Actual Portfolio, in order to add value to the Fund. For example, we may delay or bring forward hedging because of possible market impact, or in the case of many emerging market and frontier market currencies, the high interest costs of hedging may mean we wish to target a lower hedge ratio to earn a better risk-adjusted return.

Sometimes it is not possible to directly hedge some emerging market and/or frontier market currencies, but where close substitutes exist (such as a currency regime pegged to the USD), we may hedge with a proxy currency instead.

The extent to which we deviate from the Fund's asset and FX targets is limited by Board-approved Fund-wide rebalancing and risk constraints.

MANAGING LIQUIDITY

The Portfolio Completion team manages the Fund's liquidity to ensure it meets day-to-day actual and potential payment obligations while minimising the direct and indirect costs of meeting those obligations.

Liquidity is the ability to buy or sell an investment in a timely manner with minimal transaction costs. We define highly liquid assets as cash or those that can be converted into cash within two days at little or no cost.

Ensuring we hold enough liquid assets to meet the Fund's liabilities in a timely manner is critical. At any given time, we must have quick access to cash to manage the Fund's obligations and expenses, and to allow for further investment.

To manage this, we have a Framework that comprises two parts: Liquidity Management and Portfolio Flexibility.

Our **Liquidity Management** Framework is designed to ensure that we hold sufficient liquidity (e.g. cash or Treasury bills) to meet short-term cash flow obligations. The amount of short-term liquidity the Fund needs is informed by a Minimum Liquidity Requirement.

The Minimum Liquidity Requirement sets out the absolute minimum liquid assets the Fund needs to hold to meet its projected payment obligations (e.g. on derivative positions) over an adverse two day market move. It is designed to give us a high level of confidence that, during any extreme market volatility, liquidity demands can be met by the Fund.

Portfolio Flexibility is the term we use to describe the asset allocation process of managing our liquidity endowment over a market cycle. We aim to select a mix of assets that maximise returns while minimising the risk that we are over-invested in illiquid assets and forced to sell illiquid assets in a stressed environment.

We model Portfolio Flexibility by subjecting the Fund to various simulated shocks (or 'stress tests') to see how the combination of illiquid assets, strategic tilting and currency hedging combine to place the Fund's ability to meet its payment obligations under stress. This modelling includes an anticipation of contrarian investments that could be desirable under these conditions and so assists us to model and monitor that there is not an unacceptable liquidity threat to the overall portfolio.

WHY HAVE WE INSOURCED PORTFOLIO COMPLETION ACTIVITY?

We believe insourcing can provide the following benefits:

1. we have better alignment of interests when managing this value-adding strategy internally, reducing the risk of potential principal-agent conflicts that may arise under an external manager or an external implementation specialist;
2. where we have the internal capability, we consider that internal management can achieve improved net returns, mainly due to cost savings;
3. it allows us to centrally manage our Fund liquidity and related counterparty exposures;
4. having credible internal implementation alternatives creates bargaining power with third parties (such as managers);
5. it allows for a whole-of-portfolio focus; and
6. it allows us to control decision-making, enabling more precise tailoring of our portfolio to our objectives and greater responsiveness to market conditions.

PERFORMANCE

Our Portfolio Completion activities have added considerable value to the Fund over time. Over the past five financial years represented in the table below, in dollar terms, we estimate the value added as approximately NZ$700 million. Of the various work streams involved in completing the portfolio, foreign exchange management is the biggest contributor to value add:

	Foreign Exchange	Passive Replication	Transitions and other	Total
2014/15	0.48%	-0.17%	0.03%	0.34%
2015/16	-0.28%	0.34%	-0.03%	0.03%
2016/17	0.17%	0.06%	0.00%	0.23%
2017/18	0.37%	0.24%	0.00%	0.61%
2018/19	0.27%	0.14%	0.05%	0.46%

- **Foreign Exchange**: represents the value add versus our currency hedging benchmark. Value is added through management decisions such as hedge ratios and the duration of hedges.
- **Passive Replication**: represents the value add from rebalancing the Fund back to its target Reference Portfolio weights in various asset classes.
- **Transitions and other**: the impact on Fund performance when we make changes to parts of our investment strategies.

To place these figures in context, we expect to outperform the Reference Portfolio by 1% per year across all of our value-adding strategies (including Portfolio Completion), over the long-term, based on the level of risk we take.

GOVERNANCE

Successful implementation of the Portfolio Completion strategy requires robust governance and decision-making processes.

The activities undertaken within Portfolio Completion are managed internally by the Guardians, and Board commitment to the strategy rests upon their confidence in the management of the programme.

Activities are managed according to internal, CEO-approved internal investment mandates that detail the mandate objective, benchmark (if any), mandate guidelines, use of approved products, risk and prudential limits, as well as reporting and valuation requirements. A full list of internal investment mandates is published each year in our Annual Report.

Policy framework

Portfolio Completion activities are managed under two policies:

- Portfolio Completion and Internally Managed Securities Policy
- Derivatives Policy

Oversight

An oversight review group periodically considers counterparty creditworthiness and limits, liquidity management, mandate and Fund compliance. The Guardians' Investment Committee and Board review portfolio completion performance to a regular schedule.