ITEM 6(A) CCIS: REDUCE EQUITY FOR THE REFERENCE PORTFOLIO

Presented by: [redacted]

Date: ***6 April 2016***

Names and titles of staff members have been withheld for privacy reasons. Costs have been withheld where these may be prejudicial to negotiations or knowing them could give improper advantage to other market participants.

A table on page 8 has been withheld, at the request of the supplier, for reasons of commercial sensitivity and competitive advantage.

1 Purpose

1.1 This paper is for **approval.**

1.2 This paper proposes a methodological change to the Reference Portfolio equity indices whereby a number of stocks with high carbon footprints will be excluded from the Reference Portfolio. The exclusions in the revised Reference Portfolio will significantly reduce the carbon footprint relative to the original Reference Portfolio, thereby improving the resilience of the Fund to climate change-related risks. We ask the Board to **approve** the methodology used to create the revised Reference Portfolio equity indices.

1.3 The change to the Reference Portfolio will flow through to the Fund's passive physical holdings and reduce the Fund's carbon footprint. We ask the Board to **approve** the following public expectation of the Fund's carbon footprint reduction.

> *By 2020, we expect to reduce the carbon emission intensity of the Fund by at least 20%, and the carbon reserves of the Fund by at least 40%, measured relative to the original Reference Portfolio.*

2 Summary

2.1 An objective methodology for creating a targeted exclusion list is outlined in section 5. The proposed methodology incorporates an ESG metric in meeting the twin carbon footprint targets relating to carbon emissions and carbon reserves.

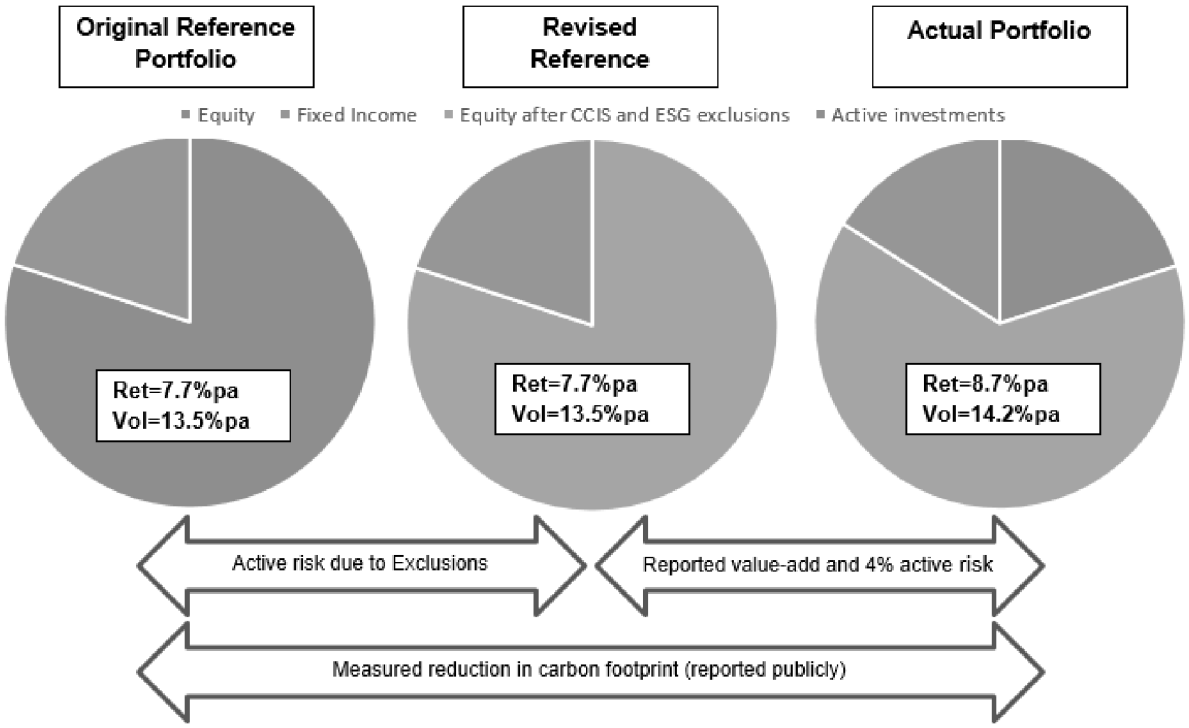
2.2 We will task MSCI with independently implementing the methodology and updating the exclusion list on an annual basis. MSCI and NZX will calculate the resulting return indices used for the Fund's performance calculations.

2.3 We intend to report annually how the Fund's carbon footprint has changed over-time and how it compares relative to the original Reference Portfolio.

2.4 We believe that the investment risk associated with climate change is material, and that these exclusions will lead to a significant increase in resilience of the revised Reference and Actual Portfolio, leaving both better-placed to achieve the mandate of maximising returns without undue risk.

2.5 The following diagram illustrates the relationship between the original Reference Portfolio, the proposed revised Reference Portfolio, and the actual Fund Portfolio. It highlights the starting point for measuring the reduction in the carbon footprint and the starting point for reported value-add and active risk.

Figure 1: Relationship between original and revised Reference Portfolio and Actual Portfolio



3 Background

3.1 This paper represents the final stage of the Reduce Equity stream of the Climate Change Investment Strategy (CCIS). A work programme to analyse and further reduce the wider Fund's climate risk exposure, and to capture investment opportunities from Climate Change, is an ongoing multi-year project.

3.2 A reduction of climate-change related risks for the Fund is a key goal of the CCIS. For the purposes of the Reduce stream, a reduction in the Fund's measured carbon footprint is considered to be a major step towards that goal. Companies with large carbon footprints are at first blush most exposed to the introduction of carbon pricing or carbon limits that will raise the cost of emitting carbon and reduce the value of carbon reserves.

3.3 A previous Board paper (available here for optional reading) examined several options for how the Fund's footprint would be defined, measured and reported, and indicated a feasible expectation for reduction. It also outlined the targeted exclusions approach presented here as the preferred option over the available off-the-shelf low-carbon indices. We reiterate the reasons for that choice:

- The desire to be able to customise the exclusion criteria beyond pure carbon metrics to include other factors that affect climate-related risk.
- A concern that the optimisation procedures required to create the index were proprietary and not sufficiently objective for our Benchmark selection criteria.
- A concern that the re-weighting scheme created by optimisation would undermine our investment thesis by increasing holdings of stocks closely related (statistically) to high carbon footprint stocks.

- The simplicity of integrating the index with our existing Reference Portfolio's equity exposure, which features non-standard weights to emerging markets and New Zealand.

4 Mandate considerations in choosing the Reference Portfolio

4.1 There is a clear and growing acceptance in the institutional investor community that ignoring Climate Change presents an undue risk for long-term investors. The G20 FSB Taskforce on Climate Related Financial Disclosures issued recommendations late last year relating to Governance, Strategy, Risk Management, and Metrics and Targets. Among the Governance recommendations is to "describe the board's oversight of climate-related risks and opportunities". Peer Funds, PGGM and AP3, have both taken measures to decarbonise their equity portfolios. Closer to home, we note the recent statement from the Australian Prudential Regulation Authority, outlining its view that climate risks are "foreseeable and material" to financial institutions. Incorporating an awareness of climate risk into the investment process is an increasingly mainstream position.

4.2 Previous Board papers have outlined our view that a Reference Portfolio constructed without regard for the "undue risk" presented by climate change-related risks may not be fit for purpose. As per our Responsible Investment Framework, we are cognisant of the ethical and reputational considerations associated with investing in companies that are heavily contributing to Climate Change. The proposed change to the Reference Portfolio is also in accordance with our beliefs that ESG factors can be material to performance, and that investors with a long-term horizon can outperform (which is of relevance when market pricing does not seem to reflect climate-related risks).

4.3 Subject to meeting the requirements of our mandate, previous Reference Portfolio reviews have outlined the main characteristics for defining a good benchmark. These are: objective selection criteria, complete representation of the asset class universe, easily replicable, investable, acceptance by investors.

4.4 The objective selection criteria were considered to be the pertinent constraint that the proposed exclusion methodology is intended to satisfy. The exclusion principles are designed to be straightforward, rules-based, and implementable by a third party index provider.

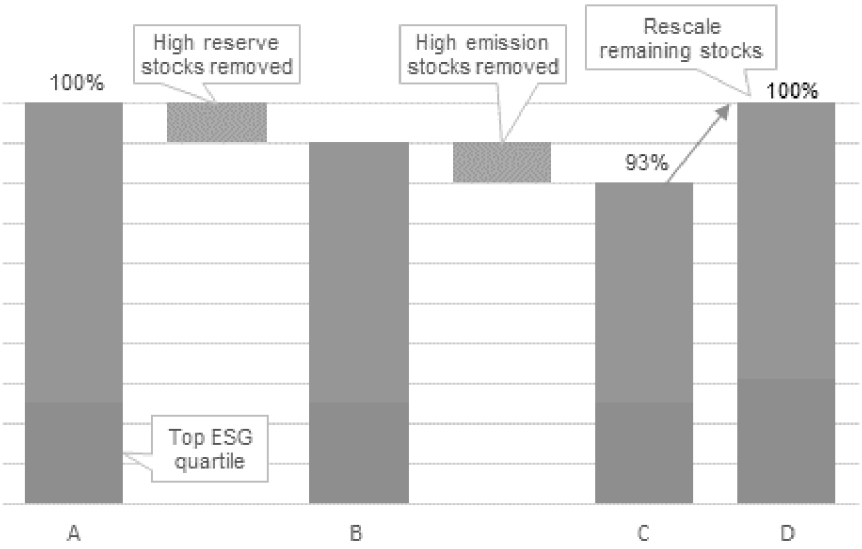
5 Exclusion methodology

5.1 We recognise that a carbon footprint measure alone may not be sufficient to determine a company's risk exposure to changing climate policy. Also relevant is the regional policy environment facing the company, and management's acknowledgment and intention to reduce their climate-related risk. We believe there is value in identifying these factors given that high-emission industries will exist in some form in the future, and some high-emission companies will contribute to the technological transition to cleaner energy sources.

5.2 In order to expand our definition of "resilience" beyond the basic carbon footprint metrics (carbon reserves and emissions) we propose using the MSCI ESG ratings as an initial filter on the stock universe. Stocks in the top quartile of MSCI's "Carbon Emissions" score – reflecting less risk and better management than their peers – will not be considered for exclusion. A detailed description of the factors that influence this score is available as Appendix II.

5.3 The basic approach is outlined in a stylised Figure 2 below and a brief description follows. A more detailed description of the methodology is described in Appendix III.

Figure 2: Equities exclusion approach



A. **Starting universe.** The Reference Portfolio equity exposure (a combination of the World Investable Market Index, Emerging Markets Investable Market Index, and S&P/NZX50 Index) is used as starting universe for developing an exclusion list. Stocks in the top quartile of MSCI's "Carbon Emissions" score are marked by the blue bar to indicate that these stocks will not be excluded.

B. **Reserve intensity target.** Stocks in the universe are ranked by their reserve intensity (potential emissions per unit of energy produced), and stocks are eliminated (from highest to lowest) until the desired reserve reduction is met.

C. **Emission intensity target.** Then the remaining stocks are ranked by carbon emission intensity (emissions per unit of sales) and stocks are eliminated until the carbon emission intensity reduction is obtained. Ranking by intensity ensures that the stocks that appear the most exposed to climate risk – because they emit the most CO_2 per unit of sales or energy created – are removed from the portfolio first.

D. **Re-weighting.** The remaining stocks within the indices are linearly up-weighted to preserve the proportionality between the three equity indices.

5.4 We considered exempting the NZ stock index from the exclusion process but decided it was important to consider all companies equally, especially given our leadership role in the NZ market. The only NZ stock on the exclusion list is Genesis Energy.

5.5 The methodology will be reapplied annually to update the exclusion list. Previously excluded stocks that no longer appear on the exclusion list are candidates for a return to the portfolio, but to avoid unnecessary shuffling at the boundary we will implement a 2-year "cool-down" period – that is, if a stock is excluded at year 0, it will only be included again at the start of year 2 if it is off the exclusion list in years 1 and 2.

6 Characteristics of post-exclusion Reference Portfolio

6.1 The Reference Portfolio reserve target was set at a 70% reduction and the carbon emission intensity target was set at a 50% reduction. These represent a balance between achieving a meaningful decrease in the carbon footprint without eliminating an excessive amount of the equity universe. The footprint reduction numbers are comparable to those achieved in many low-carbon indices and they will translate into a meaningful reduction in the footprint of the Fund itself. The higher reduction target

for reserves represents the high confidence that the "stranded assets" these companies hold will eventually prove of little economic value.

6.2 Table 1 shows the impact of the exclusions on the Fund's carbon footprint, and on the GICS (Global Industry Classification Standard) sector weights of the Reference Portfolio equity. The impact on the Fund's carbon footprint as at 28 February 2017 was calculated using the assumption that active investments have the same emission intensity as the original equity universe and no carbon reserves. The calculation of our annual carbon footprint will result in a more precise figure. Equity derivative positions were treated as though they had the profile of the underlying physical holdings, and the strategic tilting positions were ignored.

Table 1: Exclusion Option characteristics

			Proposal
Reference Portfolio Equity	Target Emission Reduction		-50.0%
	Actual Emission Reduction		-50.2%
	Target Reserve Reduction		-70.0%
	Actual Reserve Reduction		-70.0%
Fund at 28 Feb 2017	Actual Emission Reduction		-22.3%
	Actual Reserve Reduction		-43.4%
		Current index weights	**% Change / (Number of stocks excluded)**
Reference Portfolio Equity Sector weights	Consumer Discretionary	12.2%	+0.8% (3)
	Consumer Staples	8.4%	+0.5% (1)
	Energy	6.5%	-3.8% (157)
	Financials	17.2%	+1.2% (3)
	Health Care	10.8%	+0.8% (0)
	Industrials	11.7%	+0.4% (30)
	Information Technology	15.0%	+1.1% (1)
	Materials	6.2%	-0.8% (118)
	Real Estate	4.4%	+0.3% (4)
	Telecommunication Services	3.7%	+0.3% (0)
	Utilities	3.9%	-1.1% (110)
	Market cap exclusions		6.9%
	Total exclusions		427

6.3 High-carbon footprint stocks are concentrated in certain sectors (for emissions, Utilities, and for reserves, Energy). As a result, the exclusion procedure results in significant underweights in the Energy (-3.8%), Utilities (-1.3%), and Materials (-0.9%).

6.4 From the perspective of an economic lens, the post-exclusion Reference Portfolio is likely to perform relatively worse in the event of a sharp increase in energy prices. The utilities underweight would tend to perform relatively worse in a scenario where interest rates were falling (as this tends to provide a boost to the high-yielding utilities sector). These can be offsetting effects when strong global economy activity is

pushing up commodity prices and interest rates. However, an exogenous energy-price shock that leads to slowing activity and a reduction in interest rates would be the greatest concern.

7 Risk and return implications

7.1 Bloomberg's Global Active Equity Risk model was used to calculate the active risk for the equity component of Reference Portfolio after the exclusion lists were applied (measured against the original Reference Portfolio). At the total Reference Portfolio level, we estimate this represents about 0.7% of active risk. Active risk arises primarily from the sector weight changes (as opposed to changes to country weights or factor exposures). The exclusion proposals do not have any material impact on the total volatility assumptions for the Reference Portfolio.

7.2 Arguably, active risk is not a meaningful concept in the context of the choosing a Reference Portfolio. The more important criteria is that the Reference Portfolio meets the Fund's mandate. If so, then our benchmark selection criteria can be used to assess whether the proposed benchmark remains a representative and fairly complete implementation of the investment universe. In our view, the proposed Reference Portfolio, which retains 93% of the original market capitalisation, will remain a robust benchmark.

7.3 We believe that the Reference Portfolio returns will be higher over a long-horizon without exposure to companies that will be negatively impacted by climate-policy related risk. It is difficult to calibrate a precise return expectation for an investment thesis relating to a long-term horizon, as there is a high degree of uncertainty regarding the speed at which climate policy and technology will evolve. We applied Mercer's Climate Change scenario analysis to our proposed exclusion methodology. This analysis suggests an improvement in the Reference Portfolio return of about 3-10 basis points per annum over the next thirty years.

7.4 We would not normally incorporate a non-equilibrium return view into the Reference Portfolio expected return, and do not recommend doing so here. We note that by decarbonising the Reference Portfolio to a greater extent than we will initially achieve in the Actual Portfolio, we have made the Reference Portfolio a more challenging benchmark for the Fund's management to exceed.

8 Implications for the Fund when completing the portfolio

8.1 The proposed methodology is designed to achieve our expectation for reducing our carbon footprint at the Fund level, even without material footprint reductions elsewhere in the active investments of that portfolio. There is, however, some uncertainty in the forecasted carbon footprint of the Actual Portfolio. This is because the Reference Portfolio equity exposure are implemented through physical passive holdings and derivative instruments. The carbon reduction achieved through each implementation alternative is likely to differ.

8.2 For the physical passive holdings, we will be applying the carbon exclusions to our passive managers' mandates and expect the full carbon reduction to be realised.

8.3 For the derivatives implementation, we may not achieve any carbon reduction, unless a bespoke short overlay of excluded stocks is constructed. Practically, the economics

of a short exclusion overlay will cost around [redacted] basis points. The Portfolio Completion team will consider the pricing of the short exclusion overlay versus the tracking error associated with it. Should we decide to implement the short exclusion overlay, the carbon footprint in the Actual Portfolio will be lower than is estimated in this paper.

9 Implementation and timing

9.1 We recommend that the revised Reference Portfolio indices be calculated beginning 1st July 2017, and the passive equity managers will implement the changes at that point.

9.2 MSCI will independently implement the methodology and update the exclusion list annually. MSCI and the NZX will be engaged to calculate the resulting custom return indices used for the Fund's performance calculations.

9.3 We have previously considered including our existing ESG exclusions in the Reference Portfolio return calculations but deferred doing so because of the costs associated with a custom index. Given that custom indices are now a requirement, we propose adding the ESG exclusions to these custom indices at the same time.

10 Communications strategy

10.1 A communications plan will be developed to support the implementation of the climate change strategy. Our current thinking is:

- Recommend engaging with the Greens to explain to them the approach we have taken.
- Focus our communications on the overall footprint reduction rather than on individual stocks.
- Include detailed Q&A to respond to queries on the implications for NZ companies (e.g. Genesis Energy, Fonterra).

10.2 Milestones to be managed include the release of the post-implementation equity holding list.

10.3 A statement of our expected footprint reduction that can be announced publicly is regarded as best practice and helpful for conveying our strategy.

Recommendations:

1. ***Approve a change to the Reference Portfolio indices by applying the exclusion methodology outlined in this paper.***
2. ***Approve the following public expectation of the Fund's carbon footprint reduction:***

By 2020, we expect to reduce the carbon emission intensity of the Fund by at least 20%, and the carbon reserves of the Fund by at least 40%, measured relative to the original Reference Portfolio.

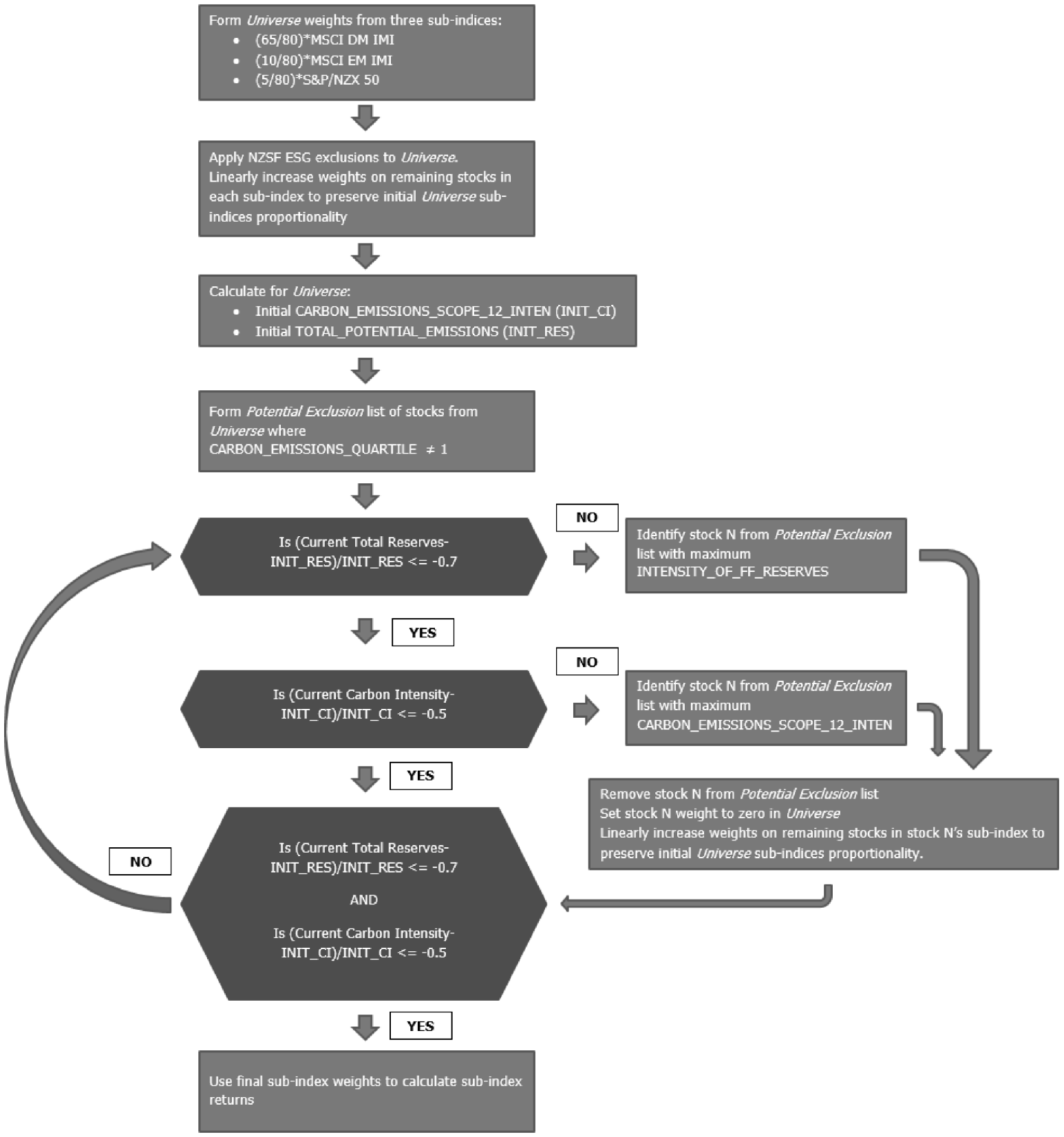
Appendix I – Exclusion List Click here for optional reading

Appendix II – MSCI Scoring Methodology

KEY ISSUE: CARBON EMISSIONS	
This issue evaluates the extent to which companies may face increased costs linked to carbon pricing or regulatory caps. Scores are based on exposure to GHG intensive businesses and emerging regulations; carbon reduction targets and mitigation programs; and carbon intensity over time and vs. peers.	
Impact	• Contribution to climate change
Risk / Opportunity	• Increased costs linked to carbon pricing or trading • Facility retrofits or operational disruptions due to regulatory caps
Exposure Metrics	• Extent to which companies operate in jurisdictions where regulations on carbon emissions are stringent or becoming more stringent • Extent to which companies' main business activities are carbon-intensive based on economic input-output model estimating total GHG emissions relative to sales
Management Metrics	• Efforts to reduce exposure through comprehensive carbon policies and implementation mechanisms, including carbon reduction targets, production process improvements, and installation of depollution or emissions capture equipment, and/or switch to cleaner energy sources.
Sectors	[redacted]
Data Sources	

Appendix III – Exclusion Methodology Flowchart

A more detailed and accurate description of the methodology is explained by the flowchart below.



- The Reference Portfolio equity exposure (a combination of the World Investable Market Index, Emerging Markets Investable Market Index, and S&P/NZX50 Index) is used as starting universe for developing an exclusion list. After excluding a stock from an index, the remaining stocks within that index are linearly up-weighted to preserve the proportionality between the three equity indices.
- In order to achieve the targeted footprint reduction, the stocks in the universe are ranked by their reserve intensity (potential emissions per unit of energy produced), and stocks are eliminated (from highest to lowest) until the desired reserve reduction is met.
- Then the remaining stocks are ranked by carbon emission intensity (emissions per unit of sales) and stocks are eliminated until the carbon emission intensity reduction is obtained. Ranking by intensity ensures that the stocks that appear the most exposed to climate risk – because they emit the most CO2 per unit of sales or energy created – are removed from the portfolio first.
- After excluding a stock, the remaining stocks within that index are linearly up-weighted to preserve the proportionality between the three equity indices.

Glossary of MSCI-calculated fields

CARBON_EMISSIONS_SCOPE_12_INTEN – *Carbon Emissions - Scope 1+2 Intensity (t/USD million sales)*: This figure represents the company's most recently reported or estimated Scope 1 + Scope 2 greenhouse gas emissions normalized by sales in USD, which allows for comparison between companies of different sizes.

TOTAL_POTENTIAL_EMISSIONS – *Total Potential Emissions (MtCO2)*: This field represents the potential carbon emissions of the coal, oil and gas reserves owned by a company. It is computed as the sum of the potential carbon emissions of the total coal, total oil and total gas reserves owned by the company.

INTENSITY_OF_FF_RESERVES – *Carbon intensity of fossil fuel reserves (MtCO2/mmboe)***:** This field represents the carbon intensity of fossil fuel reserves owned by a company. Fossil reserves are defined as proved and probable reserves (i.e. 1P and 2P) for coal and proved reserves (i.e. 1P) for oil and natural gas.

CARBON_EMISSIONS_QUARTILE – *Carbon Emissions Score Quartile*: Company's Carbon Emissions Score Quartile relative to companies in the relevant ESG Ratings Industry that are constituents of the MSCI All Country World Index (ACWI). A value of 1 represents the top quartile and 4 represent the bottom quartile.