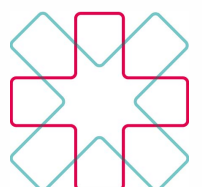




# Kaipara Moana Economic Impacts

Review of the approach and methodology utilised in the report  
Final Report

1 April 2025  
Commercial in Confidence





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# Preface

This report has been prepared for the Ministry for the Environment by Jason Webber from MartinJenkins (Martin, Jenkins & Associates Ltd).

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# Overview

We were asked by the Ministry for the Environment to review a technical report on the economic impacts of the Kaipara Moana Remediation Programme.

The Kaipara Moana Remediation Programme is a large-scale environmental initiative aimed at restoring the health and biodiversity of the Kaipara Harbour, New Zealand's largest estuarine ecosystem. The programme focuses on reducing sedimentation, improving water quality, and promoting sustainable land-use practices within the Kaipara Harbour catchment area.

The programme is in total a \$200m investment, with \$100m in funding provided from the government's Jobs for Nature (J4N) programme.

We were asked by the Ministry to review and assess the methodology in a technical report which estimates the benefits from the total investment in the Kaipara Moana Remediation Programme, as well as the approach taken to estimating the benefit-cost-ratio (BCR) of the estimates included within the reports.

We were provided a copy of the draft report to review, titled *Economic Impacts - Technical Report / Kaipara Moana Remediation*.

This report summarises our findings from the review of the report, the methodological approach utilised to arrive at the BCR calculations, and some recommendations for enhancement to the findings that the Ministry may wish to consider.



# Summary of Review

The technical report summarises an approach to the calculation of benefits for the Kaipara Moana Remediation Programme, including developing alternative modelling methodologies for the economic benefits included within the overall benefit calculation, and a critique of the specific limitation of I/O modelling for economic benefits.

## Overall findings

Overall, the review concludes that the total benefits that are estimated to be delivered by the \$200m investment are \$351.3m, for a total Crown BCR of 3.51, and a total BCR of 1.76.

We consider that the methodological approach to arriving at these results are accurate, and there is a range of detailed analysis in the paper which underpins the approach to the calculations.

We have included some minor comments on factual items in an accompanying annotated version of the report, provided to the Ministry.

In addition, the paper also develops several alternative sensitivities and scenarios to test the robustness of the results, which includes:

- Developing an approach to improving the applicability of I/O tables by adjusting some of the assumptions and outputs of these according to both a sensitivity test and a Monte Carlo simulation.
- Conducting a sensitivity test on the BCR utilising different discount rates, which the paper currently refers to as 'interest rates'.

## Opportunities for enhancement and updates to the paper

We also consider that there are a range of enhancements that the Ministry may wish to consider making to the paper, to align it with current best practice on cost benefit analysis in the New Zealand context.

In addition, we also believe that there is material which could be usefully shortened in the report, to aid its understanding, and to ensure that the bulk of the report remains focussed on calculating the benefits of the Kaipara Remediation Programme.

We summarise each of these recommendations below.



## **Recommendation 1: Conduct a sensitivity test utilising the Treasury's new discount rates for cost-benefit analysis.**

Since this report was developed, the Treasury has released updated guidance on the use of discount rates – and a mandatory sensitivity test – to be used with the new discount rate regime. We consider that this change has the most material impact on the calculation of benefits for the Jobs for Nature (J4N) programme, and we recommend that all CBA analysis is conducted with these updated discount rates.

These new discount rates are a non-commercial /SRTP discount rate (which utilises a discount rate between 1 and 2%, depending on the year), and a commercial / SOC discount rate, which utilises a discount rate of 8%.<sup>1</sup>

As the Kaipara Remediation Programme would be classified as a non-commercial investment, we highly recommend that the analysis on the BCR is updated to take account for these new discount rates. Treasury utilises the 8% sensitivity test to generate a range for the uncertainty of benefits and costs that would occur in the future, including things such as changes in the economy and other matters.

It is likely easiest to simply apply the sensitivity test that Treasury has recommended with the launch of the new discount rate regime, rather than developing some of the more precise methods recommended in the technical report.

## **Recommendation 2: Consider simplifying the report by removing the discussion on the methodological limitations of the approach used to calculate the deadweight cost of taxation.**

The technical report includes a critique on the simplifying nature of the deadweight cost of taxation estimate utilised to calculate these costs. Whilst we agree in some regards with this critique, these standards are set by the New Zealand Treasury, and the Treasury recommends the use of this simplifying assumption for all proposals that are funded from general taxation.

The Treasury's recommendation for inclusion of the deadweight cost of taxation is included in their 2015 Guide to Social Cost Benefit Analysis, which remains the most up-to-date guide to cost benefit analysis for New Zealand Government proposals, and which states that:

*'CBAs should include the deadweight cost of taxation, equal to 20% of project costs that are funded from general taxation.'*

<sup>1</sup> For further information on these new discount rates and the economic analysis that underpins their settings, please see here: <https://www.treasury.govt.nz/information-and-services/public-sector-leadership/guidance/reporting-financial/discount-rates>



### **Recommendation 3: Consider adopting the use of CGE modelling to estimate economic benefits in lieu of I/O and EIA analysis, particularly given the use of far lower discount rates in CBA analysis.**

Input/Output analysis, on which Economic Impact Assessments have traditionally relied on in New Zealand, have a range of limitations, which are noted in the technical report. In short, I/O modelling largely presumes that the structure, productivity, and efficiency of the economy remains the same over the entire analysis period. This is a limitation of the modelling approach.

In an environment where effective discount rates used for calculating costs and benefits were higher, this assumption is methodologically sound. This was because, when using a discount rate of, say, 10%, benefits that occurred ten years in the future were not included in the net present value or benefit-cost-ratio calculations.

However, now that discount rates are far lower, making a simplifying assumption that the economy will not change over the assessment period is likely no longer sound. This is because a lower discount rate now values benefits accrued up to 50 years after the commencement of the initiative, and it becomes more necessary to consider changes in the economy that would occur throughout that time period.

As a result of the limitations with I/O analysis, the technical report presents an approach to applying sensitivities and Monte-Carlo simulations to several variables that produce the I/O tables.

Whilst this approach is methodologically sound and a way to account for the limitations that exist in I/O modelling and EIA analysis, we consider that decision-makers would be better served by using two other items in combination:

- The overall sensitivity test of the use of non-commercial/SRTP and commercial/SOC discount rates, as the commercial discount rate highly discounts future benefits to the point that there isn't a need to make significant assumptions about changes in the overall economy, absent a large exogenous shock.

If the BCR for economic benefits remained above 1.00 in both instances, decision-makers could be confident that the investment represented good value-for-money, and no further economic analysis beyond the use of I/O tables and EIA would need to be conducted.

- When conducting economic analysis on an investment or initiative that utilises the non-commercial/SRTP discount rate and the BCR is lower than 1.00 when the mandatory sensitivity test is applied, utilise a Computable General Equilibrium (CGE) model.

CGE models are a class of economic models that use actual economic data to estimate how an economy might change over time. They are much more dynamic than I/O models and estimate changes in the composition of the economy over time. For this reason, they are much more suited to calculating economic benefits over longer time periods compared to the use of I/O modelling, upon which traditional EIAs have relied on.



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