

UNDER the Fast Track Approvals Act 2024

IN THE MATTER of a substantive application for marine
consents that would otherwise be
applied for under the Exclusive Economic
Zone and Continental Shelf
(Environmental Effects) Act 2012

BY Trans-Tasman Resources Limited

**JOINT STATEMENT OF EVIDENCE OF CHRISTINA LEUNG AND TING
HUANG (ECONOMICS)**

**ON BEHALF OF TRANS-TASMAN RESOURCES LIMITED IN RESPONSE TO
COMMENTS RECEIVED**

13 OCTOBER 2025



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EXECUTIVE SUMMARY

1. We respond to the economic matters regarding the Taranaki VTM iron sand mining project, particularly the use of the regional input-output approach; inputs and assumptions underpinning the estimates; discounting of the benefits estimated; and the consideration of the potential decline in some other industries as a result of the project.
2. We consider our regional input-output approach to be fit for the purpose of estimating the wider economic impact of the project. We built on the Stats NZ Input-Output table and applied a simple location quotient method to assess how economic activity arising from the capital investment and operation of TTRL's iron sand mining in the South Taranaki Bight (STB) will flow through to the supporting industries, and what these flow-on effects mean for broader economic activity at the local district, regional and national level, in terms of GDP and employment. We acknowledge the limitations with the regional input-output approach, which we had listed in our NZIER EIA report, but we do not consider those limitations to be material when assessing the benefits of the proposal.
3. We drew on historical trends and forecasts from credible international sources to apply our price assumptions for our analysis. Therefore, we do not consider the price assumptions result in over-estimation of the project's contribution to royalties and tax. We note TTR provided the inputs on their planned expenditure, employment in New Zealand, and the project's expected output and cash flows.
4. To strengthen the robustness of our estimates, we undertook additional analysis to consider the potential negative impact on economic activity in some other industries that might arise from the project. Even after accounting for the potential negative economic effects on fishing and tourism activities, we estimate the project will still bring significant net economic benefit to the regional and national economies.

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5. We estimate the net economic impact of the project when operating to be \$217.47 million for the region and \$260.95 million for the New Zealand economy per year. At a discount rate of 8% (in line with Treasury guidance), we find the cumulative net economic benefit over the 20-year operation of the project to be \$2.135 billion for the region and \$2.562 billion for the New Zealand economy.

INTRODUCTION

Qualifications and experience

1. We are **Christina Leung**, Deputy Chief Executive (Auckland) and Principal Economist at the NZ Institute of Economic Research (NZIER), **Ting Huang**, Senior Economist at NZIER, and Daniel Hamill, Senior Economist at NZIER.
2. Christina holds a Bachelor of Commerce (Honours) with first class honours in Economics from the University of Auckland. She joined NZIER in February 2015, and in her role, she is responsible for looking after NZIER's economic forecasts and analysis of NZIER's Quarterly Survey of Business Opinion. She has also undertaken a wide range of projects for clients, including analysis of regional and industry developments.
3. Prior to joining NZIER Christina had over ten years' experience in the public and private sectors, including working as a Financial Markets Analyst and then as a Senior Economic Analyst at the Reserve Bank of New Zealand (RBNZ), and then an Economist at the ASB Bank, where she led the quarterly forecasting process and produced regular commentary on key economic and industry developments. She has also been expert witness on many large-scale litigation cases involving defective building matters.
4. Christina has been a CFA charter-holder since 2010, which is a program offered internationally by the American-based Chartered Financial Analyst (CFA) Institute to investment and financial professionals. The attainment of this qualification involved passing three levels of exams and completing four years of work experience related to the investment decision making process. The CFA Society New Zealand is a key professional body for providers of financial advice. Since November 2019, she has been a Board Director of CFA Society New Zealand, and from February 2022 became Vice Chair of this Board.

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5. Christina's key areas of expertise include:
 - (a) forecasting and modelling of economic trends
 - (b) economic impact analysis and commentary on economic performance
 - (c) monetary policy
 - (d) investment analysis strategy.
6. Ting has a Masters degree in Economics from the University of Auckland. She has 10 years of professional experience in both the public and private sectors.
7. Between 2015 and 2022, Ting worked as a Research Economist at Auckland Council, where her role was to provide an evidence base to support the Council's decision-making. She significantly contributed to the Council's work programmes on the Auckland Unitary Plan, Auckland Plan and NPS-UD.
8. Since joining NZIER in 2022, Ting has worked on many economic impact assessments, particularly wider economic assessments of infrastructure investments. She has also undertaken work on topical issues relating to urban development, infrastructure and local government.

Code of Conduct

9. We have been provided with a copy of the Code of Conduct for Expert Witnesses contained in the Environment Court's Practice Note dated 1 January 2023. We have read and agree to comply with that Code. This evidence is within our area of expertise, except where we state that we are relying upon the specified evidence of another person. We have not omitted to consider material facts known to us that might alter or detract from the opinions that we express.

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Involvement in project

10. We undertook the Economic impact Assessment (EIA) which Trans-Tasman Resources (TTR) commissioned from NZIER as supporting documentation for their Fast-Track Application of the Taranaki VTM Project. The report was completed in March 2025¹ and included as Attachment 2 in TTR's Fast-Track application.

Scope of evidence

11. We have been asked by TTR to provide evidence in responding to economic matters regarding the Taranaki VTM iron sand mining project, raised by the following "comments" and associated statements of evidence:
 - (a) Brief of evidence (economics) by Professor Glenn Adrian Banks on behalf of the Royal Forest and Bird Protection Society of New Zealand Incorporated
 - (b) Statement of evidence (economics) by Dr Ganesh Nana on behalf of Te Runanga O Ngati Ruanui
 - (c) Legal submissions on behalf of Taranaki Offshore Partnership (TOP)
 - (d) Statement of evidence Fraser James Colegrave (economics) for Taranaki Offshore Partnership
 - (e) Joint statement of evidence of Professor Christopher Fleming and Andrew Buckwell² from University of Griffith(economics) on behalf of Kiwis Against Seabed Mining, Greenpeace Aotearoa Incorporated.
12. To inform our evidence, we have:

¹ NZIER - Economic impact assessment of TTRL's Taranaki VTM Iron Sands Project – March 2025

² From University of Griffith, Queensland, Australia

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- (a) reviewed the comments and evidence as listed in 11 above
 - (b) gone through previous relevant documentation and evidence reports on the Taranaki VTM project
 - (c) undertaken further analysis required to respond to the issues raised by commenters.
13. Our evidence addresses the following matters raised regarding the NZIER EIA report, specifically:
- (a) Using the regional input-output approach overestimates the project's impact on GDP and employment.
 - (b) Issues with the inputs and assumptions used by NZIER in estimating the project's economic benefits and contribution to export earnings, royalties and tax.
 - (c) No discounting applied to the estimated impacts to account for project risk.
 - (d) Economic benefits estimated in NZIER's EIA do not present the project's net benefits given it does not consider potential negative economic effects.

RESPONSE TO COMMENTS

Using the regional input-output approach overestimates the project's impact on GDP and employment

14. The scope of NZIER's EIA was to assess how economic activity arising from the capital investment and operation of TTRL's iron sand mining in the South Taranaki Bight (STB) will flow through to the supporting industries, and what these flow-on effects mean for broader economic activity at the local district, regional and national level, in terms of GDP and employment.

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15. The regional input-output approach used in our EIA follows a standard practice. We built on the Stats NZ Input-Output table and applied a simple location quotient method to develop an input-output model that captures the structure of the local and regional economies under assessment. Details of our modelling process is outlined in Section 2.2 of the NZIER EIA report.
16. We note that the review by Market Economics on behalf Taranaki Regional Council concluded that the regional input-output approach we applied is sound and appropriate for the purpose of our EIA.
17. The commenters have criticised the use of an input-output approach and consider that it ignores that:
 - (a) firms may require different quantities and mixes of inputs
 - (b) firms may change prices in response to change in demand
 - (c) Increased activity in one industry may cause displacement in activity in other industries because resources (including capital and labour) in the economy are finite.
18. Given the above, the commenters considered that the project's contribution to GDP and employment has been overestimated by NZIER's EIA.
19. Dr Ganesh Nana, Mr Colegrave and TOP in their evidence suggested CGE modelling would be more appropriate than the input-output approach for assessing economic impacts in terms of GDP and employment, for a large-scale project like TTR's Taranaki VTM project. Their view is that CGE models produce more accurate estimates of the GDP and employment impacts as such models capture the inter-relationships across industries in the economy, and they are

built to account for resource constraints and allow price changes.

20. Comments from Parliamentary Commissioner for the Environment viewed CGE modelling more favourably than the input-output approach, with considerations similar as above.
21. We acknowledge the commenters' view of CGE modelling. However, the complex and sophisticated nature of CGE modelling means that preparing inputs required for modelling and running the model would be a resource-intensive process that we do not consider necessary in order to understand the economic implications of the proposal.
22. We view the input-output approach as being fit-for purpose and that the impacts on GDP and employment presented in the EIA are reasonable and appropriate.

Issues with the inputs and assumptions used by NZIER

23. The commenters have questioned the inputs and assumptions used in NZIER's analysis. On this matter, the commenters are mostly concerned with the appropriateness of:
 - (a) TTR's planned expenditure and employment for the project
 - (b) TTR's projected output and cash flows
 - (c) using long-term averages of commodity prices for iron ore and V_2O_5 for estimating the project's contribution to Crown royalties and tax.
24. The economic impacts estimated in EIA report relied on the inputs provided by TTR on their planned expenditure, employment in New Zealand, and the project's expected output and cash flows.

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25. TTR had revised those inputs since the previous EIA by MartinJenkins in 2015.³ The revisions were informed by the pre-feasibility study of the project undertaken by Siecap NZ.⁴
26. The input-output analysis in NZIER's EIA only considers TTR's expenditure and employment in New Zealand. Our analysis of the project's contribution to export earnings, royalties and corporate tax is based on TTR's projections of the project's expected output and cash flows.
27. We note that commenters have expressed concerns around using those inputs provided by TTR. However, it is not within the scope of NZIER's work to assess the validity of TTR's inputs.
28. Several commenters, like Professor Banks, TOP and Mr Colgrave, have also raised issues with the assumptions of prices in our analysis. They considered that by assuming some (long-term) average commodity prices for iron ore, V₂O₅ and fuel, the lack of accounting for price volatility overestimates the project's revenues and underestimates the project's operational costs.
29. As outlined on pages 9 and 10 of the NZIER EIA report, the assumed prices of iron ore and V₂O₅ applied are within the lower range of historic trends and forecasts from credible international sources (including Consensus Economics). We also looked at Consensus Economics' consensus forecasts of crude oil prices, which highly correlate with prices of IFO.
30. Our assessments of historic trend and international forecasts of commodity prices suggest the price assumptions used in our analysis are reasonable and conservative. We do not

³ MartinJenkins – Economic impact analysis of Trans-Tasman Resources Offshore Iron Sands Project

⁴ Siecap – Taranaki VTM Project Pre-feasibility Study (Attachment 3a and 3b of TTR's Fast-Track application)

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consider the price assumptions result in over-estimation of the project's contribution to royalties and tax.

No discounting applied to the estimated impact

31. Evidence from TOP, Mr Colgrave, and Professor Banks has pointed out that a discount rate should be used in NZIER's analysis to reflect the project's risk. Those risks arise from uncertainties over the project's ability to extract stable output of minerals and market volatilities over time.
32. In response, we have undertaken additional calculations to discount the estimated future flows of benefits. Given this project is a commercial investment proposal, we have applied a discount rate of 8 percent as per the Treasury's guidelines.⁵
33. The table below presents our calculations of the project's cumulative economic impacts over its 20-year mining operation, at a discount rate of 8 percent. This is based on our estimates in our EIA.

	South Taranaki/ Whanganui	Taranaki Region/ Whanganui	New Zealand
GDP contribution (\$million)	364	2,177	2,604
Export earnings (\$million)			8,389
Contribution to royalties			443

⁵ <https://www.treasury.govt.nz/information-and-services/public-sector-leadership/guidance/reporting-financial/discount-rates>

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Contribution to tax			1,117
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34. After applying an 8 percent discount rate to our estimated impacts in the EIA, our results continue to suggest a sizeable economic impact of the VTM project.

NZIER's EIA does not consider potential adverse impacts

35. The commenters are concerned that the EIA does not account for the potential adverse impacts of the project, particularly:
- (a) Negative impacts on the surrounding marine environment
 - (b) Opportunity costs on activities with competing use of the marine space such as fishing and wind power.
36. Consequently, the commenters consider that those estimated impacts in NZIER's EIA should be only viewed as the project's gross economic benefits and it should not be used to inform the Panel about the project's net economic benefits.
37. The commenters also stated that a cost-benefit analysis (CBA) should have been undertaken to evaluate whether the project will benefit the region and New Zealand on net terms, after accounting for those potential adverse impacts.
38. We note that Dr Nana and Professor Fleming and Andrew Buckwell in their evidence have recommended a social CBA using the Total Economic Value (TEV) framework. They consider this as the most appropriate approach for assessing the welfare impacts of the project on the environment and society, because this approach quantifies both the market and non-market aspects of the project's impacts on the ecosystem services of the affected marine environment.

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39. We acknowledge the commenters' concerns that the project's potential negative impacts should be addressed in its economic assessment. However, undertaking a full CBA is not within the scope of the work NZIER is commissioned to undertake.
40. We note that TTR's Fast-Track Application has already included qualitative evidence from its detailed assessments of potential adverse effects on the environment. These impacts were regarded as not being significant and able to be managed appropriately.
41. We also note that the 2015 EIA undertaken by MartinJenkins accounted for the project's potential negative impacts on fishing (commercial and recreational) and tourism, drawing on TTR's previous qualitative assessment of the project's environmental effects.⁶ Their analysis showed the project's economic benefits significantly outweigh those adverse impacts.

Additional analysis to address potential negative effects

42. While we consider our EIA as fit for the purpose of our commissioned work in finding the wider economic impacts of TTR's investment and operations, we have undertaken additional analysis to assess the potential adverse effects the increased mining activity could have on economic activity in other industries. By accounting for the potential decline in economic activity in other industries, our additional analysis produces more robust estimates of the net economic impact of TTR's project.
43. We followed the broad approach applied in the 2015 EIA by MartinJenkins. They had found the project may displace activity in other industries, such as fisheries and tourism, due to

⁶ Pages 29 to 31 of the 2015 EIA report by MartinJenkins.

their proximity to the project area and potential effect on environmental amenities.

44. It is important to note that the counterfactual of what we are assessing against in the EIA is an economy without TTR's Taranaki VTM project. Therefore, the potential displacement impact on hypothetical future offshore wind energy generation activity is not included in this analysis, given those offshore-wind projects are still at the pre- planning/ conceptual stage.
45. The qualitative environmental assessment in the rest of Section 5 of TTR's Fast-Track Application suggest that the project has minor adverse impacts on fishing species and environmental resources. With tourism activity in the region being mostly onshore and the site not easily accessible or visible from the shore, the project is expected to have limited impact on tourism activity.
46. To estimate the potential impacts of the project on fishing, we have modelled a scenario in which the entire industry exited the fisheries and aquaculture industry in the South Taranaki and Whanganui region.
47. Using regional multipliers for fisheries and aquaculture, we estimate that the loss of direct output would total \$2.93 million per year, reflecting the small local workforce of six waged employees.⁷ Based on the national average employment-to-output ratio of 2.05 employees per unit of output, this aligns with expectations for industry scale.
48. Applying the multiplier for induced GDP impact to output, we estimate a reduction of \$2.10 million in annual GDP, in 2024 dollars.

⁷ The Stats NZ business demography data shows there are six waged employees in the fisheries and aquaculture industry in the South Taranaki/Whanganui area.

49. To estimate the potential negative impact on tourism activity, we have assumed the total value of tourism expenditure reduces by one percent in the South Taranaki and Whanganui region. This is selected on the basis that both the 2015 analysis by MartinJenkins (refer to paragraph 41) and findings presented in the environmental assessment in TTR's application (refer to paragraph 45) suggest the project's potential negative impact on tourism activity is negligible. We utilised data from MBIE's Monthly Regional Tourism Estimates (RTE). This captured annual spending by territorial authority and regional council, by tourism product and country or region of origin, for both domestic and international tourism.
50. Estimates are taken from the year ended October 2020 and inflated using the GDP deflator to March 2024 quarter. This time period was selected due to the lack of available data after the RTE series was discontinued. Tourism fell as a result of COVID-19, but has since been recovering towards pre-COVID levels.
51. We estimate that the direct tourism expenditure could fall by \$2.2 million annually. Though we do not have a GDP figure attributable to this decline in tourism expenditure, the decline in GDP would be less than the decrease in direct expenditure (given GDP captures the value-added portion of expenditure in the economy). So, this estimate of decline in tourism expenditure can be seen as an upper bound estimate of the potential negative impact of tourism GDP in the region arising from the project.
52. Summing these up, we estimate the potential decline in economic activity in some other industries (which we accept could partly offset the economic benefits we estimated in our EIA) could be up to \$4.30 million in the region and New Zealand's GDP annually. Therefore, the project's annual contribution to the regional (\$222 million) and national GDP (\$265 million) significantly outweighs potential negative

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impact. We estimate the annual net economic impact of the project on GDP to be \$217.47 million for the region and \$260.95 million for the New Zealand economy.

53. At a discount rate of 8 percent, the cumulative net economic benefit over the 20-year operation of the project to be \$2.135 billion for the region and \$2.562 billion for the New Zealand economy.

CONCLUSION

54. We conclude that the approach we applied in the EIA is sound and fit-for-purpose, in capturing the wider economic impacts of the investment and operations.
55. To strengthen the robustness of our estimates, we undertook additional analysis to consider the potential negative impact on economic activity in some other industries that might arise from the project. Even after accounting for potential negative economic effects on fishing and tourism activities, we estimate the project will still bring significant net economic benefit to the regional and national economies.
56. We estimate the net economic impact of the project's operations to be \$217.47 million for the region and \$260.95 million for the New Zealand economy per year. At a discount rate of 8%, we find the cumulative net economic benefit over the 20-year operation of the project to be \$2.135 billion for the region and \$2.562 billion for the New Zealand economy.



Christina Leung, Ting Huang

13 October 2025