BEFORE THE FAST-TRACK EXPERT PANEL

IN THE MATTER of an application for approvals under section 42 of the Fast-track Approvals Act 2024 ("FTAA")

AND

IN THE MATTER of the application for approvals by Trans-Tasman Resources Limited for the Taranaki VTM Project, a project listed in Schedule 2 of the FTAA

JOINT STATEMENT OF EXPERT WITNESSES:

ECONOMICS

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19 November 2025

INTRODUCTION

1. Expert conferencing on the topic of economics took place online via Microsoft Teams on 19 November 2025.

2. The conference was attended by the following experts:

   (a) Christina Leung ("CL") (Applicant);
   (b) Ting Huang ("TH") (Applicant);
   (c) Professor Chris Fleming ("CF") (KASM and Greenpeace);
   (d) Andrew Buckwell ("AB") (KASM and Greenpeace);
   (e) Dr Douglas Fairgray ("DF") (Taranaki Regional Council); and
   (f) Professor Glenn Banks ("GB") (The Royal Forest and Bird Protection Society).

3. Steve Mutch (ChanceryGreen) acted as facilitator.

4. Caitlin Todd (ChanceryGreen) assisted the experts to draft the JWS.

CODE OF CONDUCT

5. The experts confirm that they have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023 and agree to comply with it. The experts confirm that the issues addressed in this JWS are within their area of expertise, unless stated otherwise.

SCOPE OF STATEMENT

6. In Expert Panel Minute 19 (5 November 2025) and Minute 20 (10 November 2025), the Panel directed experts in economics to conference regarding identified questions, recording matters that are agreed or disagreed and any unresolved matters or uncertainties.

7. The scope of this statement is limited to economics.

8. Appendix B of Panel Minute 20 formed the basis of an agenda for conferencing.

9. In this JWS, we report the outcome of our discussions in relation to each item (below), including by reference to points of agreement, disagreement, and unresolved matters or uncertainties. Where we are not agreed in relation to any issue, we have set out the nature and basis of that disagreement.

QUESTIONS FROM THE PANEL

A. Wider Economic Considerations

1. Does assessing the extent of a project's significant regional or national benefits require consideration of the duration of the benefits, e.g. whether the project has a positive legacy effect on the regional or national economy?

10. All experts agree that consideration of the duration of benefits (i.e. a positive legacy effect) is important. All experts consider there is a caveat that not only do any potential benefits need to be considered for the duration, but also the potential costs.

11. However, there is disagreement among the experts around what is considered economic and non-economic effects:

    (a) CL and TH have assessed the impact of the investment and its operations on economic activities in the regional and national economy.

    (b) CF considers that the distinction between economic and non-economic is actually a distinction between market and non-market. CF considers that all market and non-market activity is economic for the purposes of assessing the potential benefits of a project.

    (c) DF considers that the purpose of the Fast-track Approvals Act 2024 ("FTAA") to look at regional and national benefits means the scope of benefits must include market and non-market, simply because the effects (benefits and costs) are defined geographically and must therefore be inclusive of all economic activity.

    (d) GB agrees with CF and DF in relation to paragraph 11(b) and (c) above.

2. What, if any, are the legacy effects of the project?

12. All experts agree there will be legacy effects of the Project. However, there is disagreement among the experts in relation to what is considered economic vs non-economic effects, and regarding the certainty and extent to which these legacy effects will be realised:

    (a) CL and TH consider the legacy effects to be upskilling and attraction of skilled workforce, and other investments, given the certainty in planned

activity in the region. CL and TH refer to RFI response #12 (13 November 2025) in describing the legacy effects of the training facility in upskilling.

(b) CF considers there is uncertainty around the potentially negative non-market legacy effects of the Project. CF considers the market legacy effects to be overstated in that a portion of the workforce is likely to be from outside the region and transient. GB, AB, and DF agree with this.

(c) GB considers there is a high degree of uncertainty about the workforce legacy effects given the evidence of the existing oil and gas labour force in Taranaki and international experience. GB considers the response to the RFI by TTR overstates the workforce legacy effects. GB considers the legacy effects of the Hawera training facility are speculative. CF, AB, and DF agree with this.

(d) AB notes that the proponent could point to examples of legacy workforce effects that would reduce this uncertainty. CF, GB, and DF agree with this.

(e) DF considers the legacy effects will be positive and negative, and broadly commensurate with the direct and flow-on effects during the Project, during the extraction phase and after the extraction phase is finished. CF, GB and AB agree with this.

3. The TTR Application states that the Project represents a transformative opportunity for the New Zealand economy and if approved, will be a catalyst for economic progress in New Zealand. Set out agreement or disagreement with these statements and provide reasons/examples.

13. CL and TH expect this mining investment will attract skilled workers and other investments into the region, given the pipeline certainty of activity. CL and TH consider this will help to support regional economic development.

14. CL and THs' research on productivity[1] shows one of the key drivers of productivity growth is exposure to international competition and technologies. The greater the international orientation of the economy, the more firms are pushed from the domestic to the global frontier when it comes to innovation. CL and TH state that this reflects the greater exposure to more advanced technologies and ideas, as

[1] https://www.nzier.org.nz/publications/business-productivity-in-new-zealand-assessing-the-drivers-and-barriers-in-the-international-context

well as firms being motivated to innovate to compete in the more competitive international markets.

15. CL and TH consider that this would suggest the investment presents a transformative opportunity for the New Zealand economy in being a catalyst for economic progress.

16. CF disagrees with this statement. CF considers the scale of the effect of the employment and market activity of this Project is unlikely to be transformative at a national scale.

17. DF considers it is unlikely to be transformative at the regional scale. DF does not agree that the Project represents transformative opportunity for the New Zealand economy. The claimed contribution to GDP would represent a potential addition of just 0.07% to the New Zealand economy. Given the small total size of the Project, it would have little chance of having a material impact on the national economy, or to be 'transformative'. GB and CF agree with this paragraph.

18. DF considers there may be a greater chance of it being 'transformative' because of its nature. It would be the first significant seabed mining operation in New Zealand, and if approved it might signal a significant change in how the seabed in the EEZ will be managed. That may be considered transformative if a small contribution to the regional and national economies were considered sufficient reason for a substantial shift in direction in seabed management. AB, CF and GB agree with this paragraph; however, a policy drift towards seabed mining may not yield net benefits to New Zealand.

19. GB considers that, in relation to technology innovation, there is limited scope for this given it is an offshore operation. GB considers it will be using imported technology and have very little interaction with the regional or local economy and little scope for technology transfer i.e. the capital equipment/investment is not useful for any other purpose.

4. If the Project presents risks or benefits to New Zealand's reputation, is this a relevant economic effect?

20. All experts agree that potential risks or benefits to New Zealand's reputation is a relevant economic effect.

21. CL and TH state that they have in their Statement of Evidence estimated the potential negative impact on other industries such as tourism and fishing and

aquaculture in the region. Hence, CL and TH state that the net economic impact accounts for these risks to New Zealand's reputation which are relevant in terms of economic effect.

22. CF notes that, by limiting the potential negative effect of reputational damage to 1% of tourism spend within the region, the potential negative effects to the reputation of all regions in New Zealand are understated in the model at the national level. DF and GB agree with this. AB agrees with this and considers the impact is discoverable through economic studies e.g., using a stated preference survey study of international visitors.

    5. *What weight should be given to GDP and employment contributions expressed in percentage terms versus absolute terms. How meaningful are those percentages to decision makers.*

23. CL and TH state that, as can be expected for a regional investment, their estimated benefits are large in a regional context, but much more modest in the context of the New Zealand economy. The estimated impact to regional and New Zealand GDP in absolute dollar value terms is useful to show the amount of activity the investment is expected to add to the economy. CL and TH consider this more important as it allows for comparisons across different economies on the GDP metric.

24. CL and TH state that consideration of the impact as a percentage of the regional and New Zealand economy can be useful to provide context for scale of the investment relative to the overall economy. CL and TH consider that the fact that their estimates of the impact of this mining investment is small (rough rule of thumb of less than 1%) as a percentage of the regional and New Zealand economy, supports their assessment that the limitations of their I-O multiplier approach is small.

25. DF considers that both $ and % are relevant. Most development projects have a small effect in percentage terms, simply because of the substantial size of a local or regional economy, and reliance on the % figure runs the risk of under-estimating a significant or material project for particular segments of the community, or localities. Percentages are widely used as a guide to significance because they show the relative contribution and are very widely understood and acknowledged. CF and GB agree with this paragraph.

B. Employment and GDP Impacts

6. *NZIER's IO modelling estimates total direct, indirect and induced employment of 211 FTES associated with the set-up (capex) period and 1,123 per annum for the operational (extraction) period for the Region (Taranaki Region with Whanganui District), and 459 and 1,365 FTEs respectfully at the national level. This is stated by NZIER as being "new jobs".*

    a. *How much of the direct, indirect and induced employment at the regional and national levels is likely (in reality) to be new (net additional) jobs, versus sustained existing jobs? Please provide reasons.*

26. CL and THs' estimates reflect a mix of existing and new jobs – CL and TH state it is not possible to isolate out how many are new jobs. CL and THs' estimates capture how many workers are required to maintain operations for this mining investment.

27. CL and TH consider this mix represents what happens in the real world – open international borders mean immigration to fill in some of the roles, which would weigh on wage growth than would otherwise be the case if labour supply was fixed.

28. DF notes that the estimates provided by the IO model are net additional hours of work. However, these estimates are likely to be an overestimate because of the potential for the flow-on effects through indirect employment and induced employment to be muted by increases in efficiency because the economy is larger due to the Project. CF agrees with this.

29. AB considers that it would be good practice for NZIER's IO model to be peer reviewed.

    b. *Does transfer of workers from an existing job to a job for TTR mean that induced household expenditure would have occurred under the status quo?*

30. CL and TH state that, given a job at TTR is considered higher value (in terms of the output per worker, and hence higher wages paid) than the "average" job in New Zealand, even a transfer of workers would result in the economic benefits of an increase in induced household expenditure from these higher value jobs for the mining operations.

31. CF considers that the transfer of workers to a TTR job means the induced household expenditure would have occurred under the status quo. There may be a small increase in induced household expenditure due to the TTR jobs having higher wages, but this is likely to be small (because transfer will likely be from a high paid job to another high paid job). AB and GB agree with this.

32. DF and AB consider that the distributional impact of induced household expenditure needs to be elucidated.

    c. *Should induced GDP and employment impacts be included at the regional and/or national level? Why/why not?*

33. All experts consider induced GDP and employment impacts should be included at the regional and/or national level.

34. CL and TH consider induced GDP and employment impacts should be included because the mining operations would bring in workers, which would mean additional activity rather than a mere reallocation of resources.

35. DF agrees with paragraph 34 above and considers that economic activity generates indirect effects (from flow-on spending in other businesses) and generates induced effects (from consumption sustained by household incomes). This is relevant at the regional and national level. CL and TH agree with this paragraph.

36. DF considers that the issue is the degree to which the estimates of indirect and induced GDP and employment may be overestimated in the NZIER analysis. CF and GB agree with this.

    d. *The Parliamentary Commissioner for the Environment has suggested that only direct GDP and employment should be counted at the national level? Do you agree with this, or not (and why)?*

37. All experts disagree with the Parliamentary Commissioner for the Environment's proposition that *only* direct GDP and employment should be counted at the national level. All experts consider the new activity would increase indirect and induced GDP and employment demand, and estimates need to capture these flow-on impacts as well. The Project would not result in only a reallocation of existing resources.

38. However, there is disagreement among the experts as to the quantum/extent of those indirect and induced GDP and employment effects.

7. *Are GDP impacts, employment impacts, corporate tax contributions and royalties mutually exclusive under NZIER's modelling approach? I.e., is there any double counting of these impacts?*

39. CL and TH consider there is no double-counting – these elements are measuring different things, using different approaches (one applies IO multipliers to the project's direct expenditure and activity, and the other uses TTR's projected output and cash flows) so they cannot be added together. CL and TH note that this can be considered as different elements relating to the GDP formula:

GDP = C+I+G+(X-M)

40. CL and TH state that induced household expenditure relates to C; Corporate tax and Royalties relate to G. Export earnings (X) relate to net exports (X-M).

41. However, CL and TH note that the relationships are not one-for-one e.g. a dollar increase in royalty does not translate into a dollar increase in government spending. CL and TH state that while the formula provides guidance on how our estimates contribute to GDP and are mutually exclusive, they are not additive. To clarify RFI response #21 (13 November 2025), CL and TH state you cannot simply add the estimated export earnings to the benefits estimated by the IO model.

42. All other experts agree with paragraphs 39 to 41 above.

8. *Sensitivity testing of export revenue and royalty payments: NZIER shows only one variable changed at a time. Under a worst-case scenario, is there logic in modelling the effect of combined variables? And if so, which of the variables should be combined?*

43. See response #20 (13 November 2025) for CL and THs' calculations of the worst- and best-case scenarios, as requested. CL and TH state that, although they have estimated in their response a worst-case scenario for the combined variables of high NZD and low commodity prices, they see the likelihood of this (combination) as low given the level of the NZD typically has a positive relationship with commodity prices i.e. high global commodity prices should drive an appreciation for the NZD given this development would be seen as positive for the New Zealand economy, and hence make NZD-denominated investments more attractive. This means the exchange rate typically provides a buffer for movements in commodity prices. CL and TH do not consider it is logical to model the effect of the worst-case, high NZD and low commodity price, given they

consider these combinations of developments are highly unlikely. Nonetheless, CL and TH have provided these results in their response as requested to provide some parameters for sensitivity testing.

44. GB requested some clarity around the corporate income tax payments to clarify the response #6 from Siecap / TTR (13 November 2025), and the extent to which that lines up with the original modelling done by NZIER. GB further noted that it would be material to know what the impact of the application of the 20% income tax credit and the depreciation and the offset of exploration and development costs would have on taxable income over the life of mining. DF supported the request for clarity, noting that it seems to relate directly to the question of regional or national benefit. CL and TH received clarification from TTR that the figures in response #6 are in USD, and the 20% income tax credit has not been applied to TTR's discount cash flow model which was input into NZIER's analysis.

C. Economic Impacts versus Benefits

9. Are GDP impacts, employment impacts, corporate tax contributions and royalty contributions economic benefits? What components of these measures contribute to/enhance economic wellbeing? Please provide examples of how economic benefits differ from economic impacts in the context of the Project.

45. CL and TH consider that, yes – all these elements represent economic benefits and contribute to economic wellbeing given it would mean more funding to do more things in New Zealand. This should increase the standard of living in New Zealand.

46. DF agrees with the above paragraph 45 but notes that these things have components of benefit. However, it is important to consider net benefits not just gross benefits and achieving those benefits incurs a range of costs, including adverse impacts in terms of economic activity, and environmental, social, and other costs, especially in relation to s 85(3) of the FTAA, and the question of proportionality.

47. CF considers that economic impacts are just that – impacts. While there is an element of economic benefit to economic impacts, it is important to consider net benefits – that is subtract the cost (market and non-market) of achieving these economic impacts. This includes societal and environmental costs, which should be valued and incorporated into economic analysis – for example, feasible

opportunity cost of alternative uses, foregone tourism and brand value, and reduced recreational fishing.

48. DF, AB, GB, and CF consider a specific example of how economic benefits differ from economic impacts in the context of the Project is rehabilitation of the Project site – such as the cost of restoring damaged ecosystems. This would be an economic impact but should not be considered a benefit of the Project.

49. CL and TH clarify that restoration activities are currently not captured (as benefits or costs) in NZIER estimates.

50. DF considers additional employment is generally considered a benefit (positive outcome for society) but does incur some costs such as input of time and effort, so is not entirely net benefit.

10. What weight should be given to the high share of the Project's export value transferred to foreign investors? Is this a relevant consideration in economic terms?

51. CL and TH state that it would be up to TTR how much of the export earnings are retained and reinvested in New Zealand. The share of this is currently unknown. CL and TH note that, obviously, the greater the amount retained and reinvested in New Zealand the more benefits to the New Zealand economy.

52. DF considers the high likelihood that a substantial share of the Project's export value will be transferred to foreign investors is very relevant. This is particularly in the context of opportunity cost and alternative uses for the site in relation to proportionality of Project benefits and costs, and the distribution of benefits and costs as between the New Zealand economy and the rest of the global economy. GB agrees with this.

11. In assessing economic benefits, should the Panel factor in any foregone opportunity for different activities to establish at the site (e.g. wind energy generation), and if so, how does this affect the economic analysis?

53. CL and TH consider that the Panel should not factor in any foregone opportunity for different activities to establish at the site as there are an infinite number of alternative activities that could be established at the site, each with their own costs and benefits. If alternatives were considered this should be a short list of options each with their own costs and benefits; options are then to be ranked.

54. CF considers that, yes, opportunity costs should be considered, both temporal and sectoral. At the very least the development of wind power as an alternative use of the site should be included in economic analysis. Included within this analysis should be the 'do nothing' or at least 'do nothing now' options (and retaining the benefit of the seabed as is) should be formally considered within a cost and benefit analysis (refer to paragraph 57 below). DF, GB and AB agree with this.

55. GB considers there is a temporal component to the opportunity costs attached to the ore itself in the sense that future technologies will be able to extract higher values for the vanadium and titanium, and a lower cost extraction at a lower environmental impact. GB states that will then return a greater benefit to New Zealand from the resource. CF, DF and AB agree with this.

RFI RESPONSES

56. In the Joint Witness Statement above, the experts have addressed RFI responses to the extent that they are relevant to the Panel's questions above. In addition, the experts address RFI #28 below.

#28 While the limitations of IO modelling are well set out, and NZIER maintains that the model is fit for purpose, please address the potential implications of those limitations on the results of the modelling.

As set out in the report there are several key caveats with using IO multipliers. These are:

- *Fixed Technical Coefficients – this means the proportions of inputs required to produce outputs are constant. As a result, changes in technology or substitutions possible are ignored*
- *No price or supply constraints – the model operates on a 'quantity basis and doesn't account for changes in prices or supply constraints. Employment and capital is considered abundant and doesn't get reallocated from other areas*
- *Static framework – the model is at a single point in time and doesn't show dynamic effects of capital accumulation*
- *Homogeneity of industry – each industry is assumed equal productivity; it doesn't capture that firms within the same industry may be more or less productive.*

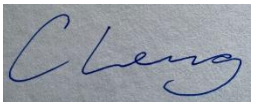
While acknowledging these limitations, we consider the IO modelling approach is fit for purpose for capturing how the Project's operational and economic activities

will flow through to the supporting industries and broader economy. Given most of the Project's direct expenditure and employment in New Zealand will be in the region, we consider the implications of those limitations of the IO model on our estimated impacts are small.

57. CF considers that if the purpose of assessing the Project is to determine whether the Project delivers significant societal wellbeing to New Zealanders, a cost and benefit analysis which considers alternative uses of the resource, including 'do nothing' or 'do nothing now' should be completed. Such an analysis would allow opportunity costs and social and environmental impacts to be considered and, where possible, quantified, and CF considers this is the appropriate analysis for the allocation of resources to the best possible use. AB and GB agree with this. DF agrees with this but considers that the IO assessment is relevant to this process in relation to the purpose of the FTAA.

58. CL and TH consider their assessment on how this Project increases economic activity is appropriate.

SIGNATURES OF EXPERTS



Christina Leung

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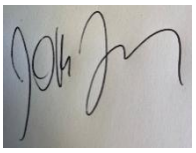

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Professor Glenn Banks