

Witness	Submitter	Ref no.	Question	Response by Jason Leung-Wai	Area of expert agreement or disagreement
A	Mr Jason Leung-Wai	JL1	Do you agree that because the fishing industry may land product caught within the STB in other ports, and that fishers may be domiciled outside the area, any contextual description of the scale of the commercial fishing industry needs to consider areas wider than just activity within Taranaki's administrative boundaries?	No. The focus of my discussion was to demonstrate the relevance of the commercial fishing industry within the local and regional study area.	Not relevant for consideration by the experts
		JL2	At paragraph [59] of your evidence you suggest "negligible impacts on commercial fisheries". Given that submitter evidence suggests impacts would be more than negligible, or that there is insufficient baseline information to make this conclusion, would your assessment of the economic impact on commercial fishing change and to what extent would it change?	I did not assess the economic impact on commercial fishing.	Not relevant for consideration by the experts
		JL3	At paragraph [77] you state: "My analysis touched on possible negative impacts on tourism and fisheries based on current activity in the study area, the likelihood of potential adverse outcomes, and the possible negative impact of that outcome. However, expert advice [in reference to Dr MacDiarmid] suggests that impacts on fisheries will be negligible. Even if negative impacts did occur, monitoring and response identified in the proposed consent conditions would quickly contain any likely impact. As such, my analysis has focused on the economic benefits that could accrue from the project."  What qualification do you have to form an opinion as to whether the monitoring and proposed consent conditions would quickly contain any likely impact?	My statement was to provide a perspective on why the focus of the analysis was on economic benefit only. I have deferred to Dr MacDiarmid's and other expertise on potential adverse outcomes and the ability of the proposed conditions to contain possible impacts.	Not relevant for consideration by the experts
		JL4	Is it normal for economic analysis of proposed activities relying on incomplete baseline information about the receiving environment to assume zero economic risk to surrounding established activities?	Yes. Economic analysis is very often contending with, and is largely designed to determine, an outcome based on incomplete information. However, I have not assumed zero economic risk but rather not addressed it in my analysis, which focuses on the economic benefit from activity.	Agreed that a full BCA would be useful to support decision making in that it would capture and reflect all the costs and benefits associated with the project. Disagreed as to whether a full BCA is possible and whether partial or incomplete analysis would be helpful or a hindrance to decision-making.
		JL5	Should you have taken a precautionary approach to your evidence and considered potential significant risks, notwithstanding your contention the likelihood of any impact occurring on commercial fisheries is low?	No. the focus of the analysis was on the economic benefit that would accrue from the ironsands activity.	Agreed that a full BCA would be useful to support decision making in that it would capture and reflect all the costs and benefits associated with the project. Disagreed as to whether a full BCA is possible and whether partial or incomplete analysis would be helpful or a hindrance to decision-making.
		JL6	Should you have included in your assessment of the economic effects an analysis of existing and future anticipated returns to the commercial fishing industry of activities within the STB?	No. the focus of the analysis was on the economic benefit that would accrue from the ironsands activity.	Not relevant for consideration by the experts
		JL7	Why have you not analysed the possible economic effects of the displacement of catch from FMA 8?	The focus of the analysis was on the economic benefit that would accrue from the ironsands activity.	Not relevant for consideration by the experts
		JL8	In Mr Douglas Saunders-Loder's evidence, he states that Talley's Group Limited own quota valued at approximately NZ\$7,177,357 (excluding the value of tuna). A minor disturbance of the feeding and migration patterns of these fish and displacement from FMA 8 would have an economic effect on the value of Talley's (and other quota holder's) quota.  Why has a consideration of the possible economic effects on Talley's (and other quota holder's) quota and non-quota species) not been included in your economic assessment of the effects of the TTR mining operation?	The focus of the analysis was on the economic benefit that would accrue from the ironsands activity.	Not relevant for consideration by the experts
		JL9	Dr MacDiarmid asserts that fish species will be displaced from the areas where the sand mining and sediment plume occurs. She states at paragraph [80] that this displacement will have a negligible effect on commercial fishing.  Displacement of fish will cause them to move from FMA 8, but they may not be available to be caught in adjacent FMAs as they may not aggregate in those areas.  Why has no consideration been given to the economic effects of displacement?	The focus of the analysis was on the economic benefit that would accrue from the ironsands activity.	Not relevant for consideration by the experts
Karen Pratt	JL10	Could you provide an audit trail, so readers of your report can reconcile Table 1 & Table 2 of the EPA Information Request to the figures in the Impact Assessment (see my non-expert evidence pages 93 and table page 96).	My report and the evidence report provides a clear description of the approach and the inputs into the modelling. This has been followed up with further information request to the EPA. I have also submitted my expert evidence and rebuttal evidence. Finally, the approach has been discussed by the expert witnesses who are comfortable with the process and the findings. I am happy to go through my worksheets if required.	Not relevant for consideration by the experts	
	JL11	Shipping processes are extremely automated. Can you provide independent support for the FTE requirements e.g. from the shipping provider. Can the shipping provider give details on training requirements, as my review of large vessels on the internet indicates specialised Fly-In training occurs, rather than 'local training centres'.	The FTE requirements were presented by Shawn Thompson in his evidence. As noted these were tested and verified by relevant industry players and experts and form the basis of the pre feasibility study. The impact of local training centres were not considered in my analysis. A local training centre would have impacts in its own right, and increase the local employment on the project in future years. This is an opportunity that the local and regional areas should consider closely. TTR will employ people with a range of skill sets, ranging from ship captains through to kitchen hands. Many of the "less skilled" occupations can be trained locally and, over time, the level of training.	Not relevant for consideration by the experts	
	JL12	What objective evidence can you supply that the Heavy Fuel Oil will not be a ship-to-ship transfer? (HFO is a materially large item for your 'domestic expenditure'). If there is uncertainty on this matter, then could you provide another set of economic results with the line item categorised as Import expenditure.	HFO to the IMV will very likely be a ship-to-ship transfer. The AHT and Geotech vessels will bunker from shore based facilities in NP and Whanganui. My analysis was based on a bunkering facility in New Plymouth that would directly employ 6 people. This was identified as the most likely approach with likely activity based on discussions with Silver Fern Shipping. TTR has been in discussion with both Silver Fern Shipping and Z Energy with regards to HFO supply.	Not relevant for consideration by the experts	
	JL13	Can you provide independent references to support your methodology of including TTR employees AND subcontracted employees as DIRECT labour? (see page 101 of my non-expert evidence, for Berl definition of DIRECT, INDIRECT AND INDUCED).	The standard approach is to use direct expenditure to derive direct labour. However, I considered that the actual estimates of TTR employees determined in their pre-feasibility study provided a more accurate estimate of TTR's direct employment than what would be determined by the model. However operational expenditure by TTR is on more than just their own employment and includes purchasing goods and services, which supports employment. Direct labour is therefore the TTR employees AND the employees directly employed as a result of TTR expenditure. This is consistent with the BERL and any other definition of direct employment.	Experts agreed with the points raised by Mr Leung-Wai.	
	JL14	At 59 you say that activity is not visible from the shore and so is unlikely to directly affect tourism. Do you accept that tourists may be aware of activities that they cannot see, but hear about? Do you accept that tourists may feel differently about visiting an area which is the subject of seabed mining even if they do not see the mining? You say that recreational fishers may be inconvenienced but are free to fish in different areas.? May those recreational fishers include tourists? And may recreational fishers not being able to fish in an area not decide to fish in Taranaki at all?	Yes they may be and yes they may feel differently about visiting the region. However, I also think that those potential visitors who feel strongly about seabed mining will also feel strongly about oil and gas exploration and production. As this is already occurring in Taranaki it is unlikely to further change the way they feel or impact on their decisions to visit. I doubt whether there are many existing visitors to Taranaki who considered the presence of oil and gas production when deciding whether to visit.  Tourists who are recreational fishers are also unlikely to not be able to fish if they so desired. This question is probably beyond the scope of my expertise. However, while the evidence suggests that fishing will not be possible within the area being directly mined and the proposed exclusion zone around that, my understanding is that area is very small and is unlikely to deter recreational fishers, particularly tourists.	Not relevant for consideration by the experts	
	JL15	Para 75: do you accept that tourists and others may consider that the project is contrary to New Zealand's clean green image, even if there are other industries that likewise undermine it?	Yes. I would also say that, based on the evidence, this project will have significantly less impact on New Zealand's environment than other industries or mining activity.	Not relevant for consideration by the experts	
	JL16	At para 65 you estimate royalties at royalties at \$6.15m? Do you accept that is a small percentage of export earnings of around \$400 million a year (Alan Eggers para 29)? Do you accept that royalties revenue received by New Zealand, are supposed to represent the economic compensation for the permanent loss of the mineral resource? (Binney para 12)	I wouldn't compare royalties to export earnings but rather profits, which are likely to be much lower than \$400m export earnings as you would exclude expenditure. As shown in my report (figure 6, p 24), royalties and taxes would increase as the price of iron ore increased, particularly when the ad velorem royalty (AVR) shifted to accounting profits rather than net sales. This is because the royalty paid varies depending upon the price received by the producer. (I would also note the benefit to New Zealand of an increase in export earnings of around \$400m annually).  According to NZPAM, royalties are set to ensure the Crown receives a fair financial return for the development of its minerals to the benefit of New Zealand. In the ironsands case the AVR stipulates the payment of the higher of 2 percent of net sales revenue or 10 percent of accounting profits.	Experts agreed with the points raised by Mr Leung-Wai.	

	JL17	At para 67 TTR is a New Zealand company. What do you mean by that? What percentage of beneficial ownership is held by New Zealand residents? Have you undertaken a study of to where dividends would be remitted? You say that TTR has 42 shareholders, of which 19 are from New Zealand. How many of those are nominee shareholders? Are they all beneficial owners? Who are the beneficial owners of Minvest Securities (New Zealand) Limited, the largest shareholder? Do you accept Mr Binney's analysis (para 36) that the consequence of this overseas financing strategy is that the bulk of the return on investment from the project will also flow directly overseas, significantly reducing the benefits accruing to New Zealanders?	TTR is a NZ registered company and the vast majority of its operations are in New Zealand. Mr Eggers has provided information on shareholders and beneficial ownership in his evidence and, in particular, Minvest Securities (NZ) Limited. While a proportion of the return on investment (profits) will flow overseas (as is the case in all FDI), this is not a significant part of the benefits identified in my report. The majority of the benefits are derived from the new investment and operations of the project in terms of employment and business spending, as well as export earnings, taxes and royalties.	Not relevant for consideration by the experts
	JL18	Para 86: even if it is difficult to monetise benefits and costs over a defined time period, do you accept that it should be attempted? Do you dispute that environmental cost is a cost?	Due to methodological issues in identifying and monetising environmental costs attempting to capture them would only muddy the waters. This is the same reason why I don't consider, or try to capture, intangible or associated benefits, for example technology transfer and increased resiliency, in my analysis.	Agreed that a full BCA would be useful to support decision making in that it would capture and reflect all the costs and benefits associated with the project. Disagreed as to whether a full BCA is possible and whether partial or incomplete analysis would be helpful or a hindrance to decision-making.
	JL19	You discuss 'double counting' environmental costs. But you have not even attempted to count them have you?	No I haven't. The focus of my analysis was on the economic benefit that would accrue from the ironsands activity. Double counting was an issue raised by the EPA in its Key Issues Report (para 120, p29). I was only referring to their caution to ensure that we don't try to capture environmental costs as part of the benefits analysis where effects on the environment or existing interests are being considered already (S59 (2) (a)-(e)).	Not relevant for consideration by the experts
	JL20	Have you read Jim Binney's evidence for KASM and Greenpeace? He said that (para 9) he is of the firm view that a comprehensive benefit-costs analysis (BCA) is the only appropriate economic assessment methodology to inform the regulatory approvals process. This should include all relevant environmental and social values that could be adversely impacted by the project. Do you disagree with this? Do you accept that your analysis cannot be used to demonstrate the net worth of the project to New Zealanders	Yes I have read Jim Binney's evidence. No I do not believe that a comprehensive BCA is the only appropriate economic assessment methodology to inform the regulatory approvals process. As noted earlier a comprehensive BCA would simply make the analysis less robust, open to criticism and interpretation, and therefore more difficult to assess. The EPA, in its key issues report suggests that the DMC needs to be particularly conscious of not double counting any costs associated with the environmental effects as these are clearly provided for in S59(2)(a)and(b) of the EEZ act as well as to a more specific extent in other subsections of section 59. It is therefore not appropriate to also account for them by subtracting environmental costs from economic benefits. I accept that my analysis only measures the economic benefits to the study areas and is not net of potential costs.	Agreed that a full BCA would be useful to support decision making in that it would capture and reflect all the costs and benefits associated with the project. Disagreed as to whether a full BCA is possible and whether partial or incomplete analysis would be helpful or a hindrance to decision-making.
	JL21	Do you consider that environmental and social values need not be valued? Do you accept that (Binney para 38) no significant attempts have been made by the project proponents to evaluate the potential value of the costs to the environment attributable to the project? Do you accept that the ocean produces goods as well as ecosystem services? (Binney para 39)? That these include exchanges of matter, energy and biodiversity? Are you aware that the ocean creates 50% of the oxygen we breathe? And recycles most carbon? And has absorbed over 93% of anthropogenic heat? Are you aware of provisioning services, regulating services, habitat, and cultural services? (Binney para 43)	I accept that I have made no attempt to evaluate the potential value of the environmental and social costs attributable to the project.	Agreed that a full BCA would be useful to support decision making in that it would capture and reflect all the costs and benefits associated with the project. Disagreed as to whether a full BCA is possible and whether partial or incomplete analysis would be helpful or a hindrance to decision-making.
	JL22	Mr Binney also said (para 10) that you have adopted an I/O approach and that is generally considered to be an inferior approach to estimating impact assessment as it tends to overestimate impacts. Do you accept that?	No. In my report I explain why it was decided to apply an I/O approach, specifically that it provided a better estimate at a regional level. I also do not accept that it tends to over-estimate impacts. If the analysis is undertaken correctly, and addresses additionality and displacement it is just as likely to underestimate as it is to overestimate. This matter has been addressed as part of the joint expert statement.	Experts agreed that, at a regional level, an IO Multiplier Analysis is appropriate model for estimating economic benefits of for the iron sands project.
	JL23	Do you accept that environmental risks do have economic values? (Binney 12) He estimated a range of the present value of the environmental damage could be in the range of \$28 – 543 million. (para 12) Do you accept that?	Yes but they are inherently difficult to measure and open to interpretation and misuse. I don't accept Mr Binney's estimates of potential environmental risks. Mr Binney's estimates are based on values not specific to the area involved, and consider that any damage to the area occurs in year 1 and the damage completely reduces the value of the environment to zero and is irreparable for 20 years. I refer to the EPA key issues report that we do not double count environmental costs.	Disagreed as to whether a full BCA is possible and whether partial or incomplete analysis would be helpful or a hindrance to decision-making. Project-specific estimates of environmental and social costs could be developed for inclusion within a BCA. However, it should be noted that this task is not trivial as different methods would need to be used to estimate the range of values for different types of environmental costs.
	JL24	Do you accept that the flow on effects identify a measure of activity, not a measure of net benefits from the project, which needs to include social and environmental effects? (Binney 35)	The flow on effects are the indirect and induced benefits that occur as a result of the initial activity and do not measure net benefits.	Experts agreed with the points raised by Mr Leung-Wai.
	JL25	Do you accept that the flow on effects identify a measure of activity, not a measure of net benefits from the project, which needs to include social and environmental effects? (Binney 35) Mr Binney concluded (para 13) that the use of an inappropriate approach to the economic analysis, a lack of transparency, and no real attempt to incorporate environmental risks into the economic analysis, means that the economic analysis does not demonstrate that the project would deliver a net benefit to New Zealanders. Do you accept that? Do you accept that the economic analysis undertaken by Martin Jenkins and Associates on behalf of TTR does not provide a solid economic argument that the project should be approved? (Binney para 48), and that the application of the I-O modelling has not been done in a transparent fashion and any results should be treated with extreme caution?	The economic benefit is not net of possible costs. It provides a best estimate of the likely benefits that would accrue in the local, regional and national economies. The jobs and value that would accrue to and support growth and sustainability in the local and regional economies over a 20 year period are a compelling reason for considering the project. The modelling was very transparent in terms of the methodology, and how the inputs that went into the model were determined. The limitations of the model were also made clear, as was the rationale and approach used to address or consider those limitations.	Not relevant for consideration by the experts
	JL26	Do you accept that biodiversity is underestimated due to sampling issues (Mead para 19.3)?	I defer to the relevant expert. My understanding is that they have answered questions related to sampling.	Not relevant for consideration by the experts
	JL27	Do you accept that rocky reefs areas were not adequately sampled? (Mead para 19.4)?	I defer to the relevant expert. My understanding is that they have answered questions related to sampling.	Not relevant for consideration by the experts
	JL28	Do you accept that reports give no indication of the distribution and abundance of microphytobenthos (MPB)? (Mead para 19.5) Do you agree with the criticisms of experimental design and data analyses in Mead para 19.6?	I defer to the relevant expert.	Not relevant for consideration by the experts